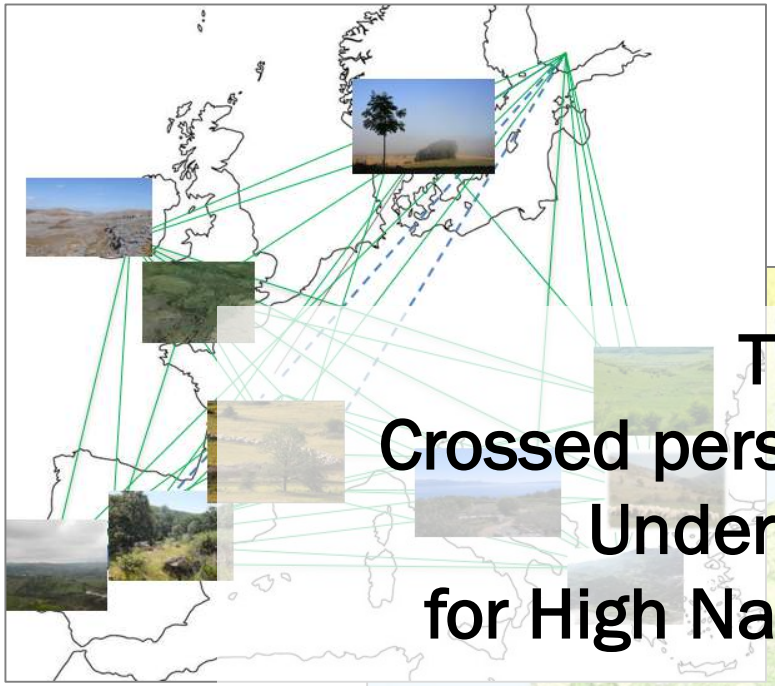
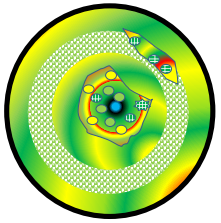
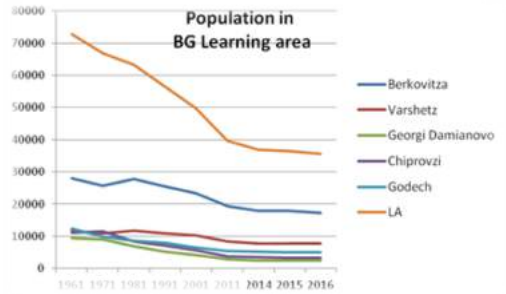
A thematic network on High Value Farming
Learning, INnovation & Knowledge

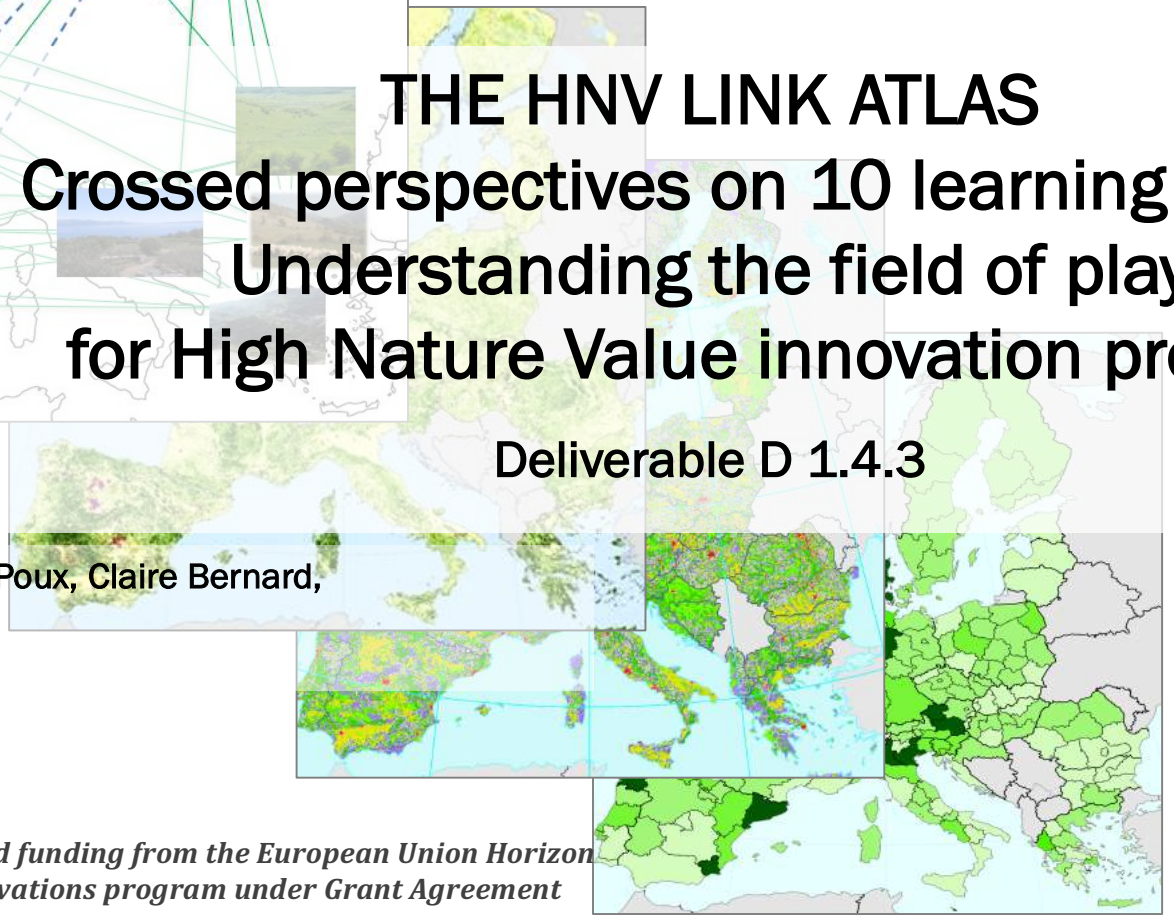






THE HNV LINK ATLAS
Crossed perspectives on 10 learning areas - Understanding the field of play for High Nature Value innovation projects

Deliverable D 1.4.3



Coordination: Xavier Poux, Claire Bernard, François Lerin
Date: October 2017

This project has received funding from the European Union Horizon 2020 research and innovations program under Grant Agreement No. 696391

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Deliverable D 1.4.3 HNV-Link 2017 – an H2020 project (Grant Agreement 696391)
Coordination: Xavier POUX, Claire BERNARD, François LERIN

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Introduction

An Atlas for High Nature Value "Learning Areas"

HNV Link is a unique project involving ten areas in assessing the needs in terms of innovation for the conservation of High Nature Value farming systems (FS) and, on this basis, engaging local and regional actors in such an enterprise. In HNV-Link, those areas are labelled as "Learning Areas" (LAs in the following pages) as they were starting an open learning process where they had to experiment the challenge of engaging multi-actors groups, acting as active innovation brokers, able to sustain long-term territorial dynamic on HNV innovation. From these processes, they will be able to demonstrate to other candidate areas, in the future, what are the key issues in operating such projects. They are Learning Areas both in the sense they are at the same time themselves in a reflexive learning process for new innovations and that other territories will be able to learn from these areas.

The choice of engaging such a number of "Learning Areas" (LA in the following pages) was to cover a diversity of situations. The idea was, and is, beyond the particular cases covered in the "Learning Areas" to apprehend a diversity of situations: this would facilitate the transfer of future findings, as there is clearly no "one size fits all" approach that can be transferred to any situation. Every situation is particular, but everyone can learn from others. The wider of situations covered, the richer the findings.

This being said, while ten learning areas is a good number to show diversity, it does not pretend to cover the whole range of HNV situations in Europe. The idea is comparing diverse cases and analyzing diversity brings understanding in challenges for HNV.

The overall intention of the present Atlas is to show the diversity of HNV macro agro-ecosystems and their dynamics of evolution (past and present), opening perspectives for the future (HNV Vision)., Therefore a comparative approach gives a better understanding of the existing challenges for each territory. It does not aim at proposing solutions, which is the purpose of another document in HNV Link (the Innovation Compendium). But it assumes that a good understanding is the first step for shaping sustainable projects.

High Nature Value farming

High nature value farmland designates "*those areas in Europe where agriculture is a major land use and where that agriculture supports, or is associated with, either a high species and habitat diversity or the presence of species of European conservation concern, or both*". They are an important component of European agriculture, notably in terms of biodiversity, cultural landscape, territorial cohesion, quality products and employment. However, abandonment, degradation, economic and social marginalisation are long-standing challenges for these systems which are still under considerable pressure. For these systems, both for national and local authorities, but also for the European Union and the Common Agricultural Policy, the challenge is twofold:

- to avoid further degradation and disappearance of HNV farming: this could be done by collating, evaluating and disseminating innovations as tools for their development;

• to maintain their “natural value” – in other words the environmental services they provide to the society.[1]

The concept of HNV farming is complex. It conceptually links FS and nature value in a holistic apprehension, crossing production-economy, environment and territories. Thus capturing the spatial and territorial dimension of HNV is inherent to any preliminary approach of any action envisaged to conserve HNV FS. The issue is not only to conserve FS in themselves or natural area in themselves but the two altogether. This conservation approach brings to the need to apprehend the development of FS in a multiscalar approach.

This necessity to bridge the two dimensions makes the very sense of HNV Link, with the idea of HNV innovation understood in a broad territorial, market and institutional perspectives.

Box 1 : approaches of HNV innovation (from WP1 Concept note-June 2016)

Innovation is bringing something new in a given context, through a dedicated process (innovation does not occur spontaneously, it needs arrangements and actors to happen) (Klerkx, Aarts, & Leeuwis, 2010).

HNV Link is about specific innovations: those that are able to conserve landscape features of natural value. We call them "HNV innovations" in order to distinguish them from other "regular innovations" that only are about economy or efficient resource management, regardless of biodiversity conservation.

The Atlas proposes outlooks able to bring light on different aspects taking place in the design and implementation of HNV innovations. What are the contexts in which such innovations take place? What should they address?

Understanding for justifying the conservation of HNV areas

Here we should recall a starting point of HNV-Link: successful projects for HNV farming are not numerous in Europe. After a comprehensive review in selected countries, project on Result-Based Agri-Environment payment scheme (RBAPS) identified around 20 schemes that could be considered as delivering for biodiversity[2]. Without pretending that all projects are covered in the study, the overall number of projects (a tens) reveal their rarity. In short: HNV-Link addresses a difficult matter and needs to fully understand what is at stake for innovation.

Same RBAPS project insists on the importance of setting an initial relevant assessment for founding the scheme. In the HNV-Link perspective, the assessment needs to be holistic, as said above. It also needs to clearly set the challenges to address for innovation.

[1] These introductory paragraphs are taken out from HNV Link proposal.

[2] http://ec.europa.eu/environment/nature/rbaps/index_en.htm

In many cases, HNV conservation is seen as a sympathetic but lost or useless cause. Stakeholders neglect to engage in HNV conservation because they do not see the issues and/or consider it as negligible compared to productive areas and/or do not identify any means to change anything. There is clearly an issue in justifying and explaining the reasons to engage for HNV conservation. Not only in general terms as stated in the EU biodiversity conservation policies, but to embody the concept in territories. Biodiversity conservation should take place in a wider territorial and economic agenda in order to happen.

To put it in a translation sociology perspective (Callon, 1986), the preliminary stages for any policy and coordinated action is to convince actors (i) that there is indeed a case (ii) and that that case is worth being considered. Before defining any concrete action, there is a need to raise coordinated intentions to design actions.

Actors to engage are at different levels:

- Firstly the level of HNV territories in which there is a community susceptible to engage, at first instance the farmers managing this territory – the Learning Areas of HNV-Link represent such territories.
- Upper levels (production basin, region, member state,…) as any local project also engages with dynamics taking place at this level: in order to mobilise RDP funds, to contribute to markets, to contribute to touristic development or to risk management. Actors at this level can be considered as external actors (Piveteau 1995): they actually engage with the territory, but from an outside perspective. For them, the territory is one amongst others they work with or make use by any means (e.g. by buying a cheese produced in the area or when electing the area as a touristic destination or when defending the flora or fauna in the area).

The different outlooks needed in order to both fully apprehend the characteristics of the LA and understand on which basis their nature conservation can be justified are forming the different chapters of the document:

- Presentation of the 10 Learning Areas;
- Biophysical and ecological characteristics (insisting on the *high nature value farming* of the LAs: what characteristics do explain the natural dimension of such LA? – what are the trends at play)
- Agricultural situations (insisting on the *high nature value farming* of the LAs: what are the agricultural characteristics?)
- Rural contexts (insisting on the *high nature value farming* of the LAs, the idea being that the social value of HNV is given by local actors, farmers and wider local and supra-local actors)
- The conclusive chapter – *towards high nature value farming for future* – opens on strategic outlooks. It may be considered as the overall compass of the present Atlas.

Crossing scales and perspectives

Having in mind the different levels of justification and action to be envisaged, the Atlas proposes different outlooks. It thus mobilises two sources, considering the territories from two perspectives: one is "from the ground", trying to capture the genuine characteristics of each LA, one is "from the sky", apprehending the collection of LA at EU level.

Although the later outlook may seem simplistic in some ways, as the complexity of each situation should be apprehended and that EU statistics are frequently showing limitation for describing well the situation in HNV areas, it seemed nevertheless important to keep this upscaling intention as the future of HNV areas – being in the set of LA or outside it – depends on decision taken by actors that will indeed firstly apprehend the issue "from the sky".

On this ground, two main sources of data have been utilized:

- The collection of so-called "baseline assessments" undertaken in each LA. These baseline assessments (BA) basically consist in the initial diagnosis of the area, both in terms of technical aspects dealing with the conservation of HNV farmland and in terms of more socio-economic aspects dealing with the human context in which engaging HNV conservation;
- A collection of thematic maps, at EU28 level, covering the different issues addressed in the baseline assessments. The idea is to put in a wider perspective the local situations and to adopt kind of remote vision in order to complete the understanding of LAs in wider contexts.

The subsequent approach is reflected in the form of the Atlas, that consist of different components, at different levels of analysis (EU 28 and territories) and found all through the chapters organizing the document:

- **A series of maps accessible at EU 28 level**, mainly from the European Commission agencies (Eurostat, JRC, EEA) but not only. Such maps have been selected in order to reveal key aspects of the analysis. Each LA is systematically positioned on each map in order to show where they stand and in what context/class they are. Each map is discussed in terms of the information it brings and its limitation re our analysis.
- **A series of illustrations taken from the baseline assessments**, mainly pictures but not only. The approach is not fully systematic, the intention being to give flesh to the different issues addressed. The choice of pictures is made such as to reveal the diversity of situations. Such illustrations are displayed using a dark grey background.
- **A series of methodological or thematic insights.** It is mainly based on one inspiring example taken from a LA, which findings may have a wider scope. Such discussions are referred as "boxes" and use a brown background.
- **A series of comparative tables, showing the main characteristics of the 10 LA** for each chapter (general presentation, biophysical and ecological features, agriculture, rural, future). Such tables are concluding each chapter and are meant to be self-explanatory having in mind the content and outlook on each chapter.

The text introducing or concluding each chapter has been reduced to a minimum.

Referring to the baseline assessments

The present document is not intended to replace the richness of each baseline assessment or not even to propose a digest summary. It inspired by their findings and proposes comparative analysis, but the reader interested in getting more information is invited to take note of these BA:

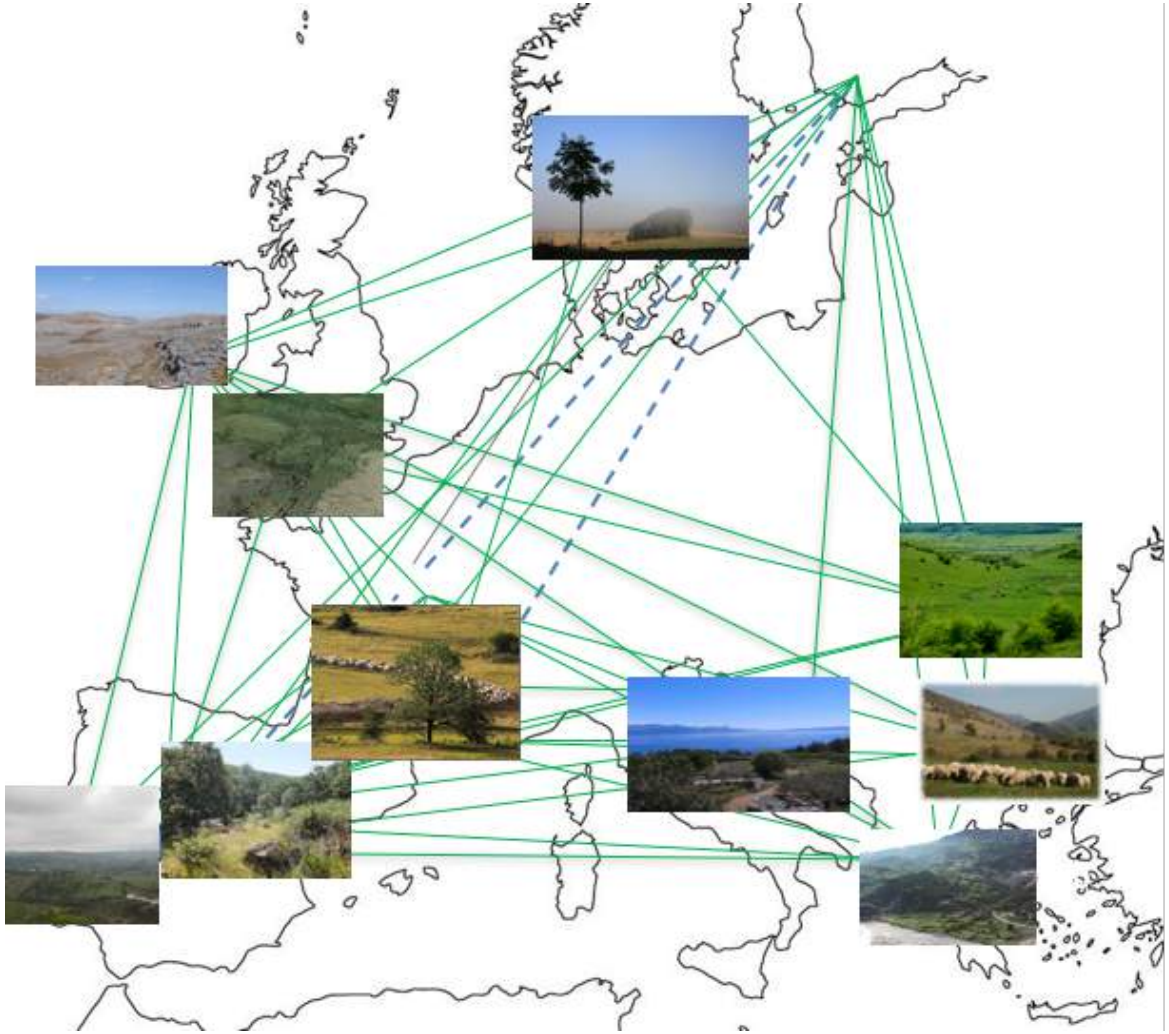
- For the collection of BAs : http://www.hnvlink.eu/download/D1.3BAcomplete.pdf
- For the display of individual BAs at LA level, showing the different outputs of HNV-Link in each territory: http://www.hnvlink.eu/learning-areas/ , giving access to individual portraits.

The following table indicates the list of authors for each individual BA. They are thanked for their contribution to the present document.

Bulgaria	Western Stara Planina	Yanka Kazakova, Vyara Stefanova, Maria Yunakova, Mariya Peneva
Croatia	Dalmatian Islands	Ivana Botica, Josip Grgić, Vinko Muštra, Slađana Pavlinović, Marija Roglić, Blanka Šimundić
France	Causses et Cévennes	RODRIGUEZ Thibaut, GIRARDIN Sébastien, NOEL Lucie, CAZALS Catherine
Greece	Thessaly mountains	Main author: Goussios Dimitris Contributors: Gaki Dimitra, Faraslis Ioannis, Vlahos George Experts: Anthopoulou Theodossia, Bourgiotis Theophilos, Dauger Lucile, Hatzigeorgiou Ioannis, LeViol Cecilia, Mardakis Prodromos, Vedrenne Marie-Liesse
Ireland	The Burren	Caroline Sullivan, James Moran and Brendan Dunford
Portugal	Sítio de Monfurado	Maria Isabel Ferraz-de-Oliveira, Teresa Pinto-Correia
Romania	Dealurile Clujului Est (Eastern hills of Cluj)	Dr. Diana DUMITRAȘ, Dr. Valentin MIHAI, Dr. Ionel – Mugurel JITEA
Spain	La Vera	Pedro M. Herrera, Julio Majadas, Guy Beaufoy, Remedios Carrasco and Javier García
Sweden	Dalsland	Lars Johansson, Magnus Ljung, Stefan Arvidsson, Tove Ortman
The United Kingdom	Dartmoor	John Waldon & Gwyn Jones

Part I: presenting the Learning Areas

A network of HNV learning areas, covering a diversity of contexts



The ten learning areas of HNV-Link form a network covering a diversity of situations in terms of ecological, economical and socio-political aspects.

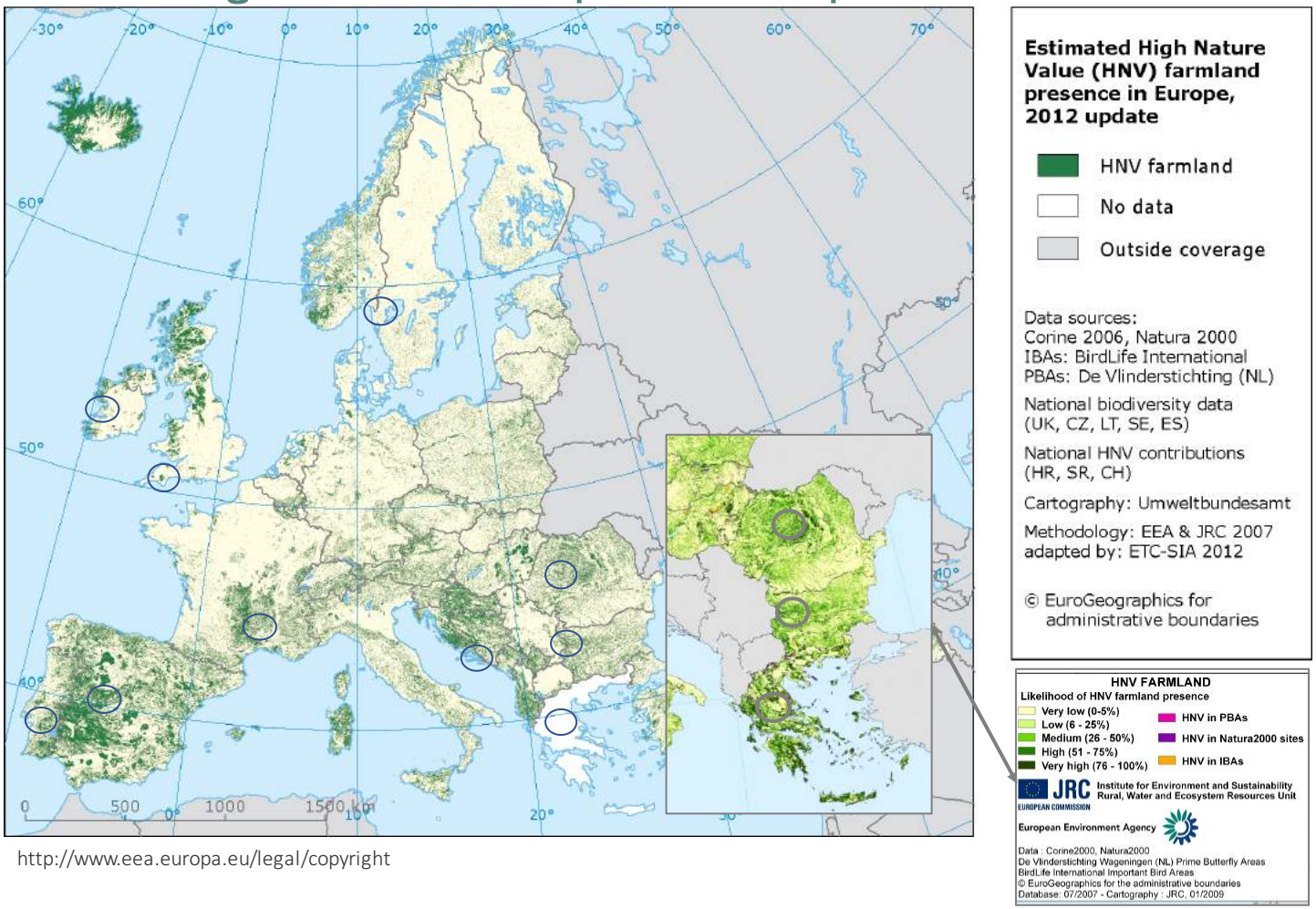
This diversity is a mean to better understand the factors influencing HNV management and future prospects. The list of the 10 LA is, from North to South and West to East:

- Sweden: Dalsland county
- Ireland: the Burren limestone pavements
- UK: Dartmoor commons
- Romania: the Eastern Hills of Cluj
- France: the Causses et Cévennes Unesco Heritage on pastoralism
- Croatia : Southern Dalmatian Islands
- Bularia : Stara Planina mountains
- Spain : la Vera mountainous pastoral area
- Portugal : Monfurado
- Greece : Thessaly mountains

Note that this collection of LA is not meant to be systematic in terms of situations.

