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**IMPACTS OF INNOVATIONS IN
HIGH NATURE VALUE FARMING AREAS -
SOCIO-ECONOMIC AND ENVIRONMENTAL
PERSPECTIVES**

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<p>Tiivistelmä – Referat – Abstract</p> <p>High Nature Value (HNV) farming systems hold significant natural values but have decreased drastically during the process of agricultural modernization. Biodiversity in Europe is dependent on these extensively farmed areas because they maintain habitats for many endangered species; e.g. 30% of Europe's butterfly species have declining populations and most live in natural and semi-natural habitats. European common agricultural policy (CAP) favour conventional agriculture, leading HNV agriculture in a foul position. HNV areas are often abandoned or replaced with intensive farming practices.</p> <p>Participatory agricultural innovation processes offer solutions to the distress of HNV farmlands. In these processes different actors – such as farmers, entrepreneurs, advisors, NGO and municipality representatives – are brought together to find localized solutions to the challenges of the area. HNV-Link project was active during years 2016-2019 identifying, developing and improving innovations in ten European HNV farming areas. In this thesis I examine the success of innovations in seven Learning Areas (LA) in terms of socio-economic viability, environmental conservation and cultural region.</p> <p>The data in this thesis is both quantitative and qualitative. I use mixed methods- approach where the statistical analysis and qualitative content analysis support each other. I carried out a survey for the LA coordinators where they responded how was the impact of the innovations to social, economic and environmental wellbeing. I complement the survey with data gathered by the project in 2016-2017. I conduct a qualitative content analysis to innovation fiches using Atlas.ti programme and a statistical analysis with IBM SPSS statistics programme with non-parametric tests. I compare the relation of socio-economic and environmental impact of the innovations, explicit aim of HNV conservation, recognition of environmental topics in the fiches and cultural region.</p> <p>Innovations were successful both socio-economically and environmentally. There was a possible synergy between economic and environmental impacts, which indicates economic viability of the LA's improving HNV conservation. Innovations with explicit HNV conservation objective had more positive environmental impact than the ones without. Innovations with high recognition of environmental themes in fiches had slightly more positive environmental impact, but the difference was so weak that they fail to express the environmental outcomes reported in the survey. Congruent patterns didn't occur inside cultural regions which might be due to the similarities of the areas or small sample size. The results display the inherent unpredictability of innovation processes, and the importance of holistic understanding and long-term monitoring of them.</p>			
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<p>Tiivistelmä – Referat – Abstract</p> <p>Luonnonarvoiltaan merkittävät High Nature Value (HNV) maatalousalueet ovat vähentyneet maailmanlaajuisesti maatalouden modernisaation myötä. Luonnon monimuotoisuus on riippuvaista näistä alueista, sillä ne ylläpitävät habitaatteja lukuisille uhanalaisille lajeille. Esim. 30% Euroopan perhoslajien populaatioista on laskussa, ja suurin osa niistä elää HNV tai vastaavilla maatalousalueilla. EU:n maatalouspolitiikka suosii perinteistä, intensiivistä maataloutta, jonka vuoksi laaja-alainen HNV maatalous ei pärjää kilpailussa sen kanssa. Alhaisen tuottavuuden ja haastavien olosuhteiden takia HNV maatalousmaita jää hylätyksi, tai HNV järjestelmät korvataan intensiivisillä menetelmillä.</p> <p>Osallistavat maataloudelliset innovaatioprosessit tarjoavat ratkaisuja HNV maatalousalueiden ahdinkoon. Näissä prosesseissa tuodaan yhteen eri toimijoita – maanviljelijöitä, yrittäjiä, kansalaisjärjestöjen, kuntien ja valtioiden edustajia – etsimään paikallisesti perusteltuja ratkaisuja alueiden ongelmiin. Vuosina 2016-2019 toiminut HNV-Link projekti identifioi, kehitti ja edisti innovaatioita kymmenellä Eurooppalaisella HNV alueella. Tässä tutkielmassa tarkastelen projektin seitsemän toiminta-alueen innovaatioiden menestystä sosiaalis-taloudellisen elinvoimaisuuden sekä ympäristön hyvinvoinnin kannalta.</p> <p>Aineistoni on sekä määrällistä että laadullista. Käytän mixed-methods lähestymistapaa, jossa tilastollinen analyysi ja laadullinen sisältöanalyysi tukevat toisiaan. Tein kyselyn toiminta-alueiden koordinaattoreille, jossa he vastasivat millainen vaikutus innovaatioilla on ollut alueen sosiaaliseen, taloudelliseen ja ympäristön hyvinvointiin. Täydennän kyselyä projektin 2016-2017 keräämällä aineistolla. Suoritan laadullisen sisältöanalyysin projektin keräämille innovaatioiden kuvauksille Atlas.ti ohjelmalla ja tilastollisen analyysin IMB SPSS tilasto-ohjelmalla ei-parametrisin menetelmin. Vertailin innovaatioiden sosiaalis-taloudellisten ja ympäristönsuojelullisten vaikutusten, HNV suojelun ensisijaisen tavoitteen, innovaatiokuvausten ympäristönsuojelullisten aiheiden tunnistamisen sekä kulttuurillisten alueiden suhdetta.</p> <p>Innovaatiot olivat menestyksekkäitä niin sosiaalis-taloudellisesti kuin ympäristölle. Taloudellisen ja ympäristöllisen menestyksen välillä oli mahdollinen synergia, mikä viittaa siihen, että taloudellinen menestys alueilla edistää HNV piirteiden säilymistä alueella. Innovaatioilla, joiden erityinen tavoite oli HNV suojelu, oli positiivisempi vaikutus ympäristölle kuin niillä, joilla tavoite ei ollut ensisijainen. Innovaatioiden kuvauksissa, joissa ympäristönsuojelulliset teemat tulivat eniten esille, oli hieman positiivisempi vaikutus ympäristöön. Ero oli kuitenkin niin heikko, että kokonaisuudessaan niissä ei ole onnistuttu kommunikoidaan koordinaattoreiden raportoimia seurauksia ympäristölle. Kulttuurillisten alueiden sisällä ei ilmennyt yhteneviä kaavoja, joka voi johtua alueiden samankaltaisuudesta tai pienestä otoksesta. Tulokset korostavat innovaatioiden ennalta arvaamatonta luonnetta, sekä prosessien holistisen ymmärryksen sekä pitkäaikaisen seurannan tärkeyttä.</p>			
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Abbreviations

CAP	Common Agricultural Policy
HNV	High Nature Value
LA	Learning Area
QCA	Qualitative Content Analysis

1. Introduction

Intensification of farming as a part of the trend of agricultural modernization during the past decades have been the main driver for biodiversity and ecosystem service loss globally (Díaz et al. 2020). Since 1970, agricultural production, fish harvest, bioenergy production and harvest of materials have caused drastic changes in freshwater, terrestrial and marine ecosystems, leading to around 25% animal and plant species being threatened globally (ibid. 2018). The conventional intensive and large-scale farming methods weaken the capacity of agroecosystems to preserve biodiversity (Chappell, LaValle 2011). Use of pesticides, synthetic fertilizers and monocropping have caused loss of species in an alarming scale, leading to deprivation of natural enemies of pests, soil organism vital to soil health, other species and elements providing ecosystem functions and services to agriculture (Thrupp 2000). Together with the changing weather conditions this can lead to severe disturbance in food safety due to recurring yield losses (ibid. 2000).

There is evidence of clear interdependence of biodiversity and agriculture, and the important role each plays in the maintenance of the other (Chappell, LaValle 2011). Most of the biodiversity in Europe occurs in the agricultural landscape, which are the only landscapes that mimic open areas maintained by grazing wild animals that have mostly become extinct in Europe (ibid. 2011). Certain styles of low-intensity farming are enhancing biodiversity through maintaining habitats for diversity of species (Andersen et al. 2004). Diversity of plants, insects and birds is high in these areas, many of them being species that do not occur anywhere else (Morelli et al. 2014, Mäkeläinen et al. 2019). In Europe these areas are called High Nature Value (HNV) farmlands; *“areas in Europe where agriculture is a major (usually the dominant) land use and where agriculture sustains or is associated with either a high species and habitat diversity, or the presence of species of European conservation concern, or both”* (Andersen et al. 2004 p. 4).

HNV farming is an important part of a sustainable global food system. Together with agroecological intensification (Kelly et al. 2017) and transition to more plant-based diet (Vinnari, Vinnari 2014), HNV farmlands are contributing tackling problems of food security and nourishment. While many meat and dairy products are high in nutrients but also have high greenhouse gas emissions (Werner et al. 2014), the production in HNV systems, based on semi-natural grasslands, enhances ecosystem services, such as biodiversity and carbon sequestration (Bengtsson et al., 2019). Some of the HNV areas are hard to take advantage of in any other way than extensive grazing. The most

sustainable way of meat production is to produce it in the areas, where it is not possible to cultivate food crops, which would also free up area from feed production (Zanten et al. 2018).

However, these extensive, diverse HNV systems have shown to be declining (Pointereau et al. 2010, Johansson et al. 2008). There is an uneven competition between low-productive HNV farming systems and modern conventional agriculture, and maintenance of these environments is becoming less and less viable for farmers and farming communities. Therefore, they are often abandoned, and the natural values sustained by agricultural activities perish (Poux et al. 2018). HNV farming systems often rely on the traditional knowledge of the area and its specialties which have developed over time through informal networks (Brush 2007, Linares 2007). The areas managed by local communities are facing many challenges globally, spread of unsustainable agriculture being one of the reasons (Díaz et al. 2020). Negative impacts of these pressures include challenging traditional management, the transmission of local knowledge and the ability of local communities to conserve and sustainably manage biodiversity. However, HNV areas are possible to retain for the future through technological, social and mercantile changes (Lomba et al. 2020). One way towards these changes are participatory HNV innovations that combine farming systems viability with biodiversity conservation, and knowledge from diverse sources to find localized solutions for HNV systems.

Innovations are emphasized in 2030 Agenda as a critical means of achieving the sustainable development goals (FAO 2018). In agricultural innovation processes new products, processes or ways to organize are introduced in order to improve the farming towards sustainability. Systems-approach is increasingly adapted instead of single component innovation to meet the diverse needs of farming systems (Klerkx et al. 2010). In this study, I am assessing the social, economic and environmental impact of the HNV innovations identified by EU funded Horizon2020 project HNV-Link in 2016-2019. The project developed and shared innovations that support HNV farming systems and communities by simultaneously improving their socio-economic viability and environmental efficiency (HNV-Link 2017a). It connected ten areas where HNV farming systems were prevalent and where appropriate innovations had been made. These Learning Areas (LAs) spanned across section of Europe. A LA is a multi-actor cluster of stakeholders such as farmers, professional associations, NGOs, local authorities, and education and applied research institutes.

I aim to discover the social, economic and environmental impacts of 29 participatory HNV innovations from seven LA's, observe the relation between socio-economic and environmental factors and tease out some of the driving forces and patterns behind the success of innovations. My study is interdisciplinary in nature and the literature used is from many different scientific fields. Mostly it touches ecology, sociology and economics in the context of agroecological systems and HNV farmlands. In the study, I undertake a mixed methods approach, integrating statistical analysis and qualitative content analysis.

2. High Nature Value farming

Concept of HNV farming was developed in 1990s for conservational needs in the EU. HNV farmland areas are semi-natural grasslands, extensive mosaic landscapes and areas hosting species of conservation concern, which are between natural and intensively cultivated areas (Paracchini et al. 2008). The latter ones are pastures, meadows and related vegetation communities, such as species-rich arable land and permanent crops. HNV farmland accounts for approximately 32% of all agricultural land within the EU - about 74,7 million hectares (Andersen et al. 2004) (Figure 1). The concept is applied only in Europe but farming systems corresponding to HNV definition can be found also in other parts of the world.

2.1. Environmental characteristics

Conservation of biodiversity in Europe depends on the continuation low-intensity farming systems (Oppermann et al. 2012). These areas, including large scale grazing systems favour certain species that would not occur in disturbance-free environment and thus, drives for biodiversity. Besides biodiversity, HNV and equivalent systems are associated with other ecological values, such as carbon sequestration, reducing fire risk, reducing soil erosion and nutrient leaching compared to conventional systems (Moreno et al. 2018).

HNV farmlands encompass diversity of different farming systems. They are mostly farmlands with a high proportion of semi-natural vegetation (type 1) but can be also semi-natural grasslands sometimes in combination with annual and perennial crops (type 2) or farmlands supporting rare species or a high proportion of European or world population (type3). Type 3 often overlap with

types 1 and 2 but there are some exceptions; e.g. Great Bustard (*Otis tarda*) and Little Bustard (*Tetrax tetrax*), an endangered bird species, are associated with agricultural areas with low vegetation diversity (Andersen et al. 2004).

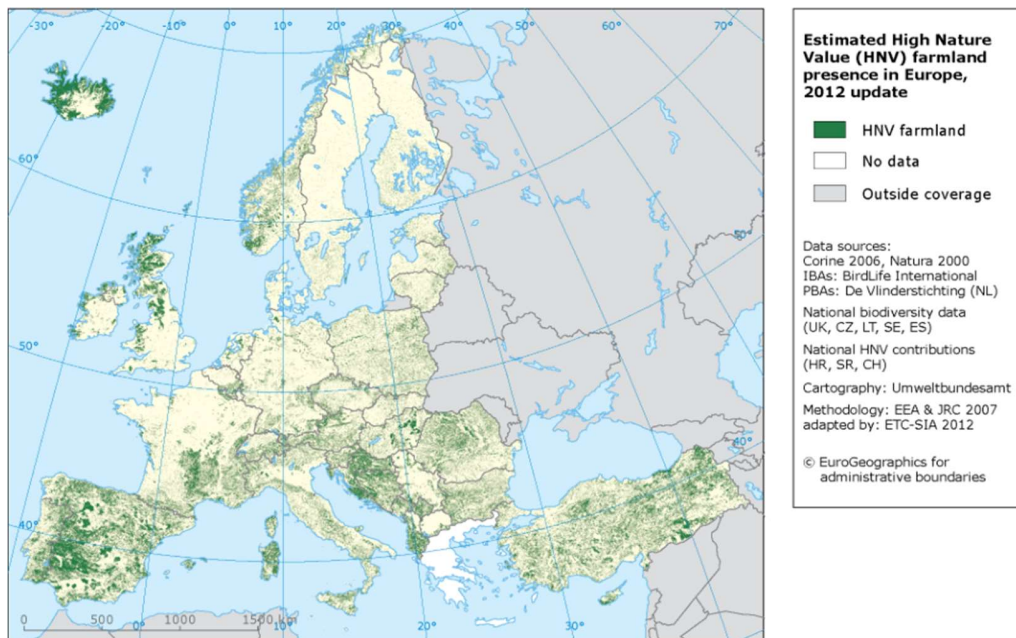


Figure 1: Estimated HNV farmland presence in Europe 2012. Source & copyright holder: European Environment Agency (EEA)

Land intensification and land abandonment are a leading cause of the degradation of HNV characteristics at the landscape level (Oppermann et al. 2012). The two phenomena often take place in the same area, e.g. intensified irrigation together with afforestation of *Eucalyptus* in abandoned areas have led to loss traditional agroforestry systems of Spain (dehesas) and Portugal (montados) (Stoate et al. 2009). In France, HNV farmland area is estimated to decrease by 68% between 1970 to 2000; from 21.3 million hectares to 6.9 million in 2000, meaning a total loss of 14.4 million of ha (Pointereau et al. 2010). In the EU, grasslands' conservation status is among the most unfavourable (EEA 2016). Abandonment of practices maintaining species and habitats in low-intensity farmlands lead in loss of biodiversity and ecosystem services. For example, 70% of European grassland butterfly species have declined during 1990-2009 (Swaay et al. 2013).

2.2. Socio-ecological systems with difficult economic realities

Centuries-old practices of extensive grazing and low-input small-scale cropping have shaped socio-ecological landscapes of HNV farmland areas, where social systems and ecosystems are joint in many ways (Lomba et al. 2020). The concept links farming systems and nature holistically, crossing production-economy, environment, and territories, to conserve farming systems and natural areas altogether. This approach requires understanding the development of farming systems in different scales (HNV-Link 2017a; Oppermann et al. 2012). Enhancing environmental benefits of HNV systems is linked to economic and social viability of the areas (Caballero 2007).

Principles of HNV farming have been viable for centuries and were the ones of conventional farming until the green revolution in 1950-60's (Oppermann et al. 2012). After that, HNV farms have not been able to keep up with the modernization of farming; while technological development allowed some areas to increase massively their production, HNV farming systems were unable to take advantages of these developments due to the low intensification potential of the areas. This type of farming systems has a low return on labor, leading to undersized incomes (Swaay et al. 2013). Due to the uneven competition between low-productive HNV farming systems and conventional agriculture, maintenance of these environments is decreasingly viable for farmers and farming communities (Poux et al. 2018).

HNV farming have survived in some areas but policy fails to make it profitable for farmers and farming communities. Common Agricultural Policy (CAP) has been a driving factor to the state of agriculture in the EU member states. During the recent decades, it has encouraged farms to be merged and intensified through direct and indirect financial support to farmers (Oppermann et al. 2012). Farmers need to react to the changing conditions for agriculture under the free market economy and CAP, and especially peasant-like farmers are under pressure to secure their livelihood autonomy in an environment increasingly hostile to their previous ways of living (Szumelda 2019). CAP reform 2014 aimed to motivate farmers to consider environment in their activities through agri-environment schemes but it failed at extensive farming systems and biodiversity protection (Pe'er et al. 2019). Regardless of having usually lower incomes than non-HNV farms, HNV farms have tended to receive lower levels of CAP support (especially from pillar

1). Even though the importance of supporting HNV farming is well recognized, the EU policy framework has not established a clear strategy for it (Swaay et al. 2013).

Due to these realities, HNV farming systems often prove hard to maintain and, in many places, HNV farming has already disappeared and been replaced with intensive and low nature value systems (Oppermann et al. 2012). Nevertheless, there are remarkable socio-economic advantages of HNV farming. Economically HNV farming systems are more resilient and have low costs (micro-economic level), and they mean less surpluses in market, resulting in smaller market price fluctuations (macro-economic). Small-scale farming considers 'high transaction costs relating to the purchase of inputs and the sale of outputs, the employment of a labour force, high costs for purchased food or poor off-farm employment opportunities and low wages' (Szumelda 2019, p. 59). HNV areas are appreciated in the society, hold environmental and cultural importance and provide significant health benefits, including mental health. The notion of these benefits has led to a re-emergence of peasantry (Ploeg 2010). There is, throughout Europe, an inflow of young people taking over the farm from their parents (Milone, Ventura 2019). In Italy a new generation of innovative young farmers oppose the basic principles of the modernization trend by making a success of running often small-scale farms (ibid. 2019). The keys to success for these farmers are their creativity, innovation, and ability to collaborate with many agents, often from outside the agricultural sphere, together with their sensitivity to new societal demands.

There is an urgency to make changes in economic-political framing conditions to make conserving agricultural practices financially attractive to create sustainable development of rural areas through agricultural practices that enrich the natural values of the area (Szumelda 2019). By improving social services, designing new uses for HNV farming merchandise and new business opportunities, the future of HNV farmland can be safeguarded (Lomba et al 2020). A need for more HNV research has been identified to better understand HNV farming systems' socio-economic characteristics, role of innovation in HNV systems and to develop better technical and management solutions for HNV farming (EIP-AGRI Group 2016).

3. Innovation for HNV conservation

Building necessary social frameworks, fostering businesses, and bringing forth technical and legislative solutions can address the challenges of HNV farmlands (Oppermann et al. 2012). These changes can be realized through agricultural innovation; ideas and solutions combining knowledge from different sources and actors, and a driving force for agricultural development under present diverse situations of uncertainty in agriculture (Leitgeb et al. 2011). Innovation is a multi-dimensional, multilevel and multi-actor process of change where farmers' and rural entrepreneurs' knowledge play a vital role. It considers the farm as an entity and its interrelations with its economic, social and cultural context and through a dedicated process, they bring something new in given circumstances. It combines different types of knowledge into a specific social and institutional context, in order to develop a new idea and put it into practice. (Wiskerke, Ploeg 2004; Klerkx et al. 2010; Knickel et al. 2009)

Innovations are a response to needs, but it also fosters collective adaptation. Recognizing the knowledge, innovations, practices, institutions and values of local communities often enhances their quality of life and the conservation, restoration and sustainable use of nature, which is relevant to broader society (Díaz et al. 2020). The incorporation of farmers' local knowledge, practices and experimentation has been shown to be beneficial in efforts to encourage agrobiodiversity (Thrupp 2000). Little research exists focusing directly on innovation in HNV farming systems, and natural values are seldom explicitly considered (HNV-Link 2017b). The HNV-Link project defined a concept of HNV innovation as an innovation that conserve landscape features or natural value. HNV innovation is a change in the social, institutional, regulatory, market, or farming approach that conserves HNV farming and its characteristics with a specific focus on biodiversity conservation (Beaufoy, HNV-Link partners 2017). While it does not always maintain an explicit nature conservation objective, it does have the effect of contributing to high nature values, even if as a side effect of another objective, e.g. socio-economic viability of HNV farms.

To understand the nature of innovations in HNV areas, I am reviewing literature from relevant research themes: agricultural innovation systems, grassroots innovation and rural sociology.

3.1. Systems approach to agricultural innovation

To understand innovation processes, technical and economic factors use alone are not sufficient to analyse the drivers and barriers but the related social and institutional aspect together with cross- and intra-sector processes are vital to be explored (Knickel et al. 2009). A new understanding of innovation processes pays particular attention to their grounding in local situations, including the relocalisation of knowledge production (Berthet et al. 2016). Sustainable production technologies are rarely possible to generalise because agroecological systems rely upon their local conditions both in production, and to maintain and enhance diversity. The systems perspective gives a holistic view on actors and factors that co-determine innovation (Klerkx et al. 2012). This means mobilizing actors with multiple perspectives and combining scientific and stakeholder knowledge (Leitgeb et al. 2011). Collaborative perspectives on learning, change and innovation are emphasized in literature related to HNV innovation, highlighting multi-stakeholder approach for sustained change (HNV-Link 2017b). Herewith, innovations can better respond to the local social, economic and environmental needs.

The HNV innovations contribute to the rural development of their areas; grass-root level activities that remarkably improve the routines and products of farming (Ploeg et al. 2012). They create shifts from features of farming shaped by modernization processes in agriculture during 1950-1990 epoch. In modernized farming, products are delivered to agro-industries where they are processed and distributed via retail chains, farms are part of wider rural environment, and resources are usually sourced off from farm. As discussed earlier, these effects of modernization have not been favourable for HNV farming, thus the farming activities in these areas have been challenged (Oppermann et al. 2012). Introducing new practices to (re-)internalize processing and distribution within the farm, inclusion of non-agricultural activities into the farm and reducing dependence on external resources are vital practices in developing HNV areas (Ploeg 2002). The emerging significance of consumer input into production is moving the food economy towards more ecological basis and is seen central for sustainable development (Miltone, Ventura 2019). It is reshuffling the prevalent power balances and suggest unravelling of main practices established during the period of agricultural modernization (Ploeg 2008).

3.2. Impacts of innovation process

Innovations can address sustainability problems in businesses by finding tools to cut negative impacts of economic activities on the environment (York, Venkataraman 2010). There is a concern that economically profitable activities often have negative impact on the environment but a recent stream of research has proposed entrepreneurship as a solution to environmental degradation, rather than a cause of it (Gast et al. 2017; Dean, McMullin 2007; Sarkar, Pansera 2017). Entrepreneurship has the capacity to supplement regulation, impact corporate social problems and activism in resolving environmental issues. It can produce more environmentally sustainable products and services that incumbent institutions cannot. Innovations can provide new methods of living and conducting business. Besides creating new products and services, innovations can also create new ways of living sustainably (York, Venkataraman 2010).

The results of a case study in Cuba is an example of multi-stakeholder approach fostering solutions to social and environmental needs (Leitgeb et al. 2011). It suggests that the government's commitment to social participation in knowledge development provides the basic prerequisite for an effective integration of farmers' experiments and innovation in Cuba. The dynamic exchange of ideas at all kinds of interactive meetings, such as workshops or farmers' field schools, have favoured farmer-to-farmer learning, as well as knowledge sharing with research, academic and extension officials. The multi-stakeholders' approach contributes to institutionalize farmers' knowledge. Farmers' experiments and innovations play a major role in improving farm management and thereby can contribute to build resilience at the farming system level as well as for the national agricultural system (HNV-Link 2017a). Success of this type of innovations depend significantly on pre-existing networks (Hossain, 2016). Networking activities are supportive for niches when they work in collaboration with various stakeholders. A common bottleneck for innovation to succeed is a gap between the need for change and farmers' readiness to adjust, and the deficient ability of innovation agencies and advisory services to assist changes (Knickel et al. 2009). Also, it can become barriers to innovation if institutions, administrations and agricultural extension services do not acknowledge that the needs of farmers and changes in society, when they are trying to support changes.

The socio-cultural environment affects how favourable it is for the innovation performance. The "culture-specific" argument by Hofstede (1980) claims that culture has a major influence on the

innovative capacity of the society, and deeply rooted cultural factors affect the way that specific cultural dimensions support or hinder innovation performance. Especially cultures high tolerance to uncertainty together with strong individuality and low power distance are most likely to succeed in innovation (Shane 1993). In Hofstede's classification Nordic countries and countries of Great Britain show these features, whereas Southern Europe score unfavourably for innovation performance (Vecchi, Brennan 2009a). Although the classification has been widely used as a base for cross-cultural studies (see e.g. Harvey 1997; Vecchi, Brennan 2009b), shifts in value classifications have been identified in some countries since the original study (Fernandez et al. 1997). Also, in some cases the within-country variability in culture is almost the same as the between-country variability, so different cultural region occurs not only between countries but within them (Kaasa et al. 2013). Other socio-economic factors also differ between regions of Europe and might have an impact how allowing are the conditions for innovations to succeed (Aidukaite 2011; Rodríguez-Pose, Crescenzi 2008; Rodríguez-Pose, Maslauskaitė 2012).

4. Aim of the study

In my study, I will discuss the impact of HNV innovations to environmental conservation, social and economic viability in their sphere of influence, following the conception of three pillars of sustainability (Purvis et al. 2019). This conception was used in the HNV-link project, where the methodological framework of this study also bases. My aim is to evaluate the impacts of HNV innovations identified and developed in HNV-Link project; what kind of changes they have fostered in corresponding LA's and how they respond to the environmental goals that have been initially set. My research questions are (Figure 2):

- 1) What impact have the innovations is HNV-Link project had on the environmental conservation, social, and economic viability of the LAs?
- 2) What trade-offs and synergies occur between environmental conservation, social and economic viability?
- 3) Do positive environmental impacts of the innovations relate to a) the explicit objective of HNV conservation or b) recognition of environmental themes in the innovation fiches?

- 4) Do social, economic, or environmental impacts of innovations vary among socio-cultural regions?

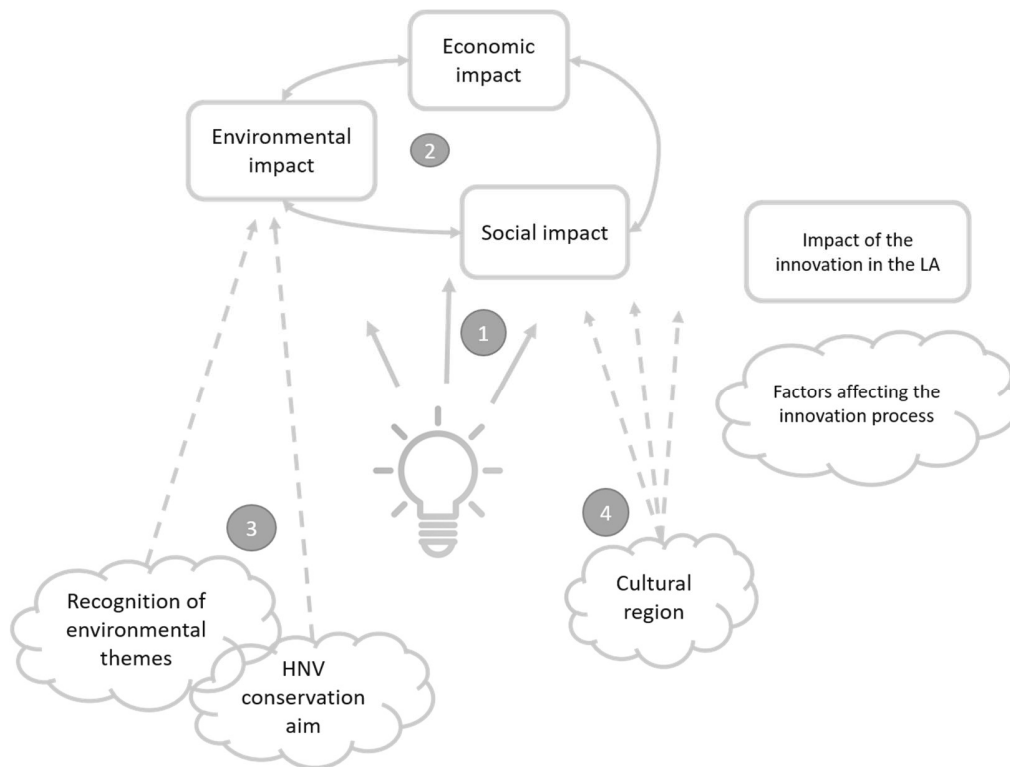


Figure 2: Research questions of this study. 1) Impact of the HNV innovation on the environmental conservation, social and economic viability; 2) Trade-offs and synergies between environmental conservation, social and economic viability; 3) Environmental impact relating to the recognition of environmental themes and explicit aim of HNV conservation in the innovation process; 4) Social, economic or environmental impact relating to the cultural region of the innovation.

My empirical study is observing recognition of environmental themes and explicit environmental objectives, relationship between environmental and socio-economic viability and socio-cultural regions as factors related to the success of innovations. It is important to recognize there are other important factors behind the success of innovations that I cannot include in the study due to scope of the study. In the discussion I reflect my results to the previous literature on the impacts of agroecological innovations, their drivers and situate them in a broader discussion of rural development in HNV areas.

5. Material and Methods

I measure the extent to which the HNV innovations promote, support or weaken the viability of respective LA's on three dimensions: social, economic and environmental (in the context of HNV farmland, it is mainly conservation). In the context of this study, social viability means success in bringing different actors closer to each other, e.g. farmers, stakeholders and researchers. In addition, employment of people and creating stronger communities are part of socially viable innovation. Economic viability includes the economic success of the farming activities, the chance for the farmer to maintain economic security. Environmental conservation focuses on conservation of HNV characteristics, outlined as a contribution to the occurrence of rare species, and support for species and landscape diversity.

5.1. Data

My data are both qualitative and quantitative and have been collected by the project and myself. I run the survey among the LA coordinators of HNV-Link project. It is composed of quantitative data about different impacts of the innovations and qualitative data from the comments justifying respondents' answers on the previous. Data compiled by the project are 1) quantitative data about environmental aims of the innovations from innovation compilation spreadsheet and 2) qualitative data from innovation fiches.

5.1.1. Survey among the LA coordinators

I conducted a survey among the coordinators of each LA of the project about the environmental, social and economic impact of the innovations in the area in question. The LA coordinators are experts on HNV farming systems and have long-term knowledge on their LA (Poux et al. 2018). They are from different scientific fields: agronomy, environmental economy, politics, geography, engineering, biology and ecology. Many have worked as agricultural advisors and in different foundations and NGO's such as European Forum of Nature Conservation and Pastoralism. All LA coordinators have worked or lived in the areas for a long period of time and have a profound understanding of the areas in temporal scale.

In the survey, coordinators responded to questions on the environmental, social and economic impact of each innovation in their LA in a scale from one to five (Table 1). I encouraged the

respondents to give a verbal comment or a justification of their choices. I specified the meaning of each response so that the LA coordinators can congruently choose the number that indicates best the environmental impact of each innovation (full survey Annex 1). I sent the survey to all ten LA coordinators of the project about 41 innovations and got responses from seven LA's on 29 innovations (Table 2) in time. The response from LA of The Burren could not be included because they were delayed. For the cross-cultural analysis I divided the LA's into three regions according to (applied from Berglee 2012): Southern, Western-Northern and Eastern. The regional division was made because the sample size would have been insufficient to do comparison among individual countries.

Table 1: Section of the survey to the LA coordinators about environmental impact of the innovations.

ENVIRONMENTAL IMPACT (1-5): What was the impact of the innovation to the environment of the area? How did it contribute to HNV characteristics of the area (species diversity, habitat diversity, semi-natural vegetation, mosaic landscapes, agroforestry, intensification, abandonment of the farming area)?

1 STRONGLY NEGATIVE: innovation strongly intensified or caused negative trend in species and habitats or abandonment of the whole area.	2 SOMEWHAT NEGATIVE: innovation intensified/caused negative impact on species or habitats and / or abandonment to some extent or over some area.	3 NO IMPACT: Innovation didn't contribute to the conservation of HNV characteristics in the area.	4 SOMEWHAT POSITIVE: innovation slowed down declining of species and/or habitat and/or prevented abandonment of some areas.	5 STRONGLY POSITIVE: conserving HNV or equivalent nature values was an explicit objective of the innovation and it was reached due to the innovation and / or habitat was restored/ species populations were increased or preserved/ abandonment of the whole area was prevented.	Comment on environmental impact; justification or explanation of your choice; example?
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Table 2: All innovations of the study and categorization to cultural regions according to Berglee (2012).

Learning Area (LA), member state	SHORT NAME OF THE INNOVATION	Cultural region
Dartmoor, UK	Dartmoor Commoners Council	West
Dartmoor, UK	Dartmoor Vision	West
Dartmoor, UK	Commons Fire Management Plans	West
Dartmoor, UK	Dartmoor TB Control Plan	West
Dartmoor, UK	Dartmoor Farming Futures	West
Dasland, Sweden	Hälsingestintan - a mobile abattoir	West
Dasland, Sweden	Facilitation of collaborative land use management (FOCLUM)	West
Dasland, Sweden	Facilitation of collaborative land use management, Land use plan (FOCLUM-LUP)	West
Dasland, Sweden	Facilitation of collaborative land use management, Techniques and entrepreneurship for HNV pasture restoration projects (FOCLUM-PRP)	West
Extremadura, Spain	QueRed - The Spanish Network of Farmhouse and Artisan Cheese Dairies	South
Extremadura, Spain	Pastando Garganta - a local HNV-Link project	South
Extremadura, Spain	Farmers building dialogue	South
Extremadura, Spain	Finca Casablanca dehesa farm, grassfed meat and direct sales	South
Cluj, Romania	Integrated management plan for the Easter Hills of Cluj (Natura 2000 site)	East
Cluj, Romania	Agri-environment measure: "Package 6 Grasslands important for butterflies (Maculinea sp.)" in Cluj and Suceava counties	East
Cluj, Romania	Effect of traditional and modern agricultural practices on HNV grasslands	East
Thessaly, Greece	GPS-tracking system to extensive livestock	South
Thessaly, Greece	Public participation and consultation 3D-Mapping tools (PP & 3D-Mapping)	South
Thessaly, Greece	Terra Thessalia: flexible governance	South
Thessaly, Greece	Participatory Guarantee System	South

Causses and Cevennes, France	Innovative regional procedures: Intercommunal Pastoral Agreement	West
Causses and Cevennes, France	Development of direct distribution (agrilocal and farm shops)	West
Causses and Cevennes, France	Creation of governance for the management of the Causses and Cevennes Site	West
Causses and Cevennes, France	Recognition of the quality products	West
Causses and Cevennes, France	Diagnosis and advice for farmers Life+Mil'Ouv project	West
Western Stara Planina, Bulgaria	Natura 2000 payments measure	East
Western Stara Planina, Bulgaria	"Food from the mountain", farmers' association	East
Western Stara Planina, Bulgaria	Linbul farm - suckler cows and on-line direct sales	East
Western Stara Planina, Bulgaria	Mobile advisory teams for HNV grasslands	East

5.1.2. Innovation compilation spreadsheet

HNV-Link project put together an innovation compilation in 2016-2017. All the LA coordinators were asked to answer the questions collected as a spreadsheet in Google Sheets. One of the questions was if conserving HNV was an explicit objective of the innovation. The coordinators responded with number 1 if the conserving of HNV was an explicit objective of the innovation and 0 if not. I took these data to analyse together with the survey results (annex 2).

5.1.3. Innovation fiches

I analysed descriptive data from the innovation example fiches produced by HNV-Link project during 2016-2017 (annex 3). These fiches are template-based descriptions of example innovations from the LA's. Their purpose is dissemination and brokering of innovations through an interactive map- search tool in HNV-Link website so that anyone can look for innovations that suit their needs. In innovation fiches, LA coordinators have described each innovation in the area responding to these questions:

- What are the problems addressed by the innovation example?
- Story of the innovation in a nutshell?
- What does this innovation achieve for HNV farming?
- How does this innovation respond to the HNV-Link innovation themes?
- The process that made it happen and critical factors for success?
- Lessons learnt from this innovation example, and its potential replication?

The analysed fiches were of same innovations as in the survey. Two innovations from Greece, *GPS-tracking system to extensive livestock* and *Public participation and consultation 3D-Mapping tools*, were combined in the fiches and analysed together under title *3D-mapping tools and GPS tracking system*. Thus, the sample size of this set of data was $n = 28$.

5.2. Mixed methods approach

I use mixed methods to analyse the quantitative and qualitative data sets (table 3). First, I analyse quantitative data with non-parametric statistical tests in SPSS statistical analysis programme (IBM SPSS Statistics for Windows, version 25) and to the qualitative data I guide a qualitative content analysis (QCA) in Atlas.ti qualitative analysis programme (version 7). In the end I compare the results of both analysis and I aim for a comprehensive picture of the viability of the innovations.

Table 3: Data and methods of analysis to respond each research question.

Research question	Data (quantitative/qualitative)	Analysis
1) What impact have the innovations in HNV-Link project had on the environmental conservation, social, and economic viability of the LAs?	Survey (quantitative)	Statistical analysis
2) What trade-offs and synergies occur between environmental conservation, social and economic viability?	Survey (quantitative)	Statistical analysis
3) Do positive environmental impacts of the innovations relate to a) the explicit objective of HNV conservation or b) recognition of environmental themes in the innovation fiches?	a) Survey data and innovation compilation spreadsheet (quantitative) b) Innovation fiches (qualitative) and survey (quantitative),	a) Statistical analysis b) QCA, Statistical analysis
4) Do social, economic, or environmental impacts of innovations vary among socio-cultural regions?	Survey (quantitative)	Statistical analysis

The foundation of mixed method research is that combining quantitative and qualitative research provide a better understanding for the research problems than they can give alone. It also enables setting such research problems that cannot be answered with only qualitative or quantitative approach and allows co-operation of research communities of many different fields and paradigms. Another way to think about it is not to distinguish clearly the difference between qualitative and quantitative data but rather understand them as different types of data and mixed methods are giving tools to analyse them appropriately. (Bazeley 2015; Tuomi, Sarajärvi 2018)

5.2.1. Statistical analysis

I used SPSS statistical analysis programme to analyse the quantitative data from the survey, innovation compilation spreadsheet and QCA (Chapter 5.2.2.). I analysed the data with Shapiro Wilk's, Skewness and Kurtosis- tests to see if the data is normally distributed (Cramer 1998; Ghasemi, Zahediasl 2012). Based on the results I continued the analysis with suitable non-parametric tests.

I used Mann Whitney U-test and Kruskal-Wallis H- test to compare independent samples: social, economic and environmental impact of the innovations (Corder, Foreman 2014). Mann Whitney U-test is a nonparametric statistical procedure for comparing two independent samples. The two samples are combined, and rank ordered together. I used The Spearman's Rank to measure the correlation between variables. These statistical methods do not measure causal relationships, only whether groups are different. Correlation does not tell about direction, and it can also be affected by third factor that causes the correlation.

5.2.2. Qualitative content analysis

I analysed the innovation example fiches with Atlas.ti. I used the framework of content analysis presented by Schreier (2014) to find out, to which extent have topics on environmental wellbeing are discussed in the innovation descriptions and is it related to the positive impacts of the innovations. I chose to use the content analysis framework due to the richness of the data and need to systematically categorize the content of it.

QCA method describes the meaning of qualitative material in a systematic way (Tuomi, Sarajärvi 2018). It belongs to the family of qualitative research that is not guided by an existing theory or

etymology, but many different theories and epistemologies can be adapted to them relatively freely. With QCA documents can be analysed systematically and objectively. The aim is to get a description of the phenomenon in a condensed and general form, so the material is organized for the conclusions. However, QCA has been criticized for not being able to make meaningful conclusions from the organized material. I am addressing this concern by QCA being part of my mixed research methodology.

Codes are notes written in the material that organizes what the researcher is handling. They work as a tool for describing the text and testing organizing the material. They can also be used for searching and checking different parts of the text (Tuomi, Sarajärvi 2018).

My workflow followed the "Steps in qualitative content analysis" (Schreier 2014) (the steps in *italic*):

1. *"Deciding on a research question"*
2. *"Selecting material."*

My starting point was that I had rich data from the project. I first selected my material and based on that I started to think how the data would support the quantitative data analysis, and what in it could be related to the environmental outcomes of the innovations. I decided to start looking for quotes where environmental topics were recognized. I also thought about doing the same for economic and social themes I decided to leave that out.

3. *"Building a coding frame"*

I started going through the first fiches and developing the coding frame based on that. I used the auto coding in Atlas.ti so that if any of the search words came up in a paragraph, I defined if it was discussing about environmental welfare and HNV conservation. I paid particular attention to distinguish if the text was describing actual conservation of HNV farmlands or "using" HNV for social or economic purposes. For example, I left paragraph where pro-biodiversity businesses were discussed, although it included one of the search words for CONSERVATION- code.

In some cases, I used free coding (choosing a paragraph and giving it a code even if there were no search words of the code) when wildlife conservation, ecological farming methods or land use practices were discussed but using no words in the search words.

4. *"Segmentation."*

5. *"Trial coding."*

I did a round of coding and simultaneously found new words for environmental themes. Every time a new search word came up, I wrote it in my coding diary. I did another round of coding to see if I get similar results.

6. *"Evaluating and modifying the coding frame."*

I ended up having three codes and several search words for them. Code CONSERVATION represents conservation of wildlife in farming and other environments. It indicates a clear nature conservational focus in the quote, signalling concrete actions, high motivation or other activities (business, social) support for conservation. On the contrary, innovations that discuss nature conservation as a tool for economic goals (e.g. tourism, pro-biodiversity business), they are not coded with the code "conservation". ECOLOGICAL FARMING METHODS code signifies recognition of ecologically sound farming practices. They can have similar benefits for environment as conservatory actions but are directly connected to the agricultural activities. Conservation of e.g. heritage breeds of livestock is included in ECOLOGICAL FARMING METHODS- code. Third code, LAND USE refers to the land use practices that profit HNV conservation or recognition of problems facing HNV farming like abandonment and intensification.

Here are the final codes and search words. Codes are in capital letters and search words are following them:

CONSERVATION: biodiversity, divers*, species, flora, fauna, habitat*, endangered, rare|protect*, conserve*, Natura 2000, indigenous, restor*, vegetation, HNV-pasture, HNV-effect*, preserv*, ecolog*, bird*, butterfly*, HNV-goal, HNV characteristic*

ECOLOGICAL FARMING METHODS: semi-natural, mosaic farm*, agroforest*, agroecolog*, agro-ecolog*, organic*, grazing, extensive*, carbon storage, HNV farm*, HNV-farm*, HNV agriculture, HNVf, dehesa, pastor*, breed, traditional farming

LAND USE: *, abandon*, degradat*, marginal*, moorland

7. "Main analysis."

I ran the analysis with the final coding system.

8. Presenting and interpreting the findings.

To compare the results of the content analysis with the quantitative data, I exported the results to SPSS. I used Spearman's correlation test described previously in the chapter 5.2.2. to compare the relationship between occurrence of environmental topics in the innovation descriptions and environmental impact or conserving HNV being explicit objective of the innovation. To explore more the occurrence of the themes, I categorized the fiches to have low (0-6 codes) or high (more than 7 codes) occurrence of environmental themes in them.

6. Results

On the average, innovations had positive impacts to their LA's (question 1) (table 4). Statistical analysis indicated that of the 29 innovations from seven LA's, majority of the innovations had somewhat (11) or very positive (12) **environmental** impact, as assessed by the respective LA coordinators (Figure 2). Six innovations did not have an impact to the environment of the area. No innovations had a negative impact to the environment. Six innovations had a strongly positive **social** impact in the area, 17 somewhat positive. Four innovations did not have a social impact at all, and two innovations had a negative impact on the social viability of the area. Almost half of the innovations (14) had somewhat positive impact to the **economics** of the area, 11 innovations did not have an impact on the economics of the area at all, and four innovations had a strongly positive impact to the economics of the area.

A Shapiro-Wilk's- test ($p > 0,05$) and a visual inspection of their histograms and normal Q-Q plots show that the data on the impacts of innovations is not normally distributed for both categories of Conserving HNV being an explicit objective of the innovation. Economic impact is not same across categories of environmental impact (Kruskal-Wallis $p = 0,002$) (question 2). There is a positive correlation between environmental and economic impact, that is not statistically significant ($r = 0,643$; $p = 0,000$). Social and economic ($r = 0,076$; $p = 0,695$), or social and environmental impacts ($r = -0,012$; $p = 0,951$) do not correlate.

Table 4: Mean, median, standard deviation of innovations in categories of environmental, social and economic impact (n =29). Values of the environmental, social and economic impact are 2 (somewhat negative impact), 3 (no impact), 4 (somewhat positive impact) and 5 (strongly positive impact). Value 1 would indicate strongly negative impact but there were none in this sample.

	Environmental impact	Social impact	Economic impact
Mean	4,21	3,93	3,76
Median	4	4	4
Std. Deviation	0,774	0,779	0,689

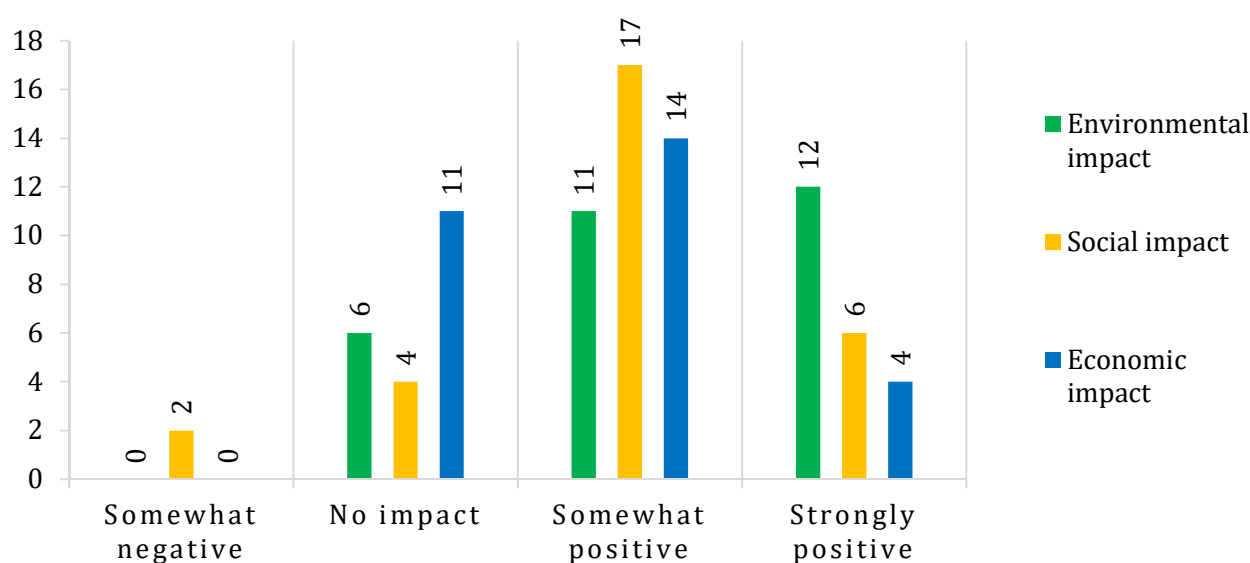


Figure 3: Frequencies of innovations with different environmental, social and economic impacts. Value 2 means somewhat negative impact, 3 no impact, 4 somewhat positive impact and 5 strongly positive impact. Value 1 would mean strongly negative impact but there were none in this sample (n =29).

In the sample, seven innovations did not have an explicit objective of conserving HNV or equivalent values, 21 did. The correlation between environmental impact of the innovations and conserving HNV being an explicit objective was not statistically significant, but there is a directive correlation between the two factors ($r = 0,665$; $p = 0,000$) (question 4a) (Figure 4). Conserving HNV or equivalent values being an explicit objective had a modest positive relationship with the economic

impact ($r = 0,337$; $p = 0,074$) and a small negative relation to social impact of the innovations ($r = -0,136$; $p = 0,483$). Social impact was slightly higher when conserving HNV was not an explicit objective, whereas economic impact was lower.

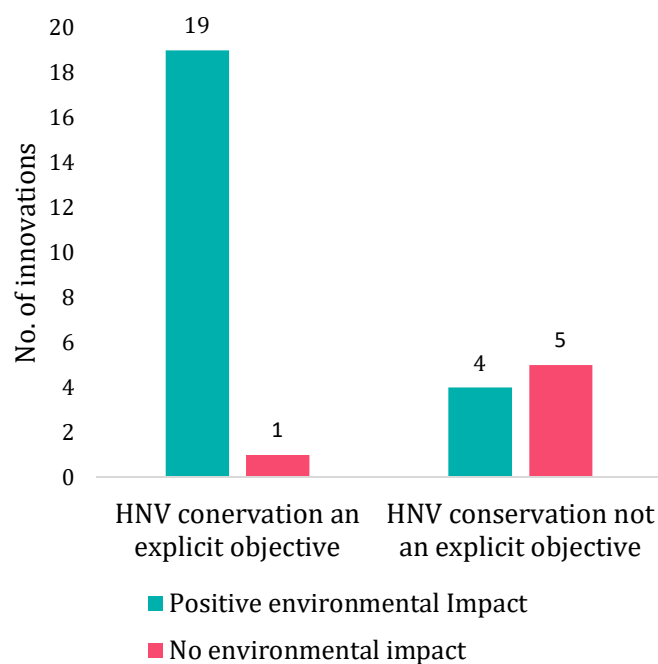


Figure 4: Innovations with positive environmental impact and no environmental impact in categories of “HNV conservation an explicit objective” and “HNV conservation not an explicit objective” ($n = 29$).

Based on the qualitative data-analysis, the recognition of “environmental themes” in innovation descriptions varied a lot (Figure 5) (question 4b). The number of codes per fiche vary between 0-26 and the average number per fiche was 8,3. Based on Spearman’s correlation test, there is a moderate correlation between the occurrence of environmental topics and positive environmental impact, which is not statistically significant ($r=0,446$ $p=0,15$). Eight innovations had somewhat positive or strongly positive environmental impact but low occurrence of environmental themes; zero to six codes on environmental topics (table 5). Three innovations had high occurrence of environmental topics (7-15 codes) but no environmental impact (table 6). Innovations “GPS-tracking system to extensive livestock” and “Public participation and consultation 3D-Mapping tools” both were told not to have environmental impact in the survey, thus the corresponding innovation “3D-mapping tools and GPS tracking system” in innovation fiches was scored with no environmental impact (see 5.1.3.).

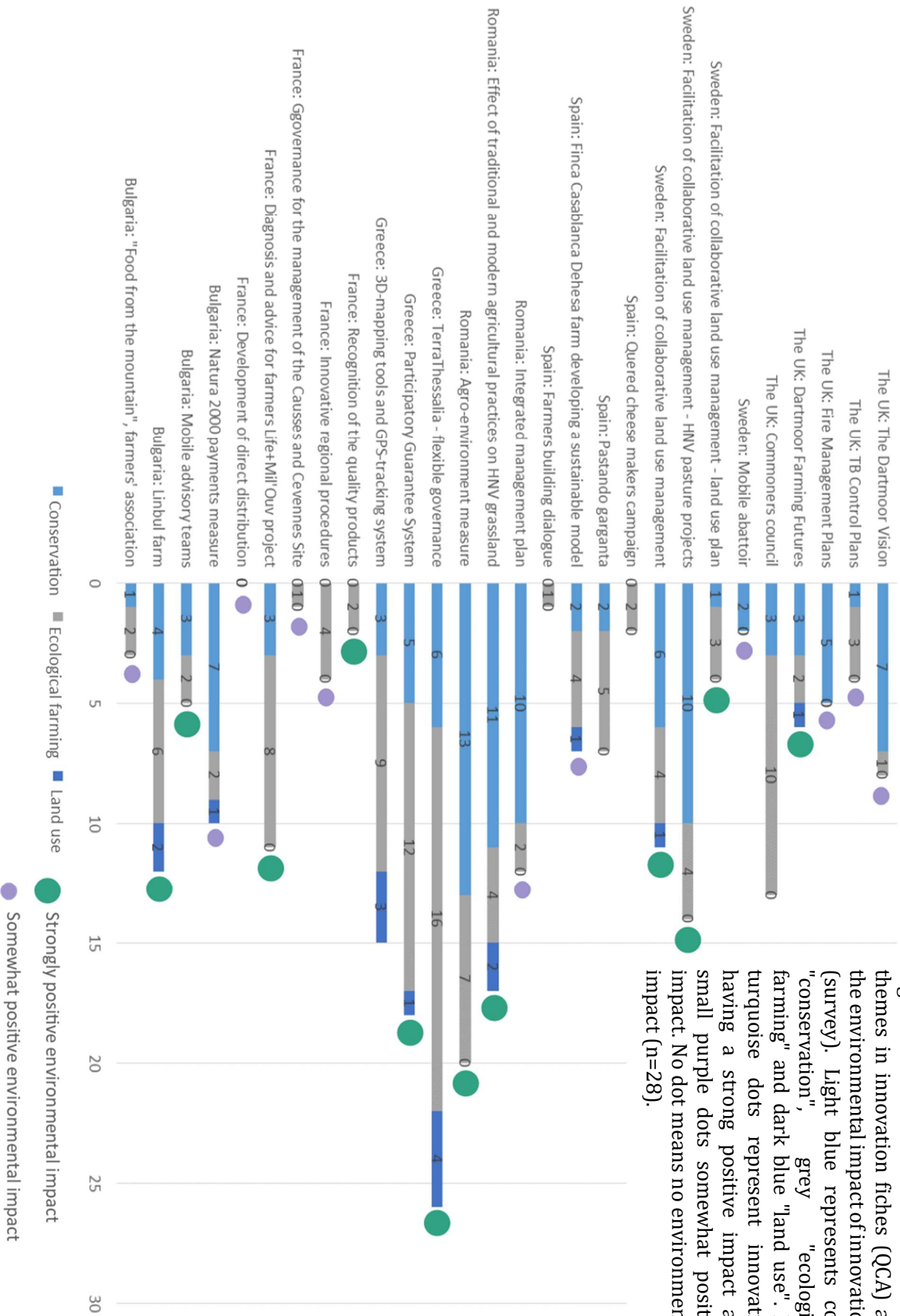
Seven innovations of the study were from Eastern cultural region, eight from Southern and 14 from Western. There were no patterns among cultural regions in the social, economic or environmental impacts of the innovations.

Table 5: Innovations with positive environmental impact as assessed by the respective coordinators and low (0-6 codes) occurrence of environmental themes in the innovation fiches.

Innovation	Number of environmental codes in the innovation fiche
The UK: Dartmoor Farming Futures	6
SE: Mobile abattoir	2
SE: Facilitation of collaborative land use management – land use plan	4
FR: Governance for management of the Causses and Cevennes Site	1
FR: Development of direct distribution	0
FR: Recognition of the quality products	2
BG: Mobile advisory teams for HNV grasslands	4
BG: "Food from the mountain", farmers' association	3

Table 6: Innovations with no environmental impact as assessed by the respective coordinators and high (7-15 codes) occurrence of environmental codes in the innovation fiches.

Innovation	Number of environmental codes in the innovation fiche
UK: Commoners council	13
SPA: Pastando garganta	7
GR: 3D-mapping tools and GPS-tracking system	15



7. Discussion

7.1. Impacts on environmental conservation and socio-economic viability

HNV-Link was primarily a conservational project, so the main emphasis in the environmental themes was incorporated from the beginning (Poux et al. 2018). Due to this, the environmental impact of the innovations stood out as with the highest scores. Social and economic impacts were mostly as well, which indicates that the mostly innovations have had positive impacts in LAs both socio-economically and environmentally (research question 1). The positive socio-economic outcomes can be interlinked to the re-emergence of peasantry, shifting to new, more viable practices in farms and reshuffling the power balances established during agricultural modernization (Ploeg 2002, 2008; Ploeg et al. 2012). Innovations that had potential for even greater environmental impact but were reported as having no impact or modest positive impact, perhaps not enough time has passed for the effects yet to be seen. This was explicitly mentioned in comments of four innovations with no environmental impact: there is a potential for having positive environmental impact with some adjustments or not enough time has passed to see the benefits. This was also a common reasoning for innovations having no economic impact.

In two innovations of Greece (GPS-tracking system and 3D mapping tools) having no environmental impact justified the result by not having an environmental aim in the first place, but the focus was technological, helping for better farming, having indirect environmental impacts and/or they are creating prerequisite for other environmentally aimed innovation. Interestingly, these innovations had initially an explicit objective of HNV (discussed more in 7.2.). In the comment section of the survey, the absence of environmental impact was justified because it was a “technological innovation, enhancing public awareness for decision making”. It seems like the explicit environmental aim was lost during the project or the innovation changed its focus to be technological and social. Similar cases have happened before in HNV areas. For example, in upland pastoralist system in the French the Atlantic Pyrenees, production of regional speciality cheese caused intensification of fodder production in the area in order to keep pastoralism economically viable although the original aim was to conserve the natural values (see O’Rourke et al. 2016).

Some innovations with no economic impact had benefits only for individual farmers' economics, so LA coordinators concluded to record them having no economic impact as the question was about a change for the whole area. 'Dartmoor Commoners Council' innovation in the UK imposed additional costs on graziers, but they balanced by some benefits when claiming Basic Payment scheme, so the outcome was more or less the same as in the starting point. Part of the innovations with no economic impact were told not to be directly economic innovations but might have had or will have some indirect economic implications.

For the four innovations with no social impact, justifications were that social impact was not the aim of the innovation at all, or the impact was so slight that the LA coordinators did not see it being significant. Two innovations that had a somewhat negative social impact were the only innovations having negative impact in any category. LA coordinator of Romania described that the *Agri-environment measure* innovation have created tensions between stakeholders in the LA. This can be interpreted as a 'network failure', where in multi-stakeholder process different actors have their own aims and perspectives that are not seen congruent (Klerkx et al. 2010). Also, conserving HNV was an explicit objective of this innovation and recognition of environmental welfare in fiches high, but still the environmental impact was just somewhat high. Literature supports the importance of creating sustainable social frameworks for environmentally sound activities to take place (Leitgeb et al. 2011). Nevertheless, the majority of the innovations had a positive social impact, which can be due to the nature of participatory projects where the premise is bringing people together for collaboration and co-creation (Klerkx et al. 2012).

When looking at trade-offs and synergies between socio-economic and environmental impacts, I found a possibility for a synergy between environmental and economic impact (question 2). Thus, the concern of a trade-off between environmental and economic goods (York, Venkataraman 2010) was avoided. In these circumstances, the economic viability has possibly supported the conservational aims by building frameworks for making, for example, extensive pastoral activities viable that maintain the disturbance in the landscape creating important habitats for species (e.g. Paschetta et al. 2013). I did not find synergy between social and environmental impact of the innovations which is contradictory to much of the literature stating that sustainable social framework is necessary for environmentally sound activities to take place (Leitgeb et al. 2011, Klerkx et al. 2012). The two innovations with somewhat negative social impact and strongly

positive environmental impact came from the environmental efforts of the innovations causing social tensions. All actors had not understood well enough the larger aim of the project and thus, haven't been willing to change their practices or haven't had the sufficient support from the innovation agencies (Knickel et al. 2009).

7.2. Drivers for successful innovations

Conservation of HNV farmland being an explicit objective of the innovation was linked with positive environmental impact (question 3a). Innovations with no explicit HNV conservation objective tended to have no positive environmental impact but some exceptions occurred in the category of *somewhat positive environmental impact* (FR: Development of direct distribution; FR: Creation of governance for the management of the Causes and Cevennes site; UK: Dartmoor TB Control Plan; SE: Hälsingestintan - a mobile abattoir). Most of these innovations had clearly an economic objective but ended up being beneficial for the environment by maintaining extensive pastoral activities, on which HNV farmlands depend. In case of Swedish *Hälsingestintan - a mobile abattoir* innovation, the LA coordinator did not give a reasoning for the positive impact. On May 23, 2019, Swedish media informed of Hälsingestintan going bankrupt (ATL 2019), which have possibly impacted the overall success of the innovation and made it hard to evaluate the impacts. Still, there might have occurred unexpected environmental benefits through alleviation of transportation of the livestock for slaughtering. The concept of Hälsingestintan have been planned to be established in France which would make an interesting case to compare. That will be a research topic for the future, as the French company Le Boeuf Ethique is still looking for investors to reach the missing budget (Le Boeuf Ethique 15.4.2020).

Can innovations with no HNV conservation objective and no environmental impact be called HNV innovations? By the definition of the project (Beaufoy, HNV-Link partners 2017), yes, but how does the innovation contribute to the conservational aim of the whole project, if it lacks completely the conservational impact? This has been discussed by Poux et al. (2018); innovations with explicit biodiversity conservation objective, so called *ideal* innovations, consist of a common understanding and commitment to long-term biodiversity management of the area. These innovations are often harder to implement due to their complex nature and requires more means in order to be convincing for local actors. In contrast, *practical* innovations put socio-economic viability to the core of the innovation and consider nature conservation as a side-effect. These

innovations are often more appealing due to their response to an immediate need of the LA, but they lack the reason to attain any HNV conservation goals. Although different innovations have their advantages and disadvantages, they are also mutually supportive and sometimes practical innovations are needed to allow ideal innovations to take place. This 'need' for one innovation to allow HNV conservation to happen is hard to assess and in the end require same kind of holistic expertise as the ideal innovation alone (Poux et al. 2018, p. 13).

Although there was a weak positive correlation between recognition of environmental topics in fiches and a positive environmental impact, to some extents the innovation fiches fail to express their environmental outcomes reported by the LA coordinators (question 3b). The innovations with positive environmental impact with a low or zero occurrence of environmental themes in fiches (figure 3) were often shorter and more technical in their descriptions than the ones with high occurrence of environmental themes. In two French cases (*Governance for management of the Causses and Cevennes Site* and *Development of direct distribution*), HNV conservation was not aim of the innovation in the first place, so environmental themes were not included in the fiche, but they resulted in having positive environmental outcomes through maintenance of extensive pastoral activities that maintain open landscapes essential to some HNV areas. For Swedish innovation *Mobile abattoir*, no data was available to explain the positive impact but no environmental themes in the fiche. These fiches are not articulating clearly enough the environmental benefits of the innovation. With the innovations with high occurrence of environmental topics but no environmental impact, the reason to the mismatch was usually that not enough time has passed for them to be fully realised. In innovation *3D-mapping tools and GPS-tracking system* the aim had might been forgotten or changed in between the fiche writing (2016-2017) and my survey about the impacts (2019), because the innovation was described to be 'technological, helping only for better farming management' (survey data).

LA representatives wrote the innovation example fiches for innovation brokering purposes and it is vital for the readers to get a correct understanding of the innovation. When a person – farmer, representative of an NGO, policymaker, etc. - is looking for an innovation for their purpose using existing innovation examples in the fiches, they might not get the right picture of the innovation. For example, even if the innovation of *Direct distribution* in France had somewhat positive impact to the environment, it will not visible from the fiche since topics of environmental conservation

were not brought up. A potential innovation user thus may conclude that an innovation had solely economic impact, and not relevant for conservation. This has a potential adverse impact for further innovation transfer and uptake. The inherent unpredictability of the outcomes is indeed a challenge of innovation networks, and there are many uncertainties actors have to deal with (Klerkx et al. 2012).

Any patterns among the cultural regions could not be identified (question 4). The most plausible reason for this was the small sample size. When designing the research questions, I did take into consideration that the number of innovations in different categories of cultural regions was quite narrow. The areas also have a lot of similarities among themselves, e.g. same EU legislations apply in all these countries, making the legislative framework similar. Also, a process of cultural shifts from the original classification by Hofstede (1980) might play a role here (Fernandez et al. 1997). Some LA's from countries of different socio-cultural region might even have more similarities among themselves than regions inside countries in question (Kaasa et al. 2013). The cultural factors in HNV innovation processes make an interesting and important topic for further research.

The analysis thus demonstrates two possible barriers to the innovation transfer and uptake: mismatch between the initial goals of the innovations and the outcomes, and slow process of delivering them. Results of the innovations become visible usually only after a long time and the complexity and unpredictability is a major challenge in systemic innovation processes. Addressing these challenges require careful planning, long-term monitoring, reflexivity and holistic understanding of the innovation process and the area it takes place (Klerkx et al. 2012, Oppermann et al. 2012, Poux et al. 2018).

7.3. Limitations of the study

Conducting a survey include always certain challenges of defining the questions that all the respondents will interpret them coincidentally. I designed the questions and described the scale of the survey in detail to avoid any ambiguity, but each coordinator always responds to the questions from their own perspectives.

The innovation fiches are for technical purposes, for brokering of the innovations. Overall the language and writing style used in fiches differed a lot which was a challenge; some of them are more descriptive and other ones more technical and straight forwards. This affected how many

times a certain word is repeated in them and led to more codes for fiches with more repetition that does not necessarily mean that the innovations were more environmentally aware.

The coding of environmental themes in the fiches relied much on my own interpretation. I tried to distinguish quotes where wildlife conservation, ecological farming methods and land use were explicitly discussed but sometimes these themes and more business-related topics (e.g. pro-biodiversity businesses) were overlapping and hard to distinguish. Although I repeated the qualitative content analysis to avoid inconsistency, this kind of topics of environmentally aware businesses can involve actual environment conservational thinking, depending on the writer. Sometimes I needed to stop to think if the search words of codes really occurred in the right context to really indicate environment conservation or not, which was not always that clear at all.

All the data was analysed simultaneously but they are from different periods of the project. This was fine in comparison of explicit objective of HNV conservation, that was from the early stages of the project, to environmental impact from the survey I ran 2019. This becomes more confusing with the fiches, as most of them are also written during the first year of the project. Indeed, the outcomes we see today are hard to predict in innovation processes and if the representatives of LA's would write the innovation fiches again now, they might look different. Due to the small sample size, it is hard to generalize the results.

8. Conclusions

The results support HNV innovation being a functioning tool to improve the socio-economic viability of the HNV areas and preventing abandonment and intensification in these areas (Caballero 2007, Oppermann et al. 2012). Social processes have been central in the project. However, the main challenge remains that it takes time to see the results of the work done. Although the project was initially a conservational project, some of the HNV conservation aims were possible to realize through simultaneously improving the socio-economic viability of the areas. I was able to identify a possible synergy between economic and environmental impact. It is important that the conservation of HNV is an explicit objective of the innovation in order to maintain or improve the HNV characteristics. I did not find patterns among cultural regions in this study, but it is an important topic for further research.

Writers of innovation fiches have not always been able express clearly the environmental potential of them, which is an important message for any innovation projects where dissemination is salient. Holistic understanding, long-term monitoring and reflexivity is vital for managing HNV innovation processes.

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Annexes

1. Survey to the LA coordinators
2. Full data sheet
3. Innovation fiches

ANNEX 2: Full data set

MEMBER STATE	LOCATION	SHORT NAME OF THE INNOVATION	FICHE NO.	ENVIRONMENTAL IMPACT	Comment	SOCIAL IMPACT	Comment	ECONOMIC IMPACT	comment	CONSERVING HNV IS AN EXPLICIT OBJECTIVE (1=yes 0=no)	Region	Recognition of environmental welfare in fiches
BG	Bulgaria	Natura 2000 payments measure	1	4	less abandonment of pastures in the LA, but no monitoring data; some practices in early years were not very biodiversity beneficial	4	the beneficiaries of N2K measure form a kind of community for sharing experience	4	provides payments to farmers even for agri land not eligible for CAP Pillar I payments	1	East	10
BG		"Food from the mountain", farmers' association	3	4	less abandonment of pastures, but lack monitoring data	4	collaboration in the association between producers of different local products; something that is not typical in BG	4	adds value at small scale yet only for the members of the association	1	East	3
BG	Western Stara Planina	Linbul farm - suckler cows and on-line direct sales	2	5	considers each aspect of env. and nutritional characteristics of the pastures, encouraging both of them to flourish via targeted practices	4	spreads his knowledge and experiences	4	add value through direct marketing;but has troubles receiving CAP payments	1	East	12
BG	Ponor/Bessaparski hills SPAs	Mobile advisory teams for HNV grasslands	4	5	focus of advises was on biodiversity values of pastures and improved practices of farmers	4	created trust between the advisors and farmers; and among farmers	4	was beneficial for farmers while in operation through support for CAP application and appropriate management and marketing of food products	1	East	5
E	Spain	QueRed - The Spanish Network of Farmhouse and Artisan Cheese Dairies	2	3	Within the LA, we are not aware of any producers that have started or maintained production as a result of this innovation. It may happen in future, in which there may be indirect benefits for HNV farming viability, and thus the pastoral landscape may benefit. In other parts of Spain, this innovation has helped producers to	4	Within the LA, the innovation has brought producers together with experts (1 workshop and a WhatsApp group) and thus greatly improved the flow of information, producers are now much better informed about the legal possibilities for artisan cheese production and sales. At regional and national levels, the same process is	3	Within the LA, we are not aware of any producers that have started or maintained production as a result of this innovation. It may happen in future, in which there may be indirect benefits for HNV farming viability, and thus some beneficial social and economic impacts. In other parts of Spain, this innovation has	0	South	2

					start or maintain production and in some cases this may have benefited HNV farming, but there is no data to demonstrate this impact.		more developed and has brought producers together with different levels of government with positive impacts on legislation.		helped producers to start or maintain production and in some cases this may have benefited HNV farming, but there is no data to demonstrate this impact.			
E		Pastando Garganta - a local HNV-Link project	5	3	The project produced recommendations that potentially could have very positive impacts. But unless the recommendations are implemented by the authorities then there will be no environmental impacts.	4	The project established a very positive dialogue with the farmers of the municipality, and also with local and regional authorities. The project produced recommendations that potentially could have very positive social impacts. But unless the recommendations are implemented by the authorities then these will not happen.	3	The project produced recommendations that potentially could have very positive impacts. But unless the recommendations are implemented by the authorities then there will be no environmental impacts.	0	South	7
E		Farmers building dialogue	6	3	Not enough time has passed for any impacts to have occurred. The dialogue process is new and many years are needed before we can expect direct results on the ground.	4	The innovation has brought farmers together, and facilitated dialogue between them and the authorities, although the process is still at quite an early stage.	3	Not enough time has passed for any impacts to have occurred. The dialogue process is new and many years are needed before we can expect direct results on the ground.	0	South	1
E	Cáceres, Extremadura	Finca Casablanca dehesa farm, grassfed meat and direct sales	4	4	This innovation is a single farm, and it is outside the LA (in a neighbouring district). The positive impacts have been at the level of the whole farm. The management model has improved the habitat quality of the dehesa by reducing grazing pressure and facilitating natural regeneration of the tree cover.	4	Finca Casablanca is a focal point for many projects and meetings concerned with sustainable management of dehesa farms. It is seen as a model and has hosted many meetings and discussion groups, including visits from CSA groups who buy the produce, and international groups.	3	The economic viability of the farm has improved, but this does not significantly affect the surrounding area or the LA.	1	South	7
FR	Languedoc-Roussillon	Diagnosis and advice for farmers Life+Mil'Ouv project	3	5	Innovation aims to improve the	3	Possible gathering of a community of	4	Maintaining economic activities within territories and aiming	1	West	11

					conservation of open habitats		stakeholders around environmental topics		the increase in profits for farmers			
FR	Mount Aigoual	Innovative regional procedures: Intercommunal Pastoral Agreement	1	4	Innovation contributed to maintain extensive pastoral activities	5	It is a social innovation involving all the stakeholders in a common objective	4	Maintaining economic activities within territories	1	West	4
FR	Causses and Cevennes	Creation of governance for the management of the Causses and Cevennes Site	5	4	Innovation aims to preserve open landscape and thus contributes to maintain extensive pastoral activities	5	It is a social innovation involving all the stakeholders in a common objective and recognizing the cultural heritage	4	Maintaining economic activities within territories and furnishing an added value	0	West	1
FR		Development of direct distribution (agricultural and farm shops)	4	4	Innovation contributed to maintain extensive pastoral activities	3	Direct contact with consumers	5	Maintaining economic activities within territories	0	West	0
FR	France	Recognition of the quality products	2	5	Specifications of recognitions of quality can constrain to a minimum rate of pastoralism	4	Gathering of a community of producers in economic and production objectives	5	Maintaining economic activities within territories and aiming the increase in profits for farmers	1	West	2
GR	Thessaly	GPS-tracking system to extensive livestock	3	3	technological innovation, helping only for better farming management	3	technological innovation, helping only for better farming management	3	technological innovation, helping only for better farming management. Indirect economic benefit. Surveillance of the flocks.	0	South	9
GR	Thessaly	Public participation and consultation 3D-Mapping tools (PP & 3D-Mapping)	4	3	technological innovation, enhancing public awareness for decision making	4	technological innovation, helping the communication between the different stakeholders through meetings taking decision.	3	technological innovation, with indirect economic profitability for the community. Common acceptable decision making increasing the success implementation of the decision.	1	South	6
GR	Thessaly	Terra Thessalia: flexible governance	1	5	Maintenance the extensive livestock farming systems. Contributing to the preservation of semi-natural vegetation and the biodiversity	5	Consists of a new social form of collaboration at Thessaly region	5	Improve the economic situation of the farms which participate to the TERRA Thessalia.	1	South	26
GR	Thessaly	Participatory Guarantee System	2	5	Certified the grazing of the animals is guaranteeing the biodiversity, (species	5	Constitute a communal platform, where the producers and the consumers of the TERRA	5	Guarantee the added value to the products and improve the	1	South	18

					diversity, habitat diversity)		Thessalia products has the opportunity to exchange ideas, opinions and knowledge.		economic situation of the Farmers.			
RO	Cluj	Integrated management plan for the Easter Hills of Cluj (Natura 2000 site)	2	4	Improve the management of HNV meadows	2		3	-	1	East	12
RO	Cluj	Effect of traditional and modern agricultural practices on HNV grasslands	3	5	Reduce the decline of hay production	4	Cooperation between researchers and farmers	3	-	1	East	17
RO	Cluj	Agri-environment measure: "Package 6 Grasslands important for butterflies (Maculinea sp.)" in Cluj and Suceava counties	1	5	Reduce the LU/HA density;	2	The AES and the management plan created tensions between different stakeholders.	4	Improve the economic situation of HNV households	1	East	20
SE	Dalsland and national	Hälsingestintan - a mobile abattoir	4	4	No data to prove it	4	No data to prove it	4	No data to prove it	0	West	2
SE	Dalsland and Bohuslän district	Facilitation of collaborative land use management (FOCLUM)	1	5	The innovation contributed to restoration of HNV pastures.	4	Innovation brought different stakeholders together and contributed to building trust between them	4	No data to prove it	1	West	4
SE	Dalsland and Bohuslän district	Facilitation of collaborative land use management, Land use plan (FOCLUM-LUP)	2	5	The innovation contributed to restoration of HNV pastures.	4	Innovation brought different stakeholders together and contributed to building trust between them	4	No data to prove it	1	West	4
SE	Dalsland and Bohuslän district	Facilitation of collaborative land use management, Techniques and entrepreneurship for HNV pasture restoration projects (FOCLUM-PRP)	3	5	The innovation contributed to restoration of HNV pastures.	4	Innovation brought different stakeholders together and contributed to building trust between them	4	No data to prove it	1	West	14
UK	Dartmoor	Dartmoor Vision	1	4	Provided a longer term vision and identified the main HNV vegetation to be managed over next 25 years	4	Provided confidence to farming community that future is farmed landscape	3	No direct link but may have convinced some farmers that they had a future on the moorland.	1	West	8
UK	Dartmoor	Dartmoor Commoners Council	5	3	Potential to influence (positively) moorland management still not fully realised.	5	Enabled farmers to govern own regulations and control bad farming practice. Farmers policing other farmers has some negative impacts on social cohesion.	3	Imposed additional costs on graziers but balanced by some benefits when claiming Basic Payment scheme (pillar 1 payments)	0	West	13

UK	Dartmoor	Dartmoor TB Control Plan	4	4	Enables cattle grazing to continue. Cattle grazing is essential to some habitats and priority vegetation.	5	Farmer led initiative that encourages farmer cooperation and to take responsibility for actions to secure improved land management for HNV areas.	3	Enabled some farmers to continue to graze cattle on the moorland.	0	West	4
UK	Dartmoor	Commons Fire Management Plans	3	4	Improved fire fighting reduced numbers of large wildfires and so protected habitats.	3	Some better engagement of farmers in protecting the moorland resource.	4	farmers paid to fight fires	1	West	5
UK	Dartmoor	Dartmoor Farming Futures	2	5	Identified priority habitat and directed land management to these.	4	Encouraged better co-operative working and better understanding of ambition of agreement. Engendered ownership.	4	Improved ownership of AE agreements may have resulted in more farmers seeking to join schemes	1	West	6

ANNEX 3: INNOVATION FICHES

Bulgaria – Food from the mountain

Bulgaria – Linbul farm

Bulgaria – Mobile advisory teams

Bulgaria – Natura 2000 payments measure

France – Development of direct distribution

France – Diagnosis and advice for farmers (Life+Mil'Ouv project)

France – Governance of the UNESCO site Causses and Cevennes

France – Innovative regional procedures: Intercommunal Pastoral Agreement

France – Recognition of the quality products / Collective approaches by breeders

Greece – Public participation and consultation 3D-Mapping tools (PP & 3D-Mapping)

Greece – GPS-tracking system to extensive livestock

Greece – Participatory Guarantee System

Greece – Terra Thessalia: flexible governance / A territorial cluster of valorisation of HNV

Romania – Agri/agro-environment measure: “Package 6 Grasslands important for butterflies (Maculinea sp.)” in Cluj and Suceava counties

Romania – Effect of traditional and modern agricultural practices on HNV grasslands

Romania – Integrated management plan for the Easter Hills of Cluj (Natura 2000 site)

Spain – Farmers building dialogue

Spain – Finca Casablanca dehesa farm, grassfed meat and direct sales

Spain – Pastando Garganta - a local HNV-Link project

Spain – QueRed - The Spanish Network of Farmhouse and Artisan Cheese Dairies

Sweden – Facilitation of collaborative land use management (FOCLUM)

Sweden – Facilitation of collaborative land use management, Land use plan (FOCLUM-LUP)

Sweden – Facilitation of collaborative land use management, Techniques and entrepreneurship for HNV pasture restoration projects (FOCLUM-PRP)

Sweden – Hälsingestintan - a mobile abattoir

The UK – Dartmoor Farming Futures

The UK – Commons Fire Management Plans

The UK – TB Control Plan

The UK – Dartmoor Vision

The UK – Dartmoor Commoners Council

Bulgaria – innovation example 3

FARMES ASSOCIATION “FOOD FROM THE MOUNTAIN”

Society for Territorial and Environmental Prosperity (STEP)

www.step-bg.bg/en/

- **Location:** Western Stara Planina, Bulgaria
- **HNV system:** Extensive grazing, mainly sheep and goat on upland pastures, family gardens and orchards, extensive vineyards, forest fruits, honey, dairy cows
- **Scale of operation:** 9 farmers in 4 municipalities in WSP
- **Timespan:** Created in 2016, formal registration at the beginning of 2017
- **Keys to success:** Commitment of members, their enthusiasm to work together for establishing a regional brand, developing the region and helping each other. The forthcoming funding opportunities (RDP, LAG, etc.) also motivated the formal aspect of the establishment of an association.



Figure 1 Food from the mountain logo

Problems addressed by this example

The main problem of people living and working in this HNV area is receiving fair payment for their high quality products and diversifying their business activities. The association is perceived as an entity which will facilitate both: i) helping producers to produce better quality, innovative products and selling them at a competitive price, and ii) diversifying the sources of income by developing tourist product «wine and food trail in Western Balkan mountain (WSP)», bringing families with children for on-the-farm experience.

Story in a nutshell

The association of farmers and small business operators from WSP mountain region «Food from the mountain» was established in 2016. The association has 9 founding members with the following profiles: Farmer, raising Replyana local sheep, managing HNV pastures under agri-environment measures and producing sheep cheese and yogurt, lamb and sheep meat; the sheep are grazing April until December; Farmer raising cows in HNV grasslands area; extensive grazing; forthcoming production of hard cheese, cream and butter; Farmer raising goats, extensive grazing, HNV pastures management; production of pressed cheese caciota type and white Bulgarian cheese; Farmer raising sheep and cows – extensive grazing; production of cheese and yogurt; Farmer raising cows extensively; production of several types of kashkaval; Goat farmer; extensive grazing; production of pressed goat cheese French style; Honey producer – in conversion to organic honey; Producer of jams and marmalades from forest fruits; Wine producer; small quantities wine from own vineyards in the region;

The association aims to promote the region as an area of alternative tourism offering clean food, traditional products, food and wine tasting, guided tours, and to preserve natural resources on which their businesses depend. Currently the members of the association participate together in weekly farmers' market in Sofia, national fairs and events.