Map 1: localisation of the 10 LA in Europe

The learning areas in the European HNV maps



Map 2 : The 10 LA in mapped HNV areas in Europe

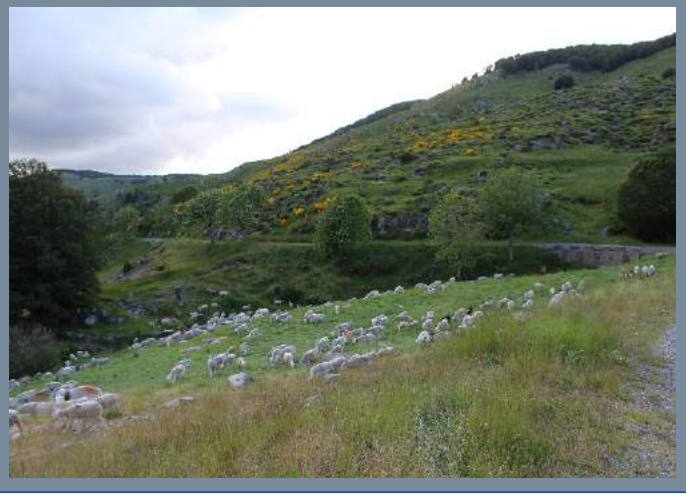
Two maps produced by EU institutions are necessary to position the 10 LA. The background one, produced by the EEA in 2012 covers EU and non EU countries, but does not comprise Greece (lack of data). The JRC one covers Greece, but not Croatia (that was not a member state when the map was issued).

These maps show that the collection of LA cover a wide range of HNV situations, as they can be inferred from the maps, at the exception of central European plains (e.g. Poland and Germany) and the Alpine arc.

The overlap of the LA with the mapped HNV areas shows three different situations:

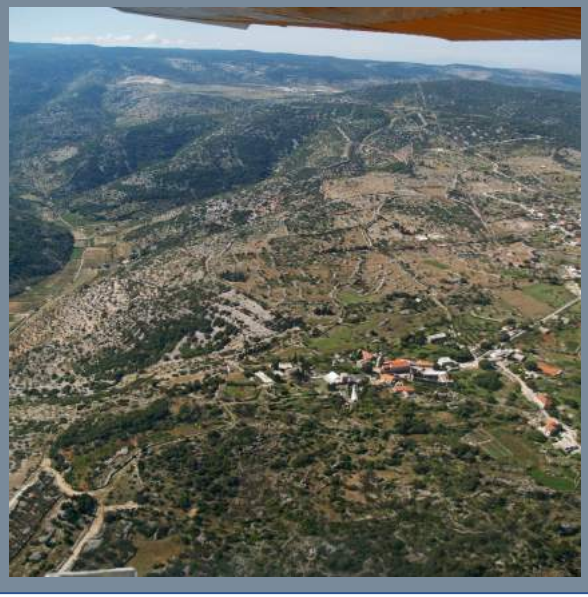
- LA where the HNV mapped area are the dominant background (broadly speaking, the southern LA)
- LA where HNV area appears as an exception in a wider low nature value background (UK and Ireland)
- LA where mapped HNV area are not visible (Sweden)

Landscapes of the LA: mountains



Clockwise: La Vera (Spain), Thessaly (Greece), Stara Planina (Bulgaria), Cévennes Crest and Valleys (France)

Landscapes of the LA: hills



Clockwise: Dartmoor (UK) – Montfurado (Portugal) - Bottom half: Dalmatian Islands (Croatia)

Landscapes of the LA: flat – plains

Clockwise: Les Causses (France), Monfurado (Portugal), Burren (Ireland), Dalsland (Sweden)

The learning areas in short: comparative table of main features

Name	Country	Size of the LA	What does set the limit of the LA?	The learning area in a nutshell (texts from http://www.hnvlink.eu/learning-areas/)
Dartmoor	United Kingdom	46 000 ha	Limits of commons land in Dartmoor National Park and the farms making use of the common Moorland	Dartmoor is the southernmost of the UK's National Parks and also the southernmost area of upland vegetation in the UK. Large areas of Dartmoor are designated under both national and EU legislation, with the core areas of blanket bog and dry heath. The area also delivers a much wider range of ecosystem services and public goods, ranging from an unparalleled density of archaeological remains to clean drinking water, from carbon storage to recreation. Nearly 36 000 ha of Dartmoor are common land grazed by sheep, cattle and ponies. Over half of the registered agricultural holdings in the Park have registered commons rights. For the last 30 years, there has been a unique and Dartmoor-specific commons system of commons governance through the Dartmoor Commoners' Council.
Sitio de Monfurado	Portugal	24 000 ha	N2000 site	Sítio de Monfurado, Portugal, is part of the Natura 2000 network, and includes complex montado systems of oak trees, diverse shrubs and grasslands, sometimes intermixed with agricultural crops and grazed by domestic and wild herbivores. Farming aims at cork harvesting and low intensity livestock production. The area has considerable heritage values and has hosted LIFE projects.
Dalmatian Islands	Croatia	185 800 ha	Geographical insular identity and LAG (Leader) project entity	The Learning Area on Dalmatian Islands, Croatia, encompasses territories of LAG Škoji, LAG Brač and LAG 5, covering the area from Dubrovnik-West Coast in Dubrovnik-Neretva County to the island of Šolta in Split-Dalmatia County. Farming is dominated by permanent crops (olives, figs, caroub, almonds), but also supports remnants of pastoral systems as well as cultivation of medicinal and aromatic plants.
Eastern Hills of Cluj	Romania	64,100 Ha; 19,000 ha in Natura 2000 site	Limits of the communes belonging to the Natura 2000 site	The Eastern Hills of Cluj, Romania, are part of the Natura 2000 network. The area includes a series of ridges with semi-natural pastures and meadows, associated arable land and orchards. Outstanding biodiversity is associated with traditional farmed habitats and farming practices, such as large-scale shepherded systems.
Western Stara Planina region	Bulgaria	166 000 ha	Geographical/human identity and administrative limits	Western Stara Planina region, Bulgaria, is an area with extensive pastures surrounded by forests and patches of small-scale arable land and traditional orchards. FS rely on extensive grazing by dairy cows and suckling cows, sheep and goats, and grassland mowing.

Name	Country	Size of the LA	What does set the limit of the LA?	The learning area in a nutshell (texts from http://www.hnvlink.eu/learning-areas/)
Västra Götaland	Sweden	400 000 ha	Regional entity (administrative and cultural)	Västra Götaland, Sweden, is an area with several Natura 2000 habitat types and cultural heritage elements. FS are based on use of permanent pastures and meadows for beef and dairy production.
The Burren	Ireland	72 000 ha	Geological peculiarity (limestone pavement)	The Burren, Ireland, encompasses Natura 2000 site and a National Park, whose grazing management is undertaken by local farmers. It is largely karst limestone landscape dominated by calcareous grassland and heaths with associated areas of limestone pavement and Atlantic Hazel woodland. FS are dominated by extensive cattle rearing.
Thessalia	Greece	420 000 ha	Geographical/human identity and administrative limits and demarcation line with the plain	Thessalia, Greece, is an area of permanent pastures and meadows, natural grasslands dependent on agricultural activity, and cultural heritage elements. FS are extensive agro-sylvo-pastoralism, extensive sheep and goat farming in coexistence with small and partly irrigated agriculture, natural aromatic and medicinal plants. Diverse practices in the area include shepherding, artisan cheese making, agrotourism activities, cultural activities, small agro-food entrepreneurship.
Causses & Cevennes	France	300 000 ha	Unesco designation	Causses & Cévennes, France, is a designated Unesco World Heritage Site. The site encompasses open landscape and dolines, grassland steppe type cover on a karst plateau, high-altitude grass and moorlands, peat soils and wetlands on a granite substrate. FS are dominated by livestock production and extensive agro-sylvo-pastoralism of sheep and goats. Transhumance endures in the region.
La Vera, Extremadura	Spain	88 300 ha (circa half of them is pastures)	Physical and FS dominated by pastoral land	La Vera, Extremadura, Spain is a region of outstanding natural and heritage values. The land cover is comprised of semi-natural mosaics of grassland, shrubs and wooded land, parcels of chestnuts, olives, figs and other permanent crops. FS are extensive goat and cattle raising, traditional olive and fruit production. Shepherding, artisan cheese making, maintenance of stone terraces and walls are practiced.

Box 2 : setting the limit of a LA – a challenging issue

Each LA had to set its own limits. What can seem obvious from an implicit point of view might be difficult when it comes to be justified. Why this limit and not another one? Indeed, further factors can be taken into account: geographical features (e.g. the mountains of Thessaly), administrative units forming a consistent action group (e.g. the Natura 2000 or Leader LAG in several areas), cultural… The reasons of the limits must be understandable for actors that can be engaged at different levels. For example, in la Vera, the LA focuses on the mountainous pastureland of municipalities that have wider and contrasted FS. The LA is not for the whole agriculture of the area.

The historical dimension

HNV farming is frequently associated with “traditional” farming. While this concept can be somehow vague and give a false impression of fixed agrarian systems, it nevertheless insists on the need to understand the historical dimension of HNV learning areas. The High Nature Value is a (fragile) heritage that can only be explained with a certain time perspective. Habitats result from a long co-evolution between FS and natural dynamics. This co-evolution frequently shows variations in terms of land-use and intensity in land-use: arable land might turn to pastures or woodland, pastures to arable… Species are able to adapt and to evolve when these changes retain key ecological functions at landscape level and take place at a pace consistent with gradual changes.

The historical dimension is also important in order to capture the cultural, institutional and sociological aspects. HNV conservation is a project that comes in a particular time that needs to be fully characterized in its time perspective: between critical danger and unprecedented awareness raising for environment and biodiversity. History leads to contrasted plausible futures.

In the process of delivering the baseline assessments, each LA coordinator was invited to tell the (hi)story of “his/her” area. The instruction was to set a timeline to organize the narrative, by proposing steps that would explain how we came to the current situation: what are the temporal milestones making sense in each territory? This being said, each LA should tell its own story, with its own perspective. The following pages show the different timelines produced in each LA. Note that for page layout constraints, it was to possible to make coincide all the periods on one common timeline.

Box 3 : dealing with history in different LA – another challenging issue

In principle, history is a relevant dimension of a territory. But concretely, how to deal with this when you are not an historian? How far should you go?

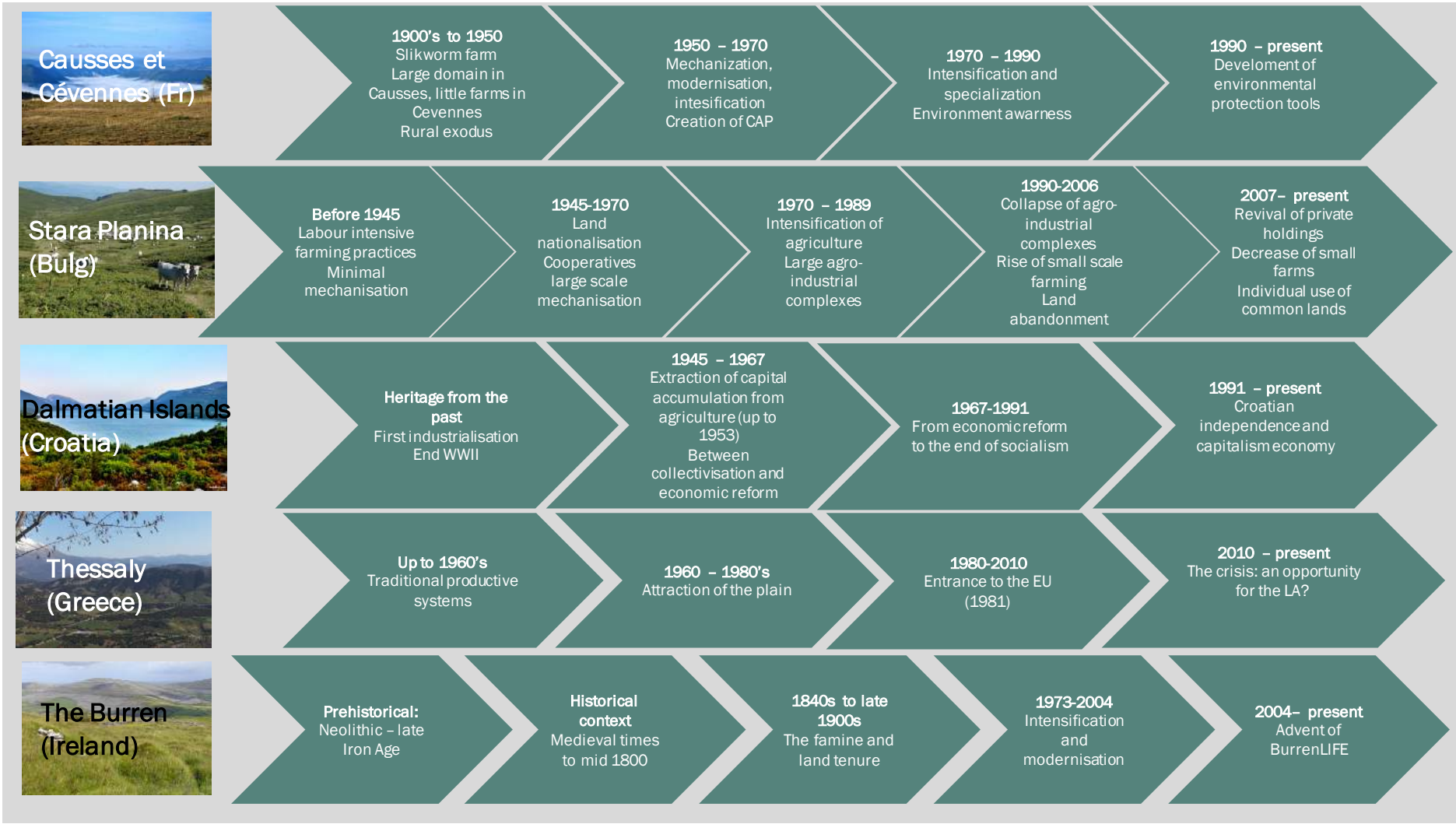
The LAs had different answers to this challenge, depending of their starting points. Some teams had already existing historical works ready to use, such as in the Burren or in Sweden. But the majority was dealing with a new piece of work.

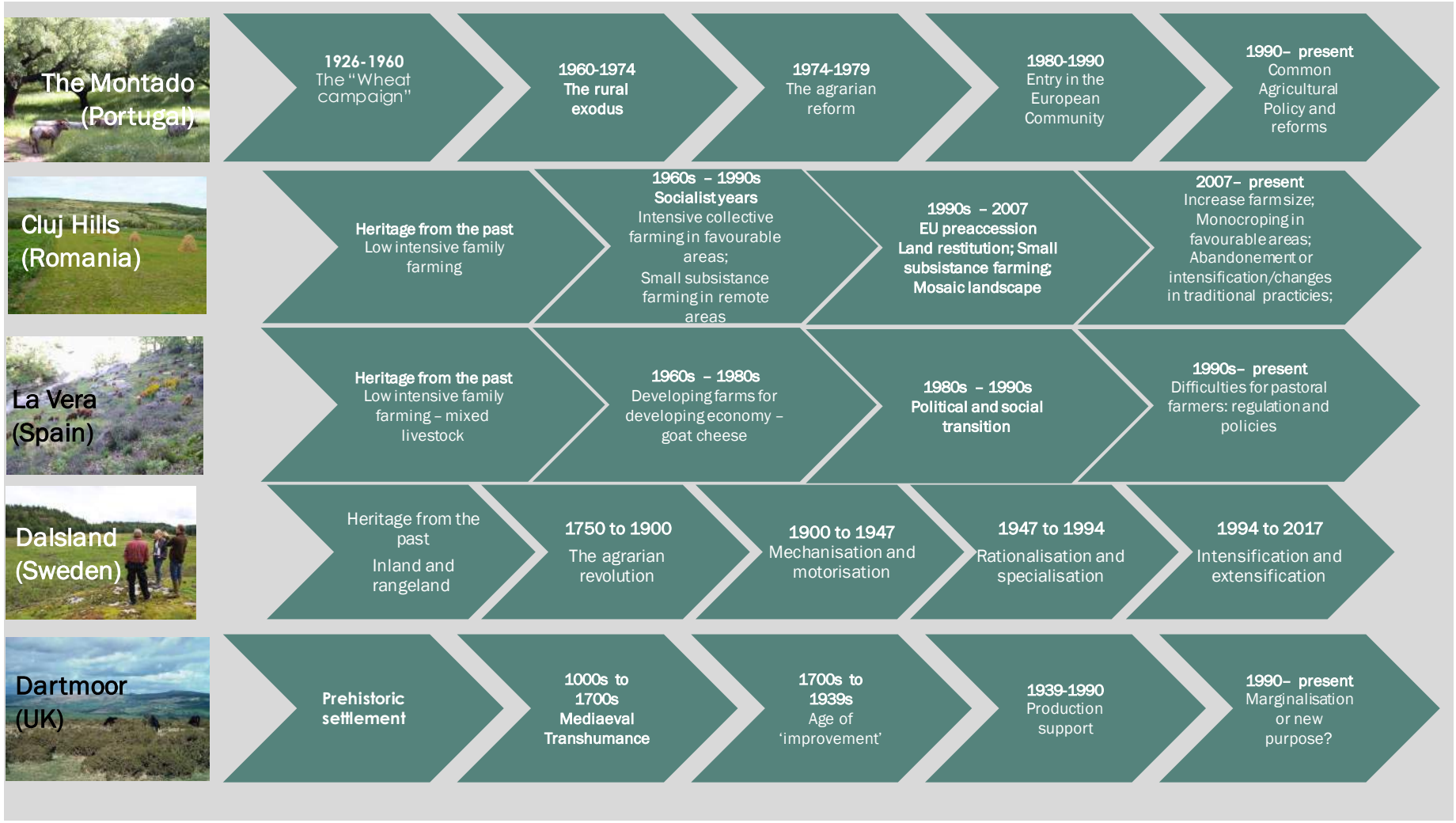
The issue is not to make a full historical work, but to put the current situation in a time perspective that was meant, at least, to start after the last World War. This starting point –practically named “heritage from the past” - coincides with the development of modern agriculture. With such a perspective, LA coordinators were invited to make the best use of three different types of data:

- Pictures, postcards, books showing landscapes and rural aspects of the area (see portfolio in following pages)
- Time series of statistics on agriculture, population, economy
- Historical studies or research

Judging on the outputs in the different BA, the treatment of this historical dimension does not pretend to be an academic work, but it gives to the BA and notably the future scenarios — the BAU and the vision — a perspective that would have been missing with only short term analysis. The enterprise should not aim at perfection, but it is worth being undertaken.

Timelines

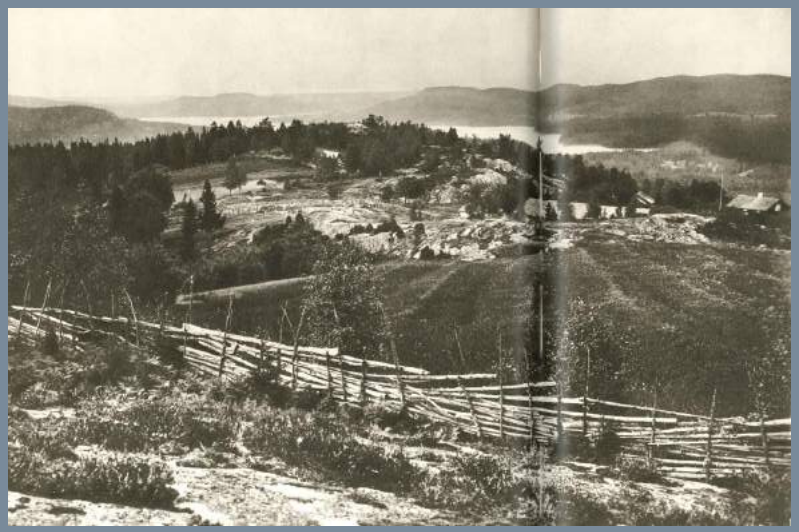

Causses et Cévennes (Fr)
1900's to 1950
Slikworm farm
Large domain in Causses, little farms in Cevennes
Rural exodus
1950 – 1970
Mechanization, modernisation, intesification
Creation of CAP
1970 – 1990
Intensification and specialization
Environment awarness
1990 – present
Develoment of environmental protection tools
Stara Planina (Bulg)
Before 1945
Labour intensive farming practices
Minimal mechanisation
1945-1970
Land nationalisation
Cooperatives
large scale mechanisation
1970 – 1989
Intensification of agriculture
Large agro-industrial complexes
1990-2006
Collapse of agro-industrial complexes
Rise of small scale farming
Land abandonment
2007– present
Revival of private holdings
Decrease of small farms
Individual use of common lands
Dalmatian Islands (Croatia)
Heritage from the past
First industrialisation
End WWII
1945 – 1967
Extraction of capital accumulation from agriculture (up to 1953)
Between collectivisation and economic reform
1967-1991
From economic reform to the end of socialism
1991 – present
Croatian independence and capitalism economy
Thessaly (Greece)
Up to 1960's
Traditional productive systems
1960 – 1980's
Attraction of the plain
1980-2010
Entrance to the EU (1981)
2010 – present
The crisis: an opportunity for the LA?
The Burren (Ireland)
Prehistorical:
Neolithic – late Iron Age
Historical context
Medieval times to mid 1800
1840s to late 1900s
The famine and land tenure
1973-2004
Intensification and modernisation
2004– present
Advent of BurrenLIFE


The Montado (Portugal)
1926-1960 The "Wheat campaign"
1960-1974 The rural exodus
1974-1979 The agrarian reform
1980-1990 Entry in the European Community
1990– present Common Agricultural Policy and reforms
Cluj Hills (Romania)
Heritage from the past Low intensive family farming
1960s – 1990s Socialist years Intensive collective farming in favourable areas; Small subsistance farming in remote areas
1990s – 2007 EU preaccession Land restitution; Small subsistance farming; Mosaic landscape
2007– present Increase farm size; Monocroping in favourable areas; Abandonement or intensification/changes in traditional practicies;
La Vera (Spain)
Heritage from the past Low intensive family farming – mixed livestock
1960s – 1980s Developing farms for developing economy – goat cheese
1980s – 1990s Political and social transition
1990s– present Difficulties for pastoral farmers: regulation and policies
Dalsland (Sweden)
Heritage from the past Inland and rangeland
1750 to 1900 The agrarian revolution
1900 to 1947 Mechanisation and motorisation
1947 to 1994 Rationalisation and specialisation
1994 to 2017 Intensification and extensification
Dartmoor (UK)
Prehistoric settlement
1000s to 1700s Mediaeval Transhumance
1700s to 1939s Age of 'improvement'
1939-1990 Production support
1990– present Marginalisation or new purpose?

Comparing the timelines make appear common features and differences

- For those LA that had data about this period (e.g. the Burren, Dartmoor, Causses & Cévennes, Monfurado, Dalsland), the coevolution has started since the Neolithic that has set fundamental characteristics in land-use associated with pastoral activities that can still prevail today in some ways.
- In all LA, a first agricultural revolution took place in the XIXth century. This correspond to a "golden age" in terms of rural life, if not always in terms of HNV management. In some places, this high population density is associated with sound management of all farmland (e.g. in Cluj, in la Vera), while in other there are evidences of over-utilisation of land and/or abandonment (e.g. in Dartmoor, in Causses and Cévennes, in Dalsland)
- The XXth century revolution has significant impact in all LA, with differences between LA getting specialised to supply wider markets (e.g. Wine in Dalmatian Islands) and those still standing on subsistence farming (e.g. Stara Planina)
- The post WWII timeline sets a line between Western Europe where markets tend to marginalise HNV area and Eastern Europe where State planification imposes productive patterns
- All LA converge towards a new era where CAP plays a dominant role, mostly amplifying some negative trends. New demands (environmental agenda) also emerge.

Making the timeline visible: selected illustrations from the learning areas



Clockwise: Dalsland (Sweden), Burren (Ireland), Les Causses (France), Hills of Cluj (Romania), Dartmoor (UK)

Clockwise: La Vera (Spain), Monfurado (Portugal), Dalmatian Islands (Croatia), Stara Planina (Bulgaria), Thessaly (Greece)

Part II: the biophysical and ecological characteristics

"high nature value farming"

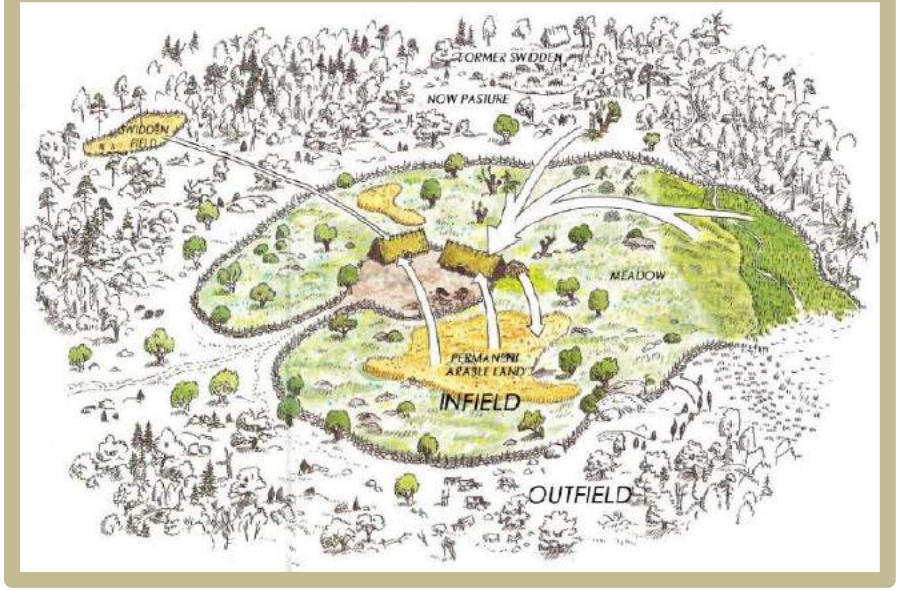
Understanding the ecological characteristics of an HNV area: the basis for conservation actions

Conserving HNV areas in the long term requires a landscape-ecology approach, as it puts the conservation issue in a proper spatial and temporal perspectives. A sound characterization of HNV area and farmland is necessary to understand what are the explaining factors of HNV land-use (referring to bio-physical factors such as slope, climate or to anthropic factors in terms of agricultural practices).

This "long view" and past dynamic perspective is the one relevant for the understanding of what is at play and stake in the innovation process, including from this HNV perspective. What is lost in precision (typically a detailed spatial analysis of habitats) is gained in accuracy. The dynamic of landscapes and habitats forming this landscape is crucial.

The dynamic of habitats will fall in three main types, fully described in (Opperman, Beaufoy, & Jones, 2012):

- abandonment of HNV land (i.e. semi-natural vegetation or low-input and mosaic crop systems);
- intensification of HNV land (i.e. through increased used of inputs and/or management practices such as early mowing or overgrazing);
- a combination of intensification in the best areas and abandonment in the less favorable ones.

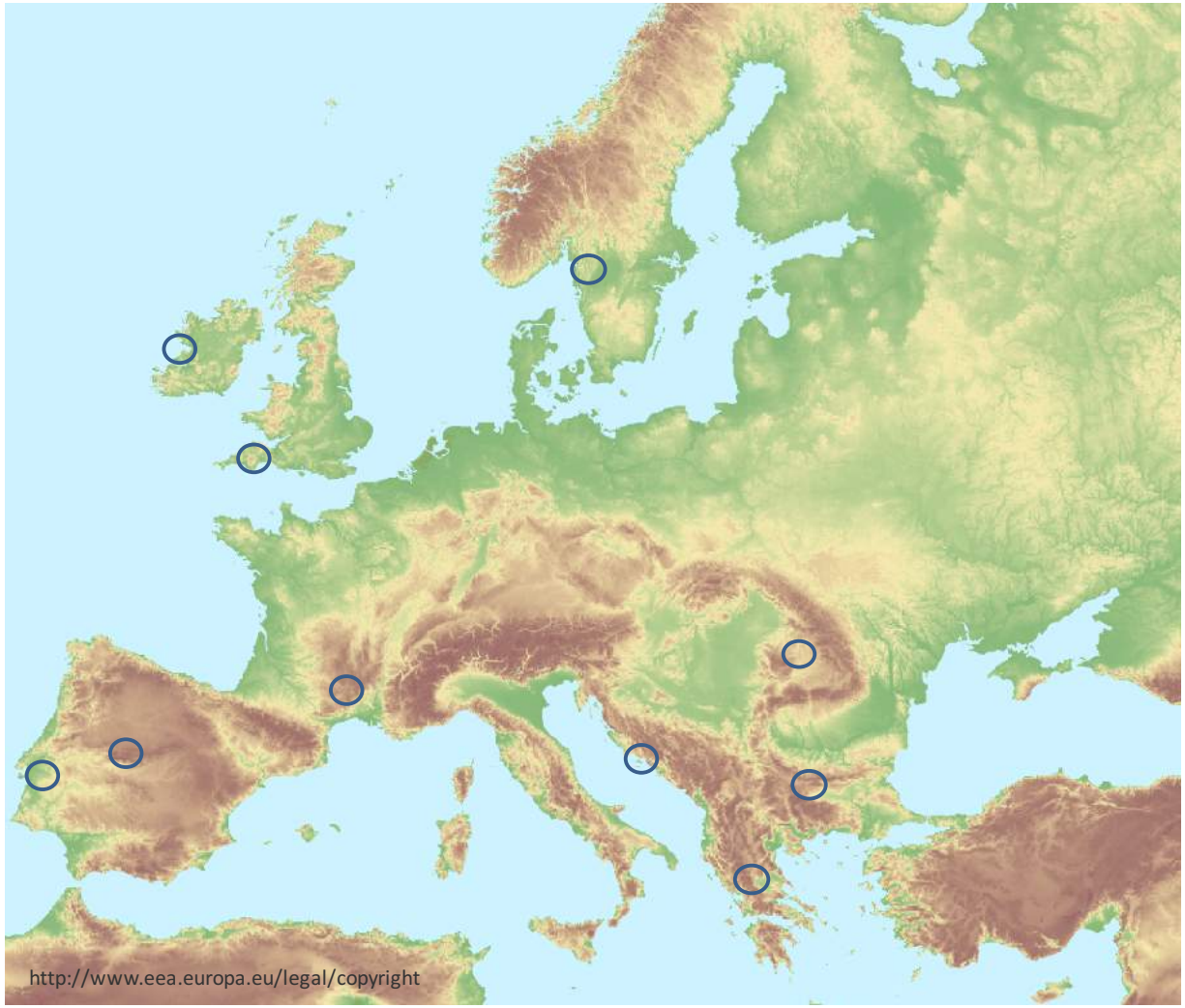


Box 4 : analysing the ecological characteristics at landscape level

The figure on the left (from Dalsland BA) gives a good understanding of a relevant approach for the ecological characterization of HNV area. It shows a spatial distribution of different types of farmland (in a forested matrix in this case), with fertility flows represented by arrows, explaining some important features in terms of ecology: oligotrophy and ecological disturbance in meadows, presence of crops representing a source of food for some animals, etc.

Not directly visible on this figure, but conceptually underlying, is the influence of physical factors (soil types, water regimes, slopes…) and/or human factors (organization of settlements, available techniques and capitals) explaining (i) the rationale of land management (ii) the resulting nature value in terms of habitats and species.

Location of the LA in the European physical map: mountains, but not only

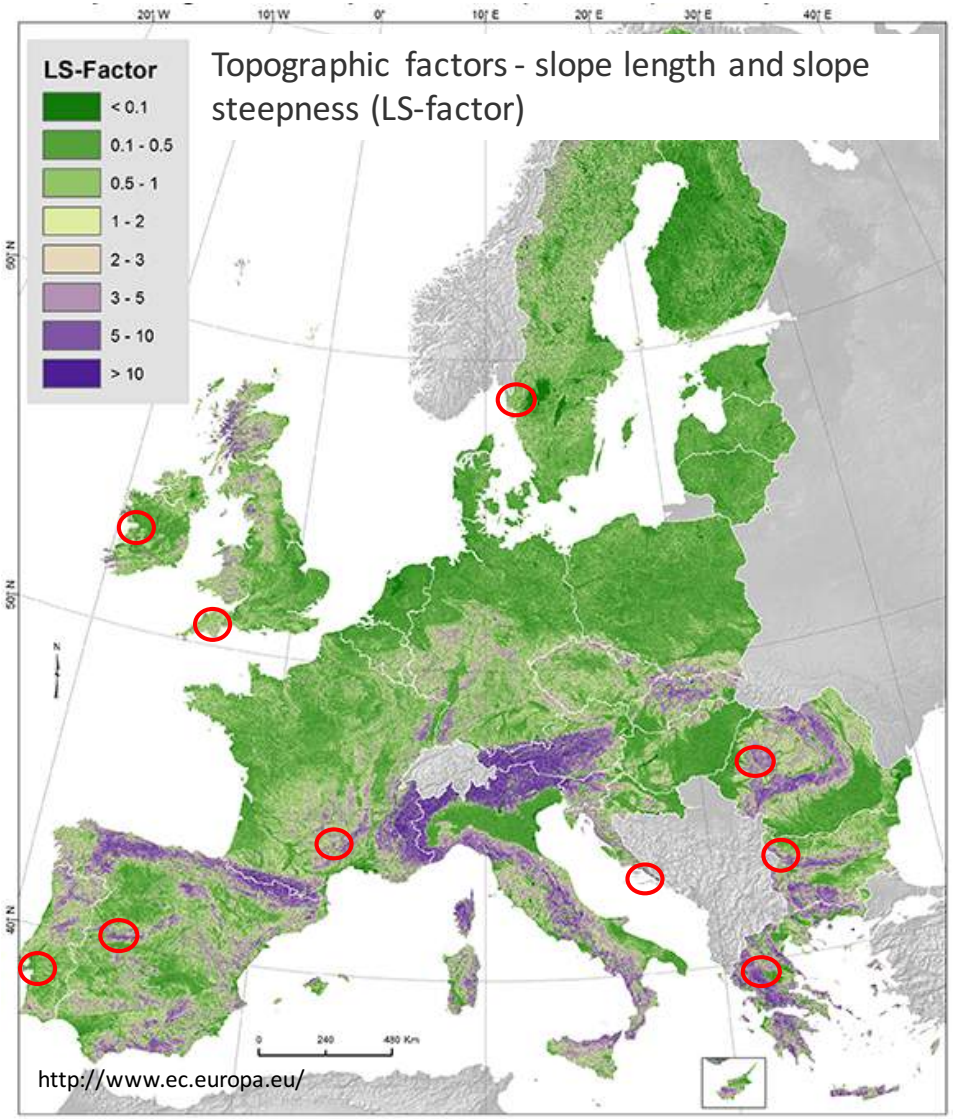


Map 3 : The 10 LA in physical Europe (relief)

Today, the presence of HNV farmlands is mostly – but not only - explained by bio-physical-"constraints" affecting the development of productive agriculture.

Relief and mountainous chararcter is one of the most influencing constraint, as it limits the use of mechanization and will have climatic impact (coldness, long winters in high altitude contexts).

Most of the 10 LA are found in mountainous areas but there is a discernable pattern between LA in truly mountainous context (Thessaly in Greece, Stara Planina in Bulgaria) and other LA in plain context (the Burren in Ireland, Dalsland in Sweden and to a lesser extent Dartmoor in the UK). In between, there is a range of mountainous character.



Map 4 : The 10 LA in mapped slope constraints at EU28 level

This map complements the previous one by focusing on the topographic effect, while the "mountainous" character combine this factor with climatic impacts associated with altitude.

The scale of representation allows a finer analysis of this factor, between

- LA with visible strong topographic constraints (in purple): Thessaly, Stara Planina, la Vera
- LA with scattered constraints: Dartmoor, the Burren, Dalsland, Monfurado
- LA in between: Causses and Cévennes, hills of Cluj

Note that the degree of display is not high enough for the characterization of Dalmatian islands (which face indeed topographic constraints).

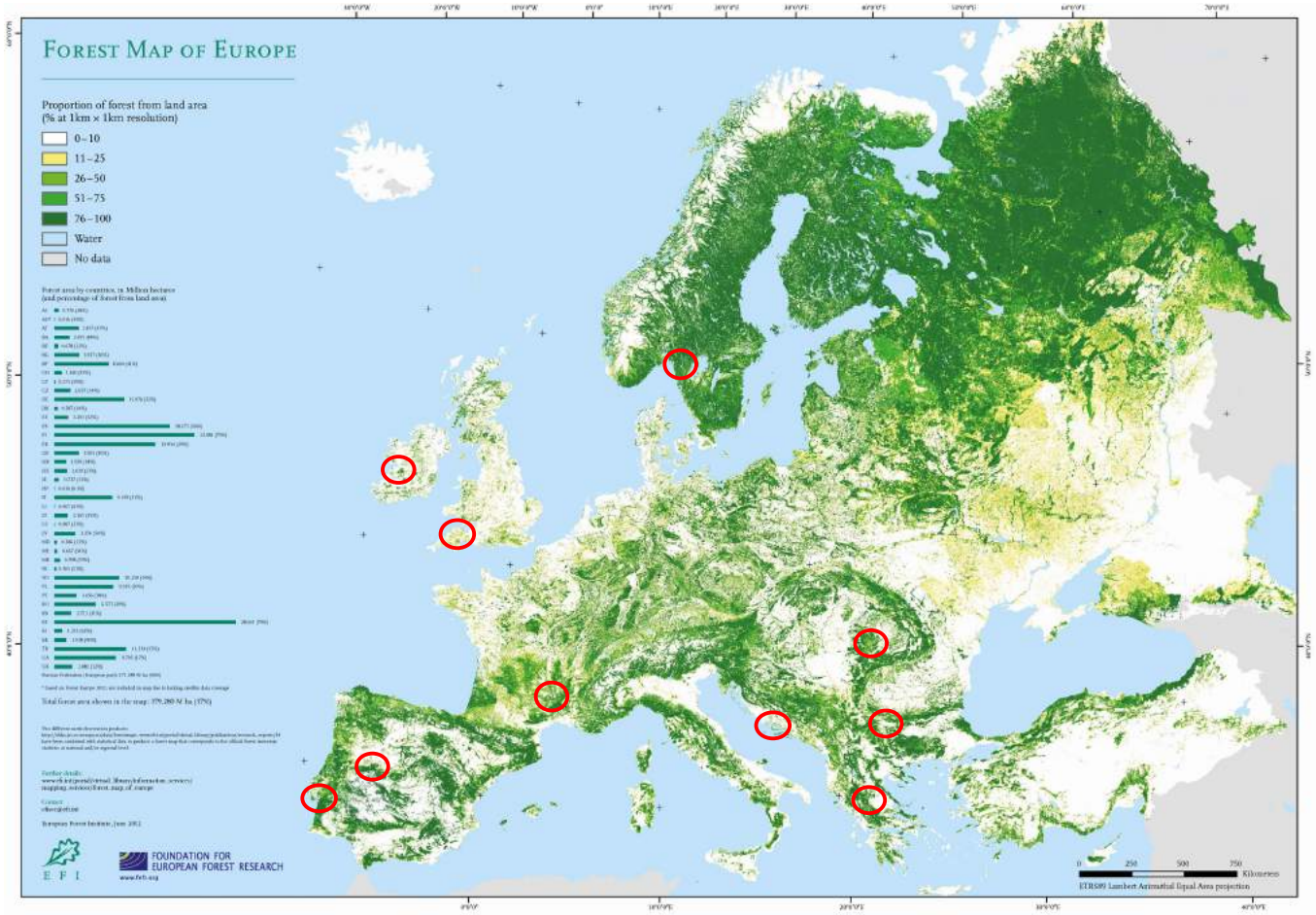
Note about the methodology of the map:

Topographic factors - slope length (L) and slope steepness (S)

The influence of topography on soil loss modelling is accounted for within the slope length and slope steepness factors. The L-factor represents the impact of slope length, and the S-factor the influence of slope angle. The combined LS-factor (dimensionless) describes the potential of surface runoff in accelerating soil loss, and in most cases determines the spatial resolution (cell size) of the modelled soil loss results.

http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_soil_erosion

Land-use and forests: the semi-natural context



http://www.efi.int/portal/virtual_library/information_services/mapping_services/forest_map_of_europe/

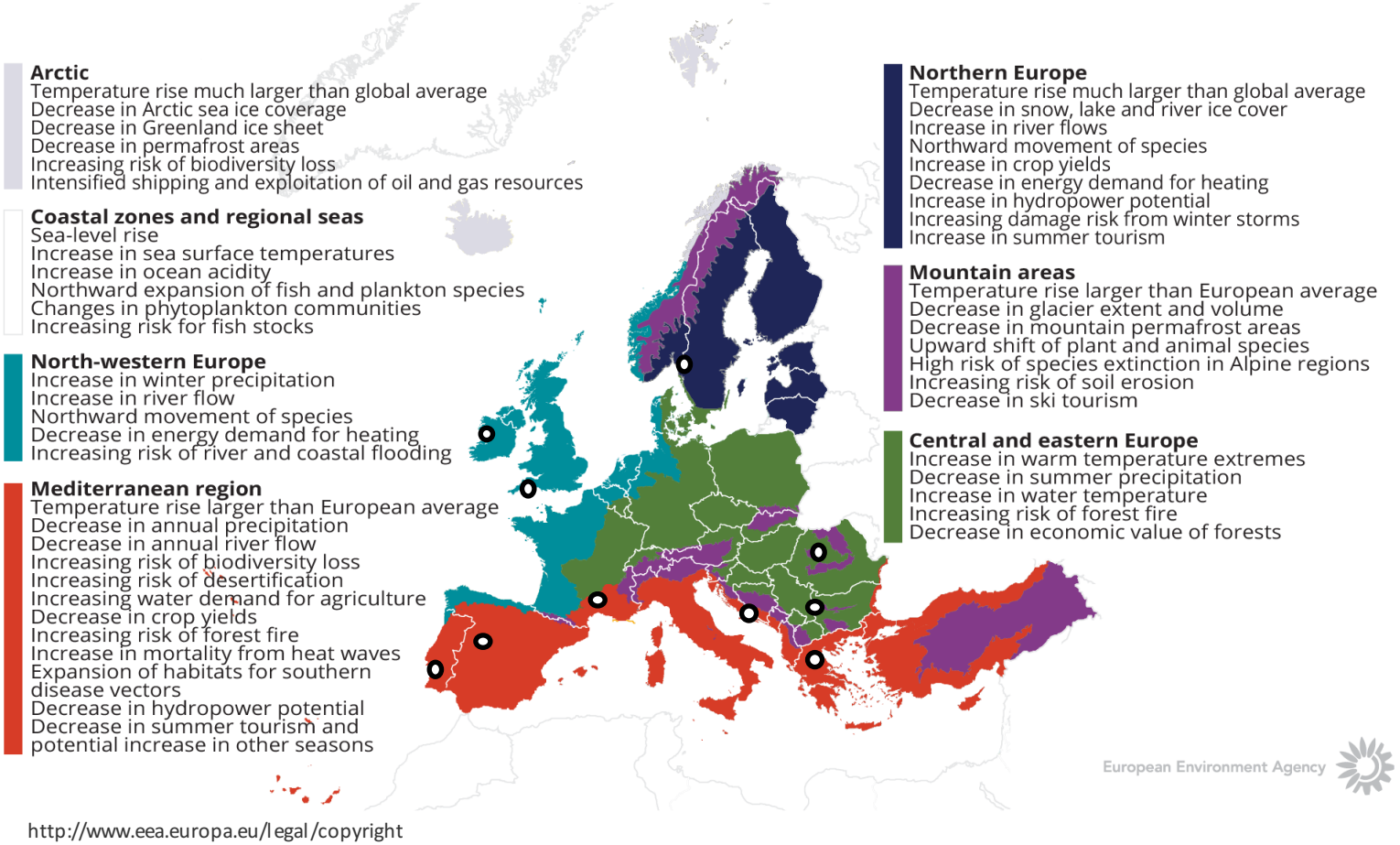
Map 5 : The 10 LA in the forest map of Europe

The forest context is not always fully considered in the description of HNV area. However, it puts the issue of the conservation of HNV farming in a wider land-use context. Notably, the impact of land "abandonment" (i.e. the decline of farming activity towards a natural afforestation) will considerably depend on this context. In already highly forested landscapes (e.g. Dalsland, Thessaly…) such abandonment will clearly lead to a loss in terms of land use. In other context, the issue must be analysed at a finer grain.

What this map does not show is the nature of forested land and their relative natural value. For example, in Dalsland, forests are frequently plantations with low intrinsic nature value while in Central Europe they will be of high interest for some wildlife. The case of Monfurado in Portugal is interesting as the forest cover refers to the oak tree system (*Montado, Dehesa* in Spain), which density and age structure greatly influence the natural value.

It is crucial to note that in such systems, and this is true in many parts of Southern Europe, forest cover goes along sylvo-pastoral uses. The green area represented at this level of display do not exclude the presence of grazing animals. The grazing pressure is a key element of the sustainability of the sylvo-pastoral regime and should be maintained between appropriate limits.

Climate: biogeographic areas and climate change risk assessment



http://www.eea.europa.eu/legal/copyright

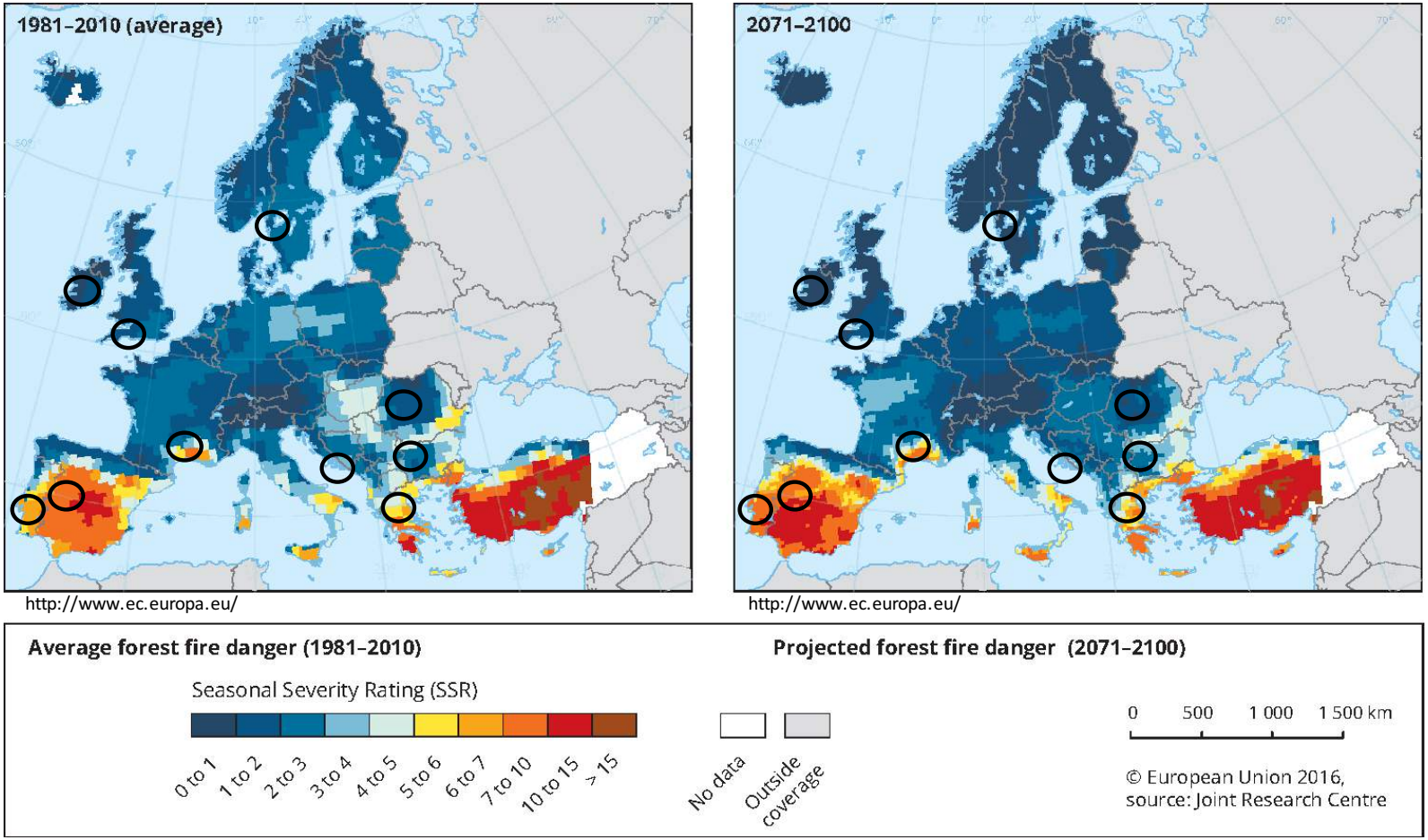
Map 6 : The 10 LA in the biogeographical zones of Europe and their prospects in terms of climate change

Altogether, LA cover altogether the whole range of biogeographic areas of Europe.

The relationship between climate change and HNV conservation is still poorly addressed (Lomba, 2017), but this map shows how LA located in Mediterranean and Mountain areas are crucially confronted with alarming climatic trends.

Crossing the issue of climate change agenda and HNV farming conservation highlights the fact that HNV farming is somehow put in danger, but also contributing to CC mitigation by the conservation of permanent grassland and meadows and fire risk prevention (see next page).

In comparison with conventional ways of farming, HNV should be considered as a highly credible option for adaptation, by promoting farming systems making use of diverse vegetal resources, from grass to brush and tree. Not to mention the quasi-absence of irrigation needs.



Map 7 : The 10 LA and the fire danger at European scale

This map shows how the 5 LA located in the Mediterranean zone are confronted with fire risks. This map can be crossed with the two previous ones (climate and forest).

The presence of grazing animals in a forested area is a way to limit the accumulation of flammable fuel, with positive impacts re CO_2 release and fire damages. This management option for fire risk reduction is a key "side effect" of HNV farming, delivering a paramount ecosystem service to this respect.

However, the relationship between livestock management and fire risk must be analysed at a proper grain: the presence of animals in an area is not enough, those animals should graze in woody pastures.