Figure 2 Milk from the mountain label



What does farmers’ association “Food from the mountain” achieve for HNV farming?

The association helps HNV farmers to receive fair income for their farming practices and to diversify their activities. Farmers participate as association in the open days and farmers markets – one or two farmers travel to the destination and sell the products of all farmers.

Achievements

The innovation has just started so it has not achieved a lot for HNV farming yet, but it has the potential to make HNV farming (livestock grazing in semi-natural pastures) more profitable and thus preserve it from extinction. It also promotes the ideas of pro-biodiversity businesses, sustainable community development and nature protection.

Economics of HNV farming

It is expected that the innovation will help achieving better prices and lower costs (economy of scale thanks to joint marketing efforts) of HNV farms. It also creates diversification in income, developing regional image as area for clean local food and wine tasting, alternative tourism, support to pro-biodiversity business which rely on good quality natural resources.

Maintaining or improving HNV values

Preserved nature is perceived as a main asset by the members of the association and its preservation is a focus of its activities.

How does “Food from the mountain” association respond to the HNV LINK innovation themes?

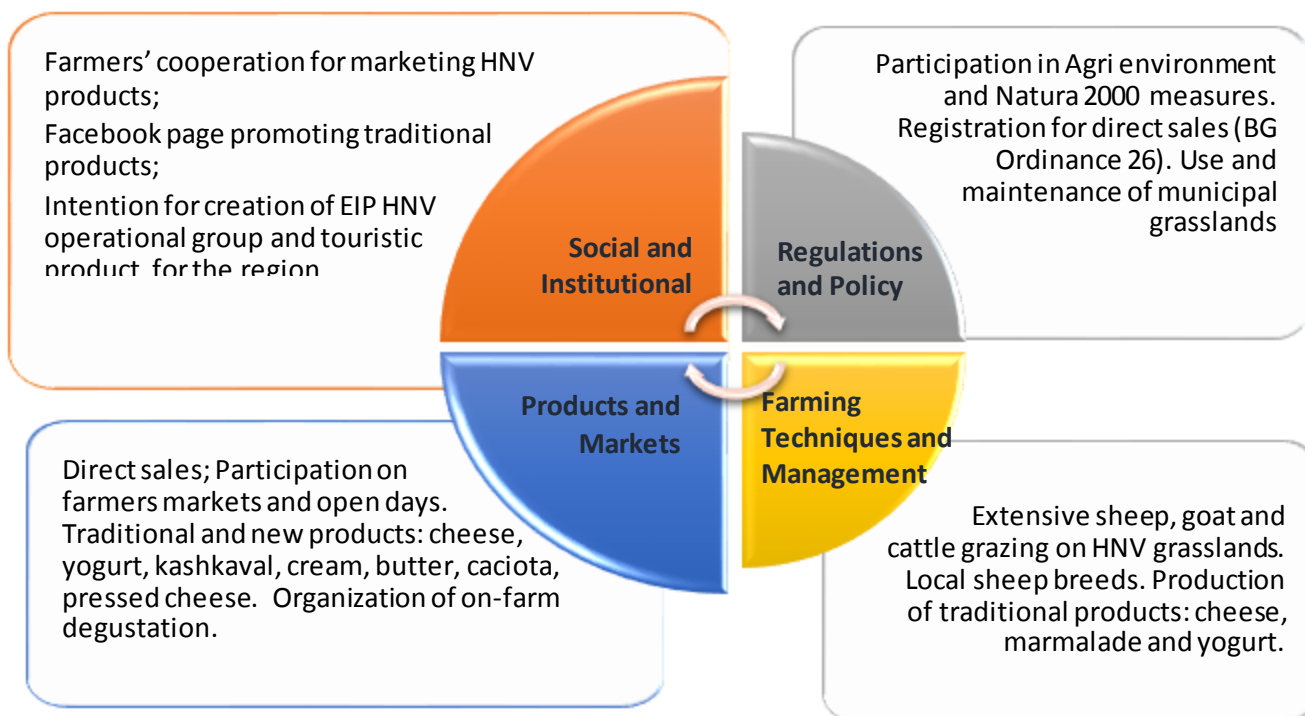


Figure 3 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

The process that made it happen and critical factors for success

- The main driver of the innovation to happen was the 9 year work of Bulgarian society for protection of birds (BSPB) in the region aiming to support HNV farmers to add value to their products, close the production cycle and gain fair payment for their work, thus preventing them from ceasing their businesses.
- Mutual trust between farmers is a key factor for the success of the innovation.



Figure 4 Saturday farmers market in Sofia



Figure 5 Sheep herd of a member of the association

Actors and roles: Most of the members of the association have been supported by an NGO project « Linking nature protection with sustainable rural development», a BG-Swiss project. Based on mutual trust and common ideas for development, part of the project beneficiaries decided to create an association.

Institutional context that made it possible: The forthcoming funding opportunities (RDP, LAG, etc.) also motivated the formal aspect of the innovation, i.e. the establishment of an NGO (association).

Resources: funding, staff etc.: The transaction costs for establishing the association are within EUR 250 ; members volunteered to do the job associated with registration. In the near future a part time project manager will be required to organize all common activities. Funding will be sought from the RDP – measure 16.4 and other possible NGO funding sources. There is a LAG in the region, which could also provide funding for part of the ideas of the association.

Processes: There are 3 lead figures –sheep and goat farmers –who proposed to establish an association and 6 other farmers and small businesses were enthusiastic to join this common initiative. Several meetings took place, one of the farmers undertook the task to prepare all the documents.

Critical factors for success: The main enabling factor was the commitment of members, their enthusiasm to work together, establish a regional brand, develop the region where they live and work, and help each other in all possible ways. Mutual trust was built during the last four years of participation in common activities (BG-SWISS project), farmers markets, fairs and festivals.

Limiting factors, actual/potential problems, and how could they be overcome: An important limiting factor in achieving the goals of the association is shortage of funding. Access to NGO type of funding is not easily available, but the prospects that funding will be secured are good at least for some of the activities of the association. Funding will be raised also from commercial and marketing activities.

Lessons learnt from this innovation example, and its potential replication

Mutual trust and knowledge of each other's products, production capacity and attitude towards quality have been essential for the association to happen. Unifying factors are:

- Similar size of business;
- Similar attitude towards nature, good farming practices , good production practices;
- Same level of understanding of what is a good quality product;
- Being proud of what they do and the quality of their product;
- Professional attitude towards their work;
- Cooperative, supportive and helping people.

Overall lessons from this example, especially from point of view of HNV farming?

Support to local farmers and small businesses – both technical and financial – have been very important for their development and sophistication. Study tours in Bulgaria and abroad in the framework of the BG-Swiss project have played important role in the development of the attitudes of each individual member of the association. Each member is proud of what he/she produces and does not compromise with hygiene and quality of production.

With positive results, more members could be attracted but after careful screening – members must share common understanding of the process of associating, to have the same goals for development, for sustainability, etc.

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

The innovation is replicable to other HNV areas, but so far it is the only formal HNV farmers association in Bulgaria.

Could it be rolled out on a bigger territorial scale? What would be needed to do this successfully?

The innovation can be replicated in other areas of Bulgaria, but specific conditions will be required – some platform to help people to know each other in a positive way; of course not all people could work together, this is a bottom-up process and should not be forced down by a project, funding or any artificial means.



Figures 6 & 7 HNV of the farms participating in the association

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Bulgaria innovation example 2

LINBUL FARM: AN HNV FARM NEAR THE SKY AND ONLINE SALES OF GRASS FED BEEF

Society for Territorial and Environmental Prosperity (STEP)

www.step-bg.bg/en/

- **Location:** Petrohan area (1400 m a.s.l.), Western Stara Planina, Bulgaria
- **HNV system:** Extensive grazing, beef cattle on rough upland pastures
- **Scale of operation:** The farm manages 40 ha with 60 suckler cows
- **Timespan:** Created in 2010 with 30 cows
- **Keys to success:** Farmers enthusiasm, commitment and persistence, use of agri-environment HNV support and Natura 2000 support, on-line sales of the meat



Figure 1

Problems addressed by this example

The innovation is a response to the need to utilize feasibly the alpine HNV grasslands. The usual practice in the 2000-2006 period was that these grasslands were abandoned and encroachment process and loss of important habitats occurred. The introduction of new farming system (beef cows) plus the new rotation grazing techniques contributed to the conservation of more than 300 ha of HNV farmland. The online sales are a new tool for marketing the produce of the farm.

Story in a nutshell

Both Linbul farm owners (Pavlin and Sonya) come from the construction business. When creating the farm they decided to raise free range beef cows in a country and area where the majority of the cows are dairy ones and the consumption of veal and beef meat is limited (not traditional). The first year they finished dairy bulls for slaughtering to explore the climate and the grass and their effect on the cows. Their main aim was to create a herd of beef suckler cows by finishing the offspring. They bought their first 30 Aberdeen Angus cows in the autumn of 2011. Currently they have 60 beef cows and manage 40,5 ha of municipal HNV grassland. The farmer is applying rotational grazing system and believes that this makes the cows happier, improves the value of the grassland and the quality of the meat. They are processing and selling on-line the meat to customers in Sofia. The farm has its own blog (<https://petrohan.wordpress.com/>) and facebook page where Pavlin and Sonya share their active position on the continuous changes in Bulgarian legal acts and procedures that have negative impact on the HNV grasslands systems. For Bulgaria, living and working in a farm outside the settlement is an innovation in itself. The farmer believes that it is an innovation for Europe to rear young beef fed only by grass without corn. The farmers think that they have succeeded to motivate other young families to try their lifestyle and way of farming.



Figure 2 Free range grazing of Linbul cows



Figure 3

What does Linbul farm achieve for HNV farming?

- The farmer restored 300 ha of common HNV grasslands which after 5 years were let out to another farmer. Now he is managing and restoring other 40 ha of municipal HNV farmlands.
- The farmer is one of the first participants in the Agri-environmental scheme for maintenance of HNV grasslands. He suffered from the improper functioning of the LPIS system and the implementation of the “famous” eligibility rule of ‘50 trees and bushes per ha’.
- The farmer is sharing his position openly and tries to influence the decision makers to introduce the necessary changes in the grasslands legislation and implementation procedure in favor of the extensive grazing and livestock breeding.



Figure 4 Pavlin and his guarding dog



Figure 5 Their daughter already helps with farm activities



Figure 6 Pavlin always participates in on the farm trainings

Achievements

The overall achievements of the innovation are the introduction of new farming techniques for beef cattle; promotion of rotational grazing as a farm technique, including changes in the initial rules of the Paying agency that wanted to have grasslands as in a golf field during all seasons; restoration and management of HNV grasslands in remote alpine area; participation in/organization of joint activities with locals, changing the status quo – strengthening local human capital and networking; on-line sales and marketing of meat products; tasty veal meat from grass-fed cattle; blog and facebook followers.

Economics of HNV farming

The innovation is a good example of how dedicated farmers can survive and develop their farms in a HNV mountain area outside the villages. They motivate other families that the sustainable and nature friendly approach can be successful. Currently the socio-economic viability of the farm is stabilised, but it is still dependent on the direct payments and Natura 2000 payments. Maintaining the HNV grasslands and the amazing landscape in the area is also a precondition for developing alternative tourist activities in the region.

Maintaining or improving HNV values

The farmer was one of the first participants in the Agri-environmental scheme for maintenance of HNV grasslands. He spent 5 years (2009-2016) maintaining and restoring the rented municipal HNV grasslands in Petrohan area. When his contract with the municipality expired he was not allowed to rent the same grasslands. He was offered to rent 120 ha grasslands fully encroached by juniper. The farmer refused to rent them and currently manages only 40 ha grasslands, all of which are in Natura 2000 area.

How does Linbul farm respond to the HNV LINK innovation themes?

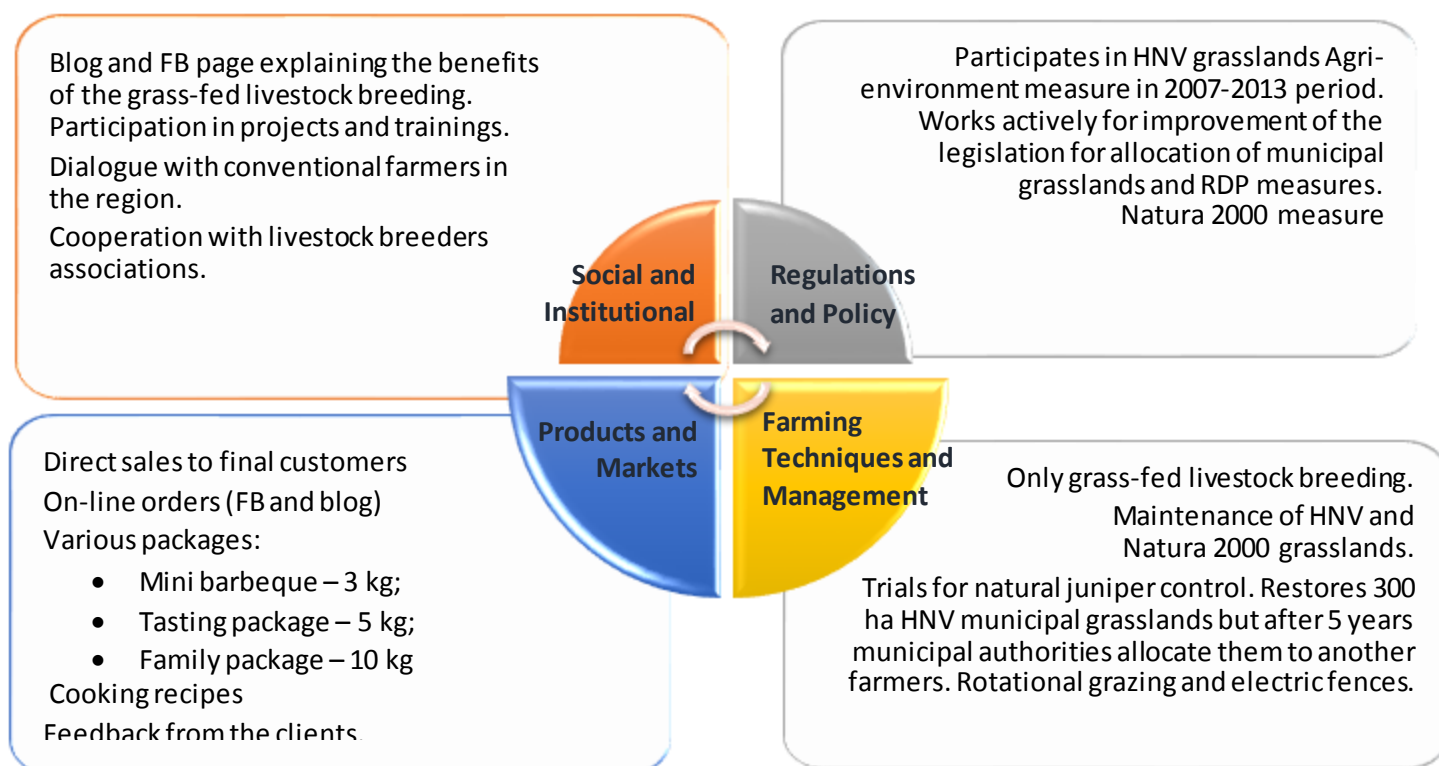


Figure 7 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

The process that made it happen and critical factors for success

- The main initiators were the farmers that decided to rent municipal grasslands and to rear beef cows. Their main motivation was to live in harmony with nature.
- ICT developments and social networks expansion allowed on-line sales.
- Rising awareness of the society about food quality, taste and safety (Linbul's recipes are very well accepted).

Actors and roles: Before starting the direct sales in 2013, Pavlin and Sonya, together with chefs, bloggers and magazines promoted beef meat taste and quality; which is not consumed traditionally in Bulgaria. There was a lack of trained butchers knowing how to prepare beef steaks, so they had to train them.

Institutional context that made it possible: CAP measures had positive and negative impact on farm development.

Resources: funding, staff etc.: Initially they had 1 co-worker that helped them. Currently they manage the farm only within the family.

Critical factors for success: The key success factor is the motivation and decisiveness of the farmer. He is sharing his position openly and tries to influence the decision makers to introduce the necessary changes in the legislation and its procedures in favour of extensive grazing and livestock breeding. Implementation of AEM and Natura 2000 measure (it is stated that socio-economic viability of the farm is dependent on them) despite the heavy administrative procedures.

Limiting factors, actual/potential problems, and how could they be overcome? Institutional and administrative procedures, especially changes in procedures for renting municipal grasslands by livestock farmers, not allowing them to continue managing the same grasslands after the first contract expired. Pavlin has again to start cleaning the newly rented grasslands, without long-term guarantee what will happen when his new contract expires. This is one of the reasons why he is currently applying for the Natura 2000 annual payments instead of undertaking new long-term agri-environment commitments for which he cannot secure the same pastures in the long-term.

Lessons learnt from this innovation example, and its potential replication

- Farmers' commitment, skills and personal belief are crucial for maintaining a HNV farm and farming systems
- Education, self-training and training and knowledge sharing are needed to improve the understanding of the High Nature Value grasslands and their maintenance requirements.

Overall lessons from this example, especially from point of view of HNV farming?

A key lesson is that farmers' commitment, skills and personal belief are crucial for maintaining an HNV farm and farming system. Pavlin really works in harmony with the nature and does not save his efforts to change the existing legal framework in favour of nature friendly grazing practices.

The constant changes in the existing legislation often demotivate farmers. For example, the lack of a provision giving a priority access to the municipal grasslands to farmers that managed them previously, demotivated them to improve the grasslands and prevent the encroachment.

Education and knowledge sharing are a key factor and driving force for the innovation described. Pavlin and his family invest and continuously improve their knowledge about HNV farming, marketing and cooking. They are open-minded and participate in projects with researchers, different field visits and discussions with farmers. They are willing to share this knowledge and to educate the others along the food chain – consumers, chefs, butchers and local farmers, even if with different opinion.

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

The innovation could be replicated in other HNV grassland areas.

Could it be rolled out on a bigger territorial scale?

The innovation can be replicated nationally.

What would be needed to do this successfully?

Motivation and enthusiasm of young farmers and a different life-style in harmony with nature.

Links:

<https://petrohan.wordpress.com/>

<https://www.facebook.com/LinbulFarm/>

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Bulgaria – innovation example 4

MOBILE ADVISORY TEAMS (MAT) FOR HNV FARMERS

Society for Territorial and Environmental Prosperity (STEP)

www.step-bg.bg/en/

- **Location:** Ponor SPA and Bessaparki hills SPA
- **HNV system:** Extensive grazing, extensive and organic orchards and gardens
- **Scale of operation:** 2 mobile teams working in 2 regions in Bulgaria, 200 farmers consulted
- **Timespan:** Operated for approx. 5 years 2007-2011, ended due to the end of GEF funded project, implemented by BSPB
- **Keys to success:** Real commitment and skills of BSPB local team to promote HNV farming practices, existing GEF funding both for the mobile advisory teams and the AE and Natura 2000 pilot grants schemes

Problems addressed by this example

The innovation of setting up mobile advisory teams is a response to farmers' needs for adequate and on-time advice, information and consultation (on biodiversity conservation and links between farming activities and nature conservation, funding opportunities, etc.) in the HNV areas, where the project operated without additional expenses for farmers to visit services usually provided in the municipality/district centres.

Story in a nutshell

The mobile advisory teams were created in the framework of project „Conservation of globally important biodiversity in high nature-value semi-natural grasslands through support for the traditional local economy”, funded by the Global Environment Facility (GEF) and United Nations Development Programme (UNDP) and implemented by Bulgarian Society for Protection of Birds (BSPB) during 2007-2011 period. The aims of the mobile advisory teams were to consult farmers on new knowledge and skills for HNV farming practices; funding opportunities; preparation of business plans; compliance with the EU standards in the dairy sector (good hygiene practices; production practices, storage and use of manure; good agricultural practices, etc.); marketing activities (direct sales; advice on design and standardization of the jars' shape and labelling; linking farmers and consumers, organization of joint visits at fairs and exhibitions, etc.).



Figure 1 Operation areas of the mobile advisory teams



Figures 2 & 3 Creation of organic garden, supported by MAT



Figure 4 Goat farm in Bessaparki hills



What does mobile advisory teams achieve for HNV farming?

- The mobile advisory teams gained the trust of farmers and became part of their daily life: “These people have entered into our daily lives, their contacts are on top of our contact lists”, shared one of the consulted farmers.
- More than 200 farmers were consulted. 83 projects were approved to participate in the HNV pilot grant scheme as a result of their work.

Achievements

In the period 2007-2011, the mobile advisory teams promoted nature-friendly farm techniques. They assisted the development and implementation of pilot AE and Natura 2000 grants schemes for HNV conservation, tailored to the specific regional conditions. Implementation Natura 2000 RDP scheme was initiated and tested by the project team. MAT also promoted the national AE measure for restoration and maintenance of HNV farmland, and gathered proposals for simplification of the rules and the procedure for its implementation.

Economics of HNV farming

The overall amount of the approved projects under the pilot scheme for support of HNV farms was 213 017 EUR. At the same time, the mobile advisory teams provided support to farmers for their applications in the national support schemes as well as compliance with newly introduced legislation. This helped many farmers to remain in business, instead of closing down.

Maintaining or improving HNV values

By the end of 2011, the farmers that were consulted were aware how to maintain the high nature value on their grasslands and why this was necessary. The terminal evaluation of the project reported that the project has directly contributed to the conservation of 36 000 ha of HNV farmland.

How do mobile advisory teams respond to the HNV LINK innovation themes?

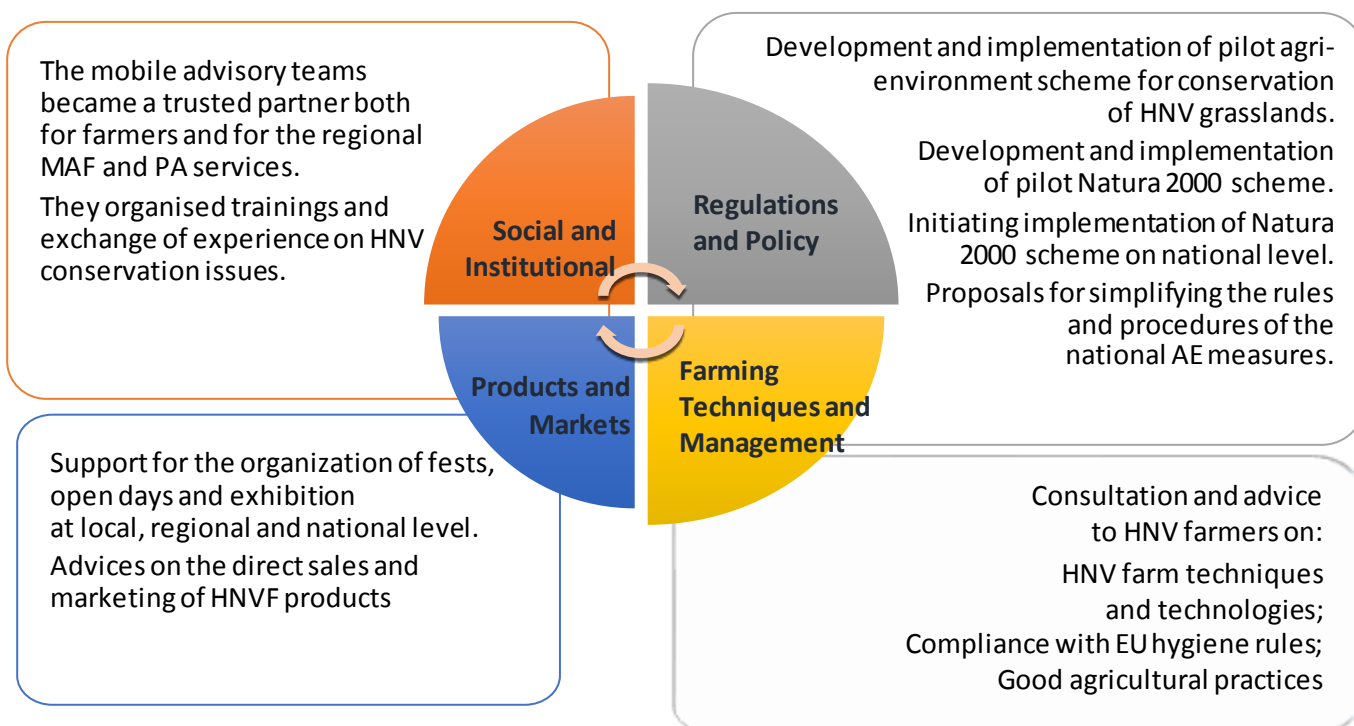


Figure 5 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

The process that made it happen and critical factors for success

- GEF funding for the project so that BSPB could hire experts for the mobile advisory teams
- The skills, personal belief and motivation of the teams helped them to gain the trust of the HNV farmers and the regional MAF authorities.
- The grant schemes that were implemented were tailored to the local conditions and the needs of the HNV farmers.
- But the innovation would not have been successful without farmers' commitment to maintain HNV farming systems.



Figure 6 HNV grasslands in Ponor mountain (WSP)



Figure 7 Organic herbs in Bessaparski hills

Actors and roles: The initiator was BSPB. The original project proposal envisaged only one mobile advisory team to serve both project areas. The adaptive management of the project decided to create two teams in each pilot region to respond better and timely to farmers' needs. The skills, personal belief and motivation of the team helped them to gain the trust of the HNV farmers and the regional MAF authorities. However the innovation would not have been successful without farmers' commitment to maintain HNV farming systems.

Institutional context that made it possible: The innovation was funded under GEF and UNDP funded project „Conservation of globally important biodiversity in high nature-value semi-natural grasslands through support for the traditional local economy“.

Resources: Each mobile advisory team had three experts. Each expert worked approximately 60 months during the project. The average monthly operational costs of the mobile teams were 1300 EUR excluding experts' salaries.

Processes: The mobile advisory teams were created during the project but the previous work and contacts with the farmers/locals and administration/institutions facilitated the process.

Critical factors for success: The skills and the commitment of the experts of the mobile teams were a key factor for success of the innovation.

Limiting factors, actual/potential problems, and how could they be overcome?

The project funding ended, and unfortunately, this innovative approach was not taken up by the government. Institutional and administrative procedures/ burdens/ bureaucracy of the national and EU support schemes and the discrepancies in the LPIS created mistrust amongst the farmers and made them reluctant to participate in the national level schemes.

Lessons learnt from this innovation example, and its potential replication

- Face-to-face contact and farm-specific advice are required to effectively engage farmers and local authorities in conservation of HNV farming systems;
- HNV mobile advisory teams have proved to be an efficient and respected partner both for the farmers and the regional MAF and PA services and could an important part of the delivery mechanism of the future AES.

Overall lessons from this example, especially from point of view of HNV farming?

Advisory services and consultation for HNV farms are better done by a small teams of experts that have background and experience both in agriculture and biodiversity conservation. Direct advices and on -the farm discussions are preferred by farmers and save them time and financial resources.

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

This innovation can be replicable in other areas.

Could it be rolled out on a bigger territorial scale? What would be needed to do this successfully?

HNV MAT at national level should be created for securing long-term viability of the HNV farming systems. However, these teams have to believe in the future of the HNV farming systems.

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Bulgaria – innovation example 1

RDP Natura 2000 MEASURE FOR AGRICULTURAL LAND: annual payments for restrictions laid down in designation orders of Natura 2000 sites

Society for Territorial and Environmental Prosperity (STEP)

www.step-bg.bg/en/

- **Location:** Natura 2000 designated sites in Bulgaria (33% of the national territory)
- **HNV system:** Extensive grazing and mowing
- **Scale of operation:** 333,884 ha in Natura 2000 areas were supported in 2014. The number of the applicants was 10,217.
- **Timespan:** The measure was implemented for the first time in 2011 and will be in force till the end of the current programming period (2020).
- **Keys to success:** Government commitment and funding, annual payments that don't bind farmers with long-term commitments, NGO insistence on implementing the measure.

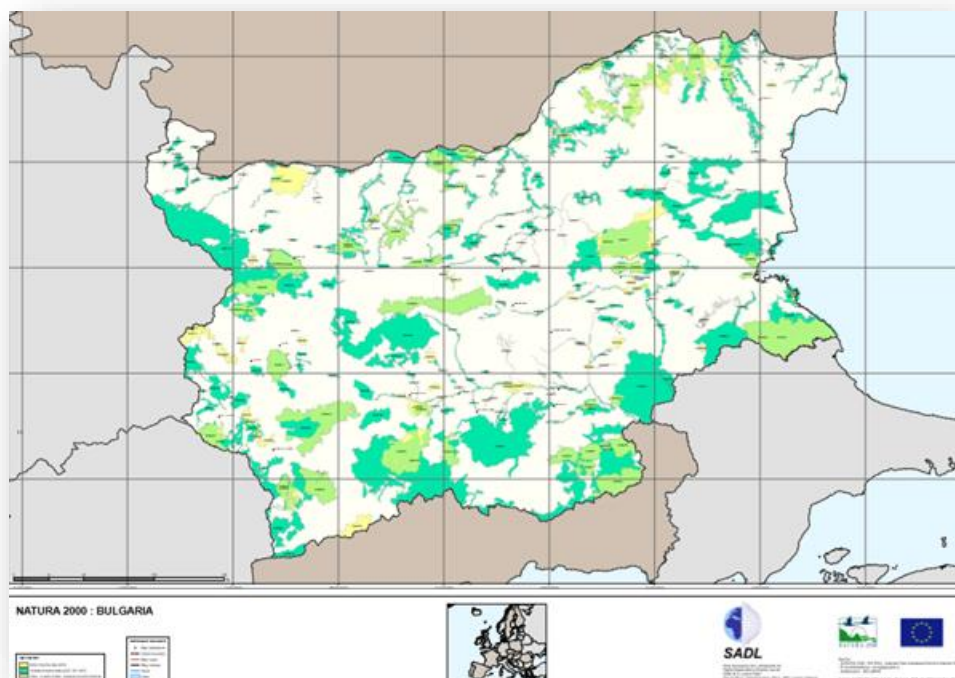


Figure 1 Natura 2000 sites in Bulgaria (Source: EU Commission)

Problems addressed by this example

Natura 2000 measure offers support for HNV farmers in Natura 2000 areas. Farmers can apply for support even if their land is not eligible for direct payments. Natura 2000 measure compensates the farmers in designated Natura 2000 sites for the following restrictions:

- Ban on the removal of landscape features (hedges, single and group trees);
- Prohibition of mowing before 1 July;
- Prohibition of ploughing and afforesting meadows, pastures and commons and turning them into arable land and/or permanent crops;
- Prohibition on the use of pesticides and mineral fertilisers in pastures and meadows;
- Prohibition of mowing before 15 June or 15 July (depending on the region) from the periphery to the centre with fast-moving technology.



Story in a nutshell

Natura 2000 measure is designed for sites with designation orders in force and where there are specific restrictions on agricultural land use. The payments depend on the restrictions that are listed in the designation orders as well as the geographical location of the site. Currently the measure covers only the SPAs. For grasslands the payments vary between €17 and €108/ha. Payments for Natura 2000 sites in ANC are lower than the areas that are not designated as ANC (the assumption being that the loss of income is lower). Similar RDP measure is implemented only in 14 member states.

What does Natura 2000 measure achieve for HNV farming?

- HNV farmland covered by this measure constantly increases. In 2015 410,442 ha were supported (an increase of 18 % compared to 2014).
- Natura 2000 measure supports also grasslands outside of SAPS Pillar 1 eligibility layer

Achievements

The interest for this measure constantly increases. In 2016 the claims for support were 11,543, compared to 10,787 in 2015. The measure is probably the one with easiest application procedures and is preferred by farmers in HNV and Natura 2000 areas. The measure also increases indirectly the knowledge of farmers about nature friendly farming practices.

Economics of HNV farming

Currently the measure covers only the SPAs. For grasslands the payments vary between €17 and €108/ha; but these are provided irrespective of the intensity of the farming system.

Maintaining or improving HNV values

The measure was specifically designed to achieve Natura 2000 conservation objectives for agricultural land, by supporting farmers to implement nature (biodiversity) friendly agricultural practices. However, the payments are not sufficient to motivate the farmers to claim their land for support only under this measure and in many cases they try to make the land “fit” to receive also payments under Pillar 1 support schemes, which means clearance of scrub and trees.

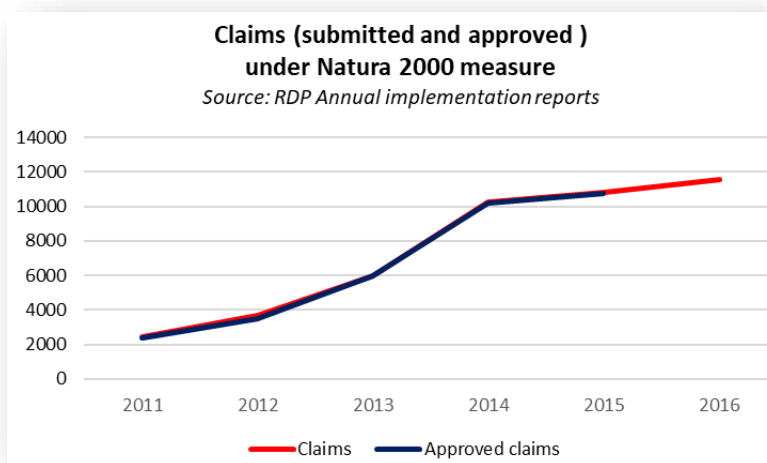


Figure 2

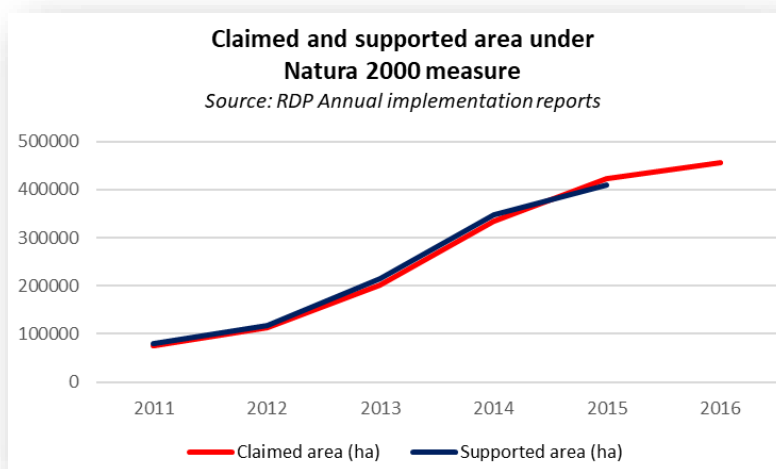


Figure 3



How does Natura 2000 respond to the HNV LINK innovation themes?

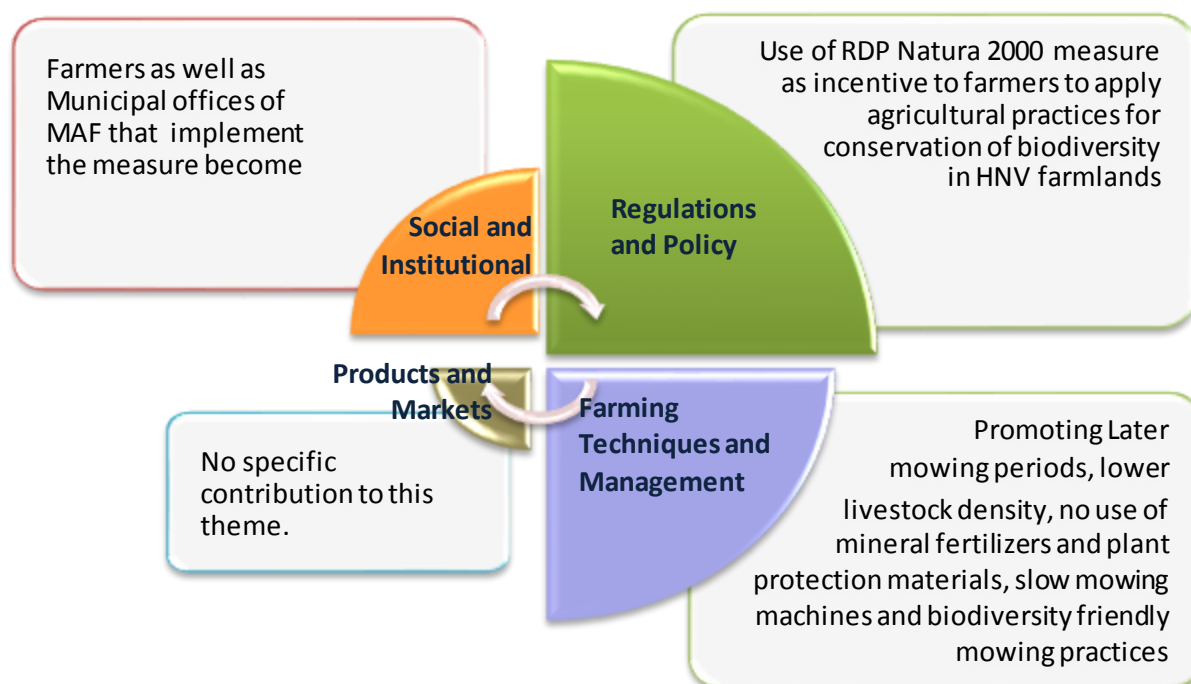


Figure 4 The framework HNV-Link used for evaluating innovations for high nature value farming.

The process that made it happen and critical factors for success

- The implementation of Natura 2000 measure was initiated by conservation NGOs and it was piloted in WSP and Besaparski hills SPAs by a GEF funded project, implemented by BSPB.
- Natura 2000 LPIS layer was incorporated in the LPIS thus making the application procedure very simple and understandable by the farmers
- The commitments under Natura 2000 measure are annual, so that many farmers prefer to apply for that measure rather than undertaking a five-year agri-environment commitment although, payments under Natura 2000 measure are lower than those available in the HNV AE scheme.

Institutional context that made it possible: The measure development is a result of the joint efforts of the Ministry of agriculture and food (MAF) and the Ministry of environment and waters (MoEW) on one side, and the conservation NGOs from the other. The measure was also used to promote the benefits from Natura 2000 sites designation.

Resources: BSPB GEF supported project and working staff in MAF and MoEW

Processes: The measure is implemented since 2011 (RPD 2007-2013) and continues in the current RDP (2014-2020)

Limiting factors, actual/potential problems, and how could they be overcome: Farmers' lack of information and/or interest. More importantly support does not distinguish between intensive and extensive farming systems and may lead to intensification of land use in some areas and farms.

Actors and roles: Bulgarian Society for Protection of Birds, supported by the Bulgarian Ministry of Agriculture implemented a pilot grant scheme under a GEF funded project "Conservation of globally important biodiversity in HNV semi-natural grasslands through support for traditional local economy" that tested Natura 2000 measure in Ponor and Bessaparski hills SPAs. Meanwhile a working group with wide stakeholders' participation was created in the Ministry of Agriculture which helped the design the measure and its implementing procedure.



Lessons learnt from this innovation example, and its potential replication

- Farmers want simple and understandable measures. They prefer short term commitments from their side rather than long-term ones on the same land.
- Although eligibility criteria for grasslands under Natura 2000 measure are less restrictive, the farmers still want to make their grasslands 'fit' to the rules for Pillar 1 SAPS support schemes. A possible approach to solve that is to increase Natura 2000 payments for areas that are not eligible for SAPS support.

Overall lessons from this example, especially from point of view of HNV farming?

Natura 2000 measure could be an efficient instrument to support both biodiversity conservation and farmers income in HNV farmland, but payments need to be re-calculated to take into account SAPS eligibility conditions of grasslands and intensity of farming systems.

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

Currently the measure is implemented only in SPAs. It can be replicated for SCIs, when their orders for designation come into force.

Could it be rolled out on a bigger territorial scale?

Yes, the measure can be further elaborated to support also the recommended activities under Natura 2000 sites management plans.

What would be needed to do this successfully?

MAF experts should make efforts to follow and include in the measure the recommended activities of the approved management plans of Natura 2000 sites. Farmers should be better informed about the eligible conditions and the benefits of both nature and farming.



Table 1 Agri-environment scheme of the Bulgaria Grasslands Project Grant Scheme. This pilot initiated the development of RDP Natura 2000 payments. Source: Kazakova, Y., (2012) Evaluation of the overall implementation, impact and results of the project pilot grant scheme for support of HNV farmers in three Natura 2000 sites in Bulgaria: SPA “Ponor”, SPA “Bessaparski Hills” and SPA “West Balkan Mountains”, Evaluation Report for BSPB and UNDP, Sofia.

Measures	Activities
Area-based measures – Compensatory payments per unit of area paid annually	
A. Natura 2000 compensatory payment	<p>A1. Grasslands management through grazing of habitats with codes 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates, 6220 Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea , 6240 Sub-pannonic steppic grassland, 6250 Pannonic loess steppic grasslands, 62A0 Eastern sub-mediterranean dry grasslands , 62C0</p> <p>A2. Grasslands management – habitats with codes 6510 Lowland hay meadows and 6520 Mountain hay meadows through mowing</p> <p>A3. Grasslands management – habitats with codes 6510 Lowland hay meadows and 6520 Mountain hay meadows through grazing</p>
B. Agri-environment payment	<p>B.1. Transformation of arable land into extensive grasslands aimed at conservation of biodiversity.</p> <p>B.2. Reseeding the grasslands with hayseed in Bessaparski Hills</p>
Investment measures – financing (90%) is based on approved projects	
C. Non-productive investments	<p>The purchases of C.1. Slow grass cutting machines; and C.2. Electro-pastures;</p> <p>The establishment of: C.3. Shelters (cattle-pens) and huts for herds and people in the mountains aimed at stimulating pasture in remote areas;</p> <p>C.4. Watering-places;</p> <p>C.5 Pits for disinfection and prophylactics of the animals.</p> <p>The placement of C.6. Visibility signs; and C.7. Bird cages, platforms and perching posts; C.8. Designation of pedestrian and cycling routes;</p> <p>C.9. Maintenance and C.10. construction of small natural water basins in the grasslands;</p> <p>C.11. Planting of trees (single or group of trees) from local species and their maintenance for 2 years;</p> <p>C.12. Purchasing of shepherd dogs;</p>
D. Productive investments	<p>D.1. Modernization and improvement of the milk farm production</p> <p>D.2. Grassland management</p> <p>D.3. Activities connected with diversification of the agricultural activities and conservation of the local products</p> <p>D.4. Public awareness activities – brochures, open days for demonstration and popularisation of traditional products. Design and maintenance of the farm web site, on-line sales, etc.</p>

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France – innovation example 4

Development of direct distribution – Farm shops and Agrilocal

Conservatoire d'Espaces Naturels Languedoc-Roussillon (CEN L-R)

www.cenlr.org/content/hnv-link/

- **Location:** Throughout France and in the Causses and Cevennes
- **HNV system:** all types of system of production. In the examples that are presented, mostly in pastoral systems.
- **Scale of operation:** large scale (Causses and Cevennes territory covers 3000km²)
- **Timespan:** Depending on the project
- **Keys to success:** Mainly the involvement of breeders and their basic willingness to take action ; in a second hand, mobilisation of funding and communication about the projects



Problems addressed by this example

To improve enhancement of their products to create added value on their farms

To remain master of their products, to be independant of the industries

To create social links and social recognition

To reassure customers

Story in a nutshell

The development of direct distribution combine several categories of example: some which have become fairly current in France over a number of years, others which are more confidential.

Farm shops permit collective and direct distribution. It is increasingly popular with consumers who are looking for a direct link with producers. Many farms shops have developed in France and in Causses and Cevennes territory.

Agrilocal is a platform that brings together suppliers of local products (farmers, food professionals, local shops, etc) and institutional catering purchasers (schools, retirement homes, etc) in a simple, direct and instant relationship that ensures respect for the public procurement code (Code des Marchés Publics).

Currently, it is used by 30 departments and 3 out of 4 departments in the Causses an Cevennes have this virtual platform.

What does the development of direct distribution (farm shops and Agrilocal) achieve for HNV farming?

Achievements

- *Creation of farmers collectives*
- *Mutualisation of sale and communication tools*

Economics of HNV farming



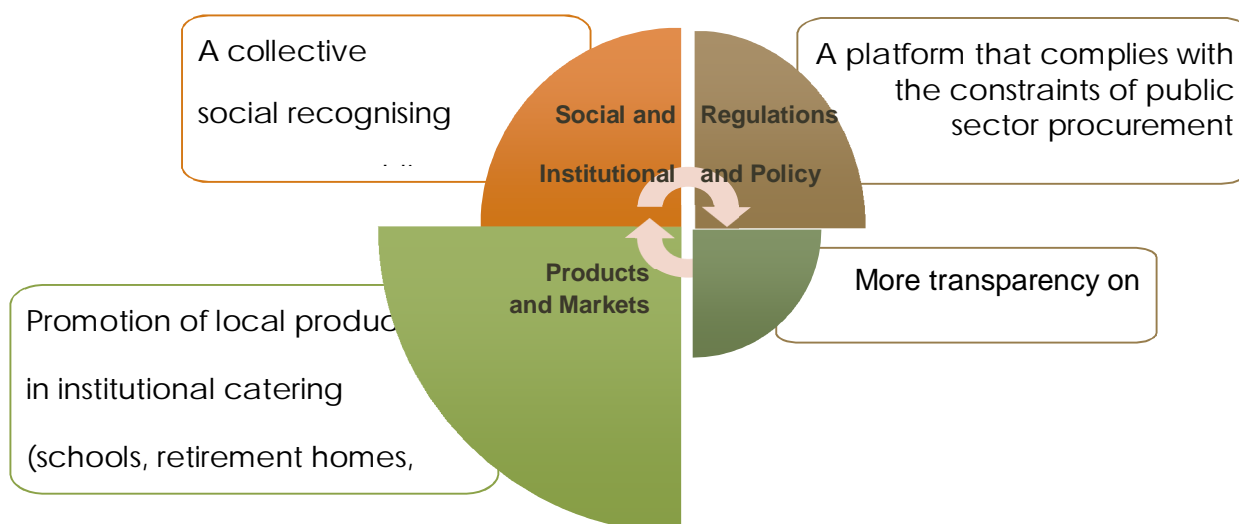
The development of direct distribution improved the economic autonomy of breeders.

Maintaining or improving HNV values

The development of direct distribution is not designed to achieve specifically HNV objectives but it allows to highlight extensive grazing systems and sensibilise customers.



How does the development of direct distribution (farm shops and Agrilocal) respond to the HNV LINK innovation themes?



The process that made it happen and critical factors for success

- Creation of the Technical Task (public institution)
- Concertation of local stakeholders to create management plan and action plan (2016)

The technical task has been created by the 4 departments concerned. It fulfils the mission of implementing the management guidelines.

Actors and roles

Agrilocal platform was developed in 2011 by the Puy de Dome and Drome departments. Currently each departments with this platform need to have employees who animate it.

Farm shops are created by a collective of farmers with the help of institution or specific associations.

Limiting factors

The approach is particularly innovative regarding produce and markets and the regulatory framework but also, to a lesser extent, with respect to social and institutional aspects. On the other hand, it does not involve automatically changes in farming practices.

The principal risks for collectives are misunderstandings within the collective that could lead to its dissolution or to the exclusion of specific people from the collective as well as the lack of funding of the organisation.

The functioning of the platform needs departments employees.

Lessons learnt from this innovation example and its potential replication

The replication of farm shop is easy if a farmers collective want it and if there are enough customers nearby.

Agrilocal platform can easily be replicated too if an institution is motivated to develop it and if local farmers and institutional catering purchasers are interested.

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France – innovation example 3

NEW METHOD OF DIAGNOSIS AND ADVICE FOR BREEDERS (LIFE+ MIL'OUV PROJECT)

Conservatoire d'Espaces Naturels Languedoc-Roussillon (CEN L-R), Idele, Cévennes national park, Montpellier SupAgro, chambers of agriculture

<http://www.lifemilouv.org/>

Location: Southern Massif Central, in particular the Causses and Cévennes

- HNV system: Diversity of pastoral livestock farms
- Scale of operation: Large scale
- Timespan: LIFE+ project lasted 4 years (2013-2017), and has been followed by an appropriation of the method in several territories and by different structures
- Keys to success: Individual and collective accompaniment of breeders and shepherds by pastoral and ecologist experts ; dialogue facilitated helping identify and meet the needs of the different stakeholders ; training and sensitisation in the pastoralism sector with regard to future issues ; production and dissemination of technical references in the field of pastoralism



Figure 1 Advisory visit to a breeder

Problems addressed by this example

Necessity to develop and share a method gathering agricultural and environmental teams and skills to support breeders with new pastoral practices, in order to improve both the conservation status of mediterranean open habitats and their economic sustainability.

Story in a nutshell

The LIFE+ Mil'Ouv method aims at dispensing adjusted and approved management supports to breeders and shepherds, and at enhancing awareness of the importance of eco-pastoral management. At the end of the project, we can state that involved breeders are familiar with the new elements



(pastoral referentials, adjusted method and tools) which facilitate an improved understanding of the problems. This allowed the recommendations to be adopted by breeders who benefited from an advisory visit. This will help improve the conservation status of Mediterranean agropastoral natural open habitats directly.

What does this method for HNV farming?

- Numerous heritage species of flora and fauna linked to Mediterranean pastoral open habitats can be preserved by the maintenance of pastoralism
- It promotes and improves breeders pastoral practices, and highlights the advantages of pastoralism

Achievements

- 8,300 ha of open habitats have been diagnosed within the framework of this project
- 75 eco-pastoral diagnoses answer the farmers' technical questions and accompany them in developing their practices
- 12 technical workshops and 3 training days to share and discuss experiences and know-how
- 1 technical guide to promote knowledge and experimentations
- 1 collective reflection game for pastoral stock farmers: pastoral rummy (construction of a food system, adaptation to different

Economics of HNV farming

Developing pastoral practices can be interesting for breeders to reduce their costs of food supply for their livestock. These agricultural activities create farm products and contribute to trade within their territories (purchase/sale of animals, equipment, buildings, etc.). They also contribute to the dynamics of the territory through their professional activities (tourism, farm visits, discussion between peers, etc.) and personal activities (school, grocery, associations, etc.).

Maintaining or improving HNV values

The approaches are linked to extensive systems using local resources and so support for this type of farming permits the continuation of forms of HNV agriculture in the region. However, the method have a clear agro-ecological objective.

The process that made it happen and critical factors for success

Actors and roles

The LIFE+ Mil'Ouv project was aimed at all those involved in agro-pastoralism: breeders, technicians, students, teachers, and decision-makers. One of the objectives has been to develop and share a method gathering agricultural and environmental teams and skills to support breeders with new practices. It has been allowed the implementation of a close partnership between an association for the conservation, management and exploitation of natural areas (CEN L-R), a national technical research and development institute to support stock-breeding and the agricultural industry (IDELE), a National park (PN Cévennes) and an educational institute for the agro-environment (Montpellier SupAgro). Their common project has been accepted and funded by the LIFE+ program.

Limiting factors

After a 4 years period funded by LIFE+, several discussions have been held with the relevant partners and drivers with regard to the coordination and maintenance of a collective dynamic but it is quite difficult to find new funding opportunities at a large scale. At present, the costs linked to this type of



method would seem more feasible in terms of finance through local public partners. More broadly, there is also a need for all actors in the territories to get involved in favor of pastoralism, but this is not yet the case.

How does eco-pastoral method respond to the HNV LINK innovation themes?

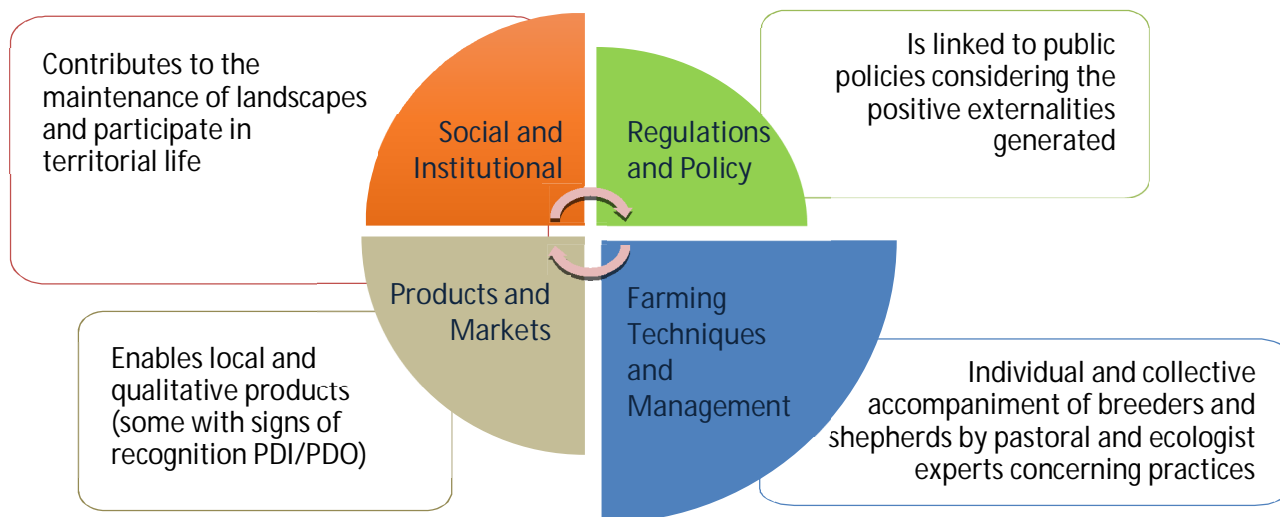


Figure 3 The framework HNV-Link used for evaluating innovations for high nature value farming.

Lessons learnt from this innovation example, and its potential replication

Eco-pastoral method used in supply to breeders needs:

- Can be replicated
- Are adaptable
- Are increasingly agro-ecological
- *But needs public funds...*

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France – innovation example 5

Governance of the UNESCO site Causses and Cevennes

Conservatoire d'Espaces Naturels Languedoc-Roussillon (CEN L-R)
www.cenlr.org/content/hnv-link/

Illustration 1: Causses and Cevennes territory

- **Location:** Causses and Cevennes
- **HNV system:** agropastoral systems
- **Scale of operation:** large scale (Causses and Cevennes territory covers 3000km²)
- **Timespan:** 2012-Present
- **Keys to success:** specific governance, financial support of 4 departments, concertation with local stakeholders



Problems addressed by this example

To coordinate actions to allow the maintaining of pastoral activities

Story in a nutshell

The Causses and Cevennes territory was added to the prestigious UNESCO World Heritage List on 28th June 2011, in the continuing evolving cultural landscapes category, on behalf of Mediterranean agropastoralism.

In accordance with UNESCO guidelines that encourage party States to ensure the participation of a wide variety of actors, site managers, local and regional authorities, local communities, non-governmental organisations (NGOs), other stakeholders and interested partners, a specific governance for the management of this site has been put in place since 1 July 2012. It is organised around three authorities: the Area Conference, the Guidance Committee, and the Technical Taskforce (Interdepartmental Alliance Causses & Cevennes).



Illustration 2: Management plan

What does the governance of the UNESCO site Causses and Cevennes achieve for HNV farming?

- *Mobilization of reflection groupes*
- *Development of collaborative project*
- *Monitoring and dissemination of local initiatives*

Achievements

- *Creation of a network of tourism ambassadors*



- *Observatory of the dynamics of the territory*
- *Organisation of farm visits*
- *Mobilization and concertation for the CAP reforms*
- *Communication tools*

Economics of HNV farming

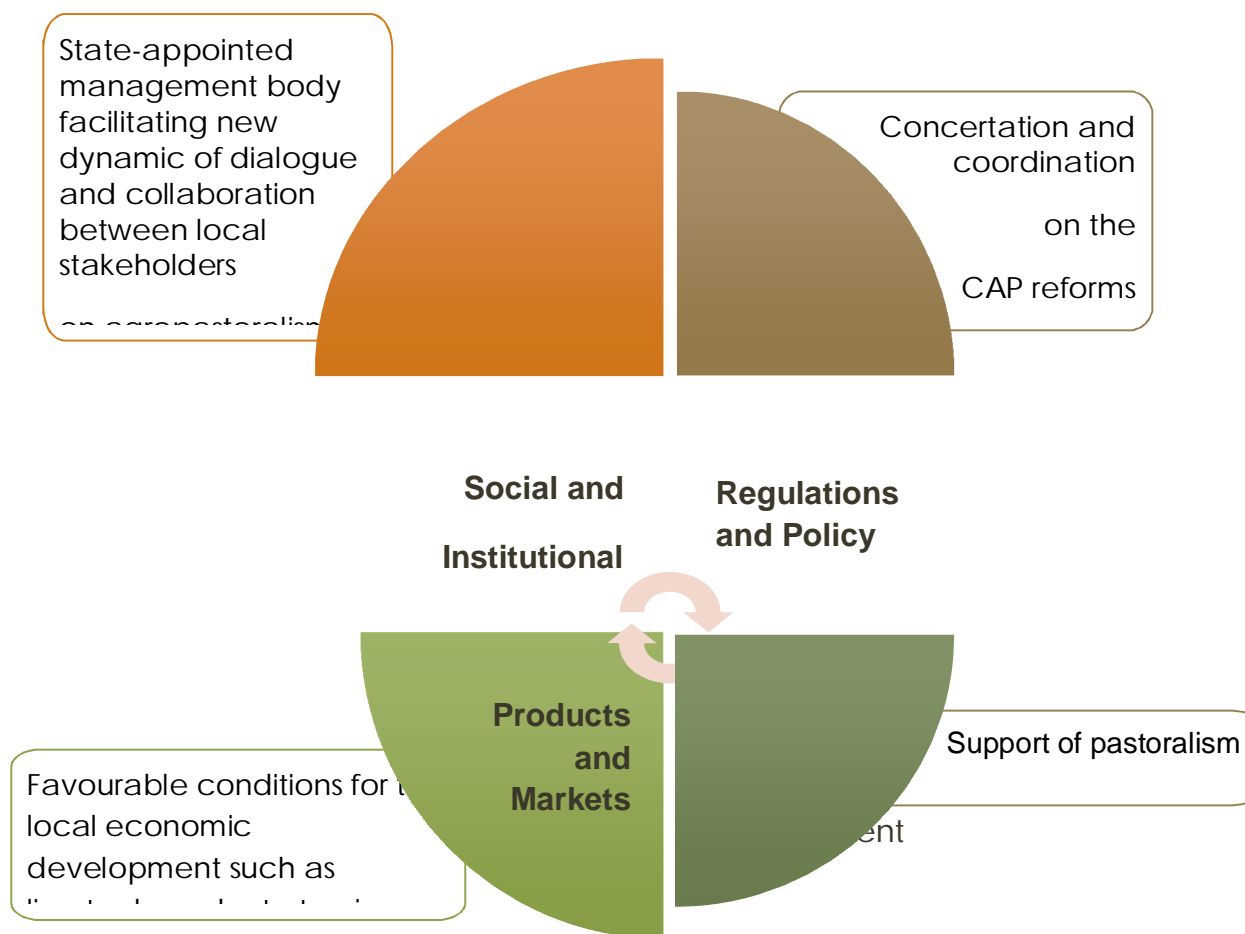
Data is not available on the economic impact of the programme for HNV farms.

Maintaining or improving HNV values

The governance of the UNESCO site Causses and Cevennes is not designed to achieve specifically HNV objectives but it allows federating many local stakeholders to maintaining extensive grazing systems.



How does the governance of the UNESCO site Causses & Cévennes respond to the HNV LINK innovation themes?



The process that made it happen and critical factors for success

- Creation of the Technical Task (public institution)
- Concertation of local stakeholders to create management plan and action plan (2016)

The technical task has been created by the 4 departments concerned. It fulfils the mission of implementing the management guidelines.

Actors and roles

A small team composed of employees responsible for different areas and many local stakeholders (Parks, public-private partnerships, CPIE, Consular Chambers, CAUE, CDT, ADT and ADRT, etc.) working on interconnected areas and themes.

As an operational organisation in the field, the Entente does not aim to replace the jurisdiction of the existing organisations but is in charge of coordinating local initiatives relating to the demands of Property conservation, in order to develop a synergy that helps to enhance and preserve the Causses and Cévennes.

Limiting factors

- Lack of direct communication with the farming community
- Coordinating many actors in a large territory
- Identify financers to achieve specifics projects

Lessons learnt from this innovation example and its potential replication



There is a real necessity of working interconnected. The implementation of this type of this type of operation is reproducible.

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France – innovation example 1

A COLLECTIVE APPROACH FOR AN INTER-MUNICIPAL PASTORAL PACT

Local Community of Communes

<https://caussesaignoulcevennes.fr/competences/pacte-pastoral/>

- **Location:** Southern Massif Central, Community of communes
- **HNV system:** agropastoral systems
- **Scale of operation:** Community of communes
- **Timespan:** inter-municipal pastoral pact signed in 2015 and followed by a 3-years action plan
- **Keys to success:** territorial procedure based on a bottom-up approach and jointly constructed by local stakeholders : mobilization of both breeders, some researchers and local actors permitting the creation of a local covenant in order to maintain and develop the pastoral activities on the territory

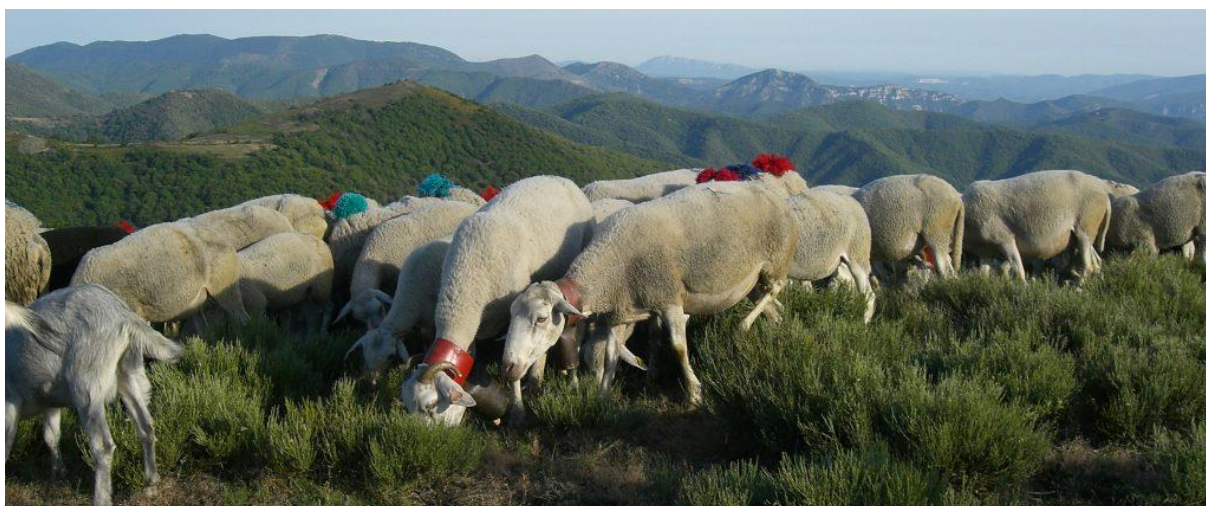


Figure 1 Flocks of sheep gathered on summer pastures

Problems addressed by this example

Land control is a priority issue for maintaining pastoralism in the region, in particular access to land for the installation of young farmers. The mobilization of breeders, with the support of local elected representatives, professional agricultural bodies and researchers has led to the establishment of a regional dynamic around pastoralism.

Story in a nutshell

The Intercommunal Pastoral Agreement (PPI) is a collective regional approach and a project jointly constructed by breeders, researchers and elected representatives. It has enabled the formalisation of local commitment to maintain and develop pastoral activity in the region and was adopted by a ruling of the Community of the Communes of Causses, Aigoual, Cevennes Terres Solidaires in 2015.

Pastoralism was declared as being of public interest and the principal measures of the Agreement are true legal innovations: grazing rights on all areas suitable for pastoral usage – a pastoral priority clause in all property transfers – specific pastoral zoning in planning policy documents.

What does this new territorial approach achieve for HNV farming?

Achievements

This resulted in a feasible action plan in 2016: to make pastoral land available; to ensure the continuation and revival of pastoral activities; organization of the Agreement. Implementation has begun since 2017.

The process that made it happen and critical factors for success

- Procedure jointly constructed with regional stakeholders around a shared heritage.
- Procedure adopted by local elected representatives and supported by the researchers.
- Document taken into account in public policies by the Gard Department, the Region and the State.

How does eco-pastoral method respond to the HNV LINK innovation themes?

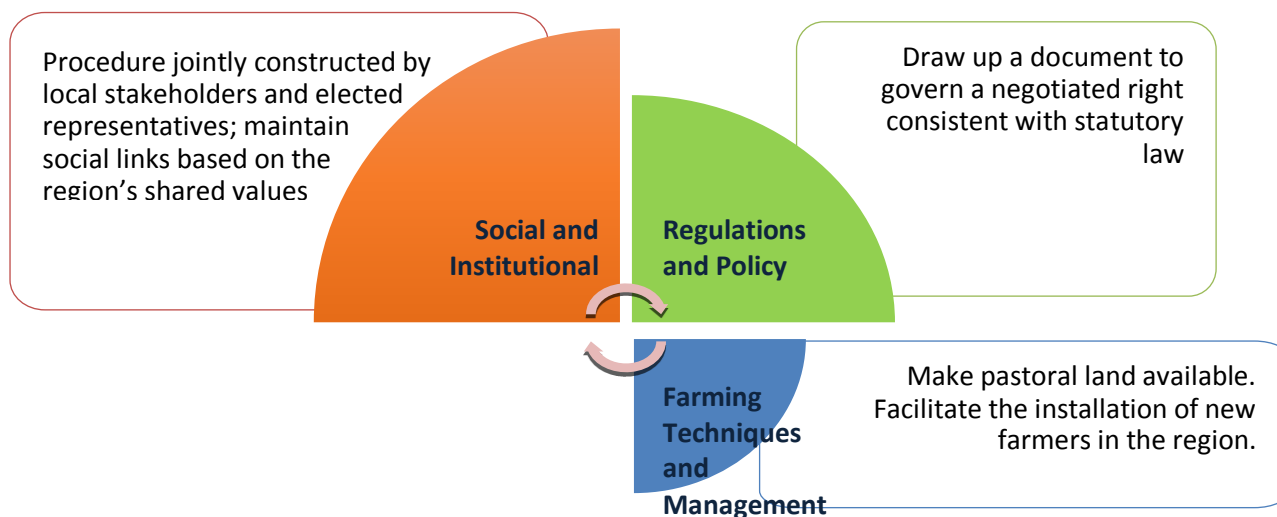


Figure 3 The framework HNV-Link used for evaluating innovations for high nature value farming.

- **Social and institutional:** The inter-municipality pastoral pact is a procedure that has been jointly constructed by breeders, researchers and elected representatives, also involving departmental, regional and national institutions. Working groups, public meetings and other encounters permitted the validation of the various successive versions of the Agreement which was finally adopted by a ruling of the combined communes in May 2015.
- **Legal and statutory:** The Agreement is a document that is not binding for third parties; it is an appendix to the planning policy document and is taken into consideration in public policies by the Gard Department, the Region and the State. The design of the Agreement is experimental and innovative and constitutes a “negotiated right” agreed by all the region’s participating stakeholders.

Lessons learnt from this innovation example, and its potential replication

- Create a methodology guide for the procedure and replicate it in other intercommunal regions.
- Form a small working group to raise the awareness of other intercommunal bodies.

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France – innovation example 2

Collective approaches by breeders - Official labels identifying quality and origin (PDO, PGI, TSG)

Conservatoire d'Espaces Naturels Languedoc-Roussillon (CEN L-R)

www.cenlr.org/content/hnv-link/

- Location: throughout France and in the Causses and Cevennes
- HNV system: All types of system. Mostly in agropastoral systems
- Scale of operation: large scale, depending on the label
- Timespan: depending on the label
- Keys to success: involvement of breeders, mobilisation of funding and communication



Problems addressed by this example

Farmers need to enhance their products, their practices and the recognition of their practices. They need to create added value on their farms. Farmers need also working collectively to enable the delivery of projects that a breeder cannot carry out alone.

Illustration 1: Official labels identifying quality and origin

Story in a nutshell

Collective approaches by breeders to create official labels identifying quality and origin (Signes Officiels de Qualité et de l'Origine - SIQO) and brands have existed in the region for a very long time and it has become fairly current in France over a number of years.

On Causses and Cevennes, the Roquefort PDO have been created 100 years ago but some are very recent and others are being created (Pérail). Currently, there are 2 PGI (Génisse Fleur d'Aubrac since 2008 ; agneau de Lozère ELOVEL since 2008), 2 PDO (Pélardon since 2000 ; Roquefort since 1925), 2 brands (ex : Boeuf fermier Aubrac since 1999).

What does official labels identifying quality and origin achieve for HNV farming?

Achievements

The quality labels have been remarkably successful throughout France and Causses and Cevennes for the commercial recognition they convey. Consumers perceive them as a guarantee of quality. Labels are increasingly popular with consumers who prefer a product with a territory link .

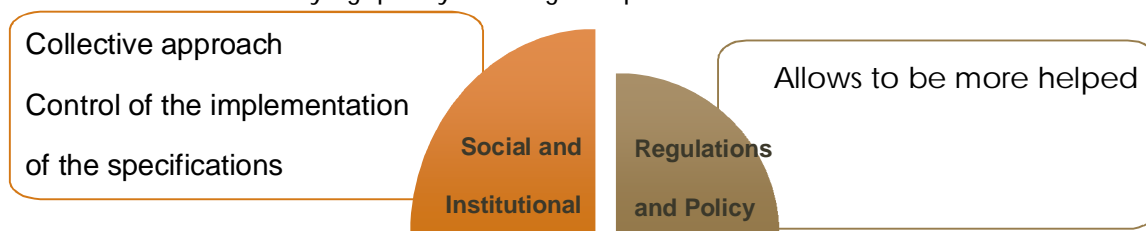
Economics of HNV farming

These labels permit promotion of agricultural produce providing added value to the products. It improves profitability on the farm.

Maintaining or improving HNV values

Labels do not involve automatic changes in farming practices. Some integrate the obligation of extensive systems or the use of local resources in their specification, and few PDO or PGI have a clear pastoralism objective.

How does official labels identifying quality and origin respond to the HNV LINK innovation themes?





The process that made it happen and critical factors for success

Actors and roles

A core group of breeders formed an association for the protection for a product as Pelardon goat's cheese through the attribution of a label guaranteeing the origin and quality of the product.

Their approach is supported by technicians, project managers, organisers, funding bodies, etc. The collective is able to employ a technician to investigate funding, partnerships, ensure communication about the product and provide technical support to the breeders.

The National Institute called INAO (National Institute of origin and quality) is responsible for the implementation of French policy on official signs of identification of the origin and quality of agricultural and food products. The INAO mission is based on close collaboration between professionals grouped in defence and management organisations (organismes de défense et de gestion (ODG), the accredited inspection bodies, State services and the Institute.

Limiting factors

- Motivation and mobilisation of the breeders who make up the collective;
- Misunderstandings within the collective that could lead to its dissolution or to the exclusion of specific people
- Support of the collective from suitable, competent structures and people;
- Public policy and funding support;
- Preparing the application is tedious and it takes a long time to be processed.

Lessons learnt from this innovation example and its potential replication

Collectives are a strength and enables the acquisition of resources and permits action to be taken that would normally be completely beyond the scope of a single farmer.

The PDO or PGI procedure is tedious but can easily be replicated on condition that there is a collective working with regional bodies and communities as well as with Civil Society to mount projects.

To list pastoralism rules in the specifications is essential to enhance HNV farming.

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Greece - innovation 3:

PUBLIC PARTICIPATION AND CONSULTATION 3D-MAPPING TOOLS

University of Thessaly, Department of planning and regional development

www.uth.gr/en/

- **Short name:** PP & 3D-Mapping
- **Location:** Thessaly
- **HNV farming system:** Improvement of the pasture management. Reinforcement of cooperation between producers and all the other actors
- **Scale of operation:** Ability to change the scale of application (pastures in the entire LA-Thessaly). The most common application scale is the community
- **Timespan:** Over 15-year application and implementation of "PP & 3D Mapping" at community level for the settlement of spatial problems (pasture overgrazing -land use conflicts etc).



Figure 1

Problems addressed by this example

- Addressing the stocking density issue in the grazing zones that are placed close to the limits of the settlements and the livestock facilities.
- Reduction of conflicts between producers (livestock breeders, farmers, beekeepers) and public services (forestry department, Ministry of Agriculture etc.)
- Reduction of disputes between livestock breeders with the residents and the municipality for the movement of the herds.

The story in a nutshell

Within the framework of rural multifunctionality the Laboratory of Rural Space (LRS), Department of Planning and Regional Development of the University of Thessaly, has focused (for the last 15 years) on the development of innovative methodologies to enhance participatory planning and consensus. In this context the LRS has developed and implemented an innovative methodology of three dimensional interactive representations by using GIS & Remote Sensing and 3D computer graphics.

This is essentially the creation of "3D Virtual Worlds" with the ability to change scale, viewing position and virtual tour. The "PP & 3D-Mapping" is a Multi-stage Collaborative 3D Mapping tool for

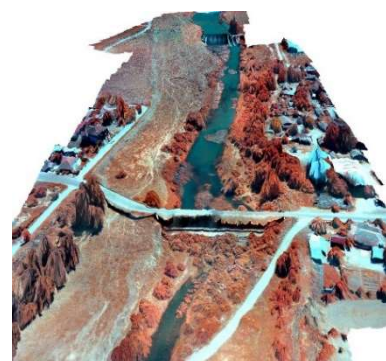


Figure 2

supporting the public Participation for landcover/Landuse management. The 3D interactive representations can function as a communication language between the various actors.

The objective of the innovation is dual:

- to strengthen the participation-communication of all the bodies (and producers) in the management of pastures and generally the HNV areas and
- the "bottom-up" collection of information, reliable and updated (creation of geodatabase), concerning the area where local society takes action,
- aiming at an on time and valid addressing of problems



What does «PP & 3D-Mapping» achieve for HNV farming?

- Pasture management: Participation of livestock breeders in the dialogue for the rational use of grazing areas .
- Training the producers in order to understand the multifunctionality of the space : Reduction of the conflicts between the various production groups but also creation of new cooperation opportunities (livestock breeding & rural tourism)



Figure 3

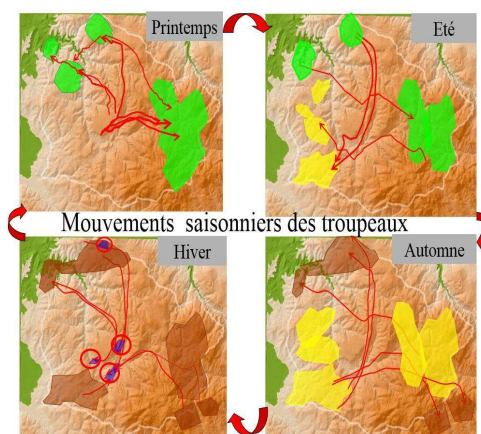


Figure 4

What's the issue that prompted the innovation?

The innovation was realized due to the need for a strong spatial tool (3D-GIS) that would support education/learning/activation of producers' participation in consultation procedures and decision making, around problems and interventions related to their space (diagnosis, evaluation, HNVf management).

Achievements?

- Functional incorporation of Geo-Informatics and 3D visualization into an integrated diagnosis and planning methodology in HNV areas
- Enhancement of participation and development of a dialogue between local production teams (livestock breeders, farmers etc.) and public bodies and specialists
- Mitigation of contradictions and understanding of the problems on space management between the involved bodies (forestry department, municipality, livestock breeders etc.)
- "Building" trust between groups with conflict of interests.

Economics of HNV farming

Indirect economic benefits: Optimization of livestock breeding through the implementation of pasture management plans that resulted in minimizing the basic cost that a pastoral holding has, buying forage

Maintaining or improving HN-values

Implementing the innovation contributes directly:

- To the improvement and protection of pastures' biodiversity. Implementation of rational grazing plans that resulted in
 - minimizing stocking density phenomena and
 - avoiding degradation and abandonment of remote pastures
- To the education and creation of sensitive, well informed and with active participation producers, on issues concerning sustainable management of the relationship between the holding and the natural environment.



How does «PP & 3D-Mapping» respond to HNV LINK innovation themes

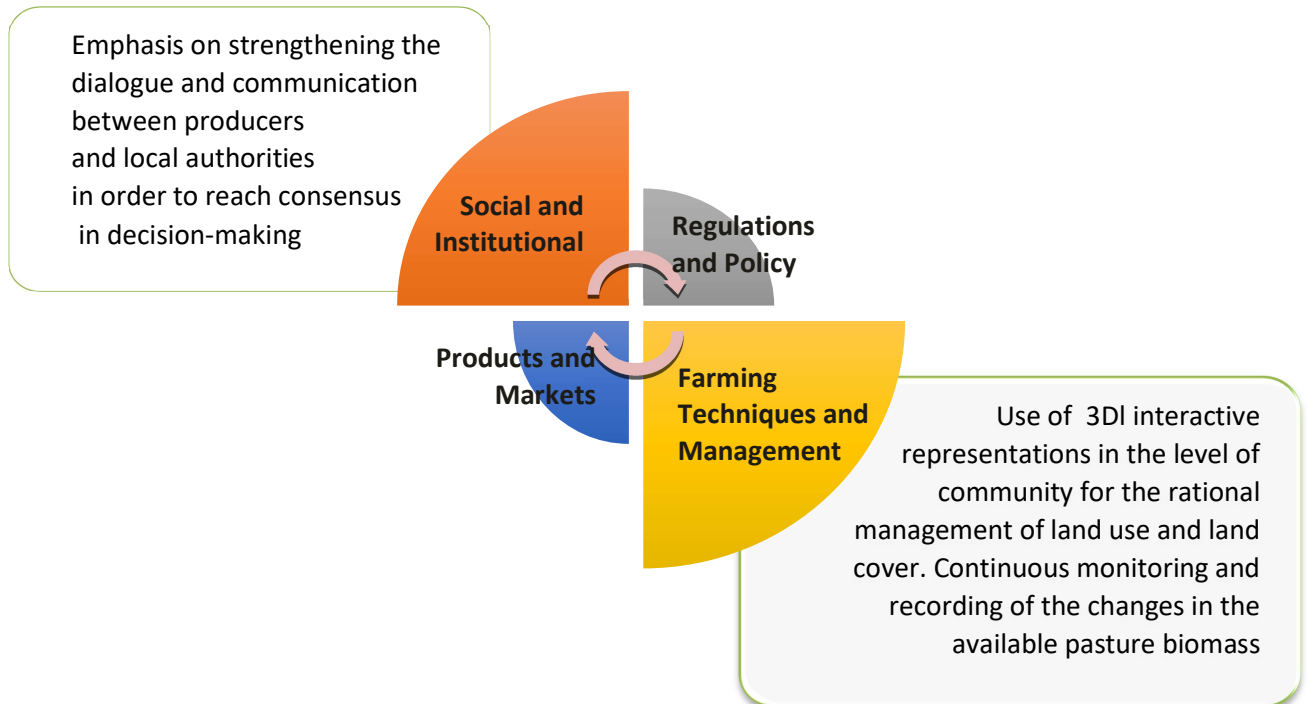


Figure 5 The framework HNV-Link used for evaluating innovations for high nature value farming.

Social and Institutional

- “PP & 3D-Mapping” innovation provides local authorities with a communication and information tool for the producers and other actors that are active in the area (NGO's, environmental associations, etc.)
- Familiarizing local societies with advanced technological tools like 3D interactive mapping for the diagnosis and management of the space favors:
- Improvement of spatial perception and the knowledge that inhabitants have for the place they live
- Participation of actors in high scale participatory procedures like: cooperation and transfer of power



Figure 6 Public-Participation in Ellinopirgos village

Farm techniques and management

“PP & 3D-Mapping” innovation contributes:

- to the continuous collection of new information in the database with no particular cost, resulting in the direct knowledge of the problems that occur (drought, floods, erosion phenomena)
- to the estimation of forage biomass for animals in the grazing zones depending on the climate conditions
- to the delimitation of exclusion/suitability zones to avoid conflicts between the various production groups



Figure 7

The process that made it happen and critical factors for success

- Participation of a support body in the installation and operation of “PP & 3D-Mapping”
- Engagement of local society in the various stages of the creation of the 3D interactive Virtual World
- Coverage of the fixed and operational costs for the installation, operation and maintenance of “PP & 3D-Mapping”

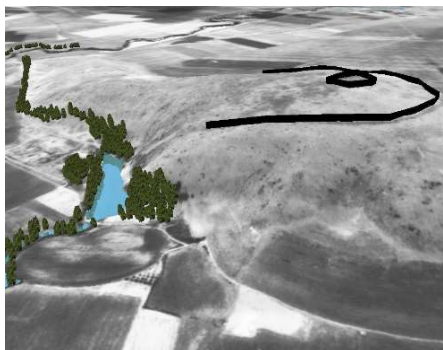


Figure 8 Scenario: Lake Reconstruction

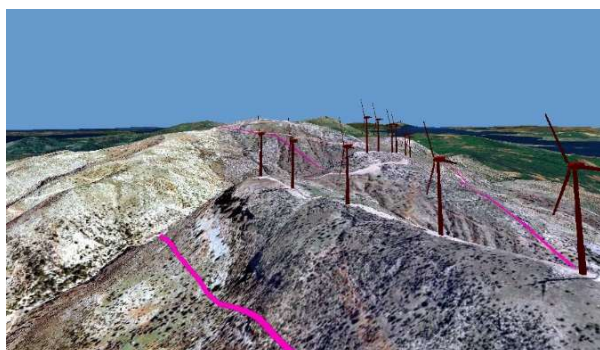


Figure 9 Scenario: Wind farm installation

Technological Issues

- The cost of the supporting software and hardware. Funding is required for the installation and operation of the system at the level of the Municipality
- The cost to get high resolution geospatial data: Aerial Photos /Satellite images /Digital Elevation Models (DEM)
- The relationship between the accuracy of the model and its construction cost

GIS-Remote Sensing technologies are becoming more and more friendly and easy to use. New trends: (a) Open source software that support 3D-GIS public participation procedures and (b) Free disposal of high resolution geospatial data by government bodies.