Western Stara Planina landscape and transect

(Larger) arable fields on the southern hills (400 - 700 m)

Common grasslands in the high mountains, already allocated for individual use

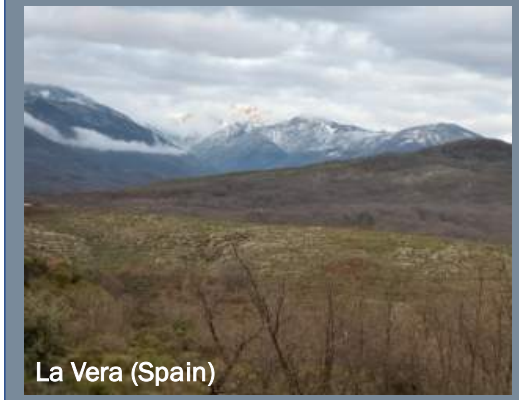
Forested northern slopes and hills with patches of grasslands and small plots

Small scale farming in the valleys surrounded by grasslands and forests

Box 5 : The influence of bio-physical factors on landscape

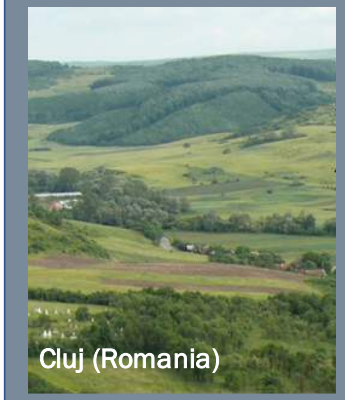
The example on the left, from Bulgarian baseline assessment, illustrates how a simple representation of the relief is able to capture and synthetize further key information for the apprehension of an area.

A variety of landscapes across the LA: illustrating the Andersen's typology of HNV farmland



Type 1 landscapes

Andersen et al. (2003) set a reference typology of HNV farmland whose attributes are associated with the presence of habitats/species.
Type 1 refers to farmland with a high proportion of semi-natural vegetation, i.e. spontaneous vegetation (not seeded, not ploughed, not fertilised nor receiving pesticides).
Grazing/mowing are the main ecological disturbances maintaining a open character of landscapes that otherwise would turn to scrubs and dense forests.
In such type 1 areas may be found permanent features enhancing the natural value of landscapes: stone walls, ponds, huts...
These selected pictures from LA show that despite an apparent uniform land-use described as "meadows" or "scrubs", those landscapes are complex and shows a high variety of vegetation types and landscape features.

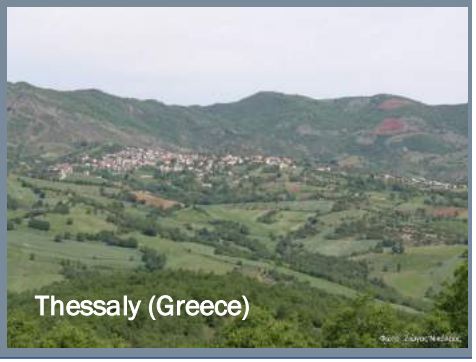

Cluj (Romania)


Stara Planina (Bulgaria)

Type 2 landscapes


Monfurado (Portugal)


Causses (France)


Thessaly (Greece)

In Andersen's typoplogy, type 2 are "*Farmland dominated by low intensity agriculture or a mosaic of seminatural and cultivated land and small scale features.*"
Paracchini et al., 2006) complete the definition with "*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.* "
The selection of pictures shows a gradient of land-use and the presence of crops and semi-natural vegetation and landscape features.

The difficulty in "reading" such landscapes is the degree of intensity in land use: it is sometimes difficult to assess whether a vineyard, for example, is low-input and biodiversity friendly or, on the contrary, impacting flora and fauna due to massive use of pesticides. Crops are frequently subject to intensification.

Other types of landscapes


Dalmatian Islands (Croatia)


Dalsland (Sweden)


Dalmatian Islands (Croatia)

Dalmatian Islands (Croatia)


Dalsland (Sweden)

HNV-Link network shows landscape where a certain natural value is socially valued, but with less connection with the whole functioning of HNV farming systems or agrarian systems. Some questions whether in this case one should speak of HNV farming.

However, two LA — Southern Dalmatian Islands (CR) and Dalsland (SW) — may refer to this situation where some farming systems may be the germs for some nature value in the future, in a wider non agricultural land-use context contributing itself to a natural value (e.g. forest, bush, garrigue…).

Although it is clearly not the core of EU agenda for HNV conservation, this approach of HNV indeed is a component of *HNV Link* and contributes to the thoughts in terms of innovation.

Note that those landscapes does not meet Andersen's "*Type 3: Farmland [are] supporting rare species or a high proportion of European or World populations.*"

The natural value of HNV areas: habitats and species

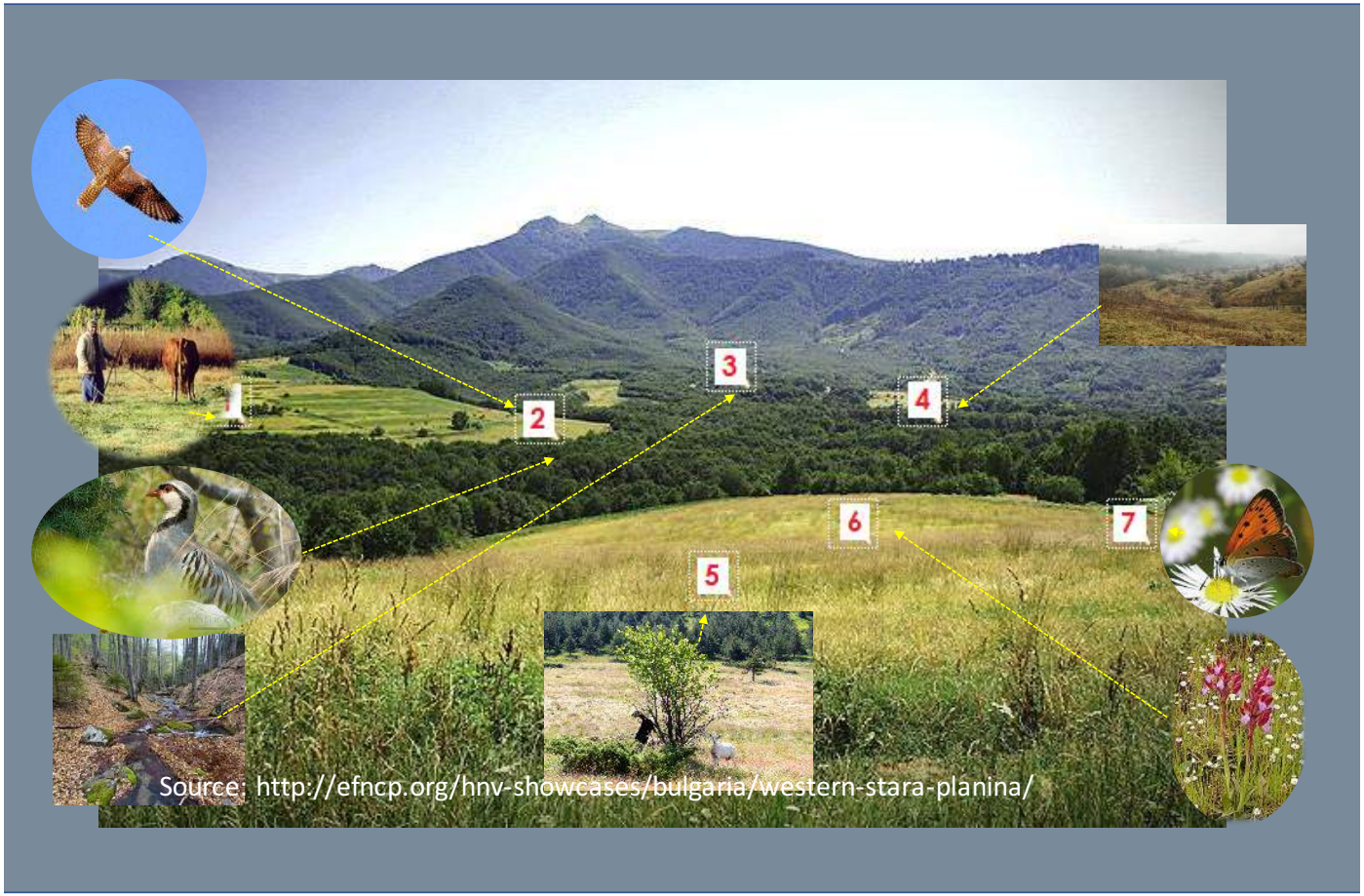


Figure 1: Habitats and key species found in HNV landscapes of Stara Planina lowlands (Bulgaria)

The ultimate evidence of HNV farming in an area is the presence of habitats and of species of natural value. At landscape level, species form a chain with, notably, trophic relationships. A diverse flora, in a low input context, will host several insects and invertebrates. The more diverse the vegetation structure, the more diverse the number of species. The presence of animals in upper position in the trophic chain – birds, mammals and notably carnivores — will demonstrate the integrity of the whole ecosystem functioning. It should be noted that the presence of species may depend on farmed habitats and non-farmed (forests) in some cases. The spatial distribution and co-existence of habitats is also a explaining factor for HNV attributes.

Rendering the whole collection of habitats and species of the 10 LA is out of the scope of this Atlas. Our intention here is to illustrate how the characterization and understanding of a landscape structure can be put in relationship with the presence, distribution and description of habitats and species. The case here is the one of lowlands of Stara Planina in Bulgaria. Numbers refers to habitats described in the full Baseline Assessment.

Similar display of habitats and species can be found in each Baseline Assessment.

Understanding the landscapes and ecological relationships and dynamics: what is at stake?

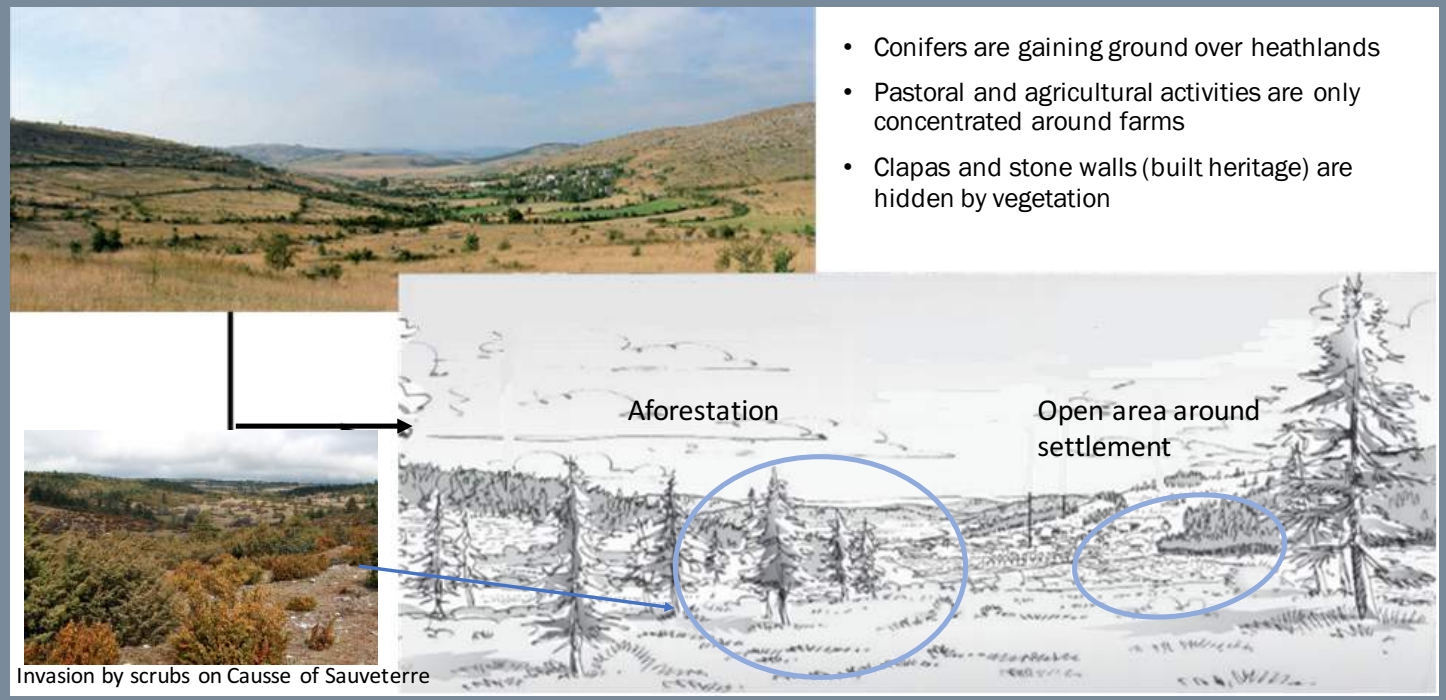


Figure 2: Rendering a landscape dynamic: the example of Les Causses (France)

There is kind of tension between characterizing an area from a comprehensive and static description of habitats and species on the one hand, and the understanding of the dynamic of the same area on the other hand. In most cases, ecological data are missing that would allow the comparison in the number and distribution of species over time. The appropriate approach is then to proceed in two folds (i) describing the relationship between landscape elements (explaining factors) and the presence/absence of habitats, species and overall landscape functioning (explained outputs in terms of biodiversity) (ii) describing the developments of landscapes over the long term, assuming that these developments can be related to an overall natural value.

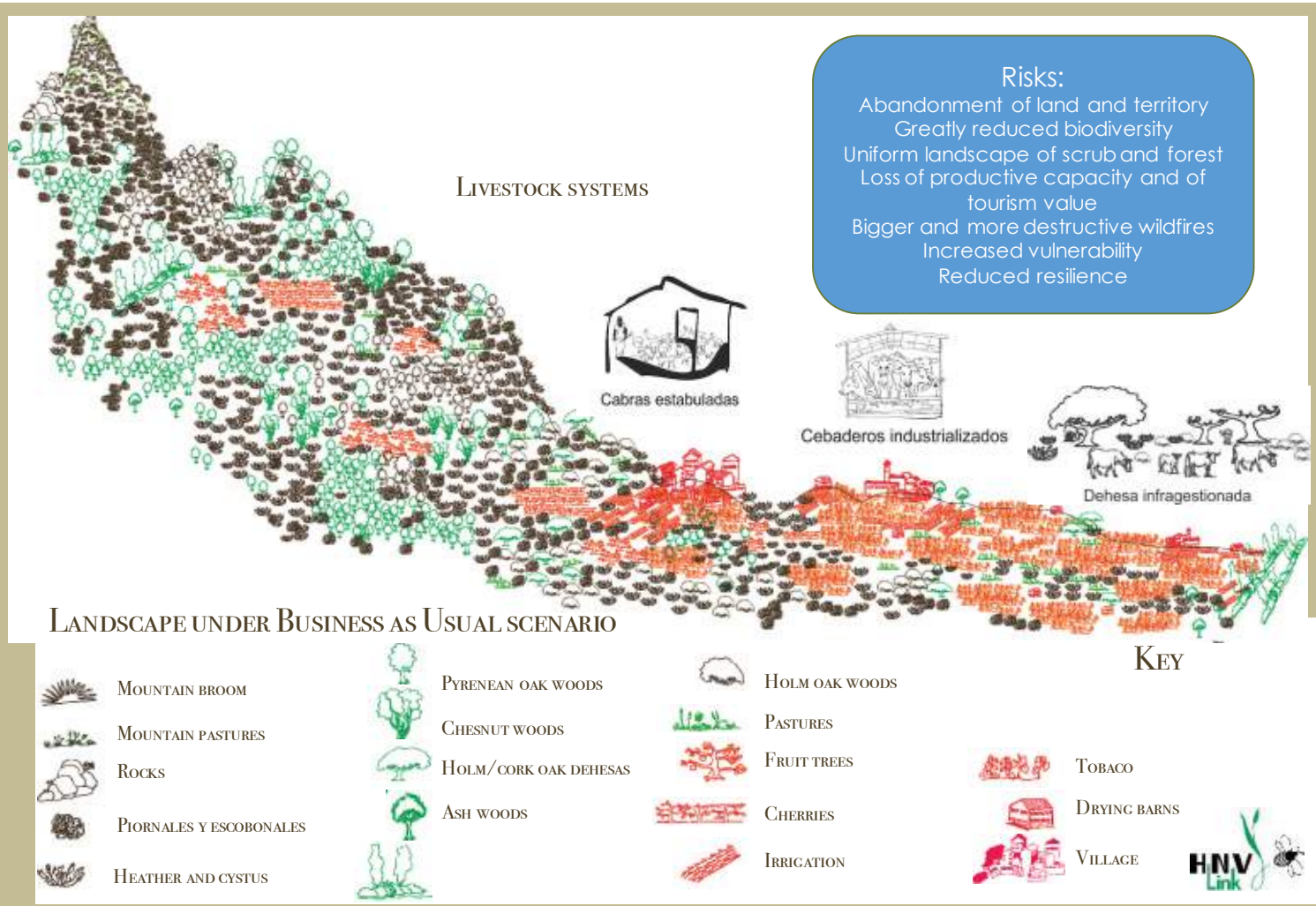
The figure on the left illustrates how dynamic landscape analysis can relatively simply made. In this case — the Causses in France — the landscapes elements considered combine land-use (pastures, crops nearby settlements, natural and planted forests) and intensity (intensified crops nearby settlements). Such dynamics can be documented with trends in terms of loss of open habitats and related species.

The characterization of dynamics must also be made in terms of land-use, from a statistical and economic perspective. The issue is not to focus only on HNV farmland. Describing the development of main categories of land-use over the long period allows a good understanding of what is at stake in terms of economic rationale, positioning the sustainable management of HNV area — notably semi-natural vegetation — in a wider context.

The dramatic Swedish example shown here (in the Valley area of Dalsland) perfectly illustrates this outlook. The drop of SNV and meadows in the last decades is understandable considering the adverse pressures from arable land on the one hand and, mostly, planted forests on the other hand.

While it might be considered as the iconic threat, land abandonment is not the only one on HNV farmland. Ploughing and intensification can also take place.

Figure 3: Rendering a landscape and land-use dynamic: the example of the Valley area of Dalsland (Sweden)



Box 6 : Using transects for the landscape representation

The use of transects — the systematic display of land and landscape organization across a geographic section — was one the methodological requirement for the completion of baseline assessments. It allows a comprehensive understanding of the structure of the area and of its dynamics.

The example on the left, from la Vera (Spain) illustrates how such a task can be done with limited means.

Such display is also easily mobilized during meetings and discussions.

Comparative table of the biophysical and landscape issues

	Altitude	Relief constraints	Soil constraints	Climatic constrains	Share of farmed land in the overall landscape	Distribution of HNV farmland in the whole landscape	Distribution of HNV farming systems (FS) in the LA	Abandonment of difficult HNV area (present)	Intensification of most favourable HNV area
Dartmoor	100-600 m	Low	Strong	Strong (rainfall and low temperature)	80%	One large specific area in a surrounding semi-intensified landscape.	Most systems using the moorland are HNV FS. Gradient of practices in inbye land.	Limited	Not applicable in the area
Sitio de Monfurado	150-420 m	Low	Low constraints	Strong (drought)	90%	The whole landscape is potentially HNV - gradients	No clear limit between HNV and non HNV FS - gradient of practices	Limited + overgrazing	Yes (at what degree?)
Dalmatian Islands	0-400 m	Low to medium	Low to medium	Strong (drought)	6% of agricultural land + unquantified rangeland	The whole landscape is potentially HNV - gradients	HNV systems are the exception	Generalised	Generalised
Eastern Hills of Cluj	300-700 m	Low to medium	Low constraints	Medium	75%	The whole landscape is potentially HNV - gradients	Strong gradient of practices across HNV and non HNV FS	Moderate + overgrazing	Moderate
Western Stara Planina region	250-1875 m	Low to strong	Low constraints	Low to strong (short growing season)	50%	The whole landscape is potentially HNV - gradients	Strong gradient of practices across HNV and non HNV FS	Strong	Yes (at what degree?)

		Altitude	Relief constraints	Soil constraints	Climatic constrains	Share of farmed land in the overall landscape	Distribution of HNV farmland in the whole landscape	Distribution of HNV farming systems (FS) in the LA	Abandonment of difficult HNV area (present)	Intensification of most favourable HNV area
Västra Götaland		0-300 m	Low	Low to strong	Medium (short growing season)	25%	Spots of HNV farmland in a surrounding intensified agricultural landscape and forest	HNV systems are the exception	Generalised	Generalised
The Burren		0-300 m	Low in general, strong locally	Strong	Low	85%	One large specific area in a surrounding intensified landscape.	Most systems on the lime-stone pavements are HNV FS. Gradient of practices (inbye)	No (since the Burren Life)	Generalised
Thessalia		250-2400 m	Low to strong	Low to medium	Medium (short growing season)	65%	The whole landscape is potentially HNV - gradients	No clear limit between HNV and non HNV FS - gradient of practices	No	Variable
Causses & Cevennes	Causses and Lozère	1000 - 1700 m	Low in general, strong locally	Low to medium	Medium (strong rainfall and drought)	>60%	Spots of HNV farmland in a surrounding intensified agr. landscape and forest	Strong gradient of practices across HNV and non HNV FS	Dominant	Generalised
	Cévennes crest and valleys	600-1000 m	Strong	Medium	Medium (strong rainfall and drought)	<30%	The whole landscape is potentially HNV - gradients	Strong gradient of practices across HNV and non HNV FS	Strong	Yes (at what degree?)
La Vera, Extremadura		500-2000 m	Strong	Low constraints	Medium	50%	The whole landscape is potentially HNV - gradients	Strong gradient of practices across HNV and non HNV FS	Generalised	Not applicable in the area

A typology for describing the HNV dynamics in the LA

The comparison across learning areas leads to a finer understanding of the nature of the possible dynamics at play in a set of HNV areas (in our LA or elsewhere), from a nature conservation perspective.

Those dynamics can be typologized as follow:

- Loss of HNV farmland by a combination of intensification in some parts of the agricultural landscape and abandonment in other (HNV) parts
- Loss by land abandonment
- Partial conservation: some HNV parts are recovered (significant conservation efforts visible at land-use level), but the overall envelope is declining
- Stability : the HNV areas are sustaining in quantity (envelope) and quality (management)
- Recomposition of landscapes: the HNV nature of the landscape shows a combination of loss in some parts (through abandonment/or intensification) and gains in other parts (but generally loss of overall land under HNV management). Generally speaking, changes from type 2 to type 1 HNV area fall in this type.
- Reclaim: formerly abandoned HNV land is used again under HNV practices.

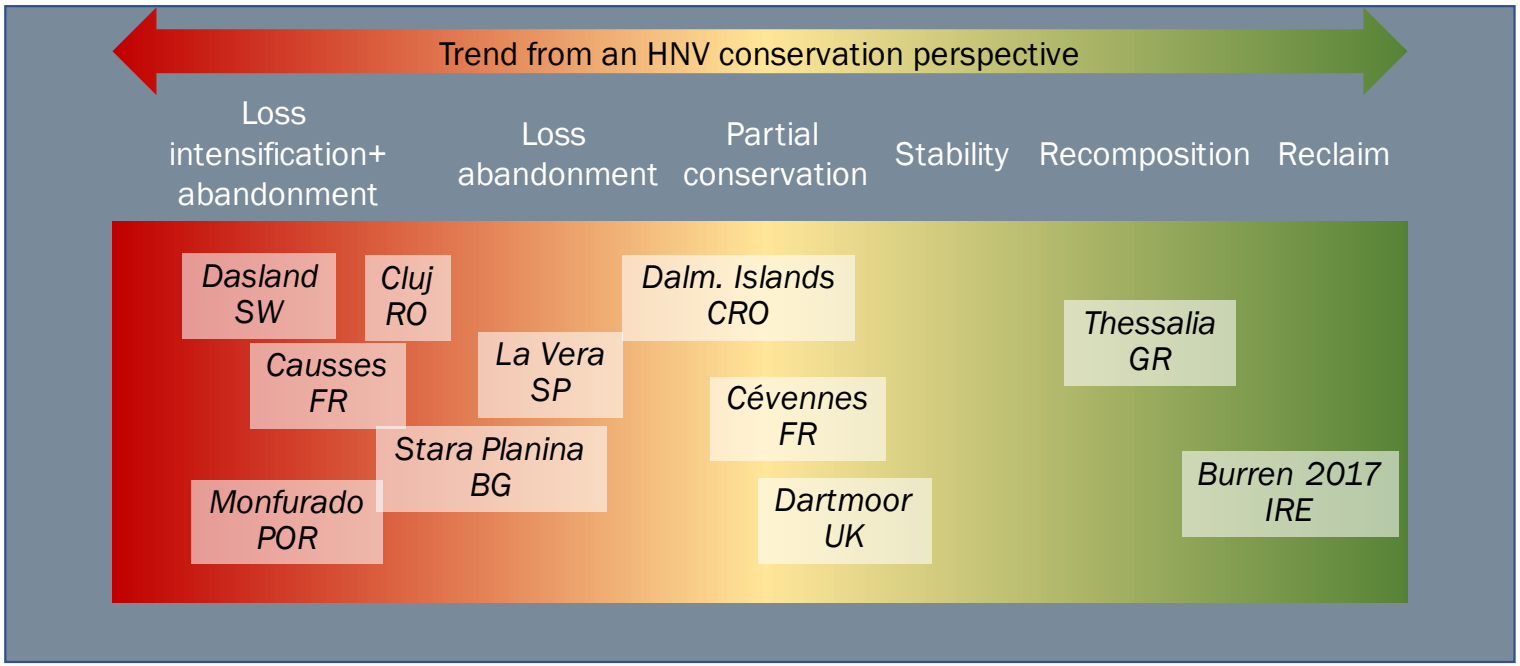


Figure 4: positioning the 10 LA in terms of types of HNV dynamic

This synthetic figure proposes an interpretation of the present situation of the 10 LA. The scale is not visible on this display but should be considered in the interpretation. For example, the recomposition taking place in Thessaly concerns patches while the loss in Monfurado is a diffuse slow process.