Technology is evolving fast:

- New, high resolution and low cost digital backgrounds are emerging in the market, creating new spatial visualization possibilities
- New, low cost technologies provide very high spatial resolution data offering at the same time the ability to perform multiple surveys in one day (Drones)

Methodological Issues

For the completion and effectiveness of the tool to be achieved three stages are required:

- Participation of a group of producers in the enrichment of the three-dimensional background with auxiliary information (place names, changes in land use, areas of particular interest etc.)
- Participation of a group of producers for the recording and representation of the spatial and temporal management system concerning land use (routes and grazing-crop areas)
- Training and acceptance, by the area's participants, of the use of three-dimensional visual representations as a tool of: (a) communication and dialogue, (b) collecting accurate data



Figure 10



Figure 11



Figure 12



Pasture zones	Timetable			
	Spring	Summer	Autumn	Winter
A				
B				
Γ				
Δ				

Table 1 Calendar with the movement of the livestock holding

Lessons learnt from «PP & 3D-Mapping» and its potential replication

- Successful implementation and operation of “PP & 3D-Mapping” depends on its integration into collective coordination and cooperation plans like Terra Thessalia
- 3D representations give the opportunity to extract a huge amount of information from local society. Its coding and utilization is a big challenge.
- The basic advantage of “PP & 3D-Mapping”: application ability in both local and regional scale.

Lessons learned

- The greater the detail and fidelity in spatial 3D representations, the more active the participation of the livestock breeders/farmers in the diagnosis, consultation, planning and management procedure.
- A need for more detailed 3D representations, especially for the creation of location scenarios and decision making. Otherwise there is rejection and failure of the consultation process
- Even people with lower spatial perception can understand the space in which they live and participate in consultations and discussions using the 3D interactive representations
- Good preparation is required for the real-time recording of the very large amount of information given by the participants during the consultations.
- Slow response to the imprinting of information slows down the dialogue and the participants are thus getting tired

Replicable in other areas?

The municipalities and other collective organizations (social, professional) can adopt the innovation “PP & 3D Mapping” as a tool of spatial management and reinforcement of participatory procedures in their regions. The whole project's success will depend on the possibility to create a technical support team in cooperation with research bodies. In this case it is suggested that the municipalities set up communication and cooperation centers with area's local bodies equipped with a 3D interactive GIS. These centers will be responsible for: a) “educating” and familiarizing the residents and producers of the municipality with 3D representation of the space in which they live enhancing their participation in local meetings and b) encouraging the citizens (especially producers) to participate in the enrichment of the 3D model with information (recording of pollution incidents) helping thus to better manage space.

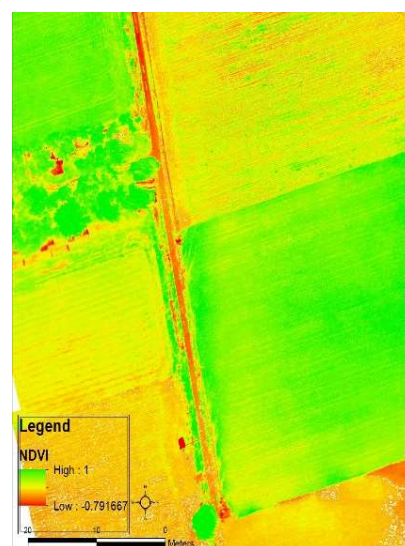


Figure 13 Drone mapping: biomass estimation

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Greece – innovation 3:

GPS TRACKING MONITORING AND CERTIFICATION OF EXTENSIVE LIVESTOCK-FARMING

University of Thessaly, Department of planning and regional development

www.uth.gr/en/

- **Short name:** GPS- tracking to extensive livestock (GPS-tracking)
- **Location:** Thessaly (LA)
- **HNV farming system:** Certification of the holding's pastoral practices in the market. Monitoring the implementation of a grazing plan.
- **Scale of operation:** On the scale of a livestock farming level
- **Timespan:** Tracking the movement of 15 extensive holdings for 2015-2016 under the Lactimed programme. Today, Terra Thessalia has assumed this application



Figure 1

Problems addressed by this example

- Certification of the herd's extensibility in order to support the effort to increase the added value of the raw material (milk, meat) and the final dairy products
- Tackling conflicts between farmers-livestock breeders, using GPS geofences and other functions
- rapid troubleshooting for free-range cattles

The story in a nutshell

Within the framework of the European programme Lactimed, the Territorial Participatory Guarantee System (TPGS) was developed, part of which is the GPS-tracking system. Initially a monitoring platform (server, softwares, etc) was created in order to record the geographical position of the moving herds in a daily basis. At the same time, the livestock breeders that participated in the programme, were trained in the use and good operation of the GPS in their animals. The aim of this innovation is manifold: (a) to certify the extensive livestock (sheep farming in mountain and semi-mountain areas) giving the added value to the corresponding dairy products (marketing); (b) to understand and facilitate livestock movement; (c) to prevent conflicts between farmers and forestry services using GPS geofences and other functions; (d) to strengthen the active participation of the producers in the management of HNV areas; (e) to collect data for the control of the pasture quality (quantity of biomass, biodiversity/plant species) by specialists (range scientists, environmentalists etc.)

What does «GPS-tracking » achieve for HNV farming?

- Market/products: using GPS-tracking undeniably contributes
 - to the guarantee of herding pastoral practices
 - to the reinforcement of the confidence with consumers
- Management of the holdings:
 - Identification of quality pastures based on animal behavior
 - Contribution to the design and implementation of spatial and temporal grazing systems
- Creation of an application team with the participation of producers, researchers and technicians



Figure 2 The GPS-tracking interface

What's the issue that prompted the innovation?

The application was implemented due to the need for a reliable tool accessible to consumers that would also guarantee the grazing of the herds.

Achievements?

- Successful implementation of GPS-tracking on all 15 holdings revealed the interest of livestock breeders to promote the practices and values of their pastoral system by adopting advanced technologies, aiming at the same time at a more directly informed consumer.
- Informing livestock breeders about the reasons for installing GPS-tracking on their holding and its contribution to the implementation of the participatory guarantee system helped them shape a more optimistic view for the future of their business and at the same time show interest for the continuation of the monitoring programme.
- Continuous feeding of a geographic database with information concerning the grazing profile of every holding on a daily basis. These data can be used by a range of scientists and specialized zootechnicians to analyze ration.

Economics of HNV farming

Direct financial benefits: GPS-tracking, as a certification tool for the grazing of the herds, contributes to the increase of products' added value.

Indirect financial benefits: Especially in cattle holdings, tracking the movement of the animals in the countryside (free range for approximately 6 months) helps to save sick-trapped animals, minimizing the cost from animal losses (sometimes this is equivalent to a few thousand euros).

Maintaining or improving HN-values

The implementation of GPS-tracking in animal movement contributes directly to the improvement and protection of biodiversity in the pastures. Recording the routes and grazing zones, thus stocking density as well, would potentially help to better manage pastures and avoid their marginalization and land abandonment

How does «GPS-tracking» respond to the HNV LINK innovation themes?

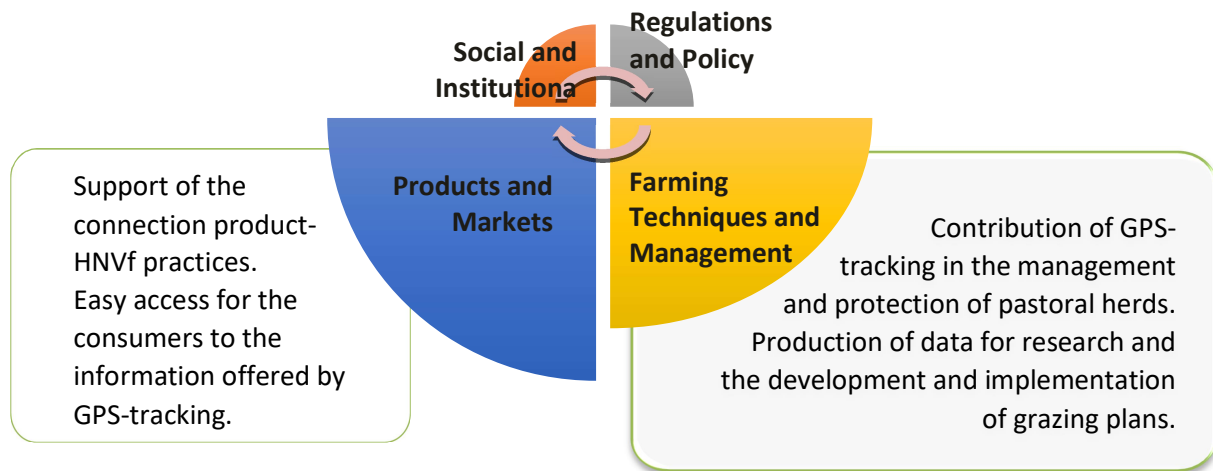


Figure 3 The framework HNV-Link used for evaluating innovations for high nature value farming.

Products and markets

GPS-tracking innovation offers to the market a reliable certification tool for the products coming from pastoral and free range holdings.

Potentially this innovation contributes to the reinforcement of the trust between the most demanding consumers, who seek the distinction between HNVf products, and those from holdings with intensive production system

Farm techniques and management

GPS-tracking innovation contribution:

- Better monitoring of the herd in the difficult and demanding environment of the semi-mountainous and mountainous regions (grazing management, estimation of the forage biomass consumed by animals)
- Familiarization of producers with advanced technological tools on diagnosis and space management (using GPS - tablet – smartphones)

The process that made it happen and critical factors for success

- A support body for the installation and operation of the “GPS-tracking” was secured
- Provision of information and breeders' acceptance for the adoption of a GPS-tracking system
- Coverage of fixed and operational costs of the GPS-tracking system



Figure 5 GPS record: Spatiotemporal movement of a flock

Basic issues that need to be resolved:

- Increasing the battery life before its next charging process, keeping at the same time the system's cost and weight low. Experiments are underway to expand the GPS operation, from 15 days to 3-4 months.
- The cost for special GPS that meet specific protocols and guarantee their good operation in difficult weather conditions (strong sunshine, rainfall etc.)
- It is necessary to train livestock breeders:
 - a) on the operation and use of the GPS (battery charging) in order to prolong its life expectancy
 - b) on the tracking of the herd (use of tablet - smartphone). However, in many cases new farmers are familiarizing quickly with new technologies minimizing thus the learning curve
- Finding the funds for the installation and operation of the system. Fixed costs: buying a server, GPS devices and their between interconnectivity for the operation of the GPS-tracking system. There are also operational costs linked with the daily monitoring of the GPS function, its maintenance and a monthly mobile telephone subscription.

Lessons learnt from this innovation example, and its potential replication

- The successful implementation of “GPS-Tracking” depends on its integration in a collective cooperation and coordination plan like for instance Terra Thessalia or in an integrated guarantee system.
- "GPS-Tracking" innovation is an educational process for the introduction of a new technology adapted in the management and promotion of the HNVf character.
- GPS-Tracking" system can be implemented in every region



Figure 4 the GPS device

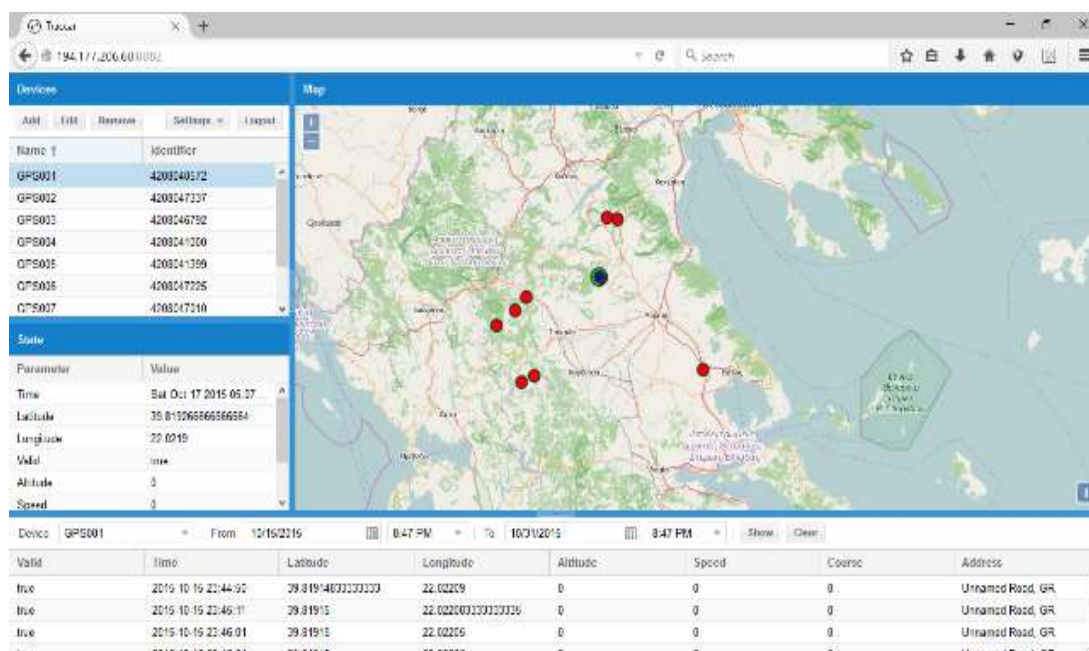


Figure 5 Monitoring the flocks movements through the GPS-tracking platform

Overall lesson

"GPS-Tracking" innovation is for the breeders a collective educational and practical process of learning and using a powerful technological tool in order to highlight themselves the HNV characteristics of their holding and the specificities of their products

Replicable in other areas?

GPS-tracking can be installed on any extensive livestock holding within the Greek territory provided there is a GSM signal (Global System for Mobile communications). The movements will be recorded on a server while at the same time every breeder will be able to control, almost in real time, the movement of his herd. The recording and management of the data could be carried out by a certification body for the extensiveness of the herd. This body would provide support to the breeders and specialists by supplying the spatial and temporal data from the herd's movement.



Figure 6

Links:

<https://www.youtube.com/watch?v=r7m3LxbbWAQ>

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Greece – innovation 2:

PARTICIPATORY GUARANTEE SYSTEM (PGS)

University of Thessaly, Department of planning and regional development

www.uth.gr/en/

- Location: Thessaly, Greece
- HNV system: Shepherd sheep and goat farming milk system, Potentially all HNV farming systems
- Scale of operation: On the scale of every holding (herd and parcel for forage) integrated in Terra Thessalia
- Timespan: Tool developed and implemented as a pilot project by the Laboratory of Rural Space (University of Thessaly) within the framework of the Lactimed programme between 2015 and 2016
- Keys to success: a) funding by the European programme ENPI MED, b) integration actors specialised in the services of herd management, livestock feed, diet, etc., c) new technology integration d) strengthening of small territorial chains without assuming an additional legislative certification

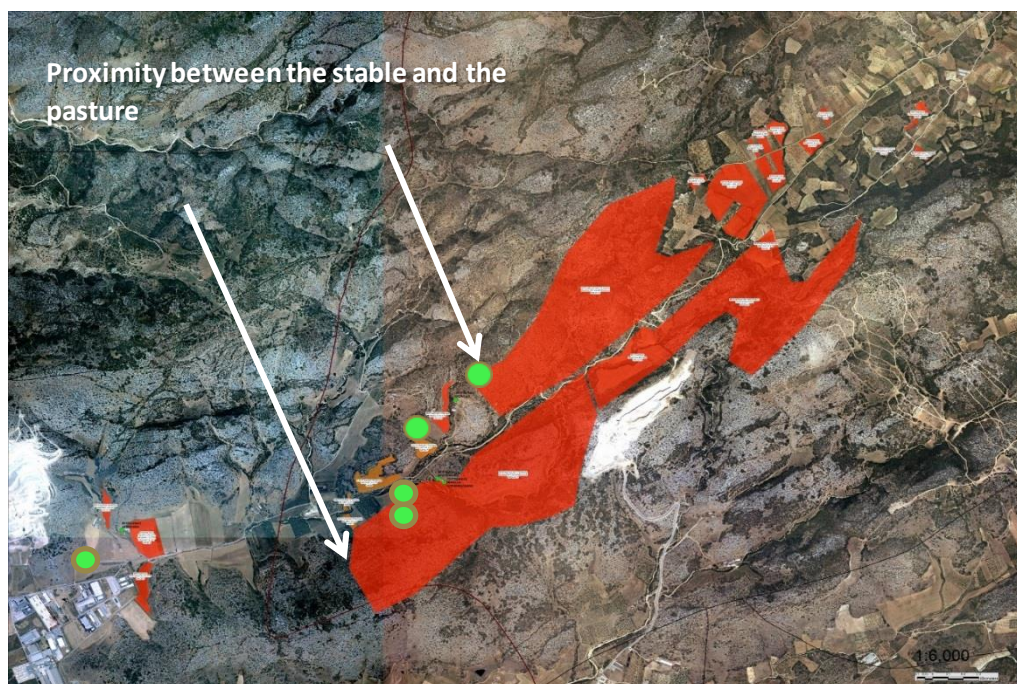


Scale of operation

After pilot implementation of the PGS in 15 herds (4.500 animals), its effectiveness was proved and can be now implemented in a larger scale: within a group of livestock breeders or a livestock cooperative but also within the limits of a community

Problems addressed by this example

- Asymmetrical power relations in the governance of the value chain of PDO cheeses (Feta cheese) do not promote the local specificities or guarantee that the characteristics of the dairy product, both inherent and extrinsic, are linked to HNVF holdings, operating thus in favor of large industrial dairies and distribution networks (oligopolistic market structures).
- Inability of the pastoral holdings, despite the high quality of the produced milk, to tackle the continuous decrease on the price of the milk and compete the intensive holdings,
- Lack of a monitoring system (herd management, local livestock feed, diet, etc) for the respect of the specifications that define the holdings' HNV character
- The asymmetry of the information relationship (particularly about the HNV character of the holdings and the "artisanal" character of small dairies) that influences the producer-consumer relationship



Story in a nutshell

1 : 6 000

A key objective for Terra Thessalia was to develop a way to continuously enrich and update quality claims related to place-based attributes. For this purpose, Terra Thessalia has undertaken the implementation of a Participatory Guarantee System (PGS) whose goal is to reveal and guarantee the specific characteristics of the dairy resource as well as to foster it. This System is defined as a means of utilizing the dairy resource and the HNVf. Its objective is twofold: a) to observe, support and control the implementation of the obligations that every pastoral holding has and b) guarantee at the consumers the HNV character of pastoral holdings and its sustainable links with their operating place. PGS adopts an integrated methodology that combines consultations, a monitoring system using technological tools whose data are displayed in a database and the Terra Thessalia site that is accessible to consumers. All the actors of the dairy chain and a group of scientific and technical support (interdisciplinary and technical working group) participated in its implementation

Keys to success:

- Objectives, layout and timetables of the LACTIMED project (European programme ENPI CBC MED). The role of the working group with the support of specialists from specialized laboratories and local development agencies (organizational, scientific and technical support)
- Specialization of the Laboratory of Rural Space (University of Thessaly) in the development and implementation of technological tools in order to support educational, consultation and monitoring needs (3D spatial representation, GIS, satellite imagery etc.). These tools contributed in the function of the PGS as a support tool for the strengthening of active participation and as a technique for the creation of trust.
- Organization of regular and continuous information meetings, educational cycles and consultations
- Connection of the livestock breeders' participation in the PGS with the redistribution system of the profits deriving from the increase of the products' value
- PGS ability to support the development of a territorial Marketing
- Ability to substitute or/and supplement the certification standards by third parties
- The procedure and guarantee means have a low cost because they are based in soft rather than hard technology and in organizational innovation but also because the tool guarantees practices and actions that producer is already implementing within his HNVf.

What does «PGS» achieve for HNV farming?

Key points :

- Effective monitoring and guarantee of the organization and function of HNV livestock farm units
- Producers' active participation in issues a) farm unit managing and b) documentation of the HNVf character
- Successful pilot application in 15 sheep and goats herds (4.500 animals)



General achievements of the action

- A guide (methods, tools) for diagnosis, evaluation and guarantee procedures
- Educational material in order to train farmers and producers to actively participate in the guarantee of the HNVf-product relationship
- PGS contribution in the development of a territorial marketing for the promotion of HNVF products in niche markets under the Terra Thessalia label

Does it improve the socio-economic situation of HNV farming? examples

It is an information, education and training tool for the producers on issues of HNVf improvement and management. At the same time, it functions interactively as a forum where producers and researchers/technicians can meet and exchange knowledge and experiences, familiarizing at the same time producers with the knowledge and use of new technologies. PGS contributes to the promotion of the value of products produced by HNV holdings and indirectly in the viability of HNVf production unit. Its pilot application has proved its contribution through the expression of interest on behalf of markets and consumers

Does it maintain or improve HNV values? Examples

PGS as a basic guarantee instrument for the connection between the quality of the product and holding's HNV characteristics, a connection that promotes to consumer society, it contributes to the recognition of the value of the HNV dairy product. This is a two-way process so that consumers and producers can actually understand the importance of local breeds, grazing and traditional practices

Does it include conservation of nature values as an explicit objective?

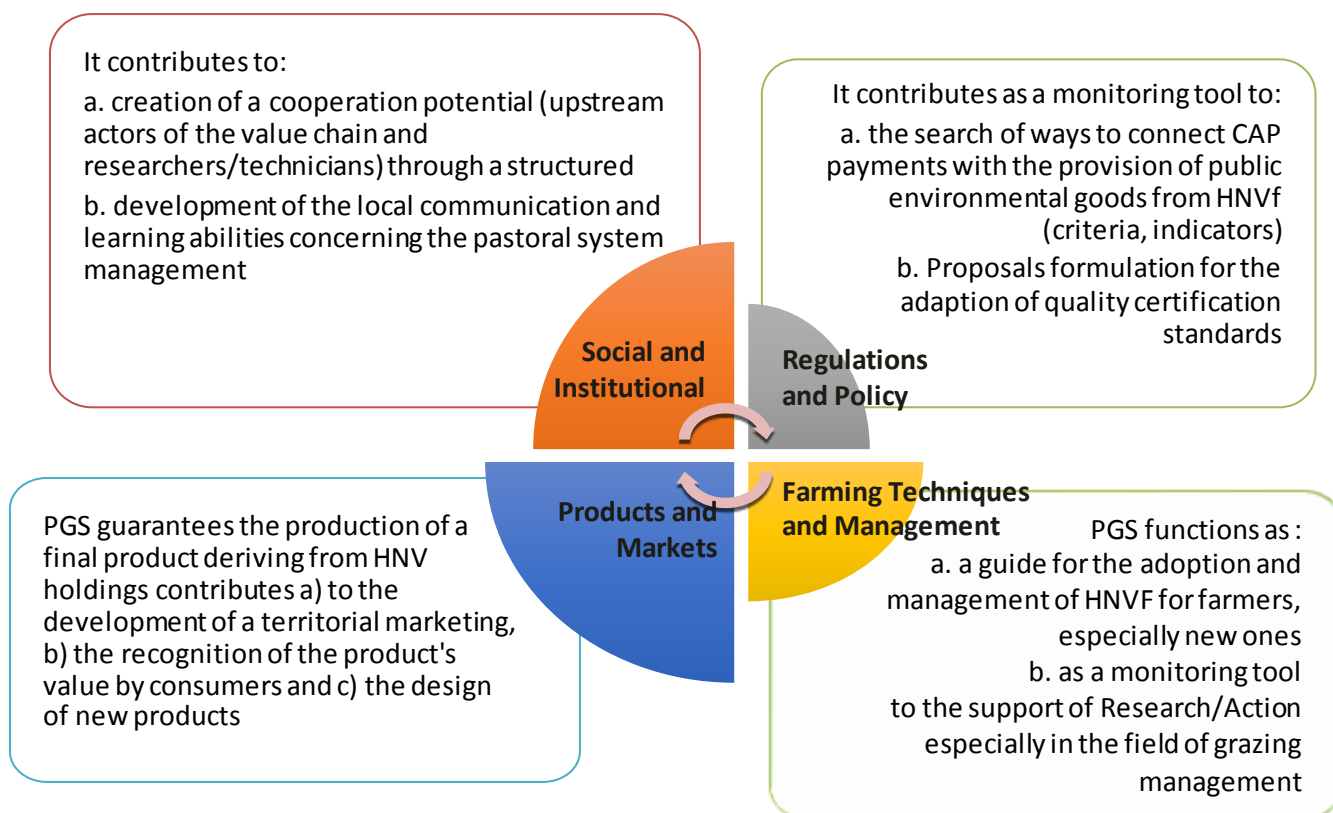
PGS was implemented only in HNVF holdings (only pastoral herds with local breeds) following TERRA THESSALIA's marketing policy which is based on preserving and promoting the HNV character of its collaborating holdings production systems. The charter signed by the small dairy territories, explicitly mentions the respect of the objective above and the adoption of a redistribution system in favor of the bodies that are involved with specific actions in preserving the HNV character of those production systems.



Could the innovation be made more directly beneficial for HNV farming and nature values? If so, how? HNVF can directly benefit by the implementation of the tool because it also functions as an adoption guide of HNVF by the new entrant farmers. What is more PGS funding will reinforce its capacity to broaden and deepen the guarantee fields and promote more effectively the HNVF image and the multifunctional role of farm units, helping thus to better inform consumers on the value of HNVf and the products it produces. The cooperation with collective territorial bodies (e.g. PINDOS initiative) that represent HNVf areas can utilize PGS as a policy tool (monitoring, control and reward of services and also support of a wider marketing strategy). Technically, strengthening this role of the PGS is possible without a big cost. It is necessary to strengthen the technical support group, implement a diagnostic study for every area or group of holdings, secure a specialized training (registration of information, use of technological tools etc.). Finally, this tool can also be used for the development of pastoral tourism as an important promotion part of HNVf values.

Already, the collaborating laboratories within the framework of Terra Thessalia aim to enrich PGS with criteria and indicators that will promote on one hand the relationship between biodiversity and HNVf (grazing management plans, ecological corridors, hedges etc.) and on the other hand the research promotion for the relationship biodiversity and farm unit productivity.

How does «PGS» respond to the HNV LINK innovation themes?



In the category “Social and Institutional”, PGS works as a new cooperation form which ensures that all the actors of the value chain and the research/support group will meet aiming at the bottom-up capture, planning and implementation of ways and means that will guarantee the holdings' HNV character.

In the category “farming techniques and management”, PGS functions as a diagnosis and monitoring tool of the holdings' organization. It gets support thus from technological tools, its multidisciplinary team (zootechnicians, range scientists, informaticians, facilitators etc.), the provided education and frequent and regular meetings that tend to establish. The use of new technological tools functions also here as a means of strengthening the capacity and ability of actors, especially livestock breeders, to actively participate in the diagnosis and planning of spatial interventions, a fact that facilitates cooperation with experts and public services.

In the thematic “Products and markets” PGS contributes to the promotion of HNV territorial resources and products, based on new spatial representation technologies, multi-media etc. PGS, with the tools it uses, can locate and guarantee elements and practices that can attribute to the product properties and characteristics connected to HNVF (e.g. spring grazing milk, movement, high-quality pastures etc.). These data are then used to shape the label and enrich the promotion message (visual and written). The innovative role of PGS is reinforced since it also functions as a two-way route of exchange, contacts and navigation in the world of HNVF for consumers.

In the categories “Regulations and Policy”, as well as “Products and markets”, PGS contributes to the issue of the necessary adaptation of certification standards to the small scale specificities based on the experience of active participation of the directly and indirectly involved actors in the production procedure of the raw material and final product. These specification standards can also complement the control generalizations and weaknesses of the standards offered (or imposed) by third parties.

The increase in the value of the products promoted by PGS and the activation of RDP measures will contribute to the better and more balanced contribution of PGS in thematic concerning innovation - especially in the thematic Regulations and Policy and Farming techniques and management - as a diagnosis and monitoring-control tool of the holdings' HNV characteristics and their relationship with biodiversity with the potential to enrich relevant criteria and indicators in the scale of the holding and the community.

The process that made it happen and critical factors for success

- Project and technical support team
- Identification of elements directly linked to the relationship of the final product and HNVF and which can be guaranteed by the PGS
- Organization of training, consultation and implementation of action cycles for the producers by utilizing new tools
- Implementation of PGS with a monitoring form for the control, guarantee and supply of the territorial marketing



Actors and roles: who made it happen, who talked to whom, what roles were played by each key actor?

The driving force was the Laboratory of Rural Space, University of Thessaly and the multidisciplinary team that was formed with the participation of the Agricultural University of Athens (milk sector, pasture management, organization of the livestock farms etc), Panteion University of Athens (label, certification, PDO, PGI, marketing) and the local Development Agencies. The first actor, the Laboratory of Rural Space, contributed with the development of technological tools concerning 3D spatial representations, territorial diagnostic etc. Next, the implementation team was organized with the participation of researchers and technicians from those institutions and members of livestock cooperatives, small cheese makers that keep their artisanal character. After that there was a series of regular and continuous information meetings, training cycles.

Institutional context that made it possible

The institutional entity of Terra Thessalia and the institutional recognition status of the operation of some research laboratories as certification centers

Resources: funding, staff etc

The progress of the programme was made without problems due to funding from the ENPI MED

Processes

The building process that was followed concerns 3 sectors:

- Organization and implementation of PGS : a) creation of a project team that integrates the services of the actors involved in the fields of research, organizational and technical support etc., b) definition of guarantee sectors and fields that are linked to the HNV characteristics of the area and the holdings and refer to environmental values (print, sustainability, HNVF etc.), c) creation of an integrated diagnosis and guarantee methodology (sources, methods and integration of technological tools developed and adapted by LPS) and d) organization of regular and continuous information meetings, training cycles and consultations.
- Evaluation-Guarantee : a. implementation of a monitoring system, b. storage and processing of data in a database-portal at the University of Thessaly, c. issuing guarantee certifications for every thematic (grazing, management, local breeds practices, origin of forage, HNV level etc.)
- Supplying a "territorial" marketing for the promotion of its basic products in the market: a. data on quality and identity characteristics of the final products, b. integration of these elements in the label and packaging shaping and also the promotion message (visual and written)

Critical factors for success: opportunities, threats, timing, individuals, continuity...?

The intensification of competition (expansion of the dairy companies and intensification of livestock holdings), the economic crisis, the failure to organize the feta PDO status in national level so that a higher value can be secured were the main factors that favored the adoption of PGS of the different actors in the value chain. New opportunities arise by a) the fact that despite the crisis consumers are turning to local and Greek food products (value for money) and b) the forthcoming activation of RDP measures (creation of Label systems, actions to strengthen biodiversity etc.) Also, new entrant farmers will play an important role in the adoption of PGS due to their orientation towards HNVF and the production of territorial products. The redistribution system adopted in the framework of Terra Thessalia reinforces the role of PGS making it necessary for producers while it secures recognition among consumers. This responds to the new expectations by an increasing part of the consumers that link the quality and the identity of the product with HNV systems and areas.



Limiting factors, actual/potential problems, and how could they be overcome?

The adoption of the tool by an increasing number of producers depends largely on the response of consumers and markets. It is necessary to continuously improve and adapt the technological tools on monitoring and control issues. Also the expansion of the tool creates the need to expand the members of the scientific and technical team as a response to the continuous emergence of new research, evaluation (pasture quality, endemic plants, nutritional characteristics of plants etc.) and guarantee fields. Finally, delays in the activation of national and European funding tools (e.g. RDP) is the main restrictive factor. However, as the value of the promoted products in quality markets increases, at the same time the possibility of at least self-financing the PGS application will also increase

Lessons learnt from this innovation example, and its potential replication

- The ties between products and HNvf can be substantiated by producers themselves if they are provided with means, training and support
- The functional incorporation of adjusted technologies in PGS transforms them into popular communication and learning tools
- The recognition of the value of HNvf products by the market upgrades the value of HNvf itself in the eyes of consumers, producers and local actors

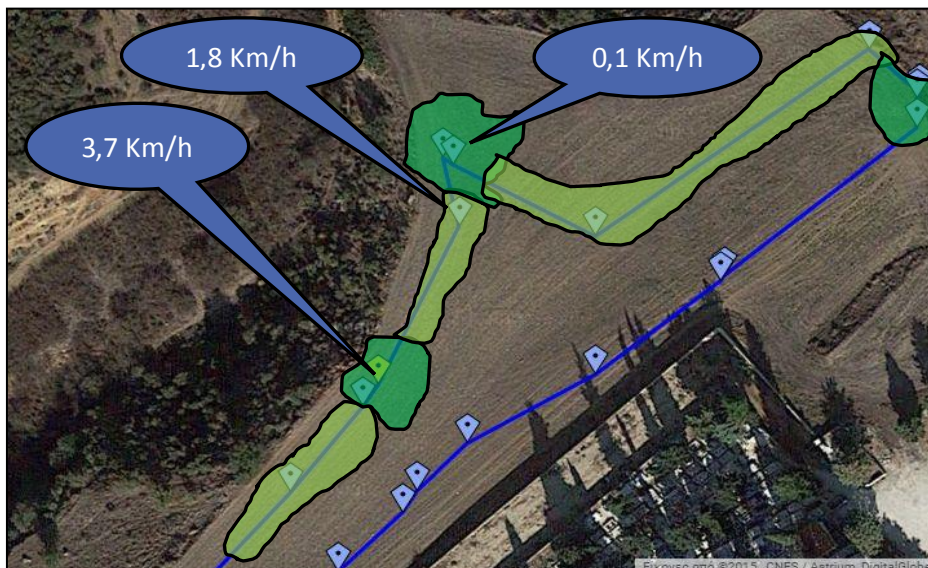


Figure X Utilization of animal speed in order to identify high quality pastures

Overall lessons from this example, especially from point of view of HNvf farming?

If we adapt and integrate new technologies (GPS, 3D, Internet, satellites etc.) in a functional and targeted tool they can become a great instrument of a) informing, raising awareness and training producers and processors, b) farmers' active participation in control and guarantee systems of their holdings' HNvf characteristics. In this case due to these technologies PGS transforms into an interactive tool that allows also the participation of local consumers (taste control, respect of traditional techniques, ethical aspects linked with the processing phases of the final product) reinforce the effectiveness and legitimacy of PGS

Local actors' participation in documenting and guaranteeing the specificities of a territorial resource (HNvf), aiming at informing consumers and supporting a competitiveness based on discretion, is more effective than certification systems by third parties.

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

Expanding PGS is easy and relatively inexpensive due to the immaterial technology that is used. Its implementation in other areas requires above all the agreement between producers and one or more cheese-makers, then securing a technical coordination and monitoring body for the implementation of the PGS and the utilization of its results. The tool can be applied to all types of agri-food.

Could it be rolled out on a bigger territorial scale?

PGS can be applied in the scale of the holding, the team of a cheese-maker's holdings, the community and the LA

What would be needed to do this successfully?

Training the participating producers, creation of a central support group and small thematic structures of technicians and researchers (pastures, ration, local breeds etc.). Utilization of RDP funding tools.





page 3

TERRA THESSALIA
ΣΥΝΕΡΓΑΣΙΑ ΜΙΚΡΩΝ ΓΑΛΑΚΤΟΚΟΜΙΚΩΝ ΠΕΡΙΟΧΩΝ ΘΕΣΣΑΛΙΑΣ

LACTIMED

ΕΥΡΩΠΑΪΚΟ ΣΥΜΒΟΛΟ

Βιοτεχνικό

ΜΕ ΟΛΟΚΛΗΡΩΜΕΝΟ ΣΥΜΜΕΤΟΧΙΚΟ ΣΥΣΤΗΜΑ ΕΓΓΥΗΣΗΣ

ΦΕΤΑ

ΠΙΣΤΟΠΟΙΗΜΕΝΟ ΠΡΟΪΟΝ ΚΑΤΑ ΤΗΝ ΚΑΝΟΝΟΤΗΤΑ ΤΗΣ ΤΕΡΡΑ ΘΕΣΣΑΛΙΑΣ

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Περιοχή Μουζακίου

ΕΓΓΥΗΣΗ ΑΥΘΕΝΤΙΚΗΣ ΠΟΙΟΤΗΤΑΣ

ΜΙΚΡΕΣ ΓΑΛΑΚΤΟΚΟΜΙΚΕΣ ΠΕΡΙΟΧΕΣ
Βελεστίνο, Ελασσόνα, Μετέωρα, Μουζάκι, Παλαμάς, Σοφάδες, Τέμπη, με πλούσια ποιμενική παράδοση

ΤΥΡΙ ΑΠΟ ΑΝΟΙΞΙΑΤΙΚΟ ΓΑΛΑ
Τυρί πλούσιο σε αρώματα & πρωτεΐνες παρασκευασμένο με βάση την παραδοσιακή γνώση από μικρά σύγχρονα οικογενειακά τυροκομεία

ΣΥΜΜΕΤΟΧΙΚΟ ΣΥΣΤΗΜΑ ΕΓΓΥΗΣΗΣ
Εγγυάται με καινοτόμο τρόπο την αυθεντική ποιότητα και ταυτότητα των προϊόντων μέσα από τις αρχές του αλληλέγγυου εμπορίου

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Greece – innovation 1:

TERRA THESSALIA: A TERRITORIAL CLUSTER OF VALORISATION OF HNV

University of Thessaly, Department of planning and regional development

www.uth.gr/en/

- Location: Thessaly, Greece
- HNV system: Shepherd sheep and goat farming system. Potentially all HNV farming systems
- Scale of operation: 7 small dairy territories (approx 7 km²)
- Timespan: The Terra Thessalia cluster as an institutional entity is the output of the strategic MED programme LACTIMED (2013-2015). This is an ongoing project (started in late 2016). Today the actors involved assume the Terra Thessalia initiative to promote their local dairy products.
- Keys to success: funding from the European programme ENPI MED, value chain approach, cluster with a territorial dimension, development of a participatory guarantee system, recognition by the market of the value of products with pastoral origin, redistribution system



Figure 1

Scale of operation

The cluster includes 7 small dairy territories, approximately 500 pastoral farms, 7 family artisanal dairies, and a significant number of supporting agencies (LAGs, Cooperative Banks, Industry and Commercial Chambers, Public Research Laboratories). A general problem is being addressed (HNV marginalization and lack of reward of their multi-functional role and the of their products' quality), through a localized example at the optimal geographic scale (organizationally in a regional level and productively in the level of small territories and HNV holdings)



Figure 2



Problems addressed by this example

- Deficit in the horizontal and vertical cooperation of local and public bodies
- Risk of losing heritage resources (landscape, pasture biodiversity, identity dairy products, traditional techniques, etc.) and environmental degradation
- Lack of visibility of the specific quality of GI dairy products on the market through a guarantee system
- Risk of usurpation of cultural resources (eg. PDO label)
- Lack of professionalization of traditional pastoral activity
- Lack of access of remote farms and artisanal dairies in HNV pastoral areas to market channels
- Need to enhance the spirit of cooperation and networking of territorial actors
- Lack of awareness by local actors regarding close links between HNV-specific product quality-consumers
- Continuous decrease on the value of pastoral products

Story in a nutshell

Creation and adaptation of a territorial dairy cluster integrating in an innovative way local productive forces as well as small dairy territories of Thessaly Region. Improvement of the image and promotion of the HNV character of localized pastoral farming systems to support and preserve them through a new organizational structure of the dairy sector, support and consultancy services, and a Territorial Participatory Guarantee System regarding the distinctiveness of origin-placed dairy products.

Keys to succes:

- The auspices, the prestige and the funding provided by the European program ENPI CBC MED; the support of the laboratories of 3 Universities; the participation of all directly and indirectly involved actors and in the value chain
- The creation and integration of three bodies within a governance structure that covers and represents: a) the territory, b) support and research bodies and c) producers and processors
- Crisis revealed market distortions and thus the importance of cooperation; consumers are turning to local and Greek food products (value for money)
- Asymmetrical power relations in the governance of the value chain of PDO cheeses -and in particular of the popular Feta cheese being in a growing demand- in favor of large industrial dairies and distribution networks (oligopolistic market structures).
- Active involvement of producers in a process, not of radical changes in the organization of the pastoral system, but of improving, guaranteeing and highlighting attributes and practices already existed in farms of HNV type.
- The innovative role of PGS combines simultaneously the respect for HNV specifications on behalf of livestock breeders and consumers' expectations
- positive reaction of quality markets

What does «Terra Thessalia» achieve for HNV farming?

- Key points: Organization of 3 bodies, provision of services, creating a multi-actor platform for dialogue, development and implementation of a Participatory Guarantee System and territorial Marketing, product sale
- 7 small historical dairy territories, 500 holdings and 7 artisanal dairies 100.000 sheep and goats (pilot application in 60 herds- 13.000 animals)



General achievements of the action

- Creation and operation of a flexible governance form based on three bodies that represent the territory (a Territorial Assembly which function and objectives are governed by a Charter), the services (Terra Thessalia, Non-profit Company) and the production/marketing of products (Trade Thessalia Lactis- Private Limited Company)
- The ability of producers and processors to guarantee themselves the relationship between HNVf and the quality of their products was reinforced with the implementation of the Participatory Guarantee System (PGS)
- the new organization and support structures have developed techniques in order to improve grazing practices, ration etc
- local actors engaged in Terra Thessalia (breeders, cheese makers) have perceived the importance of pastoral system
- the first tentative market sales (niche markets) abroad and in the domestic market under the Terra Thessalia label confirm the interest of consumers for place-based quality cheese.
- implementation of a redistribution system of the surplus



Figure 3

Does it improve the socio-economic situation of HNV farming?

Pilot actions have shown a reduction on the production cost due to the improvement of pastures and secondly due to the configuration of a balanced and adjusted ration in cooperation with the Agricultural University of Athens, local zootechnicians and livestock farmers. The guarantee of extensive production systems through the PGS, increased the value of the products. Particularly for holdings with strong orientation towards HNV systems (transhumance, locale race etc.) the increase in the final price appears much bigger. A system for the redistribution of a part of the added value allowed by the increase in the value of Terra Thessalia HNVf products has been foreseen and agreed for the benefit of these farms

Does it maintain or improve HNV values?

Nowadays, the local actors engaged in Terra Thessalia (breeders, cheese makers) have perceived the importance of local breeds, grazing and traditional practices to enhance the value of the dairy product and thus the viability of the production unit. There is now a commitment that is already being realized, to enrich the PGS with criteria and indicators that will promote the relationship between biodiversity and HNVf (grazing management plans, ecological corridors, hedges etc.)

Does it include conservation of nature values as an explicit objective?

There is a strict commitment that the production and promotion of dairy products from TERRA THESSALIA concerns only pastoral herds of local breeds. What is more, TERA THESSALIA's entire marketing policy is based on preserving and promoting the HNV character of the production systems of these collaborating holdings. The charter for the small dairy regions and the PGS specifications, explicitly mention the respect of the objective above, alongside the implementation of a redistribution system of profits for the support of the bodies that are involved with specific actions in preserving the HNV character of the production systems. The value of the pastures, for the animal welfare and the product quality, is highlighted. Also the spring season milk and cheese are promoted as of the highest quality due to the flora and biodiversity associated with the particular agro-ecological context of PINDOS (a specific mixture of Mediterranean biodiversity and flora).

Could the innovation be made more directly beneficial for HNV farming and nature values? If so, how?

The most direct benefit for HNVf depends on:

- The amount of value that Terra Thessalia can redistribute to livestock breeders and hence the success of the promotion of its products through a territorial marketing. The expected increase of economic benefits will have a positive impact on strengthening the role of HNVf and its values and also on the efforts that are made in order to manage.
- The cooperation with collective territorial bodies from HNV areas (e.g. PINDOS network) in order to a) utilize the "Cooperation" measure of RDP, b) extend the application of the PGS in the agro-ecological field and enrich it with more HNVf criteria and indicators c) enrich training with issues like the connection of biodiversity and HNVf and d) broaden the marketing strategy with the incorporation of HNVf services (pastoral tourism)



Figure 5



Figure 4

How does «Terra Thessalia» respond to the HNV LINK innovation themes?

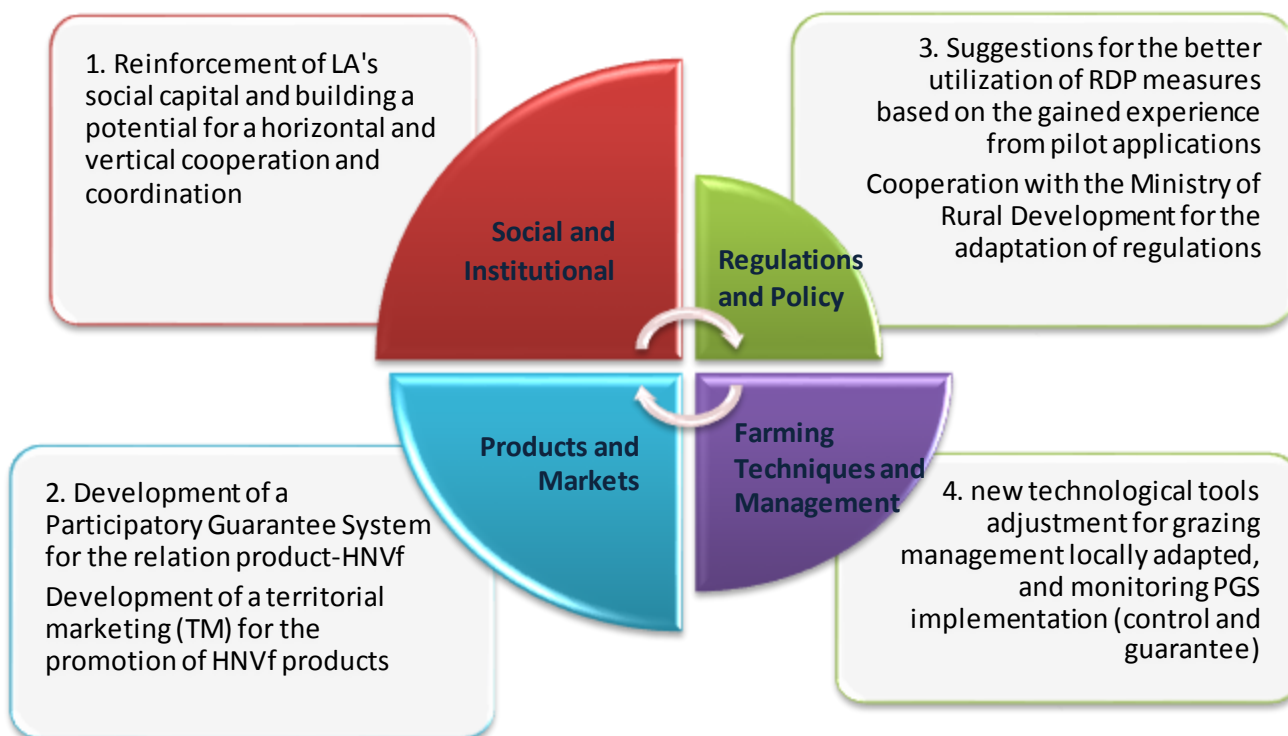


Figure 6 The framework HNV-Link used for evaluating innovations for high nature value farming

The main theme *Social and Institutional* gives priority to the organization of the livestock farmers with other actors (creation of a Territorial Cluster). The creation of TPGS, the construction of a common product etc. cover the theme *Products and Markets*, while the services that are offered by the cooperation structure the theme *Farm Techniques and Management*

1. The coexistence of the three bodies and their functional articulation reflect the balanced institutional representation of all the actors involved not only in the value chain but also in the marginalized and unrewarded pastoral farming (producers, pasture management or pastoral heritage management bodies). The organization of services by Terra Thessalia contributed to the establishment of regular consultations and the multiplication of thematic meetings between actors and special scientists (zootechnicians, range scientists, NTIC technologies, facilitators etc.) with the support of innovative diagnosis and planning tools.

2. The bottom-up development of the tools PGS and TM contributes (through the use of new spatial representation technologies, multi-media etc.) to the promotion of territorial resources and products connecting to HNVf. These tools function as a means through which consumers can enter and navigate in the HNVF world. The function of Terra Thessalia contributes to the development of new products under the Terra Thessalia label, in order to create added value through a marketing of products from HNV farming systems and areas.

3. Terra Thessalia, based on its services (grazing, local breeds, ration, etc), its pilot projects (native pastures improvement, demonstration pastoral farm) and policy proposals to the Ministry of Agriculture (entering local legume plants in the National Catalog, producing raw milk cheese), contributes to the effectiveness of RDP regulations and strengthens the position of HNV farmland and pastoral farming in rural development.

4. The use of new technological tools functions here as a means that will amplify the ability and skills of actors, especially breeders, to actively participate a) in diagnosis procedures and development plans concerning grazing management systems and HNV farmland, contributing in this way significantly to the facilitation of cooperation in thematic and multi-stakeholder meetings (researchers, technicians, public services) and b) in PGS implementation as monitoring system.

The process that made it happen and critical factors for success

Definition and implementation of a territorial cluster capable of reinforcing and revealing the values and the qualities of HNV products

1. Cluster's territorial dimension:

Three different (institutional framework, objectives) cooperation forms that organize the relationship of the Value Chain with territories, HNVF and consumers

- Territorial Assembly: governed by a Charter
- Terra Thessalia: provision of services
- Trade Thessalia Lactis: marketing and markets

2. Participatory Guarantee System: bottom-up development and implementation (specification control)

3. Territorial marketing : contribution to markets' recognition of the value that derives from the product-HNVf link

4. Redistribution system of profits in favor of HNVf holdings

Actors and roles: The driving force was the Laboratory of Rural Space, University of Thessaly and the multidisciplinary team that was formed with the participation of the Agricultural University of Athens (milk sector, pasture management, organization of the livestock farms), Panteion University of Athens (label, certification, PDO, PGI, marketing) and the local Development Agencies. So the first actor, the Laboratory of Rural Space, was the organizer/facilitator of the meetings and the consultations and responsible for the coordination concerning the integration of researchers and technicians from other institutions. The actors involved were a) livestock farmers' cooperatives, b) small cheese makers that retain their artisanal character, c) public services, d) associations of pastoral communities, e) all the representatives of local authorities, f) cooperative banks and g) chambers of Commerce and Industry.

Institutional context that made it possible:

The initiative was favored by the institutional framework of decentralization (stronger Municipalities) and the creation of more flexible cooperation forms (professional, multi-stakeholder etc.) and the RDP regulations (quality systems). Territorial Assembly does not constitute a recognized institutional form. All the representatives of small dairy territories, links of the dairy chain coming from regional and national bodies (Region, Union of Hellenic Chambers, Association of Thessalian Enterprises and Industries, Cooperative Banks of Thessaly, Development Agencies and 3 universities) participate in the assembly. Its function and role are governed by the obligations and objectives set out in the Charter (monitoring the territorial strategy for the dairy chain). Its contribution to the support of the Territorial cluster and its dynamic presence rely on the social moral burden of the bodies within every small territory (Municipalities, Development Agencies, cultural associations etc.). Terra Thessalia is a non-profit legal entity and organizes the various support services (technical and advisory) throughout the Value Chain (livestock breeders, PGS implementation, marketing). Its members are representatives of the supporting mechanisms (Research Laboratories, Development Agencies, Cooperative banks, Chambers) and Trade Thessalia Lactis, which is the third structure. This is a Private Limited Company



charged with marketing and that is why its members are limited to livestock cooperatives and the group of small cheese-makers. In order to avoid conflicts the owner of Terra Thessalia brand name is Terra Thessalia.

Resources: The progress of the programme was made without problems due to funding from the ENPI MED. The creation of a multidisciplinary team has played a decisive role.

Processes: The building process was the following: a) creation of the three bodies, b) networking and pilot actions to support pastoral holdings (pastures improvement, ration, information on local breeds etc.), c) PGS planning and application and d) development of a "territorial" marketing for the promotion of Terra Thessalia and its products. Organization and establishment of numerous consultations that contributed to the familiarization between the various partners and actors and their integration in an institutional learning procedure (organization and operation of the cluster, operation of multi-stakeholder groups) and transfer of specialized knowledge

Critical factors for success: The redistribution system that was adopted works in favor of all those involved directly in the HNVF management and reflects the coherence of cooperation constituting a powerful tool for the success and continuation of this action. Recognition by the public bodies (Region, Ministry of Rural Development). An important factor regarding the active participation and commitment of livestock breeders was the fact that for them the organization and management of an HNV system is part of the knowledge, the practices and the experiences that they inherited. All actors know that the new expectations by an increasing part of the consumers link the quality and the identity of the product with the HNV systems and areas. New opportunities arise by the forthcoming activation of RDP measures (Cooperation, actions to strengthen biodiversity etc.), by the possibility of funding exports by local cooperative banks and from the better organization of the products' distribution networks. Also, new farmers are playing and will keep playing an important role.

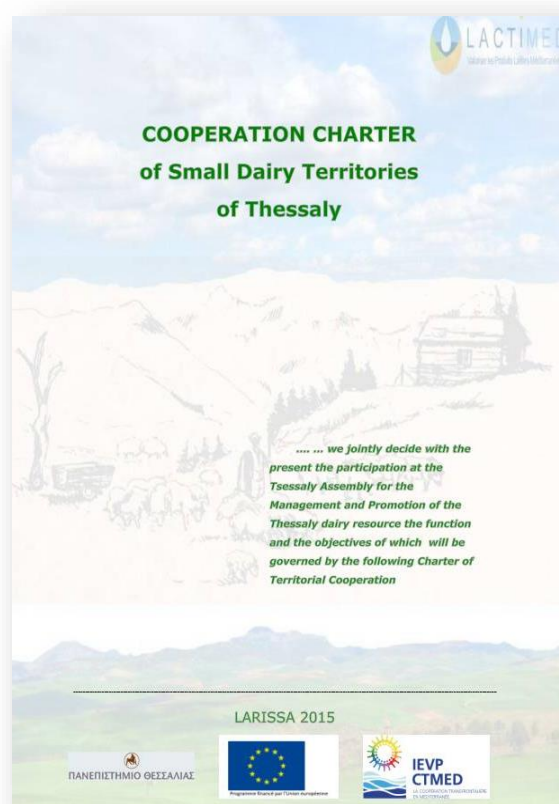


Figure 7

Limiting factors, actual/potential problems, and how could they be overcome:

- The mismatch between timetables for the implementation of support and funding policies. Despite the fact that the cooperation was ready to move to actions since the beginning of 2015, the relevant measures of the 2014-2020 RDP had not yet been activated in mid-2017
- Restrictions due to the crisis, imposed by memorandums (lack of bank borrowing, overtaxation of SMEs, farmers)
- Difficulty of local actors to cooperate and be flexible due to long persistence in individual strategies which is interpreted by the long-term marginalization of pastoral farming by national policies (reservation towards policies, bureaucrats and services) and by geographical isolation (mountainous areas)

- In this context, the interaction within the successive instances of rapprochement between different stakeholders (dairy actors, local development agencies, commercial and industrial chambers, cooperative banks, municipal services, etc.) on a wider regional level might create reciprocity and a spirit of cooperation, and restore the territorial anchorage of collective knowledge and practices. This process also brings local actors closer to the service sector and helps them become familiarized with the institutional environment of the public sector and existing policies.

Lessons learnt from this innovation example, and its potential replication

- The effort to support HNVf through consumer society requires:
 - mobilizing the actors of the value chain and the territory
 - control and guarantee of the HNVf links with its products as a prerequisite for the adoption of a competitiveness based on the specificity of these links
- The promotion of a cluster that incorporates principles, values and institutions outside the classical business and economical framework requires time since it is based on social relationships and trust building
- the innovation is transferable due to the low cost and favorable environment (policies and consumers)

Overall lessons from this example, especially from point of view of HNV farming?

Strengthening the marginalized HNV pastoral holdings that face the competition of the respective intensive holdings in the plain, depends on the ability of the territorial cluster to:

- intervene in the entire range of the dairy value chain
- link the increase of their products' value with the HNV characteristics of the holdings that produce them
- orientate part of the profits towards the reproduction of the HNV pastoral systems on which the above increase of value is based
- ensure the link between the farmers' inherited knowledge and practices with the new scientific knowledge through the cooperation of the research and support bodies (e.g. research related to the link of biodiversity and HNVf productivity)

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

This particular innovation, being mainly organizational and immaterial, can be transferred to other HNV areas without high cost. Its representatives are determined to maintain HNVf and invest in the management and promotion of its relationship with the agri-foods they produce

Could it be rolled out on a bigger territorial scale?

Yes, as long as we separate the coordination-supporting aspect that can be developed at the scale of the Region (as Operational Partnership) from the productive aspect that should be handled by each territory separately according to the homogeneity of its HNVF heritage

What would be needed to do this successfully?

Cooperation with the regional and central services for an effective combination of motives and regulatory frameworks such as consulting services, training, financial motives, support of the market etc. Commitment of all the directly or indirectly bodies involved in the value chain to cooperate for the management of HNVf and the adoption of a strong tool for the specifications' control. Utilization of RDP funding tools.

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Romania – innovation example 1

AGRO-ENVIRONMENT MEASURE: PACKAGE 6 GRASSLANDS IMPORTANT BUTTERFLIES (MACULINEA SP.) IN CLUJ AND SUCEAVA COUNTIES

Department of Economic Sciences, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, www.usamvcluj.ro/eng/

- **Location:** Cluj and Suceava counties, Romania
- **HNV system:** Extensive grazing, mosaic farming
- **Scale of operation:** Eligible areas are 26 ATUs from Cluj and Suceava counties, with a total area of 23000 ha.
- **Timespan:** It started in 2012 and continues through the actual NRDP 2014-2020
- **Keys to success:** Initiative of local NGOs (the Romanian Lepidopterological Society; collaboration with ADEPT and WWF); opportunity to ask for extra payment additional to direct payments.

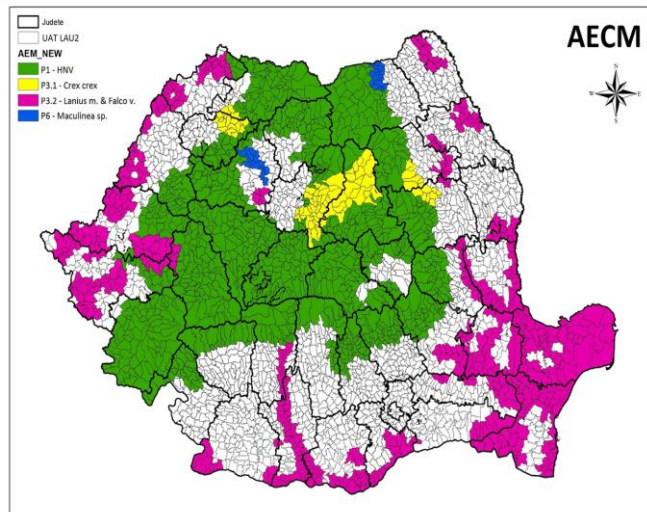


Figure 1: Eligible areas for Package 6 (■) – *Maculinea sp.*

Problems addressed by this example

Through this innovation it is intended to protect the grasslands important for butterflies' development of the two counties. The areas are Natura 2000 sites with high biodiversity. Through this measure farmers are obliged to respect some conditions such as it is not allowed to use chemical fertilizers or pesticide, the use of organic fertiliser is only up to a certain level, mowing is allowed only manually or by using light machinery and only after August 25th etc.

Story in a nutshell

The Romanian Lepidopterological Society proposed an agro-environment measure: "Package 6 Grasslands important for butterflies (*Maculinea sp.*)" in Cluj and Suceava counties, in collaboration with ADEPT foundation and WWF. This was based on the work done by the Society to protect the butterflies and their habitats, such as several working meetings, on-field research on butterfly protected species and development of an on-line platform. According to this measure, since 2012 farmers received 240 euro/ha/year if they respected the conditions of the package (National Rural Developed Program 2007-2013). This is additional to the direct payments. According to NRDP 2014-2020 farmers can receive 361 euro/ha/year if land is worked manually or 282 euro/ha/year if land is worked with light equipment. The support is granted following the signature of voluntary commitments for 5 years, after which can be extended on an annual basis until end of program.

What does Agro-environment measure achieve for HNV farming?

- Important additional support for farmers
- About 3,600 ha/year and 475 beneficiaries/year (NPRD 2014-2020)
- 2012-2016: 400 farmers received about 4.3 million euro from APIA through Package 6 (SLR Leaflet, 2017)



Figure 2 Manual mowing @ summer 2017, Pâglișa village



Figure 3: Manual mowing

Source: <http://ziuadecj.realitatea.net/politica/niculescu-subventiile-pentru-fluturisi-gaste-cu-gat-rosu-afecteaza-credibilitatea-politicii-agricole-comune--85267.html>

Achievements

The payment represents an important support for farmers in the area, as additional payments to the direct ones. The extensive management of the pastures important for butterflies is ensured by Package 6.

Economics of HNV farming

Package 6 within the NRDP 2007-2013 supported about 3,600 ha/year and about 475 beneficiaries/year (NRDP 2014-2020). During 2012-2016, more than 400 farmers from 11 communes from Cluj county received about 4.3 million euro from APIA (SLR Leaflet, 2017).

Maintaining or improving HNV values

The main objective was to protect the butterfly *Maculinea sp.*, the Eastern Hills of Cluj being the only place where can be found all European butterfly species *Maculinea*. These areas hosts about 3% of the population at European level and 40% at national level (NRDP 2014-2020). Most representative species are *Maculinea nausithous*, *Maculinea teleius*, *Maculinea alcon* and *Eriogaster catax*.



Figure 4 Sheep grazing in Vultureni Commune

Source: Romanian Lepidopterological Society



Figure 5 Butterfly *Maculinea teleius* @ summer 2017, Pâglișa village

How does Agro-environment measure respond to the HNV LINK innovation themes?

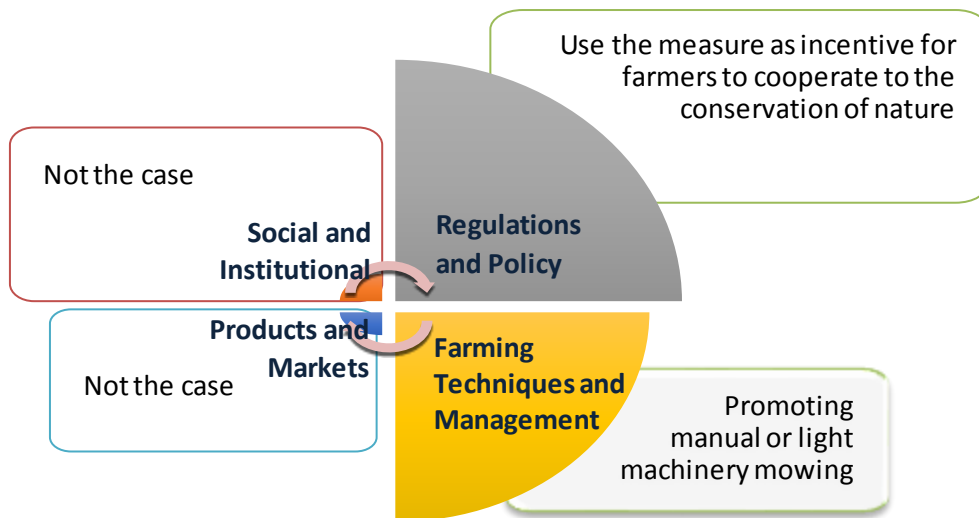


Figure 6 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

Regulations and Policy: Package 6 - Grasslands important for butterflies (*Maculinea sp.*) was especially built for Cluj and Suceava counties, being an unique measure at European level. It is an additional payment to the direct ones, obtained only by eligible farmers. Eligibility is specified in the National Rural Developed Program and it refers to technological restrictions (use of fertilizer), grazing with maximum 0.7 Great Beef Unit per hectare, mowing starts after August 25th etc.

Farming Techniques and Management: Use of extensive management through manual or light machinery mowing proved to be efficient for pastures important for butterflies only if it is done after August 25th, after the larvae are leaving the inflorescences.

The process that made it happen and critical factors for success

- Cooperation between actors within Mozaic Project
- Based on research: monitoring butterflies over the years
- Critical factors for success: difficulty to comply package conditions due to old age of most farmers, lack of interest, bureaucracy



Figure 7 Monitoring butterflies in traditional hay meadow – Mozaic Project
Source: <http://www.mozaic-romania.org>: © Inae Paulini

Lessons learnt from this innovation example, and its potential replication

- Research done by SLR in the area sustained the need of this measure
- Farmers encouraged to use extensive farming methods
- Replicable for HNV areas with species and habitats that need special attention for their preservation



Figure 10 Natural pastures general view



Figure 11 Brielmaier mower

Source: Romanian Lepidopterological Society

Overall lessons from this example, especially from point of view of HNV farming?

Researchers conducted over years by SLR proved to be an effective foundation to sustain the need of this measure as an optimal solution to conserve natural values and continue farming in the areas. Farmers are encouraged to continue the use of extensive farming methods.

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

The measure can be replicated for other HNV areas where species and habitats need special attention for their preservation

Could it be rolled out on a bigger territorial scale?

Yes, where these species or other are threatened by the type of farming activities used

What would be needed to do this successfully?

Farmers should be better informed about the eligible conditions to access this measure by explaining the benefits of both, nature and farming. A farmer association could be a good solution for small farmers who cannot afford to buy light machinery such as Brielmaier. Including all commune from LA in the eligible area to protect the habitats on a larger scale.

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Romania – innovation example 3

EFFECT OF TRADITIONAL AND MODERN AGRICULTURAL PRACTICES ON HNV GRASSLAND

- **Location:** Dealurile Clujului Est
- **HNV system:** Extensive grazing, mozaic farming
- **Scale of operation:** 24 plots of land from Dealurile Clujului Est
- **Timespan:** 2014-2016
- **Keys to success:** Initiative and experience of the Romanian Lepidopterological Society in research in the area; opportunity to attract funds

Problems addressed by this example

There is little information available regarding the correlation between biodiversity and traditional or modern farming practices. SLR has done over the years several researches proving that there is a link between biodiversity and land use (mowing, grazing, abandonment). The project intended to propose practical grassland management measures to be sent to the national and local authorities.

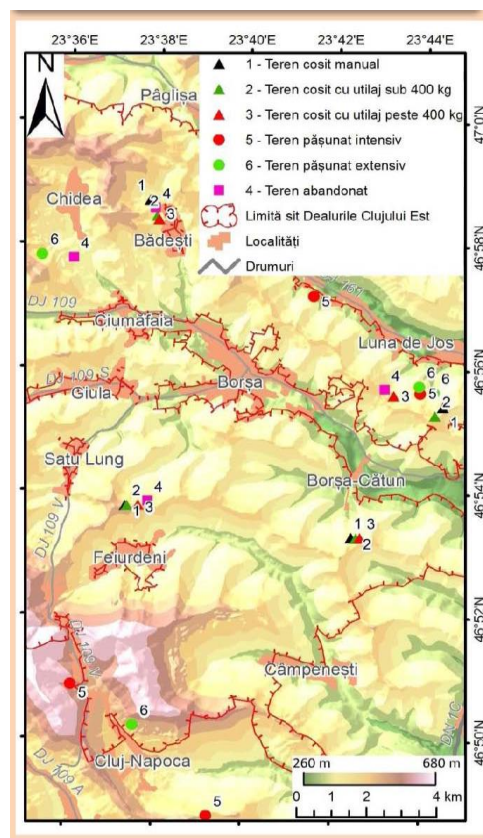


Figure 1 Map of experimental plots
Source: Romanian Lepidopterological Society

Story in a nutshell

The effect of traditional and modern agricultural practices on HNV grassland - project “Quantification of the effect of traditional and modern agricultural practices on the biodiversity of HNV grasslands targeting sustainable management”, initiated by Romanian Lepidopterological Society (SLR). It was also tested the use of ecological mowers as possible replacement for the traditional hand mowing for biodiversity conservation. There are 24 plots of land, each with a different management technique and 6 different groups of species, to be compared and to determine an index of biodiversity for each type of use. There were used 6 different techniques: intensive grazing, extensive grazing, manual mowing, mowing with mechanical mower of low capacity, mowing with a tractor, abandoned. Innovation: use of Brielmaier mower does not have a negative impact on biodiversity.

What does Traditional and modern agricultural practices achieve for HNV farming?

- About 20000mp mowed using Brielmaier machines
- Biodiversity is maintained
- Farmers can comply with the conditions or Package 6
- Grasslands important for butterflies (*Maculinea sp.*)
- Reduced working time and increased productivity



Figure 2 Brielmaier mower. Source: Romanian Lepidopterological Society



Figure 3 Butterfly *Maculinea teleius*
Source: Romanian Lepidopterological Society

Achievements

There were mowed about 20000mp using Brielmaier machines and was proved that biodiversity is not harmed. Final results of the project are expected to be officially disseminated.

Economics of HNV farming

On a long-term, the socio-economic viability of the farms can be improved if farmers are using proper agricultural techniques that do not harm the nature, helping them to reduce the working time, to increase the productivity and to comply with the conditions of the agri-environment measure (e.g. Package 6)

Maintaining or improving HNV values

Main objective was to conserve nature values and increase awareness of the benefits of using traditional and modern agricultural practices

How does Traditional and modern agricultural practices respond to the HNV LINK innovation themes?

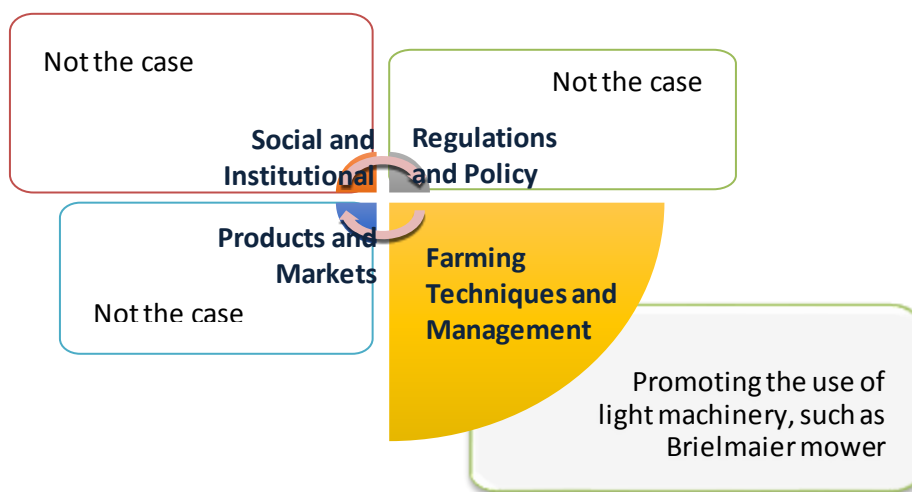


Figure 2 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

- **Farming Techniques and Management:** Use of light machinery mowing. The use of Brielmaier mower does not have a negative impact on biodiversity. Farmers can reduce the time spent form mowing and increase productivity.

The process that made it happen and critical factors for success

- Opportunity to attract funds to continue research started in 2004
- Critical factors: reluctance of farmers; lack of money to buy the Brielmaier mower
- Increase farmers awareness related to the benefits of using light machinery for mowing



Figure 4 Use of Brielmaier mower in Dealurile Clujului Est
Source: <https://assets.vlinderstichting.nl/docs/2983adae-ff6b-4dc2-813b-bd0dc442b812.pdf>



Figure 5 Researchers in the field. Source: <http://www.lepidoptera.ro/evenimente.htm>

Actors and roles: Romanian Lepidopterological Society (SLR) – initiator/**catalist/innovator**; Romanian Ministry for Education and Research – funding partner; Brielmaier Motormäher GmbH – partner.

Institutional context that made it possible

It is the result of many years of research projects related to butterflies conducted by SLR. The opportunity offered by CAP for an extra payment in addition to the direct payments.

Resources: Financed by the Romanian Ministry for Education and Research (PN II-PT-PCCA 2013-4-1229, nr. 79/01.07.2014)

Processes: Previous researches on the protection of butterflies and their habitats lead to the research idea of investigating the effects of using the Brielmaier mower.

Critical factors for success: Reluctance of farmers in using the proposed farming techniques. No information found if farmers are using the Brielmaier mower. Continuity depends on the purchasing power of farmers (about 25,000 EURO new mower; 18,000 EURO second hand mower)

Limiting factors, actual/potential problems, and how could they be overcome: Make farmers aware of the fact that their involvement in protecting natural values will not stop them from practicing agriculture.

Lessons learnt from this innovation example, and its potential replication

- Positive effect of using Brielmaier mower demonstrated over years in Dealurile Clujului Est
- Brielmaier mower proved to be efficient in Tarnava Mare a well (STIPA project)
- Applicable in other HNV areas

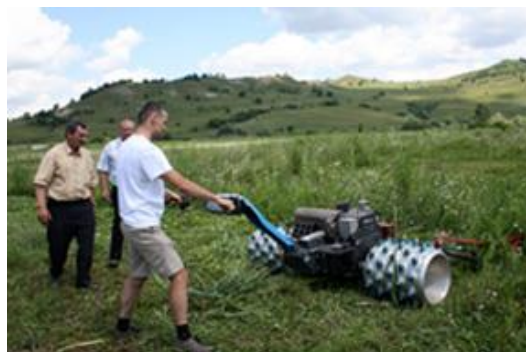


Figure Use of Brielmaier mower in Tarnava Mare

Source: http://www.fundatia-adept.org/?content=lifeplus_whatwedid&news_id=&set_lang=ro

Overall lessons from this example, especially from point of view of HNV farming?

The project was a predictable action of SLR to continue the investigation started in 2004 about the link between biodiversity and land use (mowing, grazing, abandonment). They demonstrated the positive effect of using the Brielmaier mower.

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

Even if it can be considered unique by the fact that it was tested the effect of six different techniques on flora and fauna, the innovation can be replicated in other areas. For instance, the positive effect of the Brielmaier mower was demonstrated previously in another region of Romania, Tarnava Mare within a project conducted by ADEPT foundation (STIPA project).

Could it be rolled out on a bigger territorial scale?

Yes, Brielmaier mower was proved to be efficient in Tarnava Mare a well

What would be needed to do this successfully?

To increase awareness of the positive effects of using it (technical innovation); create farmer association to afford purchasing the mowers, which could be shared by farmers.

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Romania – innovation example 2

**INTEGRATED MANAGEMENT PLAN FOR DEALURILE CLUJULUI EST.
(NATURA 2000 SITE)**

Department of Economic Sciences, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, www.usamvcluj.ro/eng/

- **Location:** Dealurile Clujului Est
- **HNV system:** Extensive grazing, mozaic farming
- **Scale of operation:** Dealurile Clujului Est Natura 2000 site
- **Timespan:** 2013-2016; Management plan approved by Order no. 1208/2016
- **Keys to success:** Initiative and experience of the Romanian Lepidopterological Society in research in the area sustained the initiative; opportunity to attract funds

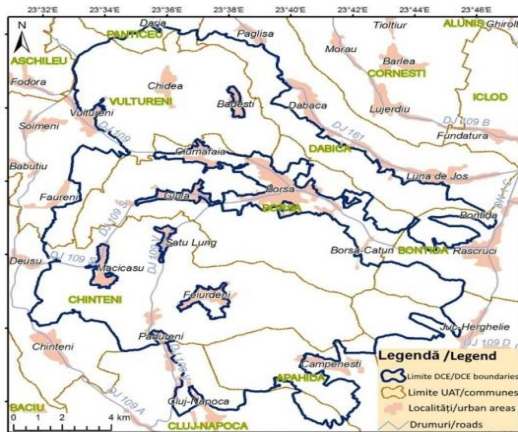


Figure 1 Limits of Natura 2000 area in Dealurile
Source: Management Plan Natura 2000 site Dealurile Clujului Est (map .4.)



Figure 2 Project brochure
Source: Romanian Lepidopterological Society

Problems addressed by this example

The management plan was developed with the aim to conserve the rare fauna and flora, by collaborating with the local communities, especially as regard to the farming activities. For example, mowing only after August 25th, manually or with the use of low capacity machines because this procedure is in the favor of butterflies, the Eastern Hills of Cluj being the only place where can be found all European butterfly species *Maculinea*.

Story in a nutshell

The management plan for the Eastern Hills of Cluj area developed within the project “Development of an integrated management plan for the site of community importance ROSC10295 – Eastern Hills of Cluj” was initiated by the Romanian Lepidopterological Society (SLR). Eastern Hills of Cluj is a Natura 2000 site (Order MMP 2387/2011) with a surface of 18889,6 ha. The management plan substantially contributes to the conservation of the biodiversity, promotes the natural values, encourages traditional agricultural practices and the sustainable management of meadows and hayfields, and encourages a sustainable tourism.



What does Integrated management plan achieve for HNV farming?

- Traditional farming practices are encouraged to continue
- Farmers from 4 communes (Borșa, Bonțida, Dăbâca and Panticeu) may be eligible for Package 6 Grasslands important for butterflies (*Maculinea sp.*)
- Favourable conservation conditions for site habitats

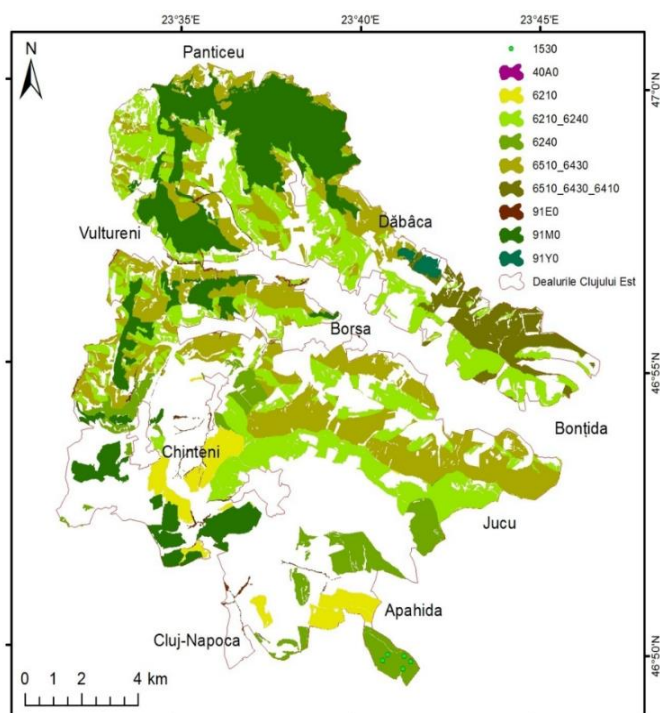


Figure 3 Distribution of the HNV habitats identified in the LA.
Source: Management Plan Natura 2000 site Dealurile Clujului Est



Figure 4 Source: Romanian Lepidopterological Society

Achievements

The management plan was approved by Order of the Romanian Ministry of Environment, Water and Forests no.1208/29.06.2016. This is a good prospect for future if the actions are applied as mentioned in the management plan.

Economics of HNV farming

Farming traditional practices are encouraged to continue. Farmers who respect the management plan comply to the conditions of the agri-environment measure “Package 6 Grasslands important for butterflies (*Maculinea sp.*)”, which is an extra financial aid.

Maintaining or improving HNV values

The management plan clearly indicates how to assure favourable conservation of each type of grassland habitat in the area by specifying the conditions under which mowing is allowed and naming the authorities in charge for monitoring and control. In the case of damaged areas several measures of ecological reconstruction will be taken.

How does Integrated management plan respond to the HNV LINK innovation themes?

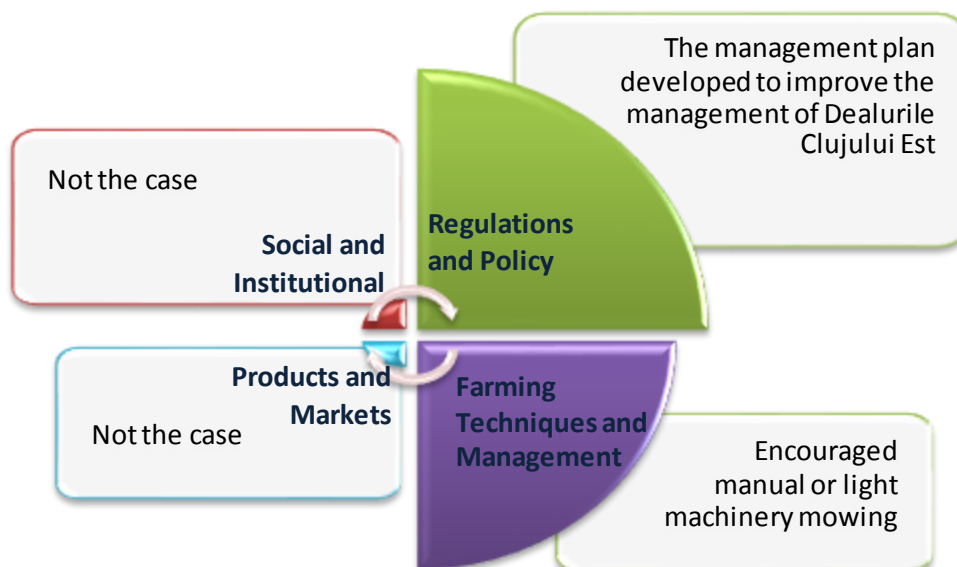


Figure 5 The framework HNV-Link used for evaluating innovations for high nature value farming.