Part III: agricultural situations *"high nature value farming"*

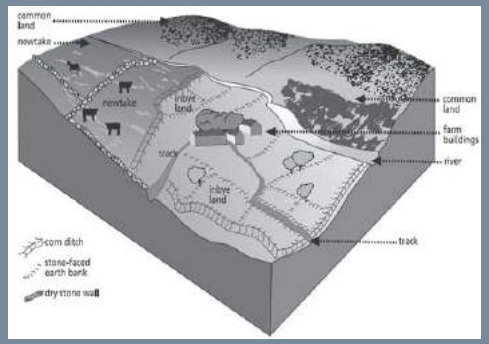
Introduction: understanding the relationship between FS, agricultural markets and HNV management

One of the core concept of HNV farming is to apprehend the co-functioning of farming systems and of agro-ecosystems. The very farming practices mimics some natural processes in terms of ecology of perturbation while the absence (or very low level of) chemical inputs do not alter the presence of spontaneous species that are indeed valued by farming systems. In this sense, HNV farming requires a systemic analysis.

Farming structures, practices — *sensu lato* when considering that the maintenance of stone walls are "practices" — and techniques are at the core of the understanding of the relationship between farming systems and agro-ecosystem functioning. In many ways, they overlap with the issues addressed in the previous section. The dynamics considered for HNV area result from the ones taking place in farming systems.

But the understanding of farming systems encompasses many other aspects, notably those explaining both the conservation of HNV practices or, on the contrary, their decline. Strictly speaking of farming systems, the key driving forces behind those dynamics include land access, capital and production factors availability, labour force. At a wider level, access to agricultural markets also is a major driving force for the development of farming systems. Both the nature of the considered products (livestock, crops, aromatic and medicinal [wild] plants), their intrinsic characteristics (including hygiene quality) and logistic (roads, abattoirs, storage) are to be apprehended. Policy and regulatory rules from the third range of driving forces.

The hill farm in the landscape (Dartmoor)



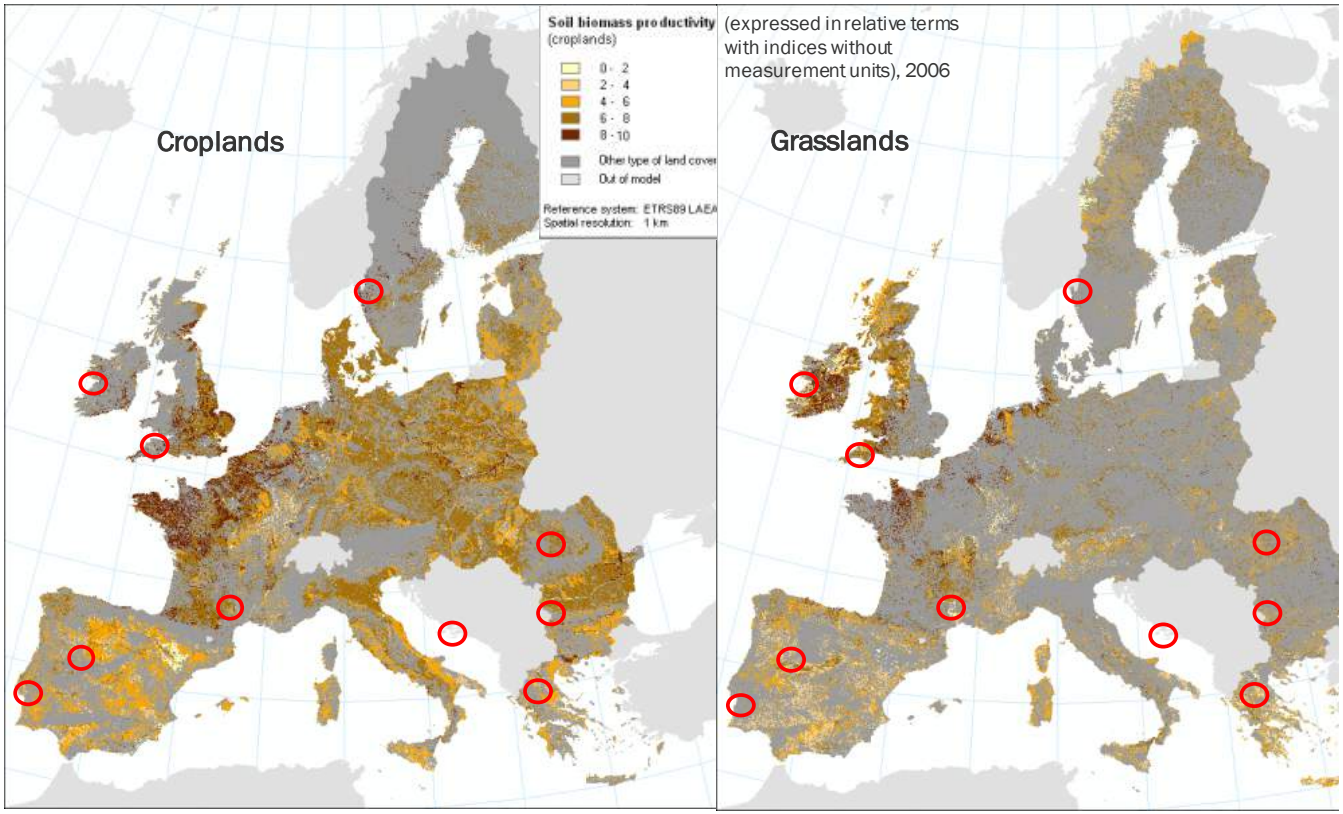
- Unenclosed moorland and many 'newtakes' (enclosed sole use rough grazings) are semi-natural and extensively managed
- Inbye land overwhelmingly improved grassland, with small % of arable. Remaining semi-natural of high nature value, but trivial on landscape scale
- Farm often has large number of sheds for inwintering (and sometimes finishing) stock

In short, the issue in the characterization of HNV farming is to understand the economic and social goals of farmers, the means they can (or cannot) mobilize in order to reach their goals and the markets — from semi-subsistence to global market — they can play in. The "means" include, for our sake, techniques and practices.

Such analysis must be conducted at a territorial level, apprehending the diversity of farming systems and their contribution to the overall quality in terms of nature value. In some cases, most farming systems can be qualified as HNV, in other only a part of them is such. In most situations, one should consider a gradient of practices more than a clear limit between HNV and Low Nature Value (LNV) farming.

Figure 5: the description of farms and farming systems must apprehend their economy and market positioning (from Dartmoor UK baseline assessment)

Land-use and production: farming in low-productivity contexts



Source: Joint Research Centre, European Commission
http://www.ec.europa.eu/

Map 8 : The 10 LA in mapped soil biomass productivity index for crops (left) and grassland (right) – JRC - ESDAC

Adjacent maps estimate the relative productivity of soil for crops (left) and grass (right). They are based on models developed by the JRC. For our sake, they unfortunately poorly apprehend the case of semi-natural and woody pastures. The scale of display also is a bit too rough for our analysis (once more, Croatian islands are not discernable).

Despites this limitation, they help positioning the LA in a "opportunity" land-use perspective: what is the more productive use of land (in terms of biomass production)?

The maps highlights learning areas where crops are an option and are indeed developed: Portugal, Sweden, Romania, France. For other learning areas, grass seems the best option: Ireland, UK, Spain, Greece and Bulgaria.

French and Romanian LA fall in mapped area where both crops and grass are practicable.

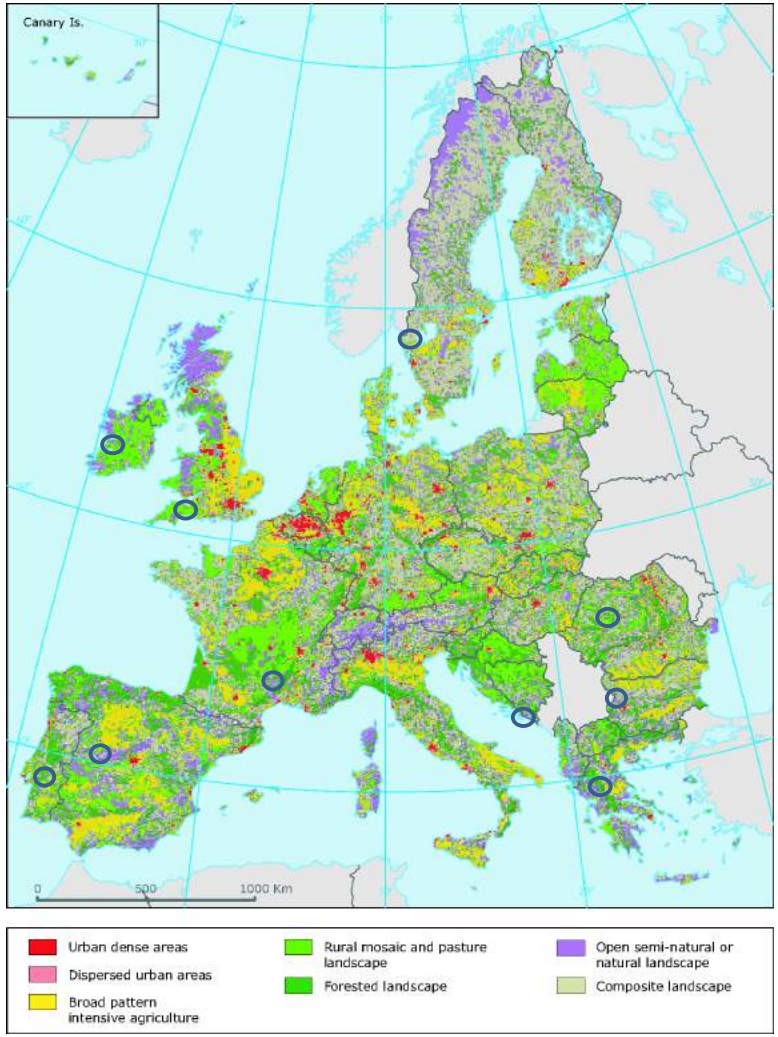
Generally speaking all LA are in low productive areas: they compete with highly productive production basins.

References for the maps:

• Panagos P., Van Liedekerke M., Jones A., Montanarella L., "European Soil Data Centre: Response to European policy support and public data requirements"; (2012) Land Use Policy, 29 (2), pp. 329-338. doi:10.1016/j.landusepol.2011.07.003

• European Soil Data Centre (ESDAC), esdac.jrc.ec.europa.eu, European Commission, Joint Research Centre

Land-use: farming in different rural contexts



http://www.eea.europa.eu/legal/copyright

The opposite map, from EEA's study on European landscapes, is a complement to the previous one. It is bases on CORINE data (year 2000), considering the type and spatial distribution of land-use.
Its reading goes further than the strict agricultural theme as it displays the major urban centers (see Part IV of the present document).
The interest of this map, compared to the previous one, is the fact that it displays semi-natural vegetation as such.

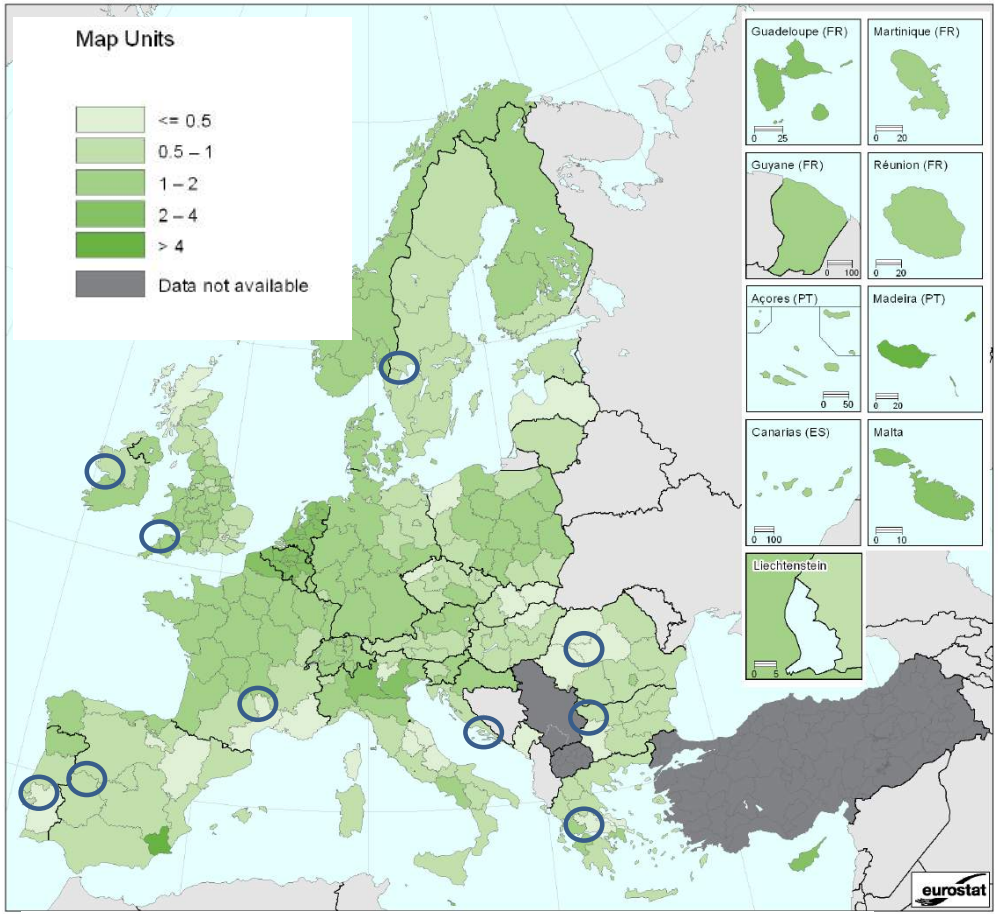
The 10 LA fall in different types of landscape:

- Rural mosaic and pasture landscapes: in Ireland and UK
- Open semi-natural landscapes: in Bulgaria, Spain and France (and likely Croatian Islands when considering adjacent landscapes)
- Mixed forest and SNV vegetation: in Portugal and Greece.
- Romanian LA appears as the most diverse in terms of landscape pattern, combining pastures, forest and SNV while the Swedish LA fall in a "composite landscape" pattern.

Although it may look based on rough data with a too general approach for our analysis, this map coincides well with the general features of the LA. With the high presence of "pastures" and "open semi-natural landscapes", it implies the presence of livestock in the management of the rural landscapes.

Map 9 : The landscape type context (according to EEA landscape typology) of the 10 LA

Grazing livestock: the best option for HNV farmland, but in competition with other areas



Livestock pattern - Grazing livestock density, EU-27, IS, CH, NO, HR and ME, 2010, NUTS2

http://www.ec.europa.eu/

Grazing livestock is the main production associated to HNV farming. Extensivity and pastoralism, approached by the stocking density, is a key characteristic explaining many HNV attributes in terms of practices and landscape features (e.g. pounds, stone walls, huts…).

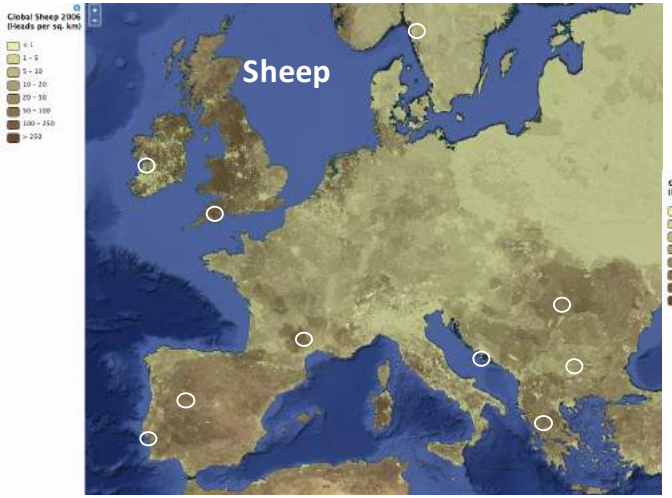
The opposite map is one of the official reference map used for agri-environmental indicators. As for our analysis, it has two major limitations:

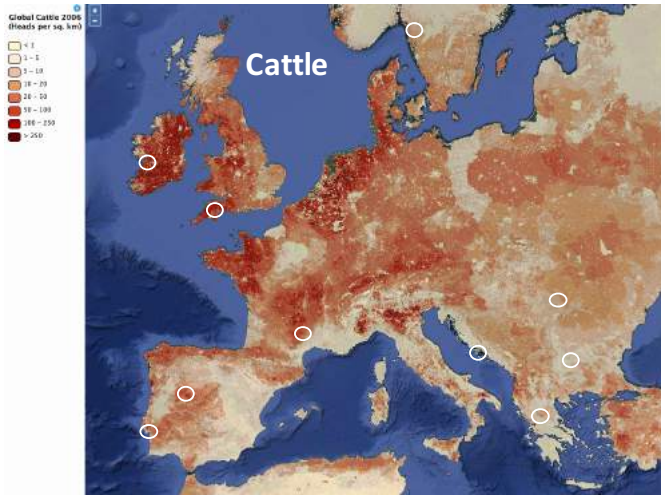
- The level of analysis, Nuts 2, is the best accessible for such maps, but may hide significant variation within a given area.
- In Nuts with common lands and/or poorly accounted semi-natural vegetation pastures, the grazing density will artificially appear high (e.g. in Greece)

With those limitations in mind, the map can be read at two levels:

- At a general stand: it shows that the LA stand in the lower range of stoking rates and compete with highly productive Nuts II units;
- Within our set of LA, there are some variations between the <0.5 and 0.5-1 LU/ha of fodder area.

Map 10 : Positioning the 10 LA in the grazing livestock density map (Nuts 2 level – LU/ha of fodder area)





http://livestock.geo-wiki.org/Application/index.php

Map 11 : The 10 LA in the livestock distribution map (as modelled by Livestock geo-wiki project – 2005 data at national level)

The opposite maps complement the previous one. They are based on a model developed by the University of Liverpool aimed at displaying a spatial distribution of livestock (downscaling significant distribution variables validated at upper levels).
Their level of display shows a grain that might not be as fine as suggested.

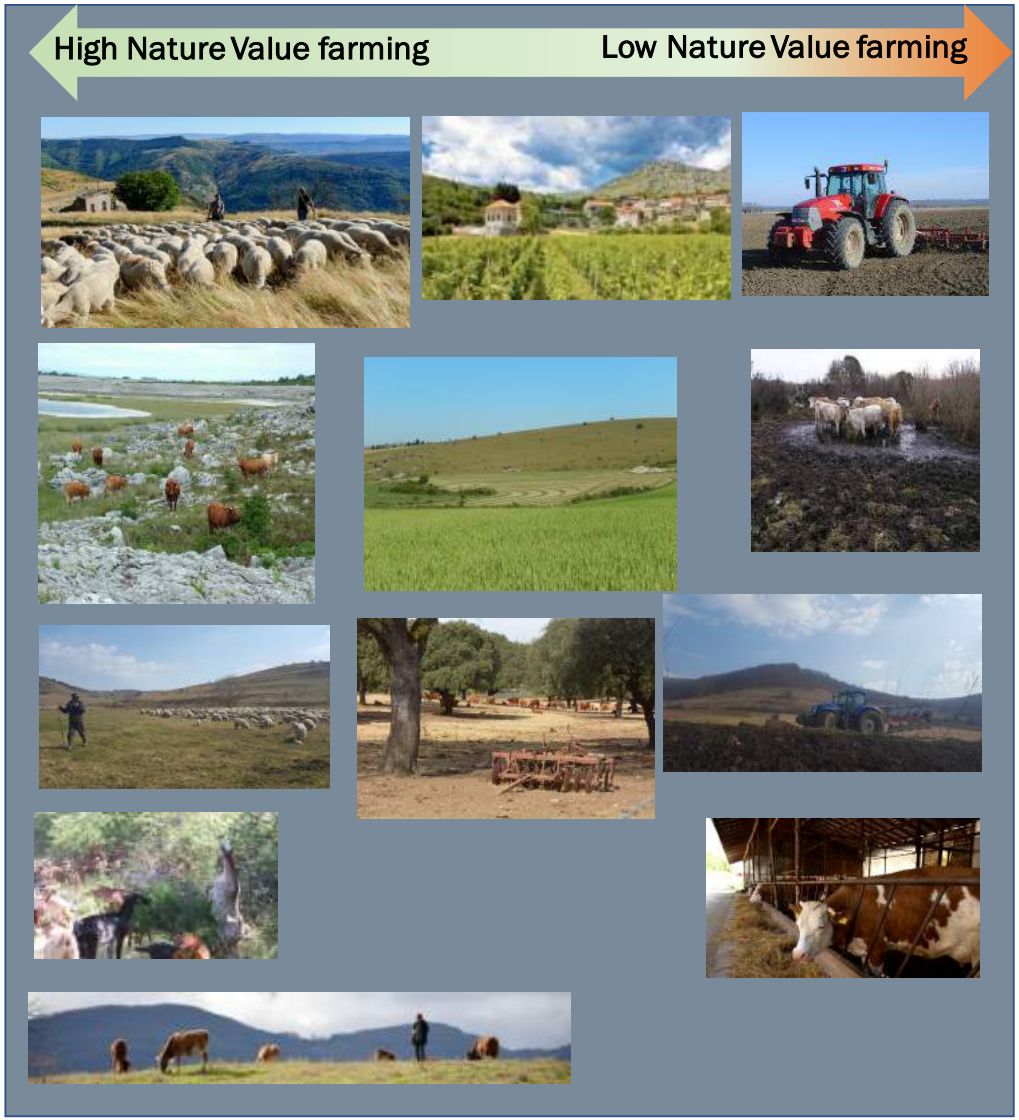
Nevertheless, these maps are the best available ones for our analysis. Note that they display an absolute number of heads and not a stocking density.
It shows different livestock orientations types for our LA:

- Area where cattle is the main livestock: Ireland
- Area where sheep and cattle are found: France, Portugal, with some possible competition in terms of rationale of land-use
- Area with sheep, cattle and goat: Spain (idem as previous)
- Areas where sheep is dominating: Romania, Bulgaria, Croatia
- Area with mixed sheep and goat: Greece
- Area with little livestock: Sweden

Reference

Robinson TP, Wint GRW, Conchedda G, Van Boeckel TP, Ercoli V, et al. (2014) Mapping the Global Distribution of Livestock. PLoS ONE 9(5): e96084. doi:10.1371/journal.pone.0096084

Describing the farm orientation and intensity at territorial level

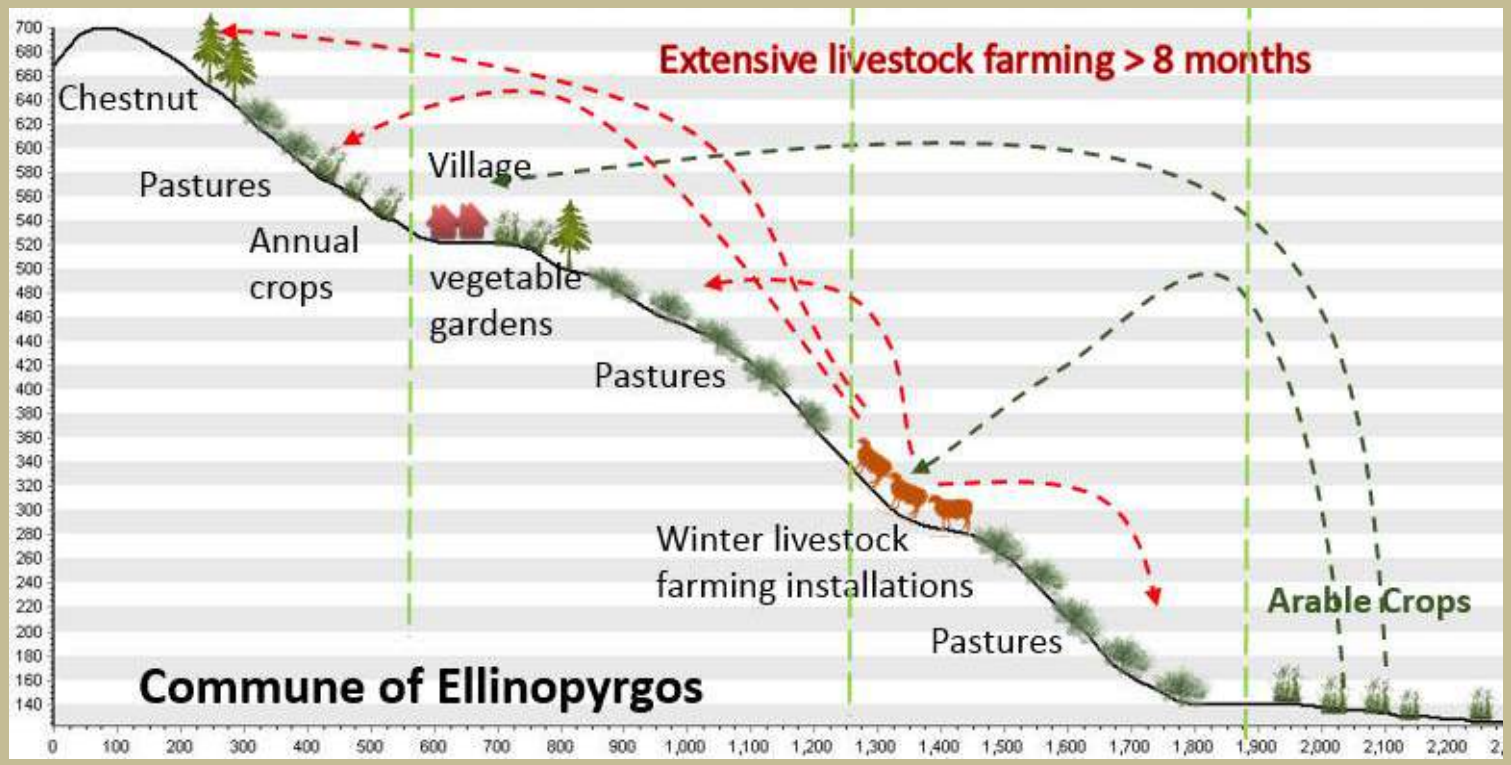


Adjacent selected pictures illustrate the diversity of farm orientations (livestock types / crops) and intensity found in the set of LA.