- **Regulations and Policy:** The management plan was developed with the aim to improve the management of the site of community importance ROSCI0295 - Dealurile Clujului Est and to increase people awareness regarding the biodiversity protection in the site. It was based on detailed assessment of conserved conservation flora and fauna species, natural habitats of conservative interest, assessment of the anthropic impact on protected areas and implicitly on species and habitats, establishment of conservation measures and ways to involve stakeholders and local communities, as well as the environmental assessment procedure according to the legislation.
- **Farming Techniques and Management:** Mowing is allowed during 25 August – 30 November, the mozaic system being recommended such that a surface to be mown every 3-4 years. Manual mowing (traditional practices) or with light machinery are encouraged.

The process that made it happen and critical factors for success

- Project co-financed by European Regional Development Funds (ERDF)
- Critical factors for success: reluctance of local people to collaborate; migration of young people; low involvement in farming; lack of interest in mowing the land



Figure 5 Brielmaier mower.

Source: Romanian Lepidopterological Society



Figure 6 Researchers in the field.

Source: <http://www.lepidoptera.ro/evenimente.htm>



Figure 7 Signing the contract;

Left Prof. dr. László Rákósy - President SLR, Right dr. Codruța Simule - Director OI POS Mediu Cluj-Napoca.

Source: http://www.lepidoptera.ro/pos_galerie_foto.htm

Actors and roles: Romanian Lepidopterological Society (SLR) - initiator/catalist/innovator; Agency for Environmental Protection 'Cluj – partner; European Regional Development Funds (ERDF) – co-financer; Romanian Government – co-financed from national budget

Institutional context that made it possible: The initiative of SLR, based on many years of research in the field and opportunity to attract non-refundable funds from the European Regional Development Funds and national budget.

Resources: Total budget was 1,349,497 RON (aprox 300,000 EUR), from which non-refundable funds were 1,331,149 RON from the ERDF, and the rest from the national budget.

Processes: The project was prolonged with 9 months, period necessary for the management plan to be approved. Meetings were organised to inform farmers about the management plan.

Critical factors for success: Reluctance of local people to collaborate and the migration of young people from rural to urban areas; risk of low involvement in farming and lack of interest in mowing the land.

Limiting factors, actual/potential problems, and how could they be overcome: Farmers to be informed about the benefits they can obtain, such as becoming eligible for Package 6 (although only in 4 communes), a higher productivity when using light machinery for mowing.

Lessons learnt from this innovation example, and its potential replication

- Collaboration with stakeholders is mandatory to succeed
- Actions to increase awareness of the benefits of using extensive farming
- Applicable in regions with same grassland habitats or adapted on other types of habitats.

Overall lessons from this example, especially from point of view of HNV farming?

It is important to develop management plans for protected areas with actions that lead in time to a better conservation of the land with the help of local communities (HNV farming).

Is the innovation unique to its territory and its characteristics, or is it replicable in other areas?

The idea can be applied in other regions with same grassland habitats or adapted on other types of habitats.

Could it be rolled out on a bigger territorial scale?

Yes, in protected areas where HNV farming is still present

What would be needed to do this successfully?

Collaboration with all stakeholders (especially farmers) is critical to understand the reality in the area, the problems they confront on daily basis and find optimal solutions that are in the benefit of both, nature and farmer (to preserve the natural values and help farmers increase their economic productivity).



Figure 8 Informing farmers about the management plan.

Source: Romanian Lepidopterological Society



Figure 9 Meetings with local stakeholders, Vultureni City Hall

Source:
http://www.lepidoptera.ro/pos_galerie_foto.htm



Figure 10 Prof. dr. László Rákósy explaining about the Natura 2000 site to children in a school from Bondita

Source:
http://www.lepidoptera.ro/pos_galerie_foto.htm

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Spain – innovation example

FARMERS BUILDING DIALOGUE

Asociación de ganaderos de La Vera y Norte de Extremadura

- Location: La Vera, La Vera, Extremadura
- HNV system: Extensive goat and cattle grazing on common pastures
- Scale of operation: District
- Timespan: 2017-ongoing
- Keys to success: The dedication and persistence of a small number of farmers is key. HNV-Link was able to support the farmers' association and to facilitate the dialogue with the authorities.



Problems addressed by this example:

Devastating campaign by authorities against TB, top-down implementation, lack of dialogue, failure of authorities to understand local farming conditions.

Story in a nutshell:

It is not a specific project, it is the story of an initiative or process by which the local livestock farmers' association organised itself and opened a dialogue with the regional government on the sensitive issue of TB control, with support from the HNV-Link project. So far, two meetings have been organised between the farmers and the authorities to discuss practical issues with facilitation from HNV-Link. There has also been an open meeting between farmers and animal health experts, held in La Vera. The farmers' association already existed before this initiative, but the catalyst for becoming more organised and for building dialogue with the authorities was the regional government's new campaign against TB in goats from 2016. This campaign was implemented in a very rigid, top-down way, leading to the slaughter of many goat flocks and increasing frustration among goat farmers who perceived the campaign as devastating their livelihood but ineffective in terms of its objectives.

What does the initiative achieve for HNV farming?

- Gives pastoralists the opportunity to engage in dialogue face-to-face with the regional authorities and make their own proposals for changes to the way the TB controls are implemented, in a facilitated environment rather than confrontational.
- Transmits the critical situation and proposed solutions to the authorities who have the competence to implement them.

The process that made it happen and critical factors for success:



- A new campaign against TB in goats was the catalyst, as it put pastoralists in a desperate situation.
- One or two specific goat farmers became more active in the farmers' association which previously had been more dominated by cattle farmers.
- A member of the HNV-Link team was available locally and dedicated time and enthusiasm to understanding the farmers' concerns and acting as a bridge between farmers and authorities.
- Specific individuals in the regional animal health authority showed willingness to listen and engage in dialogue.

Lessons learnt from this innovation example, and its potential replication:

- Very good potential for replication in all areas of extensive livestock grazing, especially where there have been no previous initiatives to build dialogue.
- Starting a dialogue with farmers and authorities is a very time-consuming process.
- Needs dynamic and committed individuals with ability to collaborate with different institutions.
- Lack of continuity of the HNV-Link support role is a weakness.

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Spain – innovation example 4

FINCA CASABLANCA DEHESA FARM DEVELOPING A SUSTAINABLE MODEL

<http://dehesando.com/>

- **Location:** Oliva de Plasencia, Extremadura
- **HNV system:** Extensive beef cattle and native pigs in dehesa. Olives.
- **Scale of operation:** Single farm 400ha
- **Timespan:** Started 20 years ago, developed steadily since then
- **Keys to success:** A private initiative, not supported directly by projects or institutions. The farmer is highly motivated and collaborates with the University of Extremadura and NGOs



Figure 1

Problems addressed by this example

Unsustainable practices in many dehesas (e.g. overstocking, lack of tree regeneration), lack of economic viability (which also drives the unsustainable intensification).

Story in a nutshell

Dehesa farmer practising low-density grazing system to facilitate tree regeneration, local transhumance, grass-based fattening, own butchery, direct sales of organic beef and pork (including to CSA groups), and rural tourism. Also collaborating as a field site for research on management for tree regeneration and into organoleptic qualities of meat.

What does Casablanca achieve for HNV farming?

- The farm began to operate as an organic system 20 years ago.
- Collaborative work with the University of Extremadura began 10 years ago, including ground-breaking work to develop a practical grazing model that facilitates tree regeneration.
- The farm fattens its own stock from pasture, which is very innovative for the region.
- He also maintains traditional seasonal stock movements (local transhumance).
- He has developed direct sales and his own butchery in the face of numerous bureaucratic barriers.

Achievements

The farm has a philosophy of sustainability (ecological and economic) and is innovative in its management, diversification, processing and marketing, all developed gradually over many years.

Economics of HNV farming

Data is not available on the economic impact of the farming system.

Maintaining or improving HNV values

The farm is in many ways a model of HNV dehesa farming, with a low stocking density, seasonal withdrawal of stock to mountain pastures, both of which prevent any overgrazing of the pastures and facilitate tree regeneration.



Figure 2



How does Casablanca respond to the HNV LINK innovation themes?

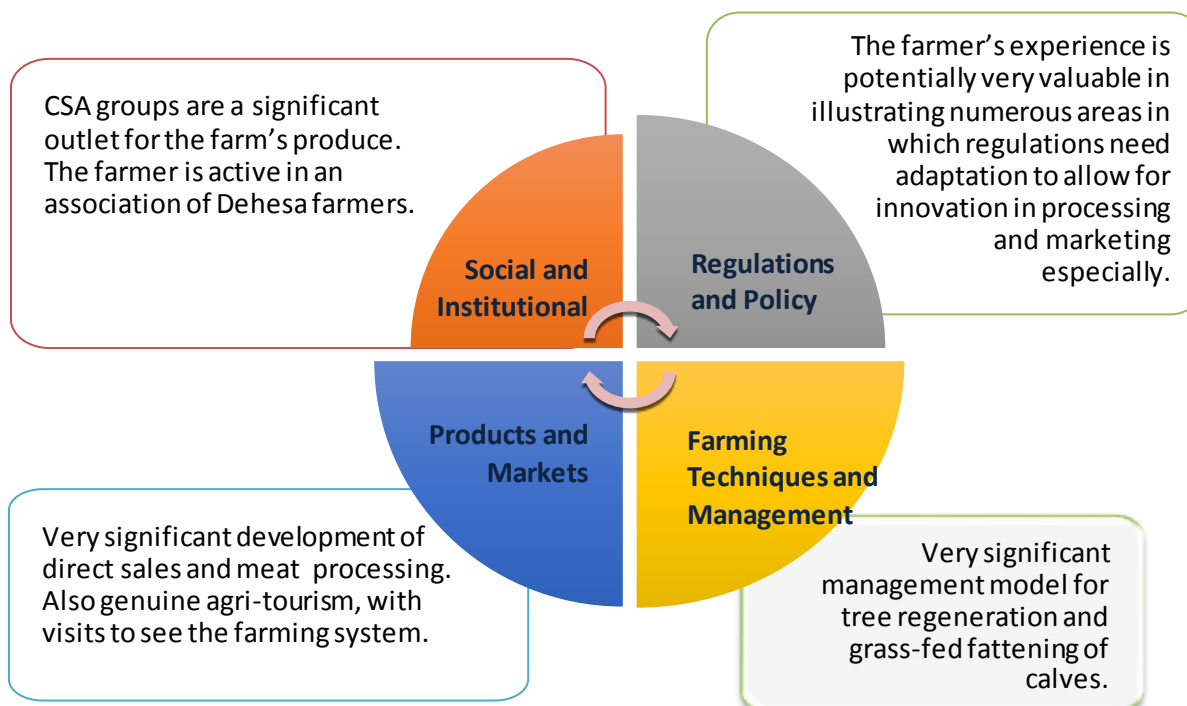


Figure 2 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

The process that made it happen and critical factors for success

- A private initiative, not supported directly by projects or institutions.
- The farmer is highly committed and motivated.
- Collaboration with the University of Extremadura and NGOs is a source of extra motivation
- Major bureaucratic barriers (see below)

The farmer faced repeated administrative barriers to his plans for processing and selling his own meat, e.g. rules for the transport of meat and establishment of a butchery do not contemplate his type of small-scale operation as an adjunct to the farm business. The farmer was obliged to establish a separate business as a butcher. The government campaign to eradicate TB in livestock is causing additional problems for his transhumance and meat sales.

Lessons learnt from this innovation example, and its potential replication

- Potentially very valuable as a demonstration farm, e.g. for more sustainable grazing and tree regeneration.
- And to test innovative policy measures, such as payments for biodiversity results and adapted food hygiene and animal health regulations.

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Spain – innovation example

PASTANDO GARGANTA – A LOCAL HNV-LINK INITIATIVE

European Forum on Nature Conservation and Pastoralism www.efncp.org

- Location: Garganta la Olla, La Vera, Extremadura
- HNV system: Extensive goat and cattle grazing on common pastures
- Scale of operation: Municipality
- Timespan: 2017-2018
- Keys to success: HNV-Link was able to employ a project officer to engage with all the pastoralists in the municipality, and with other key actors, to understand the current situation and challenges and to work up a set of practical proposals for sustaining pastoral activity into the future. HNV-Link resources were crucial, but equally the dedication of specific individuals who executed the project and the positive response of the local pastoralists and institutions.



Problems addressed by this example:

Extensive grazing is in severe decline in the Municipality. Natura 2000 grassland habitats are present on a large scale but are being lost at an alarming rate. The number of pastoralists declined by 25% in the past 3 years, and goats by 40%. Only about ten pastoralists remain, all are over 50 and only one has a possible family successor. Reversing these trends depends very largely on the regional and local authorities, as the pastoralists have limited options to innovate in the current regulatory framework (e.g. dependence on rented common grazing land, hygiene and land-use restrictions on activities such as cheese making, environmental restrictions on scrub control, devastating campaign by authorities against TB, lack of support from CAP and RDP, etc.).

Story in a nutshell:

Pastando Garganta ("*Grazing Garganta*") is a local project within the HNV-Link Learning Area. It targets one Municipality with two large areas of common grazing, one public and one private, covering a total of 3,666



ha, of which the great majority is within Natura 2000. A project officer was employed to engage with all the local pastoralists and also with hunters, foresters, and with local and regional authorities. The aim was to find out the current situation of pastoralism and also of the Natura 2000 habitats in the Municipality.

What does Pastando Garganta achieve for HNV farming?

- Reveals for the first time with facts and figures the crisis facing extensive pastoralism and Natura 2000 habitats in the Municipality.
- Gives pastoralists the opportunity to make their own proposals for change, including practical measures for improving pastures and living/farming conditions.
- Transmits the critical situation and proposed solutions to the local and regional authorities who have the competence to implement them.
- Physically brings the different authorities together with pastoralists in the field to discuss together for the first time.

The process that made it happen and critical factors for success:

- HNV-Link was the catalyst, providing resources (though very limited) and the context and approach of a wider project in La Vera and at EU level (credibility with authorities).
- A very suitable and motivated expert was available locally to work as part-time project officer.
- The Municipality is a suitable scale for working with limited resources, as one person can easily engage with all pastoralists and there is only one local authority to deal with.
- Garganta la Olla was especially suitable as the grazing area is dominated by only two units of grazing land.
- Local pastoralists are in a desperate situation and have been largely ignored by the authorities and society generally until now. They were willing to respond positively to this initiative.
- Different authorities showed willingness to listen and engage in dialogue.

Lessons learnt from this innovation example, and its potential replication:

- Very good potential for replication in all areas of extensive livestock grazing, especially where there have been no previous initiatives (starting from zero).
- Lack of continuity and very limited resources are weaknesses with this project approach. It requires funding over a much longer term in order to deliver solid results.
- Needs dynamic and committed individuals with a clear vision and ability to convince and collaborate with different institutions

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Spain – innovation example 2

QueRed ASSOCIATION FOR ARTISAN CHEESE MAKERS

www.redqueserias.org



Figure 1

- **Location:** National network (also part of a European network FACE)
- **HNV system:** Dairy (goats, sheep, cows), farms are mostly grazing systems
- **Scale of operation:** 300 members throughout Spain (200 are producers)
- **Timespan:** Established in 2013
- **Keys to success:** Association directed by small-scale producers with full transparency, independent from government and public funds, active members encouraged by a dynamic director, low members' fees at the beginning

Problems addressed by this example

One of the main problems for HNV Farming is the economical weakness of farms. One way to become more profitable is adding value selling cheeses or meat in short supply chains. But the poorly adapted legal framework (especially the implementation of EU food hygiene rules) is a real constraint for small-scale producers that face expensive requirements that make business unfeasible. This is the problem addressed by QueRed.

Story in a nutshell

QueRed is a national association of artisan cheese producers for the adaptation of rules and bureaucracy to the reality of artisan cheese dairies. The association also organises training for producers, exchanges among producers in a googlegroup, collective participation in cheese festivals and markets, looking for collective contracts for transport and insurance. Besides cheesemakers, QueRed has also an important group of future cheesemakers that find in the association support and help from more experienced producers, and it is also a way to assure the continuity of the association. QueRed is the only association in Spain that represents the interests of small-scale cheese dairies at national level and in 4 years of life has achieved legal reforms that are improving the situation of farmers on the ground.

What does QueRed achieve for HNV farming?

- Specific legal changes in Spain.
- Publication with official approval of several crucial documents on adaptation of rules and bureaucracy to the reality of artisan cheese dairies (see notes).
- Training for producers, exchanges among producers, collective participation in cheese festivals and markets, looking for collective contracts for transport and insurance.
- Support for future cheesemakers.





Figure 2



Figure 3

Achievements

Approval and publication, by the Public Health Ministry, of a document with examples of interpretation of EU food hygiene rules in small-scale cheese dairies. This work was done by QueRed and negotiated with national (Public Health Ministry (Aecosan), Agriculture Ministry (Mapama) and regional competent authorities).

http://www.aecosan.mssi.gob.es/AECOSAN/web/noticias_y_actualizaciones/noticias/2017/aplicacion_higiene_queserias.htm

Guidelines for the improvement of the hygiene package implementation and proposals of exceptions and adaptations for farmhouse and artisan cheese dairies. This work was done in collaboration with Slow Food Italy, Slow Food Macedonia and Ardahan University (Turkey) and the aim is to help EU candidate countries to implement EU Food Hygiene Regulations in an adapted way for small-scale productions. <http://www.pmproje.com/upload/icerik/flex.pdf>

Approval of the European Guide for Good Hygiene Practices in the production of artisan cheese and dairy products.

https://ec.europa.eu/food/sites/food/files/safety/docs/biosafety_fh_guidance_artisanal-cheese-and-dairy-products.pdf

Economics of HNV farming

Data is not available on the economic impact of QueRed's work for HNV farms, but positive effects can be expected for farms that choose to develop small-scale cheese-making.

Maintaining or improving HNV values

Indirectly, the work of QueRed should help to maintain some individual HNV farms.



Figure 4

How does QueRed respond to the HNV LINK innovation themes?

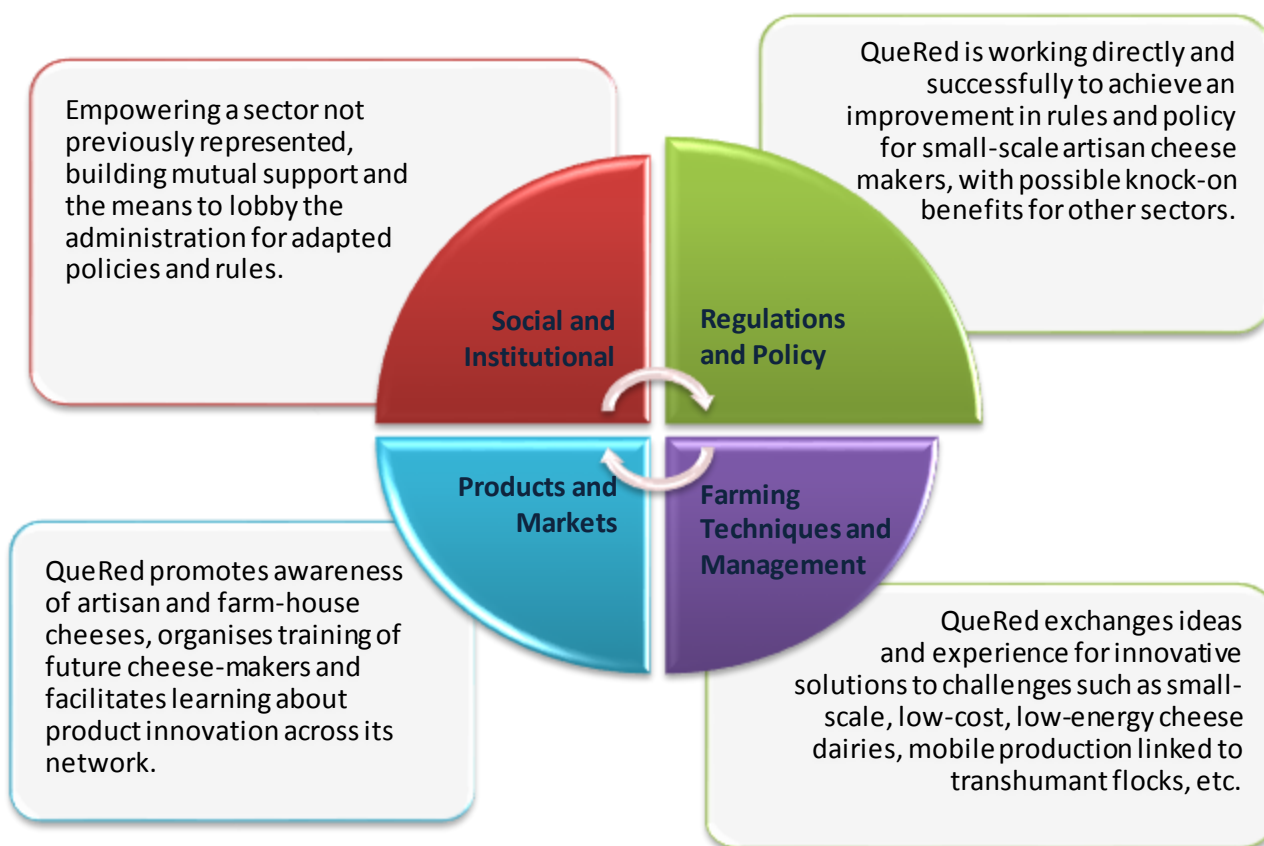


Figure 5 The framework HNV-Link used for evaluating innovations for high nature value farming.

The process that made it happen and critical factors for success

- A brave and risky beginning, starting the association without funds, and undertaken actions of a high level.
- Independent from government and public funds.
- Association managed and directed by small-scale producers, with complete transparency.
- Active involvement of members, encouraged by a dynamic director.
- Low members' fees at the beginning, to recruit members and show them over time that the association is working well.

Lessons learnt from this innovation example, and its potential replication

- QueRed could be replicated in other countries and also for other kinds of products, not only cheese.
- It is important to have a technical team of high level for preparing reports and proposals to administrations showing the problem but also offering the solutions.
- With transparency and good purposes, interesting people approach the association ready to help.

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Sweden – innovation example 1

FACILITATION OF COLLABORATIVE LAND USE MANAGEMENT (FOCLUM)

County Administrative Board of Dalssland

www.lansstyrelsen.se/vastragotaland/

- **Location:** Dalssland and Bohuslän, Sweden
- **HNV system:** Livestock, mosaic and multi-functional farming
- **Scale of operation:** FOCLUM used in 13 municipalities, in dialogues with 400 participants, on 4 000 ha.
- **Timespan:** FOCLUM operated for app. 7 years. The practical work has been put on a back burner since 2014 due to lack of funding.
- **Keys to success:** The method facilitate dialogue and collaboration between actors, resulting in shared goals, joint measures and a coordinated approach for a more sustainable land use.

Problems addressed by this example

Cessation of or discontinuing the traditional use and management of (former) HNV-farmlands

Story in a nutshell

Many land-owners at small farm-holdings are now at a crossroad: Will they turn their grassland and farmland into forest, should they try to lease the land, or even sell it? Land-owners and animal keepers are physically separated in the landscape and it is difficult for them to develop viable collaborations. Furthermore, the HNV farmland in the area consists of smaller, isolated hotspots. The question is: What could make farmers cultivate HNV-farmland again? And how could the authorities support another development? The key to success is dependent on a shift in perspectives: If the animal keepers searched for larger, connected areas and if organized correctly the smaller patches of farmland could create these areas, but this would only be possible if a constructive dialogue between all involved actors could be initiated and successfully facilitated over a longer period of time. The innovation in this case is the development of a process design and a facilitated approach which enable learning and joint action based on a constructive dialogue among local actors and other relevant stakeholders, aiming for collaborative land use management.



Figure 1

What does FOCLUM achieve for HNV farming?

Facilitate the process from first contact to implementation of concrete measures:

- Identify the land area which is HNV or has a HNV-potential
- Identify and bring together the actors whom are central to the preservation and restoration of HNV-farmland
- Facilitate the dialogue and development of a cross-sectorial basis for decision
- Design and facilitate a collaborative process
- Present an overview of potential economic support
- Support when practical measures are taken on HNV-farmlands

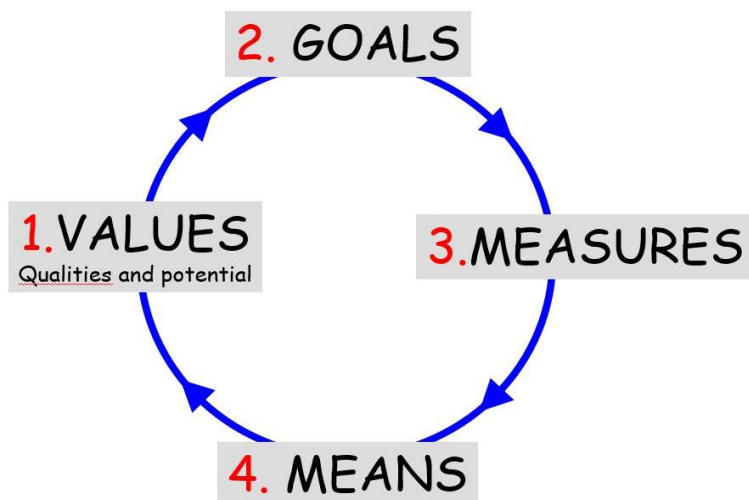


Figure 2 The process design builds on some specific phases and steps, and where additional facilitative tools are implemented or developed if needed.

Achievements

FOCLUM was a response to the need to facilitate network-building, dialogue and to develop joint basis for decisions regarding land use issues, not least in relation to HNV-issues. The approach and process design has, until today, resulted in restoration of app. 500 ha, that land management on many farms have become more oriented towards HNV (a couple of thousands ha), and that many landowners have chosen to put aside parts of their estates in different forms of nature protection (a couple of hundreds ha).

Economics of HNV farming

The applied method has resulted in a number of new or extended animal husbandries and that the turnover of these farms have increased.

Maintaining or improving HNV values

The method has a clearly expressed HNV-focus and evaluations of regained, traditional management has shown clear and positive HNV-effects. The processes the method facilitate is usually long-term. To reach the highest possible HNV-qualities it is necessary that the supporting actors, f.i., public authorities and research institutes, have a long-term commitment. There is also a need to have competent facilitators (with relevant experience) to coordinate and strengthen the work, as well as basic funding to take initiatives and to take care of the outcomes of the process.

How does FOCLUM respond to the HNV LINK innovation themes?

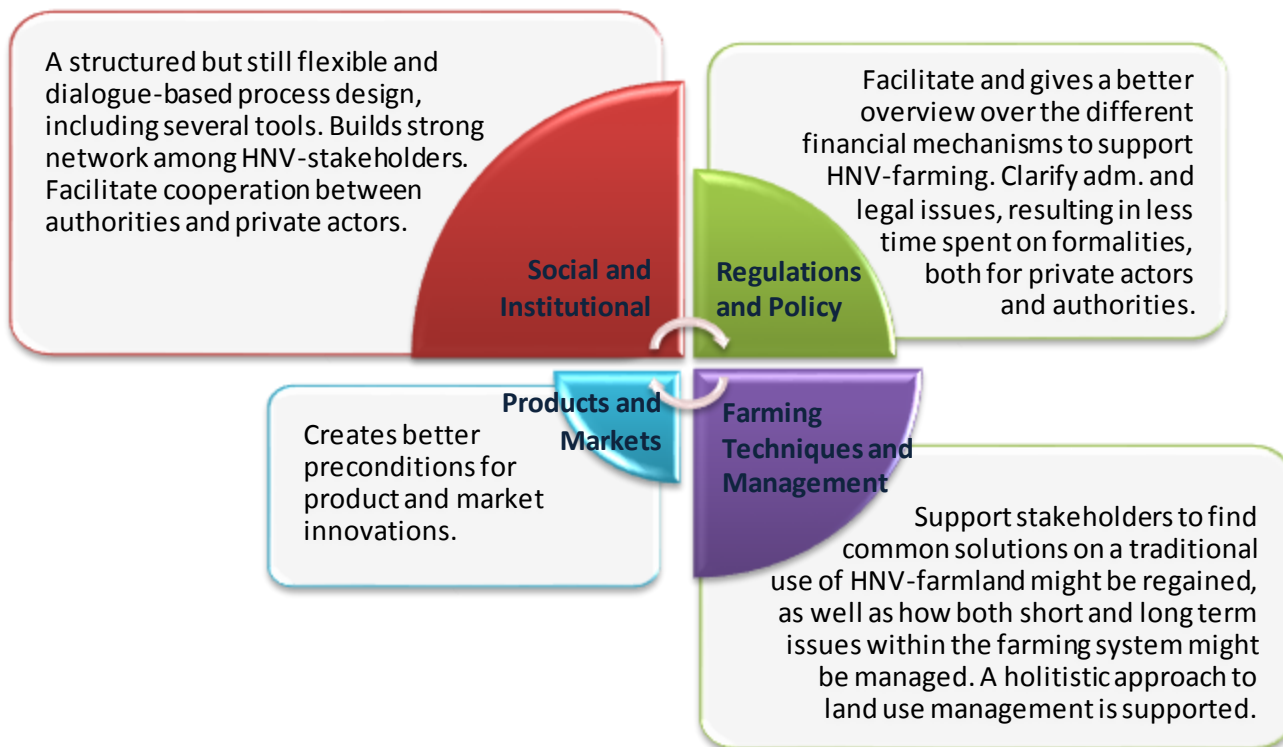


Figure 3 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

The core of the method (innovation) is mainly social and institutional. Less so an issue of farming techniques and management, and even less related to regulations and policy. There is no strong connection to the development of products and markets per se. We believe this is reasonable and that all four categories does not necessarily need to be treated equally. Rather, our experience is that a strong focus on social and institutional innovations creates the best preconditions for innovations in other areas.

The process that made it happen and critical factors for success

- A will and commitment from land owners, animal keepers and other local actors to support HNV-farming
- A willingness, competence, continuity and sustained effort from core individuals at relevant authorities
- Time (money) to develop the method, to build network and trust, and to create a common ground
- Funding to realise concrete HNV-measures

Some 15 years ago the authorities interacting with land-owners in the area managed their affairs without much contact with each other, although some issues was about managing the same estates or land areas (the County Administration and the Swedish Forest Agency). But there were persons in each organization that experienced that they, in their professional roles, were not able to support land-owners in an efficient way by not communicating with each other, and by not working with a systemic approach. In fact, they struggled with their professional role as well as the ways in which their organizations should work in relation to the farmland managers. Although having a deep understanding and a good ambition, they realized that the way they worked would not be sustainable in the long run.

To overcome the challenges surrounding the HNV-farmlands in the learning area the County Administration in 2007 applied for and also got funding to develop a new working approach to make land-owners and animal keepers collaborate and by such measures help conserving HNV-farmland. The project broadened its scope in 2009, were pre-longed in 2013 and was, as a project, ended in 2014. For each year the collaboration between the authorities was strengthened, but most of all a strong network of farmers in the area had been established and several examples of successful collaboration developed.

Since 2015 this working approach lack funding. Furthermore, the funding for restoration projects on HNV-farmlands, as in the earlier initiatives, has ceased. In practice this means that new initiatives are not taken, and existing engagement and interest not taken care of. No doubt there is a will to start working with the same or similar approaches again among many local actors. During our workshops in the LA Dalsland in spring and summer of 2017 this was also clearly stated among participating stakeholders.



Figure 4

Lessons learnt from this innovation example, and its potential replication

- The importance of willingness and a commitment to HNV-measures among local actors
- The method works well to strengthen HNV-qualities, but demands training and continuity
- Long-term funding for working time and specific measures is very important
- The method has a big potential for replication
- If the crucial issue of funding is solved, the method will have a big effect on the HNV-qualities in the landscape

Before initiating the first project in 2007 there were some doubts that the local actors, especially land owners and animal keepers, would not be enough interested in HNV-issues. Especially that they would not be committed to do specific measures. These doubts proved to be unfounded. The interest was very big.

Another fear was that it would not be possible to find enough grazing animals for the areas which were identified as desirable and feasible to restore. Also this has shown to be unfounded. When actors collaborate and make a thorough preparatory work, that is tries to find holistic solutions so that the preconditions for animal keeping in an area is as good as possible, there has always been HNV-oriented animal keepers that has come forward and shown an interest and high competence.

In Dalsland and Bohuslän there is a variety of natural environments, from coastal zone to forest areas, and in all these environments the methods have shown to work well. Therefore it should have a potential to be replicated to other countries, regions and natural environments.

Long-term funding of competent individuals is a prerequisite for continuity. Such a continuity among core persons is important to be able to build on already made experiences, existing networks, established trust and social capital. It takes time to build such capital in an organisation, why a strategy must exist on how to secure long term funding, training and commitment among key employees in these organisations. Furthermore, some kind of financial support to farmers who aim to do important HNV-measures are necessary. This are measures which society at large benefit from, why public support is relevant. In the long run, a combination of public support and market solutions are probably the most common solution.



Figure 5

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Sweden – innovation example 2 FACILITATION OF COLLABORATIVE LAND USE MANAGEMENT; LAND USE PLAN (FOCLUM-LUP)

County Administrative Board of Dalsland

www.lansstyrelsen.se/vastragotaland/

- **Location:** Dalsland and Bohuslän, Sweden
- **HNV system:** Livestock, mosaic and multi-functional farming
- **Scale of operation:** At present the method has been used on app 2.000 ha.
- **Timespan:** FOCLUM-LUP operated for approximately 3 years. The practical work ended 2014 due to lack of funding. Got new funding 2017 to develop the method.
- **Keys to success:** The method conclude and visualise the discussions held between actors, which enable them to reach common ground, set up joint goals, prioritise among measures and coordinate concrete measures to achieve a more sustainable land use.



Figure 1

Problems addressed by this example

The need to structure the dialogues and collaboration between actors working with complex land use issues.

Story in a nutshell

When the work with Facilitation of collaborative land use management (FOCLUM) had been going on for some years the process involved app. 30 different groups and on different places in Dalsland and in the nearby sub-region Bohuslän. To make the work in these different groups more efficient a number of dialogical and learning tools have been developed. Some were necessary to use in all groups/on all locations in processes related to HNV-farmlands. These tools were later on combined in a kind of GIS-based tool-kit which we label Land Use Plan (LUP). This integrated tool becomes the hub in the FOCLUM-process by helping the participants to realise where they are in the process (as well as what they have done and where they are heading). The tool can visualise all perspectives and qualities which the group needs to agree upon, it can manage both specific objects as well as the landscape level, and it covers the time line from historical land use to today's and future, potential land use. The tool is used to visualise specific goals for different areas of a property, potential measures and economic issues. As such the tool facilitates the shift from the planning phase to the action phase.

What does FOCLUM-LUP achieve for HNV farming?

- Structure, visualise and document the data which the FOCLUM-process generates
- Visualise a BAU-scenario and one or more HNV-scenarios
- Give a basis for decision on how to realise a HNV-scenario and support the implementation

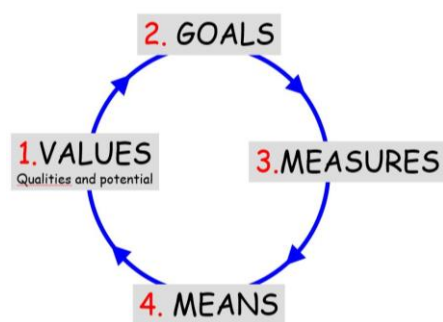


Figure 2

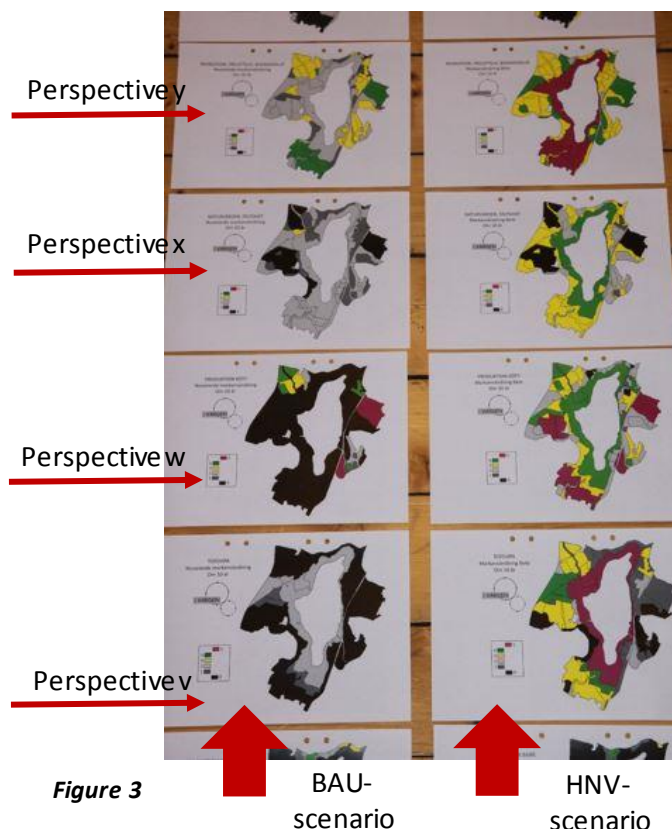


Figure 3

Maintaining or improving HNV values

FOCLUM-LUP, the land use plan, facilitate dialogue on HNV-issues and has proven to be effective for this purpose. The integrative tool has also supported planning and implementation of concrete HNV-measures. The LUP is used in all steps of the FOCLUM-process, where there are perspectives and data which would benefit from being better structured, documented, visualised and deliberated. The tool is used in all four steps of the FOCLUM-process: 1. Values, 2. Goals, 3. Measures, and 4. Means. The example given illustrates how the documentation might look like and the visualisation of step 1, the values inherent in different perspectives. First the participants in the group decide which perspectives that should be taken into account. Often this deliberation results in 10 to 15 different qualities regarding the environment, economy and the social situation. The picture shows four out of twelve perspectives which were considered around a lake in Dalsland. The left column shows a potential BAU-scenario. When applying this method one estimates how each specific quality, on each part of a specific landscape, will develop during a ten years period, based on how land use and management is developed. Dark colours represent low qualities, the colourful high qualities in the landscape. The right column show one possible HNV-scenario in ten years time, based on assumptions on how land management is changed and based on specific goals (further discussed under step 2 on Goals). The fact that the local actors in the group together deliberate on levels, and potentials, of different qualities and in different parts of the landscape, as well as identifying the trends affecting them today, lay a strong foundation for an increased understanding of the dynamic complexity in their land use and land use decisions. But this is a necessary dimension of the collaborative learning process if it are to result in shared HNV-goals to all involved feel committed.

Achievements

In each group where the tool has been used we can see that land management has, by part, shifted to become more HNV-oriented. On most locations the dialogue has led to that land owners and managers agree upon some form of agri-environmental scheme or protection.

Economics of HNV farming

So far no study has been done which study this aspect.



How does FOCLUM-LUP respond to the HNV LINK innovation themes?