The idea behind this illustration is to show the types of farming systems, and the importance of human keeping for the appropriate management of fodder resources in most areas (e.g. shepherds and cowherd on left pictures).

On the opposite, some farming practices will be adverse to HNV conservation such as ploughing at large scale, keeping animals indoor or poorly managing the pastoral resources by unkept animals. While the presence of animals is a necessary condition for the use of pastoral resources, it is not sufficient one when the size of flocks, for example, entails

As said previously, the HNV management is not a black and white picture and one should better consider a gradient in farming systems. Some of them, in the middle of the figure, shows contrasted intensity in land use, associated with the ability to maintain opened landscapes and key landscape features (e.g. stone walls).

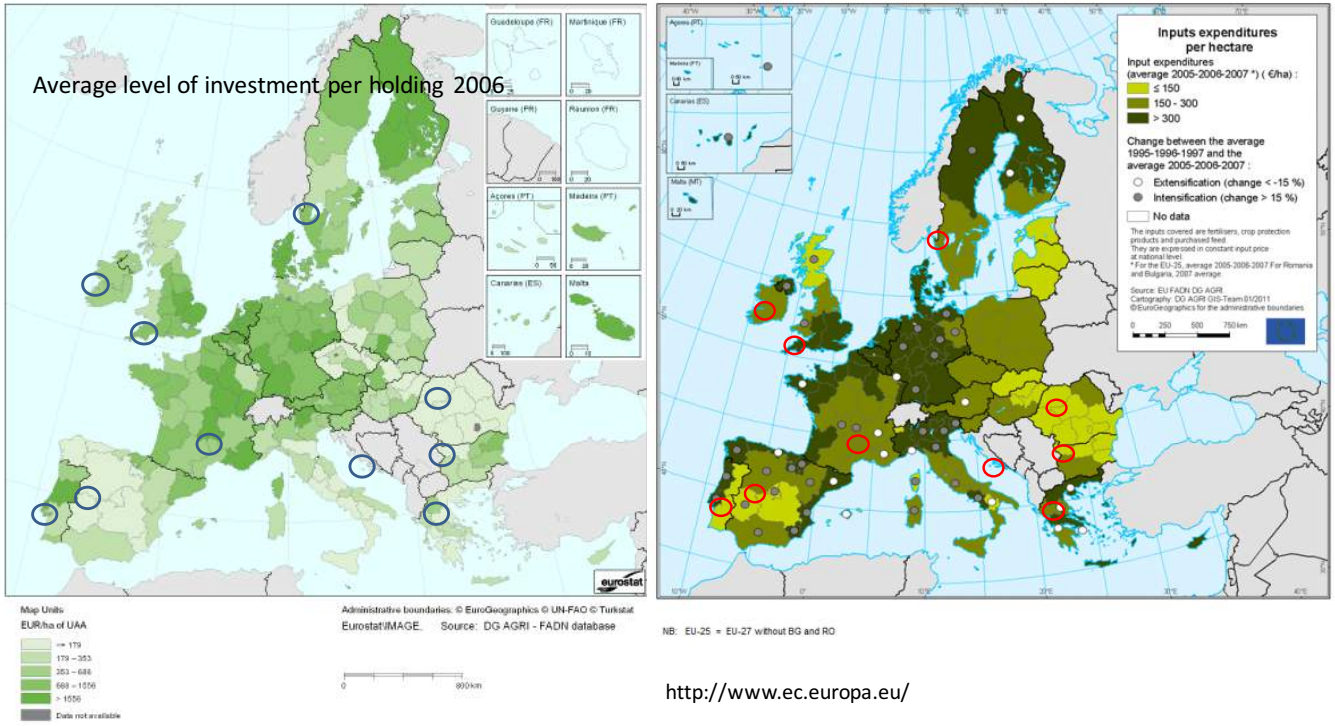


-Box 7 : Understanding the spatial functioning of farming systems

The adjacent figure, from the Greek baseline assessment, shows a spatial representation of the functioning of one type of farming system all through the year.

It allows the understanding of complementary areas for feeding animals and the technical rationale explaining the land use. In a certain way, this approach it is the "explanatory layer" of transects describing the landscape units, as displayed in Box 6.

The farm economic intensity



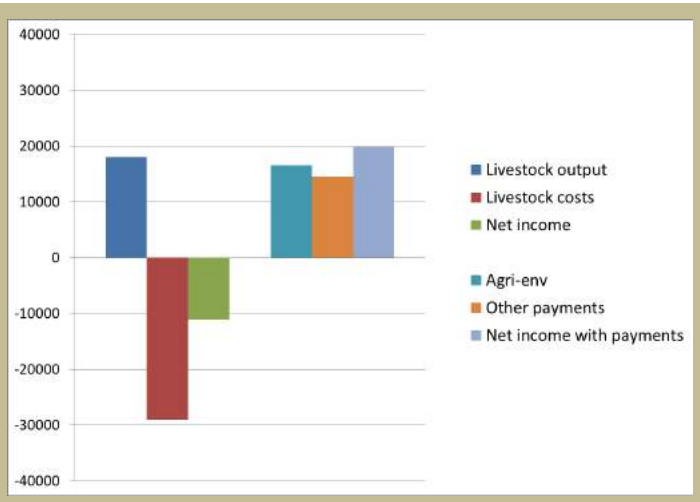
Map 12 : The 10 LA in the investment per holding and per ha map (Nuts 2)

The technical intensity approached above can be linked with an economic intensity, measured in monetary terms. The opposite maps show two types of economic intensities: the level of investment per holding (a proxy for the capital needs) [left] and the annual input expenditures per ha [right]. As for the other maps from Eurostat, these ones are reference, but have strong limitations in our case. First, the data come from FADN, where medium and large farms are overrepresented. Second, again the Nuts 2 level is too rough for a proper spatial analysis. Third the /ha indicator does not take into account SNV and common land. Croatia is out of the scope for the available year.

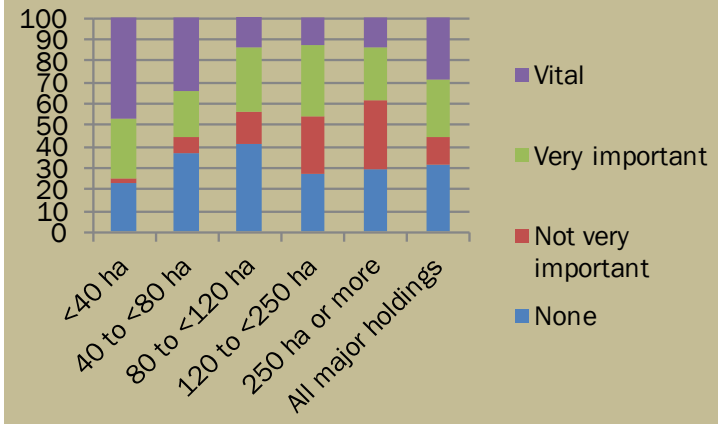
This being said, they show general patterns re the 10 LA:

- Areas with low capital and low input: Bulgaria, Romania, Spain. Greece should fall in this category taking into account the UAA bias.
- Areas with medium capital and medium input level: France, Ireland, Sweden and UK (the grain is too rough for Dartmoor)
- Area with medium capital but low input level: Portugal

For HNV analysis, the most significant variable is the input one. The level of investment is more indirect in the way that it frequently goes along a rationale of intensifying in order to cover high fixed costs.



Economic performance of 'extreme hill farms' in Dartmoor



Importance of non-farm income on a sample of major holdings in Dartmoor (c.2005)

Box 8 : The economic analysis of farming systems

Understanding the economic rationale of farming systems is paramount for the identification of challenges. This requires data that are not always easily accessible.

The adjacent example comes from the Dartmoor baseline assessment. The top figure illustrates the structure of income, setting out the gross product and the costs from a pure "productive" perspective. In this example, but this is a frequent finding, costs are higher than the gross product, meaning a loss in terms for the productive part of the farming system. In this example, the overall farm income stands on payments, agri-environmental and pillar one ones. Only with these payments may the farm sustain in economic terms. Before getting to the conclusion that, in this case, farmers should opt for quitting livestock production, the overall analysis must take into consideration the requirements of payments (would dropping animal production entail the continuation of conditions for getting the AE payments?) and long term strategies where farmers "accept" high structural costs to accumulate capital that they may sell. Despites these discussion issues, the analysis explains well the trend in terms of livestock decline in the Dartmoor and the role of payments for a close future.

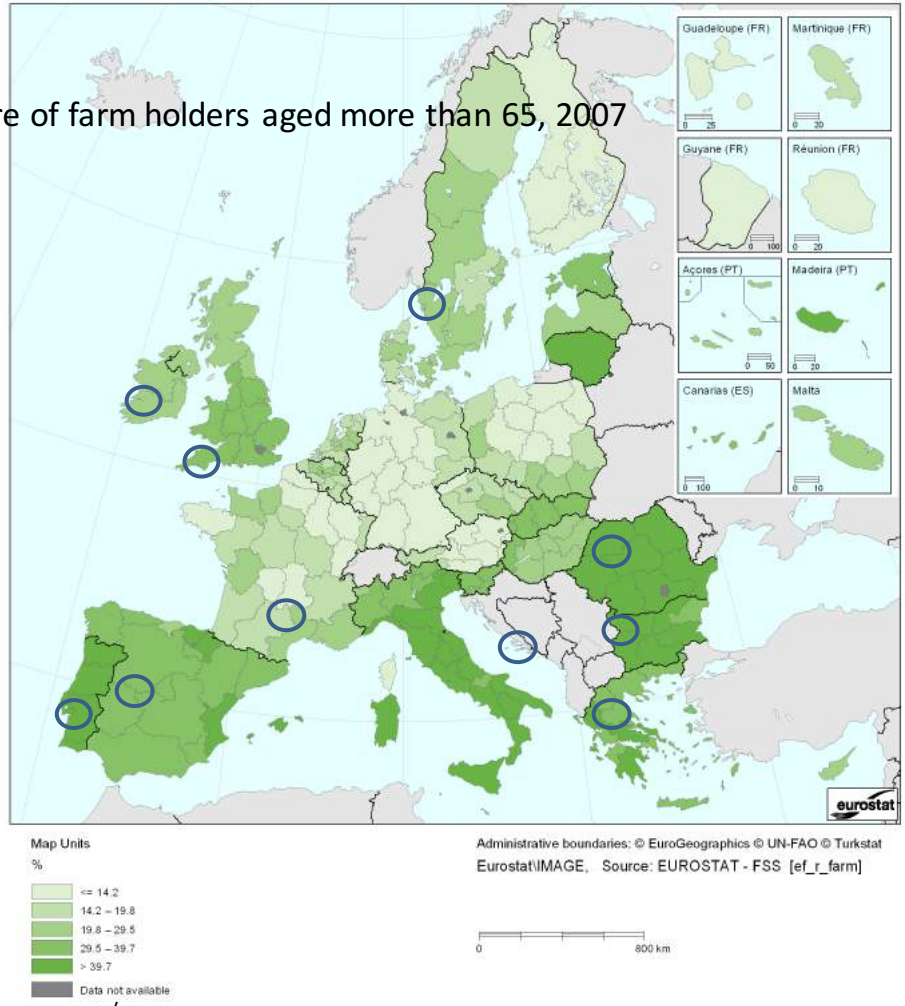
The bottom figure shows the importance of non agricultural income in the overall household income. In many touristic areas, it is absolutely crucial to apprehend such activities.

The economic analysis should be led against the actual needs in terms if income, that varies considerably across areas, depending on social standards and costs for rural services (food, transportation, school, health…).

In general terms, the issue for the economic sustainability of HNV farming systems is to run farms with low operational costs and, thus, generally low physical output. This can be addressed by (i) the search of high selling prices on distinguished markets, when possible (ii) the minimization of structural costs [i.e. no costly equipment] (III) public payments. The fragile economic balance of HNV systems needs to be characterized against the same balance of Low Nature Value Farming systems.

The environmental impact of economic strategies must be analysed. The critical issue is to avoid that the improvement of economic performance may lead to the loss of HNV characteristics through intensification or loss of appropriate practices.

Ageing farmers



http://www.ec.europa.eu/

Age structure is a critical aspect in the analysis of HNV farming. Most of times, ageing farmers population coincides with a lack of perspective for HNV farming, leading to land abandonment when there is no young farmer to take over and/or to intensification when the young farmers will adopt more "modern" production patterns.

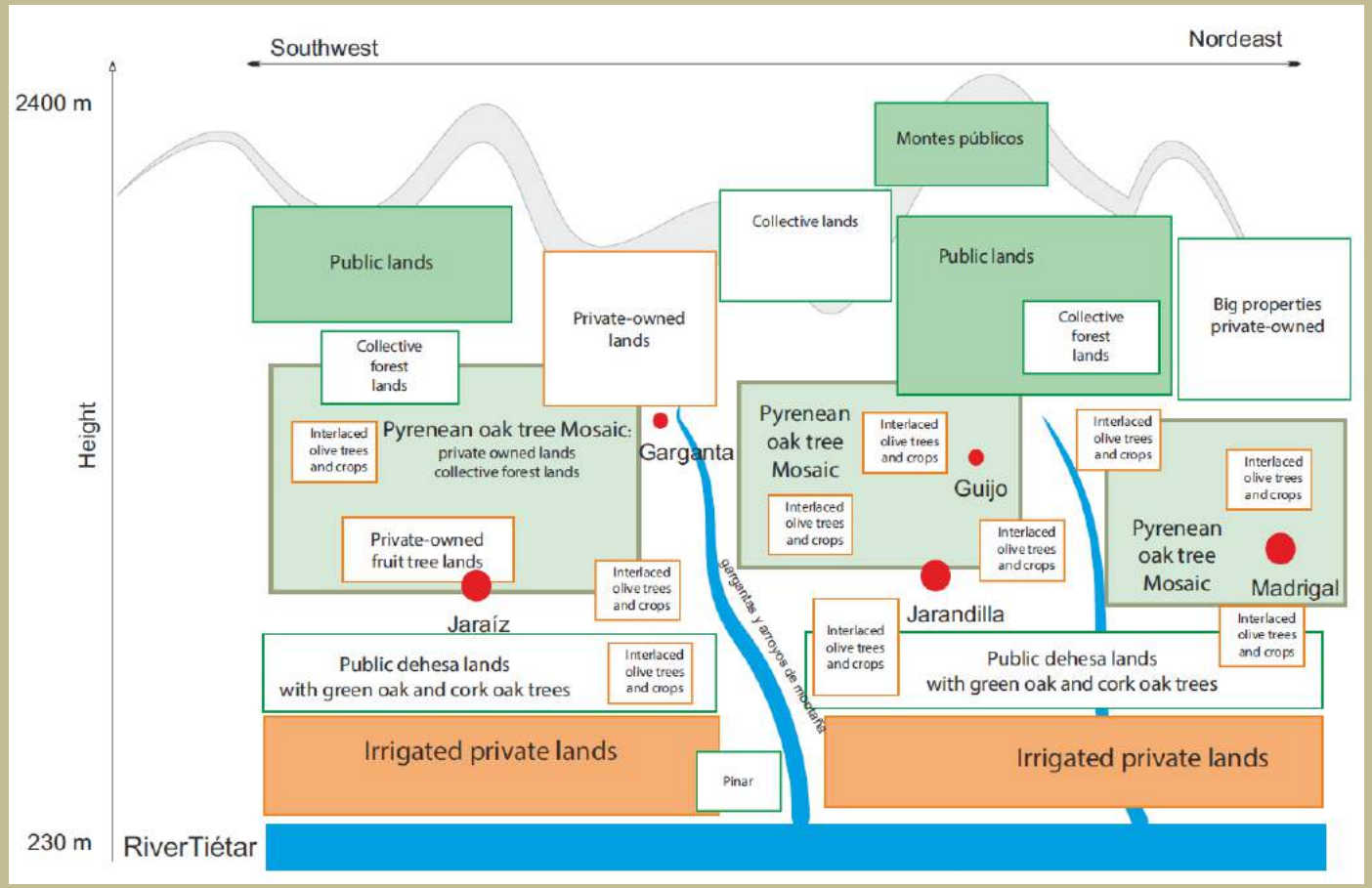
The opposite map shows the distribution of aged farmers at Nuts 2 level (with same limitation in terms of spatial significance and resolution). Note that age structure is subject to rapidly change when a cohort of elder farmers stop their activity in a short period and that a cohort of younger farmers is able to take over most of the land. The map being 10 years old, it is subject to changes. Croatia should be in the map.

This being said, it shows two types of situations in the set of the 10 LA:

- The ones where aged population is visible at Nuts 2 level: Romania, Bulgaria, Greece and Portugal
- The ones where ageing is not striking: France, Ireland, Sweden and the UK.
- As for la Vera, in Spain, there is clearly a major gap between what the map shows and the problem of ageing for HNV farmers, who are not captured in the stats.

Map 13 : The 10 LA in the map of ageing farmers at European scale

Land tenure and land access



Box 9 : Land tenure – land access

Land tenure and land access are critical issues in the characterization of farming systems.

However, data are scarce on this issue. Stats are hardly available and land access is a highly "sociological" issue, with local powers dimensions. Eurostat is of no help to address this theme. The difficulty of a proper apprehension of the theme leads to the fact that it is frequently "forgotten" or poorly studied.

The adjacent figure proposes a spatial representation of land tenure in la Vera (Spain). In this case, but this is not an exceptional one, this analysis is crucial for understanding one of the problem faced by HNV farmers, namely access to a diversity of agricultural land.

Such display can be inspiring for further analysis on this theme.

	Nb of farms	Size of farms	Economic logic	Markets	Trends on agricultural systems (BAU)	Challenges for HNV conservation	Importance of rural development for agricultural development
Dartmoor	c. 1122 but only c.850 with common pasturage rights	Small to very large, with active grazing probably dominated by larger holdings	Livestock not profitable: AEM and non-farm revenue	General meat market Diversification	Maintenance and maintenance of minimal livestock (too low) in relation to AEM	Better target AE Strengthen extension for extensive livestock (AKIS)	Managing too much tourism and commuting
Sitio de Monfurado	149– estimate on the lower side	Small to large, predominantly small farms, but large farms dominate for land use	Revenue from cork and livestock - structural costs to cover	Cork and PDO meat Diversification	Specialisation (towards crop/trees/livestock) with decline of natural regeneration of oaks	AKIS for sustainable management	Not a visible challenge - (as long as tourism supports the economy)
Dalmatian Islands	5748	Very small farms	Permanent crops and tourism	Local agro-tourism vs. General wine/olive markets	Marginalisation of agriculture	Promotion of HNV permanent crops and putting livestock on the agenda (payments, AKIS)	Managing too much tourism
Eastern Hills of Cluj	Estimated at 5000 small subsistence and commercial farms	Very small farms to average big commercial farms. The later dominate in terms of arable land use	Subsistence for traditional farms; Sheep/cattle commercial farms with limited productivity; Arable farms with medium productivity	Limited access Development of meat sheep	Recomposition towards larger farms	Supporting existing small HNV farms and AKIS for larger farms	Rebalancing infrastructures between close and remote areas

		Nb of farms	Size of farms	Economic logic	Markets	Trends on agricultural systems (BAU)	Challenges for HNV conservation	Importance of rural development for agricultural development
Western Stara Planina region		3561	Very small farms	Semi-subsistance farming	General meat market Diversification	Recomposition towards larger farms	Supporting existing small HNV farms and AKIS for larger farms	Connecting to Sofia Rural infrastructures for remote areas
Västra Götaland		11000 farmers	Medium-large (?)	Arable farms and specialised livestock	General crop market and timber	Marginalisation of agriculture (wood) and specialisation towards crops	Promotion of local HNV farms as "germs"	Not a visible challenge though the area is remote
The Burren		1 500	Medium-large	Cattle farms with structural costs to cover	General meat market	Two-tier logic: on the limestone pavement : reconquest	Maintaining the flame	Not a visible challenge
Thessalia		4 100	Small-medium	Taking opportunity of recomposing landscapes at minimal costs	PDO, local	Reconquest from different types of farming systems	Managing the spatial development of the area	Rebalancing infrastructures between close and remote areas
Causses & Cevennes	Causses and Lozère	1200 < < 1400	Large	Sheep farms with structural costs to cover	PDO export	Concentration, larger farms	Better target AE Strengthen extension for extensive livestock (AKIS)	Not a visible challenge - (as long as tourism supports the economy)
	Cévennes		Small	Sheep/goat farms with limited productivity	PDO, local	Concentration, larger farms but encroachement	Higher level of AE Strengthen extension for extensive livestock (AKIS)	Not a visible challenge - (as long as tourism supports the economy)
La Vera, Extremadura		120 livestock farms approx	Small-medium	Goat and cattle	Local (pbs with hygiene rules)	Disappearing of goat farmers	Give hope to extensive goat farmers	A social challenge as for the image of goat farmers

A typology for describing the agricultural dynamic in learning areas

The assessment of agricultural dynamic is a complex issue, that can be done through different themes. In this sub-section, we adopt the mainstream vision of agricultural developers or local actors and authorities judging whether an area is "developing well" in terms of agriculture, with a high weight given to economic aspects and minor one given to environmental and social aspects as long as dynamics are kept in socially accepted limits (i.e. no major environmental impacts – pollution – nor social impacts).

This deliberately simplistic analysis of agricultural development must be considered as it represents, as we said, the common sense for most mainstream actors. In the light of the "justification" effort required for HNV conservation projects, such justification will have to be made having in mind the assessment of the situation made by local and regional stakeholders. When a HNV broker says "there is a need to change the agricultural development of my learning area", against what vision of agricultural development does she/he have to deal with?

In this given perspective, we can propose the following current indicators mobilized for such an assessment:

- The evolution of the gross agricultural product at the learning area level: does the baseline assessment shows a severe decline? A relatively stable one or, even, a growing one when some farms are intensifying to increase their production?
- The evolution of the farmed area: is it facing a severe decline, a limited decrease or, in broad terms, an abandonment?
- The presence/absence of young farmers to take over the farms getting to the end of their life cycle. This criteria seems more robust than the evolution of the number of farms or farmers alone as, in some cases, agricultural "development" has coincided with the replacement of numerous old farmers by a reduced number of younger competitive ones (this was indeed the principle for the early retirement scheme).

On this basis, the following typology can be proposed for agricultural dynamics, characterized at a territorial level (not only HNV farms):

Type of agricultural dynamic	Overall assessment	Gross agricultural product	UAA	Take-over of farms by young farmers
Stable	Farming activity remains stable	Stable or, if declining, compensated by public payments	Stable or gently declining (for urbanization or afforestation, not land abandonment or at limited scale)	Yes – demand on most farmland remains high
Eroding	Farming activity is decreasing but remains significant	Decreasing	Significantly decreasing, signs of land abandonment	Partial: only some farms are taken over
Decline/crisis	Farming activity is getting marginal	Strongly decreasing	Strongly decreasing, land abandonment generalized	Very low
Relict	Farming is only a small economic activity, for some individual farms	Low at territorial level (but some individual success can be found)	Agricultural use is marginal	Not significant
Reconquest	Having reached a critical "relict' point, new initiatives re-start, but the situation remains uncertain	Developing, but starting from nearly 0	Reconquest of pieces of land, but also from nearly 0	Might be significant

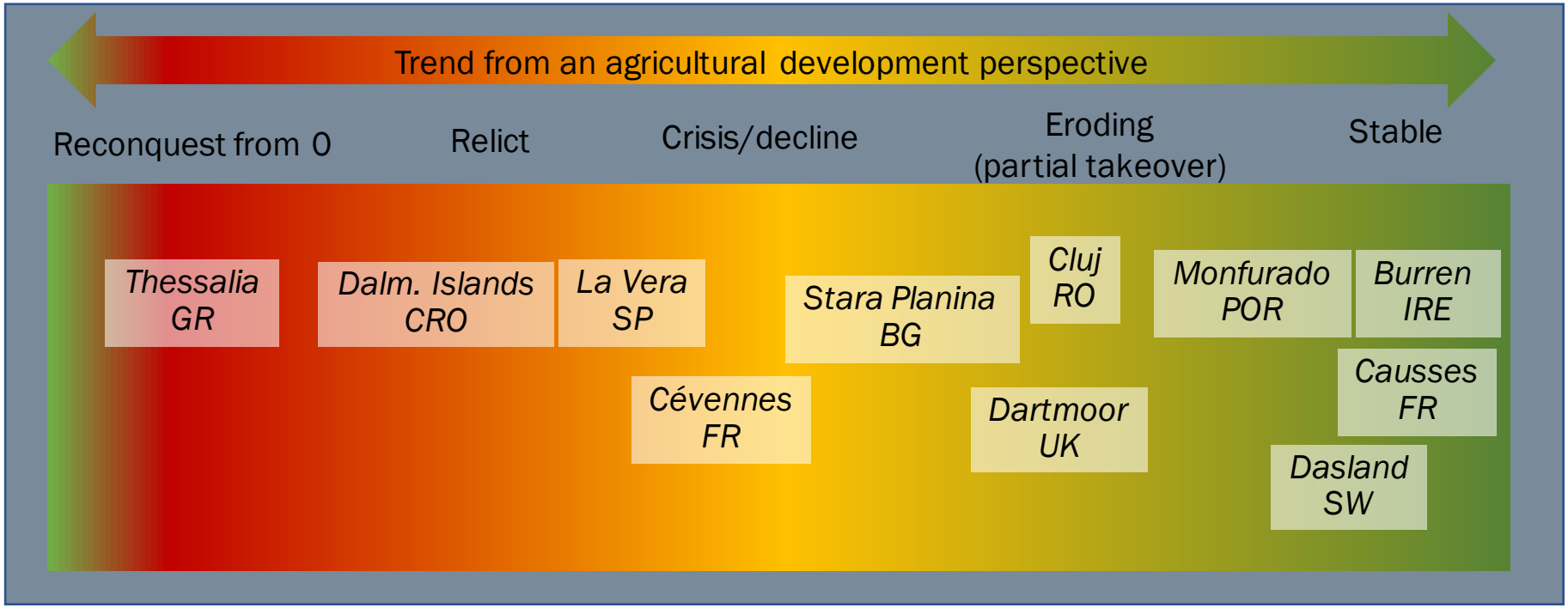


Figure 6: positioning the 10 LA in terms of types of agricultural dynamic

Part IV: rural context

"high nature value farming"

Introduction: the two faces of rural development for the conservation of HNV farming

The rural context of HNV farms influences the agricultural development in many ways, sometimes contradicting one another. Indeed, remote areas with difficult access and low rural services will not be attractive for young farmers and their family to settle. A general rural decline is frequently associated with land abandonment when the basic needs for living in a place are not met. Lack of transportation infrastructures also is a drawback for delivering agricultural products, when costs for collection become too high in comparison with more favored production basins. This is all the more the case when those products have no special added value, which often goes with promotion and market organisation actions undertaken in dynamic rural areas. No PDO or similar marketing innovation will take place in declining areas, where economic actors are not present.

But on the other hand, rural dynamism – might it be coupled with urban or periurban one – may also pose a threat for the conservation of HNV farming systems. Pressure on land increases their price, and then tends to further intensification in order to cover the costs. When it is not simply a matter of selling the land for other more profitable activities such as tourism or land development. From a social perspective, the presence of off-farm activities might be economically attractive, but may thus divert labor force from farming. Agri-tourism does not necessarily go well with shepherding, even if it secures the household income. Or, on the contrary, farming systems might not be attractive enough for tourism when they are all fenced and are then associated with poorly accessible landscapes. The proximity of a large city or a huge flow of tourists might be an opportunity for direct selling and added value, but it does not necessarily go along the continuation of HNV practices. It might be easier to buy off-farm feed and make as much as possible of marketable goat cheeses instead of leading the flock in woody *garrigue* or *mattoral*. But on the other hand, the same tourists and local economic stakeholders may be aware of the value of their landscapes and promote a nature-friendly rural development.

This is all a matter of coordination between different actors playing in the rural field. How do local actors value the (high) nature value of their farms? And who are those actors? These are questions to be addressed when envisaging social innovation.

Two ideas from this short introduction: (i) the rural context must be taken into consideration in the analysis of any area, even from an HNV perspective (that would otherwise tend to focus on technical issues dealing with management of HNV farmland) (ii) the overall influence of this rural context is highly context dependent, and will depend on the projects and relationship of a large set of actors. The balance between positive and negative impacts re HNV farming conservation is fragile.

Box 10 : an actors' typology for analyzing the different projects in a rural area

Piveteau (1995) proposes a useful typology of actors for analyzing their interrelations in rural areas. He envisages two levels of analysis explaining the nature of projects at play in such areas.

- The first level of analysis compares the "intern/extern" characteristic. Some actors are 'internal' to a (learning) area) : this area is the place in which they have projects, it is not substitutable to another one ; other actors are 'external': they care about the area, but this area is one amongst others, it is substituable — a visiting tourist is a typical example of such influencing 'external' actor.
- The second level of analysis compares the nature of projects: some actors are supporting 'private' projects (referring to one given interest*) while others are playing a 'collective' role of arbitrator/facilitator (trying to combine and regulate different interests).

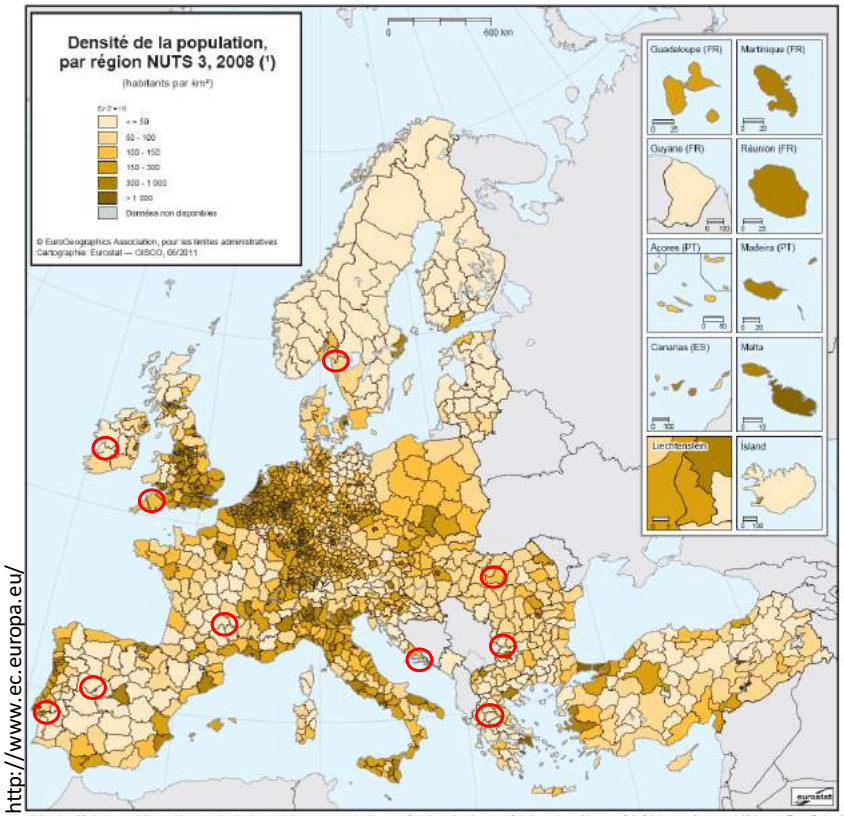
The crossing of those two axis brings to the following typology (with typical actors in italic) – outlined terms are those of Piveteau:

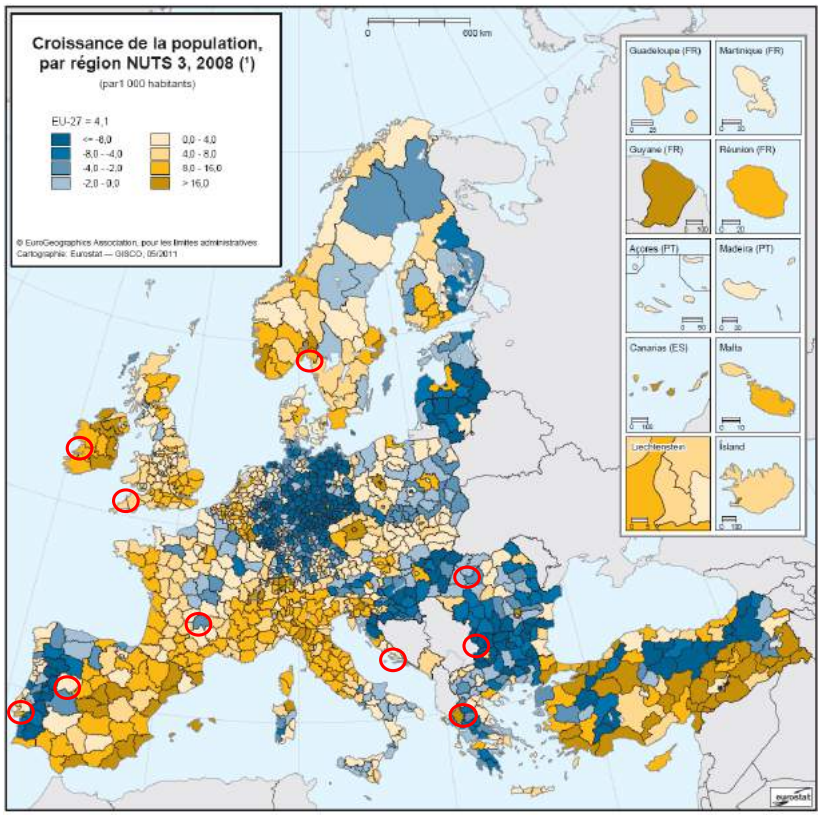
	Internal	External
Arbitrator	Collective *Mayor, local authority*	Arbitrator *Regional authority, State agent*
Private	Private *Farmer, local entrepreneur*	External Tourist, food-industry, national NGO

* the term 'private', proposed by Piveteau, is somehow misleading as a bird conservation project, for example, will fall in this category.

Figure 7: the presence of fences might hinder local tourism, even when associated with scenic landscapes. In this particular example (Portuguese montado*), fences may also be linked with the management of beef flocks preventing natural oak regeneration. Is a pastoral future, based on shepherding in open landscapes an option? Who would support the costs and who would benefit? Addressing such an issue engages different types of actors (see Box 10).*

The demographic context





http://www.ec.europa.eu/

(*) La densité de la population est le rapport entre la population (moyenne) et la superficie terrestre. La superficie terrestre est la superficie totale sans les eaux intérieures. Pour Bulgarie, Danemark, Allemagne, France, Chypre, Pologne et Portugal, la superficie totale a été utilisée à la place de la superficie terrestre; Pologne, par région NUTS 2; Royaume-Uni, 2007.

(*) Belgique et Royaume-Uni, 2007.

The adjacent maps show the demographic context of the 10 LA. Compared with other maps, this one has two major strength: (i) data are less subject to interpretation and bias due to sample effect (e.g. FADN) (ii) the Nuts 3 level is more relevant for spatial analysis.

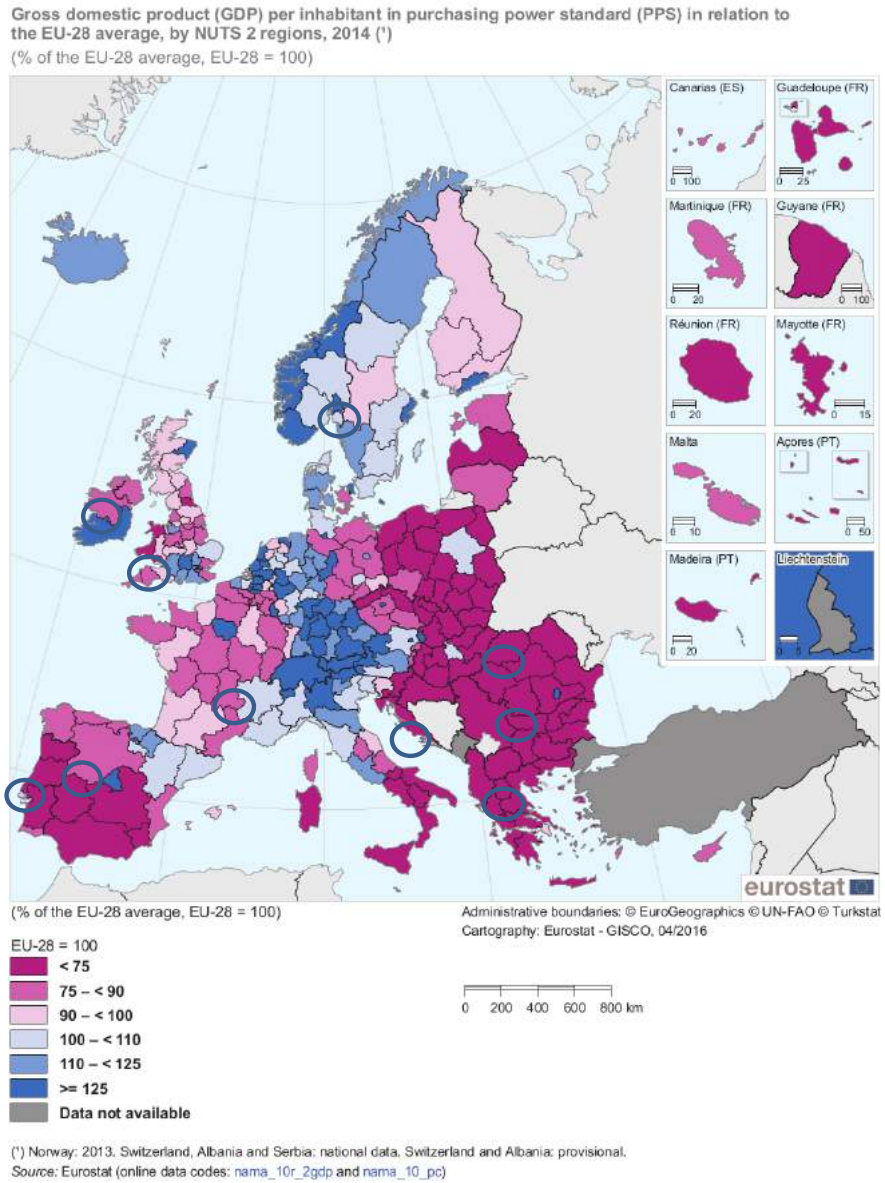
Map 14: the LA in their demographic context

The left map, on population density, shows two main features:

- The 10 LA are not located in highly dense areas. This result can probably be generalized for a large set of HNV areas while, historically, large cities and dense regions are frequently associated with productive areas (and/or harbors).
- This being said, there is a range of variation across the LA: some are in the less dense regions of Europe (in Spain, France, Bulgaria, Ireland, Greece and Sweden) but other may be in more dense regions (Portugal, Romania, Croatia and the UK). The image of HNV areas intrinsically associated with "empty" rural areas might be revisited.

The right map, on population trend shows that while most of the LA are located in regions with severe population decline (with the overall Eastern Europe trend), this is not taking place in all LA. Here, agriculture plays a minor role in the overall demographic trend.

The 10 LA are mostly located in regions with low economic output



The adjacent map shows the ration between the regional GDP (Nuts 2) and the EU 28 average GDP. It shows the distribution of "rich" and "poor" regions at EU 28 level, with the limitation that in some regions not all the economy is monetarized.

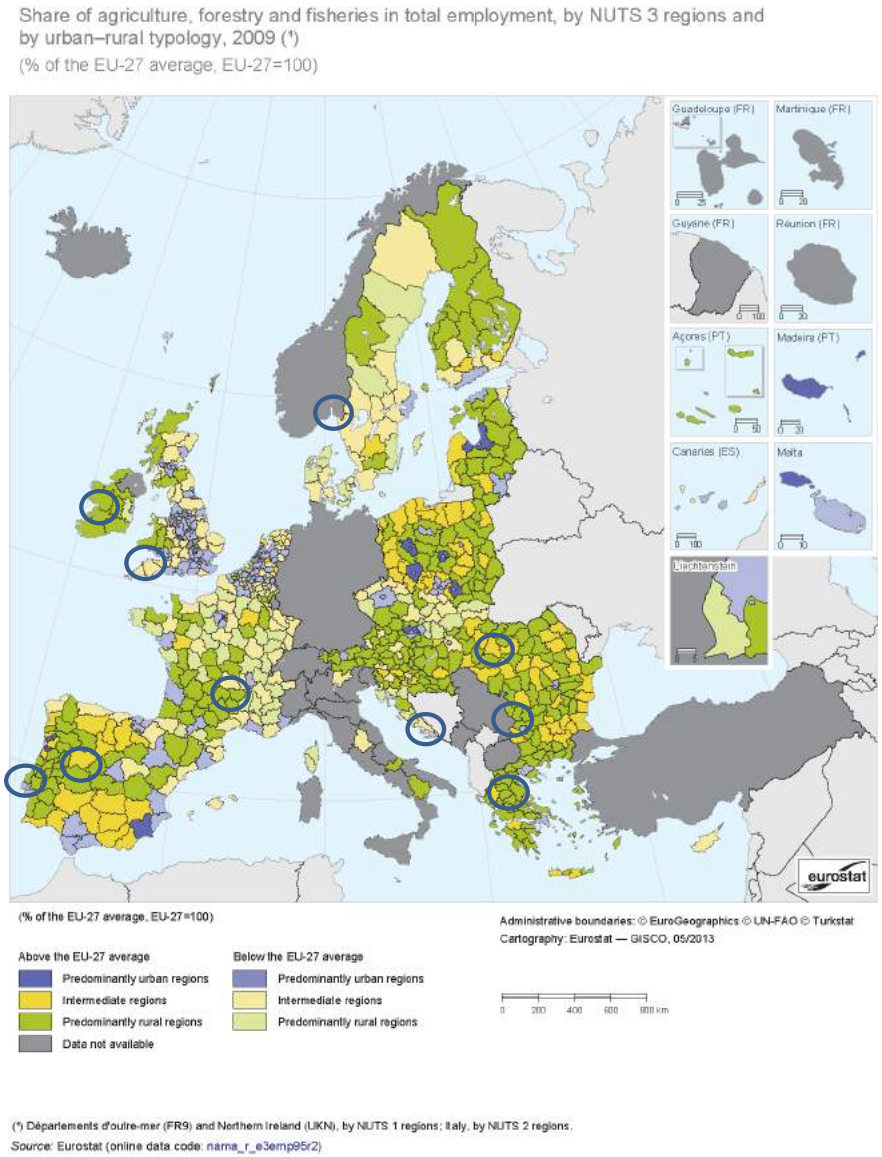
The map clearly shows that the 10 LA – and more generally the majority of EU HNV farmland – are located in "poor" regions in average (with the apparent exception of the Irish LA).

The conclusion might be ambivalent from an HNV conservation perspective: in such context, there is a need to conserve any activity, starting with farming in rural areas (a positive outlook for HNV farming) vs. there is a need to be competitive and develop farming at any price in order to create GDP (a negative outlook).

Map 15: the 10 LA in their regional economic context

http://www.ec.europa.eu/

Share of agriculture in the overall employment



(*) Départements d'outre-mer (FR9) and Northern Ireland (UKN), by NUTS 1 regions; Italy, by NUTS 2 regions.

Source: Eurostat (online data code: nama_r_e3emp95r2)

http://www.ec.europa.eu/

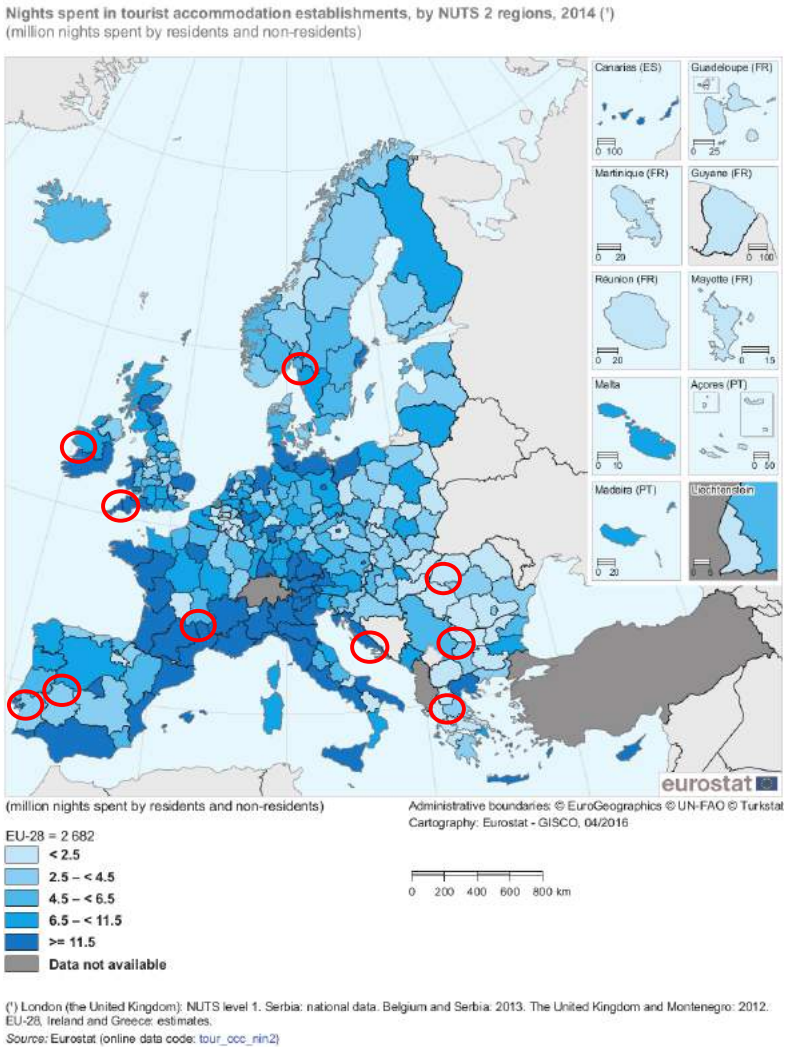
The adjacent map should be read having in mind two layers of information.

- The color of the background (blue, yellow, green) displays the rural/urban typology at EU27 level: the blue are predominantly urban, the green are predominantly rural and the yellow are in intermediary situation.
- The density of the color (pale/dark) shows the position compared to the EU 27 average: pale regions are those where the share of agriculture, forestry and fisheries (total employment) are below the EU 27 average; dark ones are above this average.

This map is a bit binary for our analysis, at it does not distinguish classes below or above the average. It nevertheless confirms that all the 10 LA are located in regions (nuts 3) where agriculture - and forestry – are relatively important, with the exception of Dartmoor. This being said, it does not mean the agriculture is the main activity in the area ; it simply means that its share is above the average.

Map 16: the 10 LA in their employment context

Tourism



http://www.ec.europa.eu/

The adjacent map shows the touristic intensity, as measured with the number of night spent. The Nuts 2 level of display has the already noted averaging effect. Data might also have limitation (the case of Greece that appears as a marginal touristic destination is striking and the map does not show all touristic activities in the Greek LA and, probably, elsewhere in Europe). And in addition, it does not tell about the type of tourist.

The map shows a great variation across LA, with some with high touristic activity (in UK, France, Croatia, Ireland) and some with limited activity (in Sweden, Portugal, Spain, Greece, Romania and Bulgaria).

Map 17: the touristic context of the LA

Box 11 : Tourism in HNV area – the case of the Croatian LA

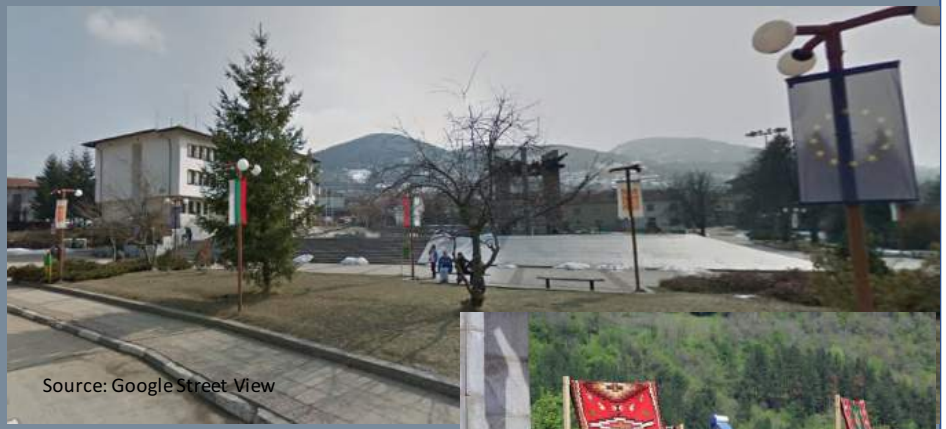
The Dalmatian Islands case fully illustrates the issue of tourism. The intensity of mass tourism (1) is causing pressure for building (2) and land (3). This touristic frequentation might increase a demand for 'genuine' 'local' products, nicely marketed (4) — or not (4bis). But the higher the demand, the higher the risk to maximize production with production means not fully HNV (5). This sequence describes what most stakeholders call a successful local development (the business as usual).

Caring for landscape, in some ways 'reinventing' traditional features is an option for remote areas (6), with ambivalent outputs in term of environment. Making this rural tourism HNV needs a certain type of tourists (7 ; ≠ 1!), in relation with certain types of farming (8 and 8bis; ≠5) and requirements on marketing and value chain (9; ≠ 4… or not).

Living and development in rural areas: selected illustrations from LA

Romania

Source: Google Street View



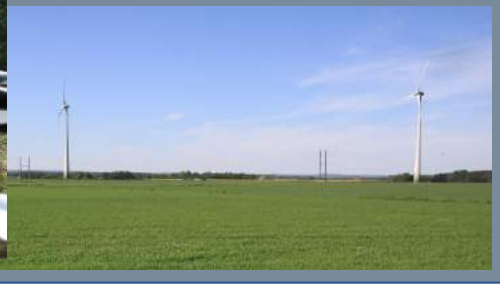
Source: Google Street View

Bulgaria

United Kingdom

France

Sweden

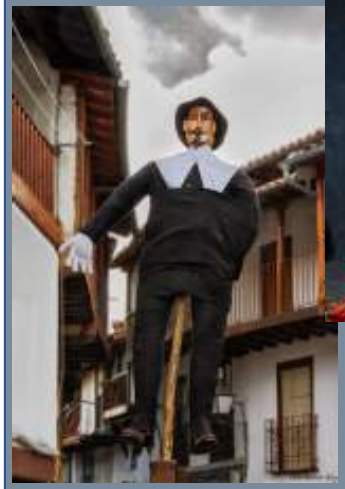


Portugal

Greece

Croatia
(also see box)

Spain



Ireland

	Size of the LA	Population in the LA and trend	Calculated population density	Population near LA/urban influence	Tourism (*and other activities*)	Overall dynamism of the area (LA and close context)
Dartmoor	460 km^2	34,000 inh. increasing	73,9 inh./km2	Two large cities - Plymouth and Exeter, around 0,5 M inhabitants	Highly developed (10 M visitors/year)	Strong
Sitio de Monfurado	240 km^2	16,500 inh. decreasing	68,8 inh./km2	Small city of Evora, circa 50,000 inhabitants	Agritourism - medium intensity	Low
Dalmatian Islands	1 858 km^2	57,000 inh. decreasing	30,7 inh./km2	Insularity (isolated for daily commute) - Close to Dubrovnik	Highly developed - main economic sector	Strong
Eastern Hills of Cluj	190 km^2	30,000 inh. increasing overall, but strong gradient between close and remote communes	157,9 inh./km2	Influence of Cluj Napoka (circa 320,000 inhabitants)	Limited tourism - *industry and services dominate the local economy*	Medium
Western Stara Planina region	1 659 km^2	36,000 inh. Decreasing, strong gradient between remote and well deserved communes	21,5 inh./km2	+ 150 km from Sofia (1,3 M inhabitants)	Limited tourism - services, *industry and social payments are the main sources of income*	Low
Västra Götaland	4 000 km^2	50,000 inh. Decreasing	12,5 inh./km2	The whole province is isolated and has a low economic attractivity compared to the rest of Sweden	Limited tourism	Low
The Burren	720 km^2	15,000 inh. Decreasing	20,8 inh./km2	Influence of surrounding cities, commuting is developed - importance of off-farm income	Developed tourism	Medium

		Size of the LA	Population in the LA and trend	Calculated population density	Population near LA/urban influence	Tourism (*and other activities*)	Overall dynamism of the area (LA and close context)
Thessalia		4 200 km^2	33,000 inh. Decreasing (?)	7,9 inh./km2	Influence of Karditsa and Trikala (80.000 and 60.000 inhabitants respectively)	Agritourism in Summer - medium intensity in the LA/strong nearby	Medium (contrasted)
Causses & Cevennes	**Causses and Lozère**	3 000 km^2	34,000 inh. increasing	7,0 inh./km2	Limited influence - mainly small cities near the LA	Developed tourism	Low
	Cévennes crest and valleys			17,0 inh./km2	Strong influence of Montpellier and Nîmes (250,000 inh. each)		Strong
La Vera, Extremadura		883 km^2	25,000 inh. Decreasing	14,2 inh./km2	Limited influence - mainly small cities near the LA	Developed tourism in the overall area, limited in the LA stricto senso	Low

Conclusion: challenges and future perspectives *"towards high nature value farming for future"*

Building an HNV vision and confronting it against a business-as-usual scenario

The different thematic outlooks evoked in the previous pages cross at territorial level. They draw up different possible futures, one where most forces go against the conservation of HNV farming — up to date the dominant one when considering the decline of HNV farming in general terms. This business as usual (BAU) scenario will have major impacts on land use and, in a more or less close future, loss of biodiversity and ecosystem services. Anticipating such losses, affecting both local actors but the wider European and even global society, justifies the design of an alternative scenario in which HNV farming is maintained or even restored. Figure 4 (page 38) gives a better grammar to understand the possible dynamics in terms of landscape and biodiversity conservation. This scenario has been called the *HNV vision* in HNV Link, and each LA was to design and show up its own vision. An HNV vision combines the different elements addressed in this atlas: nature, farming, territories and rural actors. The main challenge is to engage a large set of stakeholders and wider beneficiaries in the design, discussion, sharing and appropriation of the vision.

Box 12 : a representation of an HNV vision – the example of Monfurado (Portugal)

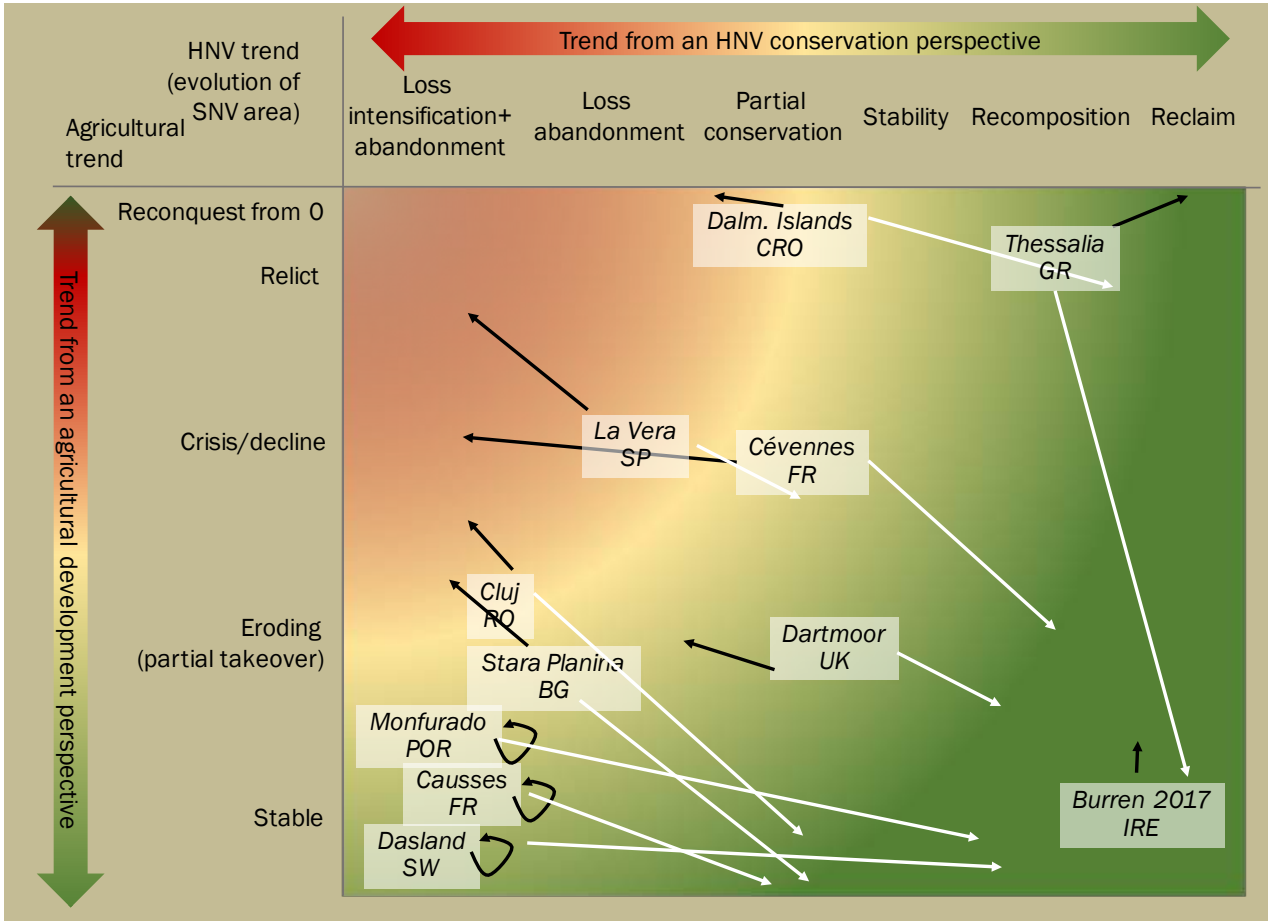
The adjacent image represents a vision of what could and should be the Monfurado area in 2030. It is at the same time (i) a tool for organizing a consistent analysis of different themes: nature, soils, landscapes, farming, rural life (ii) a support for common discussions, with local actors and (iii) a reference for HNV projects.

Sensible displays in drawing and quoting are a way to reach a variety of actors, not only 'experts'.

Drawing by Carolina Velloso, University of Evora, 2017

Development in HNV areas is not development for HNV in rural areas

The different perspectives on the LA, and in a wider set of HNV areas, shows the numerous challenges to address in order to conserve HNV characteristics. The very core of HNV concept is to consider that, in such areas, the fate of biodiversity and landscaped is intrinsically bound to the one of HNV farming systems and the rural society supporting them. While the decline of HNV farming systems indeed means the decline of ecological features, the conclusion is not that the conservation of any farming system means the conservation of such features. Indeed, in some areas the decline of ecological value goes along the decline of farming, in general terms (la Vera being the most obvious case in this perspective); but in other the ecological decline might be caused by the development of low nature farming.



Box 13 : representing the BAU dynamics and challenges for reaching the HNV vision

The adjacent figure proposes a synthetic representation of the challenges met by the development of farming systems in the 10 LA. It consists in the crossing of the two thematic typologies displayed in Figure 4 and Figure 6. The pale rectangles represent the present situation, in terms of crossed dynamics. The present "quality" of HNV area is not rendered in this figure. The black arrows represent the BAU, also in terms of dynamics. The white ones, what is envisaged in the HNV vision. Looped arrows suggest stability.

The findings from this figure are:

- Most LA are facing a problematic situation re HNV conservation.
- The exceptions are the Burren (success story in terms of HNV conservation project) and Greece, where land reconquest is taking place in a context of relict farming.
- In some areas (bottom left), a 'positive' dynamic in terms of agricultural development does not mean positive ones for HNV conservation.
- All BAU trajectories imply a radical change in terms of agricultural development. Note that the length of arrows suggests the one of way to go.

Engaging a strategic process: brokers, stakeholders and allies

Each HNV Link learning areas has engaged its own genuine process in order to make the HNV vision come true (even if this vision will probably change in the course of the process). The challenge for HNV brokers is to share this vision – making it collectively designed – and to identify and mobilise the relevant and necessary means to reach it. This is the *raison d'être* of each local innovation process.

Such processes are demanding and must be progressive. They can be read under a 'translation sociology' frame. Such frame identifies different steps in a process, where an actor bearing a concern/a project will have to engage with other actors in order to develop the project. The first steps might be modest, but they are critical for the future of the project.

Box 14 : the meaning of translation sociology for HNV innovation projects

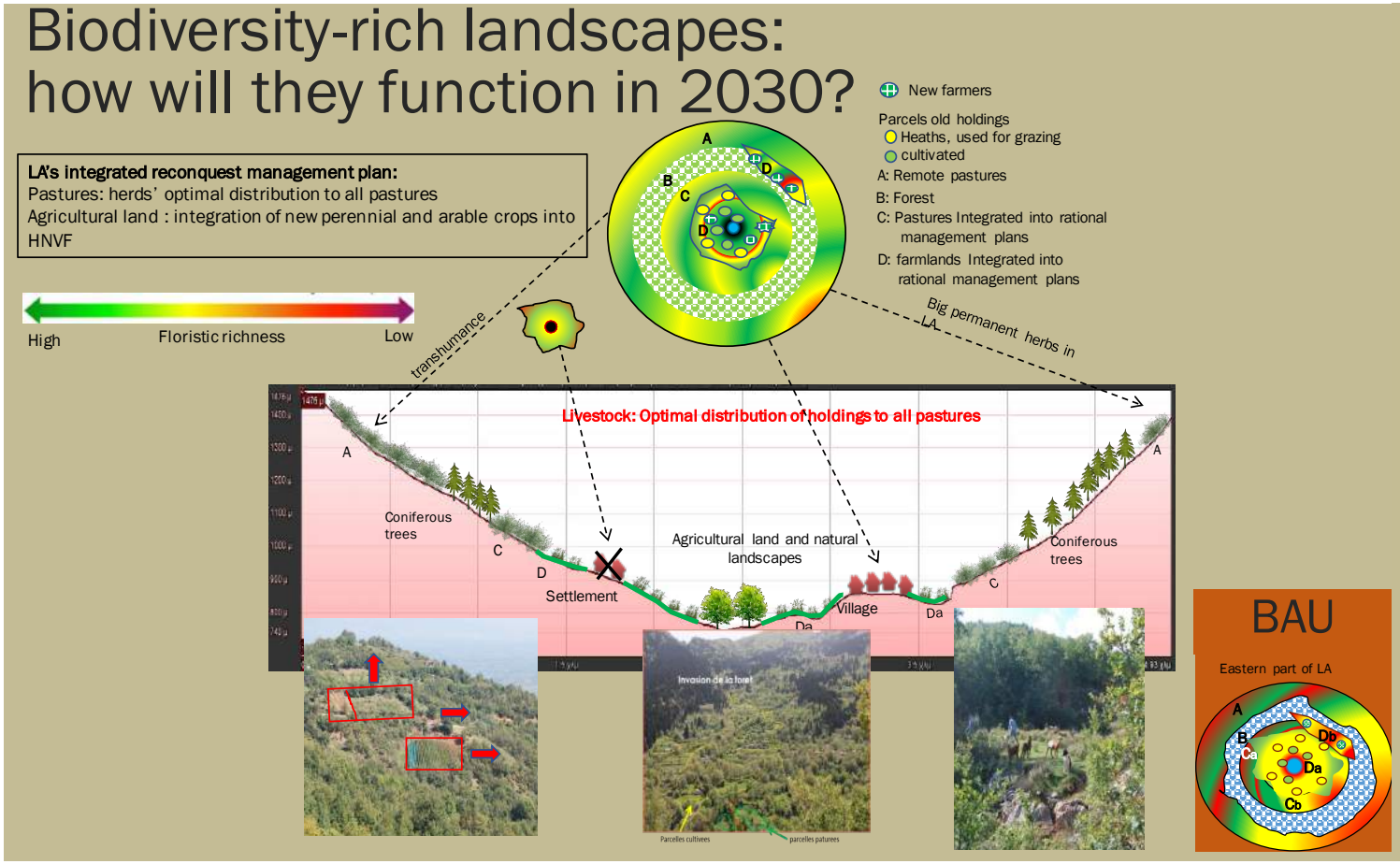
The translation sociology identifies different steps, starting from an awareness raising issue (steps 1 and 2), reaching an action phase based on convincing actors to change their behavior (steps 3 and 4) in the perspective to last over time, as it is not a matter of one shot, even if it is a success (step 5). The Burren LA is facing the step 5 issue, after having gone through the previous steps. Most other LA are between steps 1 and 2.

The progressive enlargement of actors concerned, and the fact that they will indeed act in favor of the project is the critical challenge, as the HNV project is competing with other ones. Building a community convinced that this project prevails on others and able to mobilise the appropriate means is the key.

The action dimension of the steps concerns different types of actors, some 'internal' and some 'external' according to Piveteau's typology (see Box 10).

See Callon (1986)

Representing and defending the HNV challenges in a territory: explicit spatial display



Box 15 : representing the landscape translation of HNV vision

Being able to explicitly represent the spatial significance of an HNV vision is a strategic challenge. While many projects will defend vague environmental objectives, making the effort of representing them shows the specific value, in terms of result, of the project.

Box 12 proposes a way of representing the principle of the vision. But the adjacent representation, from the Greek BA, represents a rather interesting way of combining different layers of information in a synthetic display.

The spatial organization of the village area shows what is the specific land management aimed at in the HNV vision. The color code indicates the gradient of natural value (approached by the floristic richness). The positive outcome on this register is compared against the business as usual scenario (bottom right).

Such a representation clarifies the goals of the HNV project and gives indications for the design and local monitoring of the project, in a continuous result-based and adaptive approach.

Engaging with local and supra-local actors

Ireland

UK

France

Romania

Farmers

Researchers

Local politicians and NGOs

Private consultants

The LAG

Food processing companies

Portugal

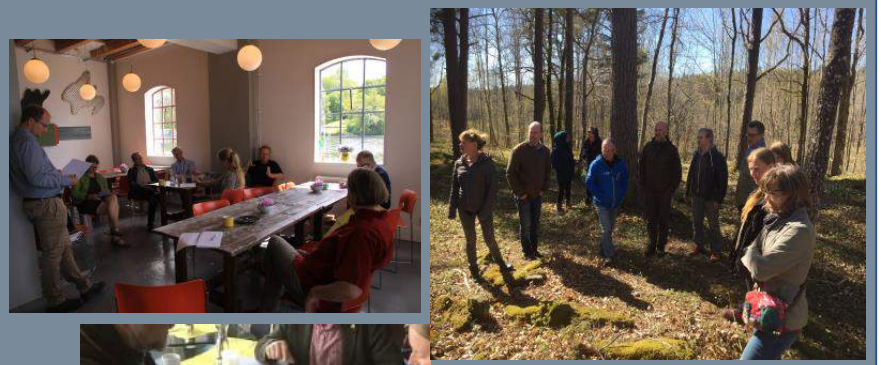
Local (LA) Regional National

Spain

Greece

Croatia

Bulgaria



Sweden

LÄNSSTYRELSEN
VÄSTRA GÖTALANDS LÄN

	Main institution(s) committed in Env/rural management	Initiative for HNV	Who is the HNV broker?	Is biodiversity conservation is a priority for most stakeholders in the LA?	Main message for HNV conservation	The issue is to…
Dartmoor	Dartmoor National Park	Targeted: Dartmoor Hill Farm Project	DNP, commoners	*Yes in principle, but often mindsets are subconsciously influenced by the dominant agricultural narratives which may work against this objective*	In Dartmoor, the stocking density is now to low. Nature conservation is too decoupled from the fate of livestock sector: there is a need to support and manage the development of this latter.	Change agri-environment schemes, hygiene rules and extension services
Sitio de Monfurado	Local development NGO, LAG, Municipality of Montemoro-o-Nuevo	General: Different local development initiatives	University of Evora	*Generally speaking, biodiversity conservation is A priority, but not THE priority for most stakeholders.*	There are different driving forces playing against HNV conservation. Farmers should be convinced that HNV conservation is the best option on the long term, for the sustainability of their farming system.	Demonstrate to farmers the interest of HNV management
Dalmatian Islands	National parks (in some parts), LAG	General: Leader	LAG	*The possibilities for agriculture are in favour for biodiversity conservation regardless of the stakeholders priorities.*	HNV is an asset for the development of Dalmatian Islands, overwhelmed by a mass tourism.	Initiate pilot projects
Eastern Hills of Cluj	Naturalist NGO and municipalities	General: Different local development initiatives	NGOs environmentalists; USAMV Cluj Napoca	*Biodiversity conservation is a priority for several environmental stakeholders. The local authorities and local population are favorable to more intensive farming activities and other rural economic sectors.*	Traditionnal HNV farms are left away from the current agricultural development, developing farms are not properly manage HNV farmland	Rebalance policy schemes and more globally rural conditions in favour of HNV farming systems

	Main institution(s) committed in Env/rural management	Initiative for HNV	Who is the HNV broker?	Is biodiversity conservation is a priority for most stakeholders in the LA?	Main message for HNV conservation	The issue is to…
Western Stara Planina region	Municipalities	General: Different local development initiatives	Environmental NGO	*The majority of the influential actors are not in favour of farming activities for biodiversity conservation (except for subsidies). The few innovative farmers/residents in favour of biodiversity are working against the tide.*	Traditionnal HNV farms are left away from the current agricultural development	Rebalance policy schemes and more globally rural conditions in favour of HNV farming systems
Västra Götaland	Municipalities	General, at county level	County Administrative Board	*Biodiversity conservation is not a priority for most stakeholders in the LA today. But on the other hand, there is a strong interest in these subjects, for example, from land owners and keepers, when the issues are raised in structured dialogues.*	There is a need to coordinate actors and to raise awareness for HNV conservation	Initiate pilot projects
The Burren	National Park and Teagasc (extension agency)	Targeted: the Burren programme	National Park and Teagasc (extension agency)	*The development of farming activities irrespective of biodiversity conservation is a priority of most stakeholders but it has been realised through the work of BurrenLIFE that biodiversity conservation can be a component of farming activity.*	The Burren is a national heritage, its encroachement is a loss. Farmers are the best managers and can value winterage. Both nature conservation and farm economy expertises are required.	Continue the sound approach of the Burren programme and expand it

	Main institution(s) committed in Env/rural management	Initiative for HNV	Who is the HNV broker?	Is biodiversity conservation is a priority for most stakeholders in the LA?	Main message for HNV conservation	The issue is to…
Thessalia	Local authorities and National Park of Tzoumerka, Peristeri and Gorge of Arachtos	Targeted, in progress	University of Thessalia	*Most of the stakeholders in the LA have understood the significance of the biodiversity and are indirectly in favor of the conservation of the biodiversity, retaining the extensive livestock production systems.*	The mountains of Thessalia have a natural and heritage value. They are presently re-invested by new farmers willing to develop activities in the context of crisis and strong social demand. Local authorities can accompany and better manage this momentum.	Formalise a charter and a proper space management planning engaging local and regional authorities for the reconquest of mountainous villages and farmland.
Causses & Cevennes	Many: Parc National, Parcs Naturels Régionaux, Entente Interdépartementale	Targeted under the Unesco initiative, still in progress	Environmental NGO, Entente Causses et Cévennes, National Parc	*Biodiversity conservation is not a priority but very often taken into account*	Pastoralism is a word heritage, there is a need to conserve livestock, to the extent it stands on continuing pastoral practices	Rebalance policy schemes in favour of HNV farming systems
La Vera, Extremadura	Local municipalities	Not for the HNV farms of the area	NGO and small farmers association	*Biodiversity conservation is not a priority.*	The pastoral economy is collapsing, this leads to loss in terms of landscape and ecosystem services (forest fires)	Urgently redirect payments towards pastoral farms and address the hygien rules hampering the development of cheese selling

Main literature references used

References for the Livestock Densities calculated in Map 11 : The 10 LA in the livestock distribution map (as modelled by Livestock geo-wiki project – 2005 data at national level)

- Prosser, D., Van Boeckel, M., Xiao, X., Guo, Wint, W., Robinson, T.P., Takekawa, J. and Gilbert, M. (2011) Modelling the distribution of chickens, ducks and geese in China. Agriculture, Ecosystems and Environment 141, 381-389.
- Van Boeckel, Prosser, D. and M., Wint, W., Robinson, T.P. and Gilbert. M. (2011) Modelling the distribution of domestic duck in Monsoon Asia. Agriculture, Ecosystems and Environment 141, 373-380.
- Robinson, T.P., Franceschini, G. and Wint, W. (2007) The Food and Agriculture Organisation's Gridded Livestock of the World. Veterinaria Italiana 43, 745-751.
- Wint, G.R.W. and Robinson, T.P. (2007) Gridded Livestock of the World, 2007. Rome: Food and Agriculture Organisation of the United Nations, Animal Production and Health Division. pp 131.

Andersen, E., Baldock, D., Bennett, H., Beaufoy, G., Bignal, E., Brouwer, F., Elbersen, B., Eiden, G., Godeschalk, F., Jones, G., McCracken, D., Nieuwenhuizen, W., van Eupen, M., Hennekens, S., Zervas, G., (2003). Developing a High Nature Value Farming area indicator. Report to the European Environment Agency, Copenhagen.

Callon, M. (1986). Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. Dans J. Law, *Power, action and belief: a new sociology of knowledge?* (pp. 196-223). London: Routledge.

Klerkx, L., Aarts, N., & Leeuwis, C. (2010). Adaptive management in agricultural innovation systems: The interactions between innovation networks and their environment. *Agricultural Systems , 103*, 390-400.

Opperman, R., Beaufoy, G., & Jones, G. (. (2012). *High Nature Farming in Europe.* Ubstadt-Weiher: verlag regionalkultur.

Paracchini M.L., J.-E.Petersen, Y.Hoogeveen, C.Bamps, I.Burfield, & C.van Swaay. (2008) High Nature Value Farmland in Europe – An estimate of the distribution patterns on the basis of land cover and biodiversity data. Luxembourg: Office for Official Publications of the European Communities. EUR 23480 EN

Piveteau V. (1995) Prospective et territoire, Apports d'une réflexion sur le jeu, Cemagref, collection Etudes, "gestion des territoires", n°15, 298 p.

Tóth G., Gardi C., Bódis K., Ivits É., Aksoy E., Jones A., Jeffrey S., Petursdottir T. and Luca Montanarella (2013), Continental-scale assessment of provisioning soil functions in Europe, Ecological Processes 2013 2:32; DOI: 10.1186/2192-1709-2-32