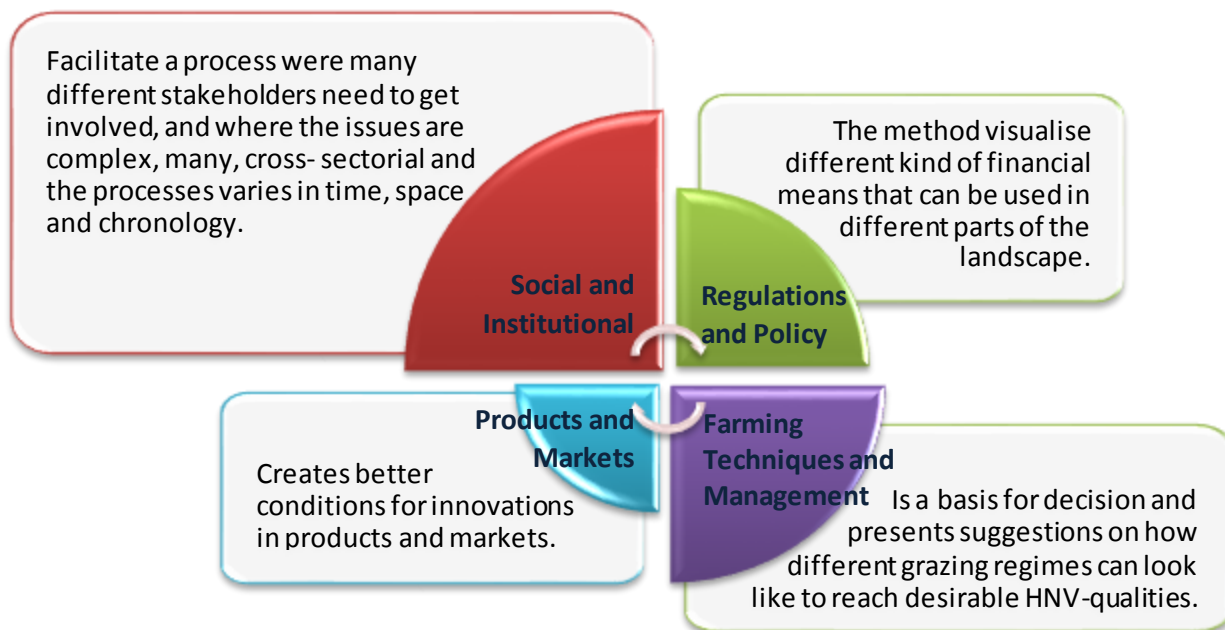


Figure 4 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

The overall aim with LUP (Land use plan) is to create as good preconditions as possible for constructive dialogue in the FOCLUM-process. Focus is on social and institutional innovations. If the conversations are successful other tools or competences could be added to the process, for instance to develop business models for new products and markets.

The process that made it happen and critical factors for success

Funding of the earlier FOCLUM-projects meant:

- A possibility to establish a network among HNV-actors
- Identify bottlenecks and possible solutions for HNV-farmlands
- Develop material to be used to facilitate dialogue and deliberation
- Test and train
- Identify areas for improvement
- New projects on method development



Figure 5



Without earlier FOCLUM-projects between 2007 and 2014 the need for a tool like LUP – the Land Use Plan – would not have been identified. Based on experiences made when participating in and facilitating groups working with HNV-issues we were able to capture ideas on how the dialogues and the collaboration in these groups could be made more interesting, well-grounded and efficient. Over the last two years the further development and implementation of the concept has been on standby due to lack of funding, but recently the Swedish Board of Agriculture has granted funding for us to develop a handbook on methods, to further develop the technical part of the tool and develop examples of Land Use Plans for 1.000 ha.

Lessons learnt from this innovation example, and its potential replication

The tool has proven to be efficient in facilitating dialogue and learning on:

- Qualities; from objects to landscapes.
- Time frames; historical land use, as well as today's and future management
- Different scenarios; BAU and HNV-vision can easily be compared
- Decisions; For instance on future goals of land use, desirable measures and possible financial support.
- Synergies; The dialogues and the process design often leads to that potential goal and value conflicts is managed constructively and joint measures taken.



Figure 6

We believe that the tool has been successful and efficient when structuring and facilitating dialogue between the participants in the multi-stakeholder groups involved. It has given us a common language, facilitating dialogue and learning, and has increased our ability to identify shared goals as well as solutions on complex and multi-faceted challenges. Our opinion is that the tool ought to be possible to be used also in other countries, environments and for all kind of HNV-issues.. A handbook on the methods in English should be written and the persons supposed to be working with the approach and tools trained together with experienced users.



Figure 7



Figure 8



Figure 9

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Sweden – innovation example 3

FACILITATION OF COLLABORATIVE LAND USE MANAGEMENT; TECHNIQUES AND ENTREPRENEURSHIP FOR HNV PASTURE PROJECTS (FOCLUM-PRP)

County Administrative Board of Dalssland

www.lansstyrelsen.se/vastragotaland/

- **Location:** Dalssland and Bohuslän, Sweden
- **HNV system:** Livestock, mosaic and multi-functional farming
- **Scale of operation:** A couple of hundreds hectare
- **Timespan:** Has operated for app. 7 years
- **Keys to success:** Entrepreneurs with an interest in HNV-farming, and with broad and deep competence as well as an ability to collaborate with both authorities, animal keepers, land owners and other HNV-stakeholders.

Problems addressed by this example

Land owners usually do not have the time nor access to resources, for instance machineries, or experience enough to restore semi-natural grasslands in a way which give us successful results.

Story in a nutshell

An entrepreneur based in the neighboring county to the learning area has developed a service package directed toward HNV-pasture restoration projects. The company offers a number of services, and can help a land owner through the process from making the first plans to the first grazing seasons. The services are directed towards restoring former HNV-land that has been deforested, either due to plantation or spontaneous overgrowing, a situation that is the starting point for the most of the HNV restoration projects in the learning area. In developing the techniques for the restorations, the entrepreneur has invented several machine adaptations, for example a rebuild harrow adapted for assembling branches that are left after felling the trees.

What does FOCLUM-PRP achieve for HNV farming?

- It offers services for restoration of HNV-farmlands, either for specific parts of such projects or as a prime contractor.
- Cost efficient with good impact on HNV-qualities.
- The implementation phase of the FOCLUM-process is facilitated.
- Could be used for HNV-measures also outside of the FOCLUM-process, where the context might be less complex.

Achievements

The entrepreneurial firm participating in most HNV-restoration projects has been working with app. 200 ha semi-natural grasslands. Sometimes the land owner want a prime contractor, sometimes services for specific measures. All different parts needed for a successful restoration is delivered, but based on needs and the level of ambition. The firm can also support with grazing animals during the restoration project and take responsibility for the sometimes quite complex administrative work. Altogether, this firm has worked with app. 30 land-owners during the project period. FOCLUM-PRP has proven to be an efficient tool to implement the goals which the FOCLUM-process and the FOCLUM-LUP-tool has generated.



Figure 1 & 2



Economics of HNV farming

The restoration projects are less expensive and with a better end-result if the entrepreneur take the whole responsibility for the implementation phase (to be compared with a situation where you work with many different entrepreneurs without any professional coordination). The potential to make restorations in a cost-effective way, and where the animal keepers does not have to spend unnecessary time, has made the preconditions for future restorations more favourable. In some areas and processes this might have been the final factor that made land owner and animal keepers to dare to go for a bigger restoration project.

Maintaining or improving HNV values

All individual operations have been developed so that they generate as high HNV-effect as possible and could both lead to maintenance and improvement of HNV values.



Figure 3 & 4

How does FUCLUM-PRP respond to the HNV LINK innovation themes?

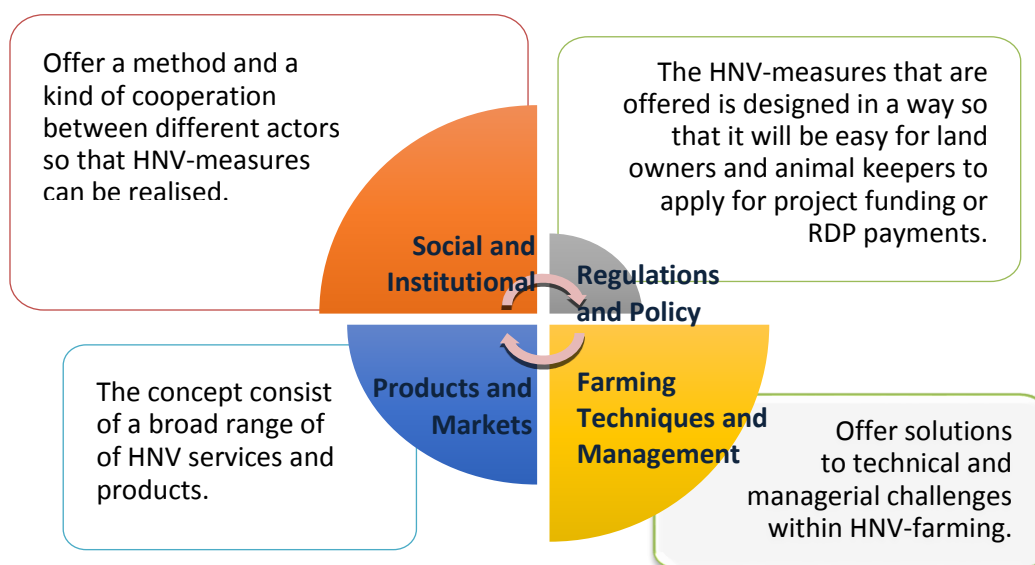


Figure 5 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

This innovation helps us manage challenges in all four categories of innovations. FOCLUM-PRP is used in a phase where land-owners, animal keepers and other HNV-actors move from dialogue and deliberation on specific HNV-goals to the implementation of measures needed to reach the goals. Therefore, it is not strange that the main part of this innovation lies in the field of Farming techniques and management. Making implementation work is nevertheless strongly related to the other innovation areas. From another perspective one would perhaps argue that FOCLUM-PRP is an innovation in Products and markets because the entrepreneur deliver a mix of services and products which facilitate customers possibility to reach their goals. It is also services which are traded on an open market. Or, from another angle, the innovation could be seen as a social and institutional innovation because it gives us a working approach so that we can do concrete HNV-measures.

The process that made it happen and critical factors for success

- A common need for cost-effective restorations with the best possible HNV-effect.
- Project funding were available, both to enable time spent on development among advisors and to finance concrete HNV-measures.

Before this concept was established land owners and animal keepers had, with support from the County Administration and the Swedish Forest Agency, made restorations on their own or by hiring specialized entrepreneurs for different measures. All actors felt a need for a more coordinated, cost-effective and HNV-oriented approach.

After having tested the new approach, the County Administration found that the way the entrepreneur organized and did the restoration was much more efficient and with higher quality compared with before. Also for the land owners the process became much smoother. As an individual land owner you does not do many restorations during a life-span, but as an entrepreneur you could develop your skills and the technologies for each project you became involved in. Today the entrepreneur has trained employees and a specialized machinery to fits its purpose.

It has mainly been two factors that has been important for this innovation to exist. One is that there has been financial resources for this kind of restoration projects with enabled employees at the authorities to coordinate activities and to develop the method/process design (FOCLUM). This enabled them also to spend much time interacting with farmers and entrepreneurs. The second factor has been the availability of public project funding (within RDP) for restoration-projects on overgrown semi-natural grasslands. This has been necessary for land owners whom otherwise would have had hard time paying the entrepreneur for their services.



Figure 6-8

Lessons learnt from this innovation example, and its potential replication

This is an efficient HNV-tool if:

- It is part of an overall HNV-process such as FOCLUM
- A good basis for decisions has been developed for HNV, for instance by FOCLUM-LUP
- All actors have planned and prepared themselves so that they have the economy to pay the entrepreneur during a restoration phase. Consequently, this could mean that possibilities for such project funding must be available under the RDP.

Our experience is that FOCLUM-PRP is a very effective tool to make HNV-restorations of high standard, but also as part of other measures on landscape and object level. In complex projects the implementation must be based on a process which has developed strong drafts for decisions and trust among involved actors (f.i., FOCLUM-LUP). The restoration projects benefitting from FOCLUM-PRP is often part of long-term initiatives which per se create a strong foundation (f.i., through the FOCLUM-process) for actors to finally deliver the desired HNV-qualities.

Where you have capital strong land owners they can start restoration projects without public support. But our experience is that a close dialogue with authorities still is necessary. It has often meant unnecessary work for the entrepreneur if not some procedures are taken into account, as well as some missed opportunities to create high HNV-qualities. When working with this innovation and tool, it is important to keep in mind that the preparatory work, the dialogue and network arrangements, the challenge of future land management, issues related to economy, etc., all are parts of a bigger process, where the chain is not stronger then the weakest link.



Figure 9



Figure 10

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Sweden – innovation example 4

HÄLSINGESTINTAN – A MOBILE ABATTOIR

County Administrative Board of Dalmland

www.lansstyrelsen.se/vastragotaland/

- **Location:** Järvsö, Hälsingland, Sweden
- **HNV system:** Livestock
- **Scale of operation:** National in Sweden
- **Timespan:** Hälsingestintan was founded in 1999 as a reaction to the poor range of meat in Swedish food stores
- **Keys to success:** They have been successful in integrating their overall vision of animal ethics and quality meat, with managing technological and juridical challenges for mobile abattoir, as well as issues related to traceability of products and marketing solutions for customers.



Figure 1 Source: <https://www.halsingestintan.se/>

Problems addressed by this example

The new focus on "ethical" meat and the unique concept of traceability for consumers down to farm and single animal level offers many opportunities to also include the biodiversity provided by HNV-lands in the concept.

Story in a nutshell

As Europe's first mobile abattoir for fully grown cattle, Hälsingestintan offers an on-farm slaughtering. The process of starting up the initiative was motivated by a wish to provide consumers with "ethical" meat, where the animals have suffered minimal stress during slaughter. The company has a strong focus on meat quality, something that is improved by the low-stress slaughter. This interest in meat quality also means that the company are interested in slaughtering and buying meat from farms with grass fed animals. The company has a few contracted farms in the learning area, and the initiative is helping to strengthen the pasture based cattle production, even though it is not specifically directed towards animals bred on HNV-pastures.

What does Hälsingestintan - a mobile abattoir, achieve for HNV farming?

- This concept was not originally developed to specifically support HNV-farming, the focus was on ethics and quality meat, but it can easily be used and adapted with a stronger HNV-focus.
- Could easily serve as an example of traceability and marketing.



Figure 2



Achievements

The mobile abattoir were presented in 2014 by Hälsingestintan in cooperation with animal scientists and veterinary surgeons, and the business started the following year. The company has grown, and the abattoir is now going on full capacity. Hälsingestintans investment in mobile slaughter of adult cattle is the first in Europe. The design is completely autonomous, with its own electricity, its own water and own heating. The company has a handful contracted farms in the learning area, and the interest seems to continue to rise among farmers and consumers. It has been on the forefront both when it comes to mobile slaughter of adult animals, as well as applying new technologies for increased traceability.



Figure 3

Economics of HNV farming

Data is not available on the economic impact for HNV farms.

Maintaining or improving HNV values

So far the results on HNV-land are uncertain, since the main focus of the innovation is on animal welfare and meat quality. However, the potential to include a HNV perspective is promising.

How does Hälsingestintan - a mobile abattoir, respond to the HNV LINK innovation themes?

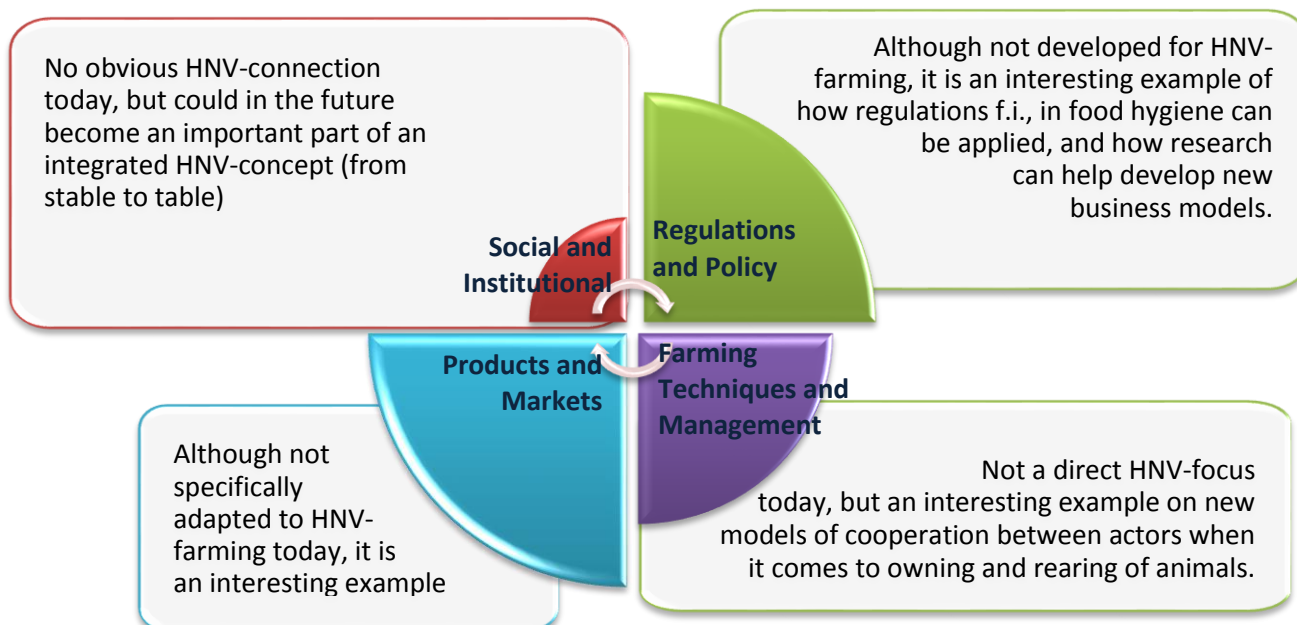


Figure 4 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

One issue that many Swedish producers struggle with is traceability. As a consumer you might want to be sure that the meat you buy comes from animals that actually has grazed in areas with high HNV-qualities. Hälsingestintan has solved the challenge by using modern technologies enabling the consumers to know the origin, quality, breed, and age of the meat they buy. In short this is how the labelling it works:

1. The animals are equipped with electronic transponders (RFID technology) in the ears when they are born. The tags have a unique ID-code that can be linked to the animal's birthday, breed, farm, etc. via a database. This provides a secured identity as well as a number of logistical benefits during the animal's growth and handling. For example, it is possible to register weight development and possible medical treatments.
2. At the slaughter, each animal ID is reported in the database. The information is then added with slaughter inspection results, such as classification and weight. Whether the animals are labeled electronically or not, they are labeled at the slaughter, when the animal's ID information is transferred to a bar code label that accompanies the hanging ring.
3. When the animal bodies are to be cut, the barcode is read off. When the details are packed for delivery to store, the information accompanies the label that is pasted on the detail in the form of a QR code.
4. On each meat packet, there is direct information about the sex, age, breed, and from which farm it comes. In addition, each tray has its unique QR code that can be read by using a smartphone. When scanning, you get detailed information about the farm and the animal, recipes for cooking and information about Hälsingestintan. (See picture p. 28.)

This kind of solutions regarding traceability might be interesting to look at for existing and future HNV-products.

The process that made it happen and critical factors for success

- The company had a vision of being able to deliver “ethically meat” slaughtered in a new way. From that vision emerged the idea of a mobile abattoir.
- Moving from idea to realisation the company has cooperated closely with researchers in animal welfare, and food hygiene, and been in constant dialogue with relevant authorities.
- Another important factor has been the big interest in the Swedish society for animal welfare issues.



Figure 5



Figure 6 Source: <https://www.halsingestintan.se/>

We have not had the opportunity to investigate in detail the emergence and development process behind this innovation, nor the critical success factors.

Lessons learnt from this innovation example, and its potential replication

- This innovation shows that complex challenges in both technical and legal issues can be managed if relevant stakeholders get involved in a constructive process.
- There are good possibilities for other countries to use similar solutions, and the concept has already been introduced in France.



Figure 7 Source: <https://www.helsingstintan.se/>



Figure 8

The company introducing this innovation in the learning area has a strong focus on animal welfare and food quality, and so far the ecological perspective has been secondary. There is however many possibilities in using similar types of solutions, such as the traceability and the mobile abattoir solution in initiatives that are more focused on HNV-conservation and biodiversity. Adapted towards a focus on the HNV-qualities of farming, this could be an important tool in building awareness about biodiversity and landscape ecology among consumers and distributors.

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UK, Dartmoor – innovation example 2 DARTMOOR FARMING FUTURES

- **Location:** Dartmoor – on 2 commons
- **HNV system:** Extensive cattle, sheep and pony grazing
- **Scale of operation:** Trials on 11,724 ha.
- **Timespan:** designed in 2010, trials to 2020
- **Keys to success:** Adaptive management approach to HNV vegetation. Farmers aware of and engaged with indicators of success, and involved in monitoring. Improved farmer engagement includes governance mechanism for approving variations to standard prescriptions.



Figure 1

Problem addressed by this innovation

Partly as a result of clarity on objectives from the Dartmoor Vision, farmers expressed concern that their existing agri-environment agreements (with their prescriptive approach to many issues, not least stocking regimes) were unlikely to deliver better environmental benefits. They also noted that they were not clear what the phrases used by agencies ('favourable status', for example) meant in practice.

Story in a nutshell

A group of Dartmoor farmers were invited to design a new approach to agri-environment in 2009. Trials, using the new design, started in 2011 and are continuing and being evaluated on two commons - one of 554ha and the other 11,170 ha. The pilot 'sits on top of' standard agri-environment agreements; the grazier association agrees a set of outcomes and participating graziers do not have to be bound by the standard prescriptions – any variations they propose have to be agreed through a formal mechanism. Some of the outcomes (move towards 'favourable status' of Annex 1 habitats) were subject to a process of clarification and simple exposition on an illustrated A3 field sheet by the relevant agency, itself an innovative development. Some of the participating farmers are now undertaking elements of the monitoring of the agreements. Recent evaluation confirms improved ownership and delivery from those participating in the trials.

What does Dartmoor Farming Futures achieve for HNV farming?

- An outcome based scheme that encourages farmer participation in identifying the most appropriate land management and monitoring and which has also involved better communication of the agreed objectives by agencies.
- Several evaluation studies confirm improved farmer ownership and delivery of actions.
- Improved land management for HNV outcomes and other public benefits.



Figure 2



Figure 3



Figure 4

- It recognises the value of farmers using their skills and experience to deliver public policy outcomes on HNV farmland. It is new approach to agri-environment for the UK, focussing first and foremost on outcomes; as a result, it is not prescriptive, allowing farmers to make decisions in a framework of assessment by their own peers.
- It has brought farmers and agencies together (building on the Vision) to better understand and then agree detailed objectives, which has involved the agencies examining how to make legal and ecological concepts meaningful in the field for farmers
- Farmers monitoring parts of the agreement has secured better engagement and ownership of the trial. Ecological monitoring training was particularly successful and was based on the agency work to turn their objectives into 'plain English'.
- Recent independent evaluation confirms participating farmers have better understanding of HNV farming and what it should achieve.

How does DFF respond to the HNV LINK innovation themes?

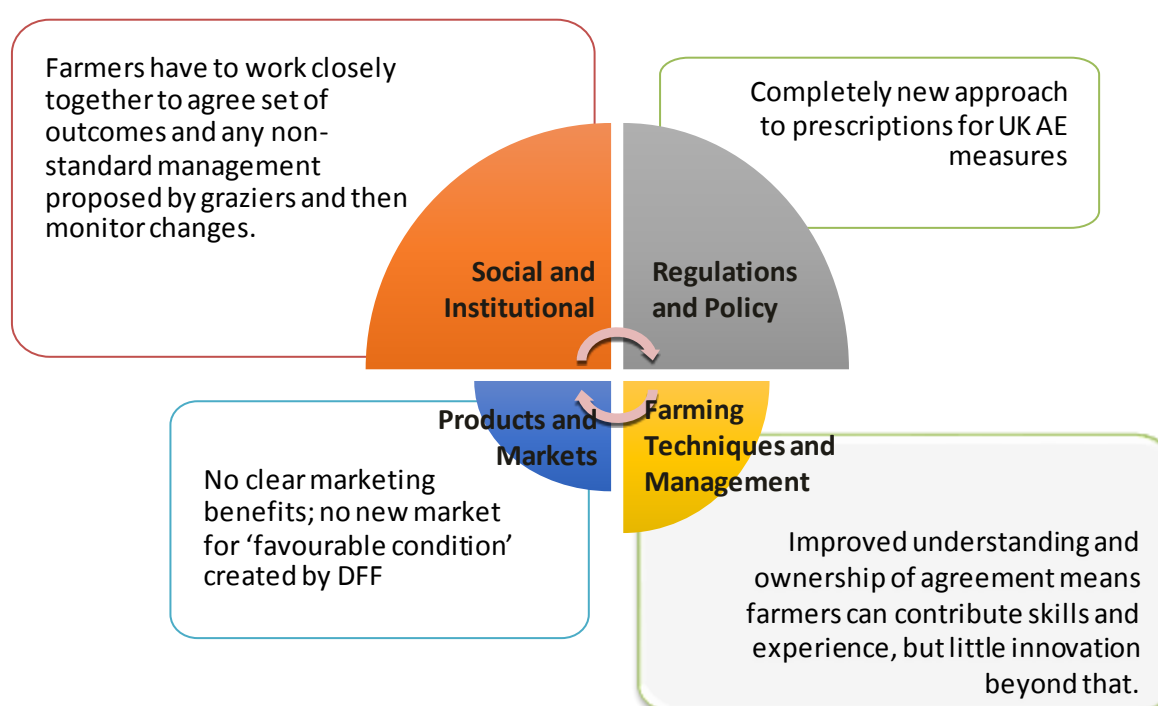


Figure 2 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

- **Social and institutional:** This innovation has significant benefits for farmer participation in a scheme. If the agreement is better understood and is deliverable then it results in less effort to ensure the terms of the agreement are met. It does however require trust between both parties. This results in lower administration costs and enables professional effort to be targeted on outcomes rather than administration. The State was involved in one significant innovation, which was a new way of setting out and explaining its policy objectives (Favourable Conservation Status for Annex 1 habitats) to farmers. This involved a good deal of work on the part of local staff, followed by training events etc., but its character is if anything more social and institutional than regulatory, despite being carried out by employees of the State – never before had such a search for common language and practical explanation of policy taken place in this way.

- **Regulations and policy:** While non minimising the innovation of doing anything different within a national agri-environmental scheme in England, the irony is that, for an innovation centred on an agri-environment scheme, the impact on regulation and policy is less than might be imagined. and while the participating grazings and commoners have a certain freedom from the standard prescription, the innovation has its limits. There is no impact on payment levels, while the standard prescription remains as the default option for graziers even on the participating commons (a good half-way house for a pilot, but given the underlying logic of the experiment that the standard prescriptions are less effective than they should be and potentially ineffective, the possibility of significant numbers of graziers opting for the default may not be sustainable in a roll-out). More disappointingly, there has been no attempt to integrate the lessons of DFF into the national scheme, nor to roll it out even to other Dartmoor commons under AE contract, nor to extend the scope of the innovation on these or other experimental commons. Neither have the farmers' self-monitoring efforts been collated and analysed or somehow incorporated into wider monitoring or evaluation processes.
- **Farming techniques and management:** While the pilots allow a potentially much greater range of management approaches and techniques to be legitimised as appropriate for delivering AE undertakings, there is no reason to think that it has so far spawned approaches or techniques which are in themselves innovative; that possibility remains open however.
- **Products and markets:** The lack of a link between 'quality' (or even hours of work expended) and payment level means that strictly speaking this innovation has not led to a new 'product' nor a new market for the farmers' products. Taking this extra step would be challenging but should at least be considered in depth.

The process that made it happen and critical factors for success

- Two groups of farmers given the opportunity to design a new agri-environment scheme.
- The design and trials are underpinned by existing AE agreements and consents to deviate from agreement prescriptions granted.
- Funding for design and facilitation provided by National Park, Duchy of Cornwall and Natural England. Trials funded by AE agreements.
- Similar design (outcome based) produced by both groups of farmers. Farmers then presented their ideal model and granted consent to trial.
- Process require sufficient time (farmers busy), farmer led agenda and independent facilitator. Need to build trust.
- Trust-building and confidence to vary prescriptions also closely-related to Natural England's explanation of its objectives for Annex 1 habitats



Figure 5



Figure 6



Figure 7



Partly due to the Vision farmers were critical of the current and past agri-environment schemes claiming the schemes failed to reflect local conditions and local farming systems. In response to the criticism a Government Minister suggested that the farmers design a better approach. A group of farmers designed a new scheme based on outcomes for a range of public benefits and later given the opportunity to trial this innovative approach on two commons.

Dartmoor National Park Authority, Natural England and the major land owner (Duchy of Cornwall) provided funding for facilitation to enable farmers to design scheme.

Important that sufficient time allowed for farmers to design. Security for trials provided by underpinning by existing AE agreement with consent to deviate from prescriptions. Annual monitoring programme and sign-off mechanism reduces risk to both parties.

Lessons learnt from this innovation example, and its potential replication

- Need to build trust between farmers and agencies. Provide sufficient time for progress to advance, balance action with engagement, speak to farmers in way they can understand
- An outcome based AE scheme is applicable to all farming systems.
- Ideally suited to common land the approach could be used on farm land.
- Willing farmers (leaders), independent facilitation (who can explain the benefits to all) and sufficient time.



Figure 8

- The list of outcomes to be delivered includes a number of public benefits/ecosystem services in addition to the more usual ecological and historic environment outcomes.
- Capacity provided by common agreement useful but not essential, the approach can be adapted for a farm.
- Farmers participating have more understanding and ownership of agreement. Similar approach under consideration elsewhere (Exmoor).
- Farmers enabled and encouraged to contribute experience, skills and local knowledge.
- Clear outcomes are reported each year. Flexibility enables farming practice to respond to climate and vegetation growth. Reflects local conditions.
- Ownership within farming community is high and it has increased trust between farmers and between farmers and agencies.
- BUT changes within the statutory agencies have created problems, since new staff do not understand the reasons for the trials.
- Greater clarity as to how this pilot is regarded in national policy and how/when its lessons will be rolled out to other areas (even within Dartmoor) would be very beneficial. A clear process of using farmers' monitoring data would also help build positive feedback loops.

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UK, Dartmoor – innovation example 3

FIRE MANAGEMENT PLANS

- **Location:** Dartmoor, UK
- **HNV system:** Moorland with extensive cattle and sheep grazing.
- **Scale of operation:** Currently available on almost all of c.80 common land parcels = 36,000 ha
- **Timespan:** Designed in 2006 for one common; now operational more widely until end of current AE agreements (<2020).
- **Keys to success:** Involving farmers in fighting wildfires, providing training; innovation in equipment; knock-on for farmers' controlled burns



Figure 1

Problem being addressed:

Wild fires were destroying priority habitat (HNV) threatening property and jeopardising agri-environment agreements. Farmers were less confident of carrying out controlled burns and this valuable management tool was being lost.

Story in a nutshell:

The control of wildfires was a priority for Environmentally Sensitive Area agreements (ESA), as a result of which the Dartmoor Hill Farm Project worked with a group of partners including Ministry of Defence, Natural England, Duchy of Cornwall, Devon and Somerset Fire and Rescue Service (DSFRS) and Dartmoor National Park Authority, to establish a model Management Plan.

Prior to the adoption of the fire plan no commoners/farmers were allowed to work alongside the professional fire fighters. The professional fire fighters when they attend a moorland fire have to wear the same uniform and carry the same equipment that they would use when fighting a house fire; this heavy protective clothing reduced the speed they could reach fires away from roads or tracks. The professional fire fighters' only equipment are fire beaters – a pole with a heavy rubber flap, traditionally used to put out grass fires. The commoners could improve the time in reaching a fire by the use of quad bikes, a vehicle that the professional fire fighters are not allowed to use.

The solution was to train some commoners to work alongside the fire fighters. Training, provided by the Fire Service, was arranged and once a commoner had successfully undertaken the training they were allowed to work alongside the professionals at the front line. The training has to be refreshed each year and only those farmers with this up-to-date accreditation can directly fight the fire. There is a debriefing session, identifying issues and solutions, after every fire.



Figure 2

The Fire Plan provides the necessary information to help tackle fires (access routes for vehicles, water sources etc.) and training to enable farmers to tackle fires on the common by providing equipment and training. It also resulted in the invention of a new water based firefighting kit carried on a quad bike - a fogger.

This plan has enabled 29 commoners to be trained and equipped to respond quickly in controlling and managing wild fires on the Forest, alongside DSFRS and DNPA rangers.



What do the Fire Management Plans achieve for HNV farming?

- Reduces the extent of wild fires that can damage various HNV habitats.
- Enables better controlled burns that help with management of certain vegetation by reducing evasive gorse.
- Decline in number of fires and areas burnt by wild fires.
- Considered by Natural England to be the main achievement of AE schemes on Dartmoor.
- Note: 2 wildfires in 2010 = 475 ha.

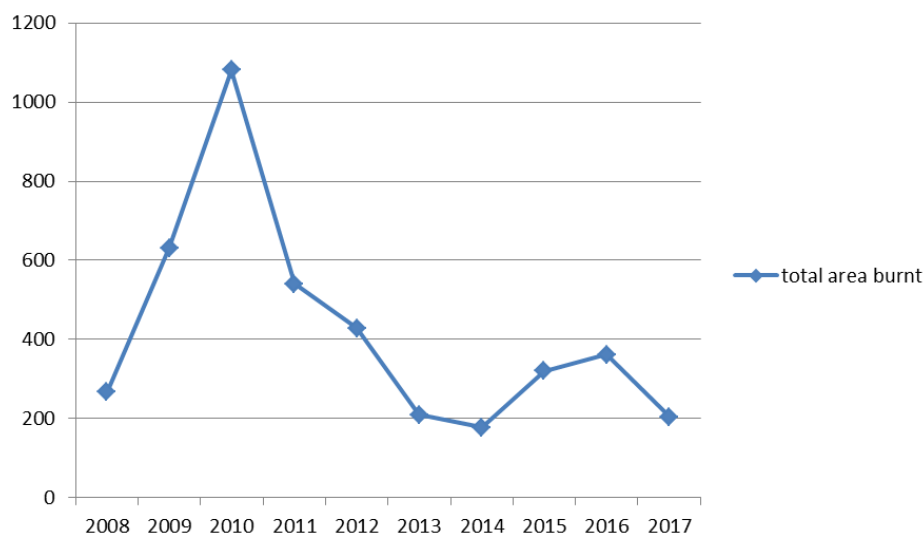


Figure 3

Achievements

The huge reduction in the extent of wildfires is considered to have been achieved largely by the use of trained farmers to tackle wild fires and to be better equipped for controlled burns. The initiative ensured the local farmers had some responsibility and participated in controlling wild fires. Wild fire damage to priority habitats, especially blanket bog much reduced.

The skills and relationships developed has also had an impact on the confidence of farmers in carrying out traditional controlled burns (swaling) to manage vegetation such as gorse (*Ulex*) and *Molinia*, while within the DFF pilot commons, applications to vary the approach to burning laid out in the original AE contracts can be regarded with more confidence and favour.

Not only are the plans seen as the major achievement of AE schemes in general on Dartmoor, but it is the one aspect of AE (apart from the payments) which non-participating commons look on with envy – regret has been expressed that something so useful in its own right is only available if the associated perceived burdens of AE are undertaken.



Figure 4

How do the Fire Management Plans respond to the HNV LINK innovation themes?

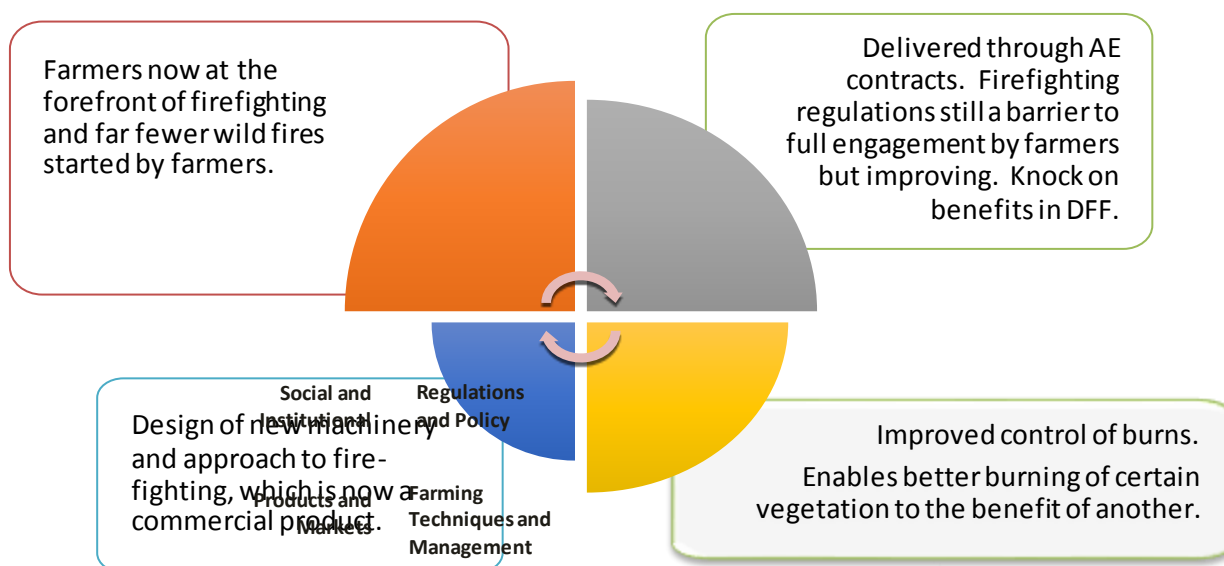


Figure 5 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

The plans have been innovative in all regards:

- New way of working together when previously partners were hampered by health & safety rules etc.. Has led to upskilling of farmers and a high degree of ‘ownership’ of fire control on their commons.
- Delivered through AE, and one of the most prized innovations within AE by all parties
- While perhaps not per se innovative, the management of both wildfires and controlled burns has improved in quality in a way which is new to the area
- New machinery was developed by the commoners for their own use in collaboration with the fire service, and is now available commercially

The process that made it happen and critical factors for success

- Initiated by the Dartmoor Hill Farm project and key farmers.
- Need for improved fire control identified by one AE agreement.
- Large AE agreement provided not only capacity but funds to produce plan, new equipment and training.
- Package of plan, equipment and training produced for one common then available to all commons in AE.
- Initial resistance from professional fire fighters but overcame by demonstrating benefits (and commoners allowed to do things firefighters are not able to do, so high amount of complementarity in practice)

Initially the fire plans and associated training of farmers to fight fires on the common were part of the agri-environment agreement on the Forest of Dartmoor common. The Dartmoor Environmentally Sensitive Area (ESA) scheme was launched in 1994 and the Forest of Dartmoor association entered into an agreement in 2001. Although a fire management plan was not a prerequisite members of the association and staff from the Dartmoor Hill Farm Project soon realised that uncontrolled fires could put their agreement at risk and they designed a plan and associated training to ensure that fires did not jeopardise their income. The Fire Management Plan was soon recognised by Natural England and to be very successful in reducing the impact of wild fires and aiding controlled fires (swaling) and become a requirement within all the other commons' agri-environment agreements on Dartmoor. This reflects

well on this aspect of the English project officer-led AE implementation model which in some ways at least permits the putting together of an appropriate package of support. Unfortunately, it is only available within the AE 'package', so that commons associations which would benefit from it, and want it, but are unable or unwilling to enter into an AE contract.



Figure 6



Figure 7

Two individuals were responsible for the concept, the chairman of the common's association and the project officer from the Dartmoor Hill Farm Project. The Fire Management Plan, training the farmers and the purchase of equipment were funded from the ESA agreement. Although initially there was no specific money allocated within the agreement to address fire issues the size of the agreement (almost £1m per year) enabled a discreet "pot" of money to be set aside to develop the fire plans, buy equipment, train farmers and pay farmers to attend fires without having a significant impact on the payments to individual members of the agreement (c280 farmers). The farmers soon recognised that new equipment was needed to fight fires and this led to the invention of foggers, power sprays mounted on quad bikes.

Lessons learnt from this innovation example, and its potential replication

- Funding enabled original ideas to be developed. Strong leadership and a willingness to work with the Fire service to secure better solutions.
- Plans, machinery and training provided to other areas on Dartmoor and further afield (Wales & north of England).
- Ideally suited to common land where capacity of farmers much larger. Requires some financing.



Figure 8



Figure 9

This approach is highly exportable to other sites as long as professional fire fighters willing to adopt. New equipment is cheap compared to fire engines, but expensive for farmers (£1200/2000 euro for a fogger) and training requires funding. At present it is tied to a wider AE contract; while the ideal might be to tie it firmly to wider land management commitments, it seems that the benefits of the approach are such, even on a standalone basis, that some mechanism for wider roll-out might be desirable. Funding innovation is a real issue; the size of a large agri-environment agreement, enabled small but substantive separate pots of money to be created without a significant impact on individual farmers. The creation of a separate pot of money for fighting fires was supported by all the agreement members. This pot still exists for funding farmers to fight fires, replace equipment and training. Surplus money at the end of the agreement will be reallocated to all beneficiaries.

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UK, Dartmoor – innovation example 4

TB CONTROL PLANS

- Location: Dartmoor, UK
- HNV system: Extensive grazing, beef cattle on rough upland pastures
- Scale of operation: plans in place for most commons (30 commons with associations)
- Timespan: annual renewal from 2014.
- Keys to success: cattle able to graze on commons and fewer movement tests



Figure 1

Problem being addressed

New TB Control regulations introduced in 2014 were impractical for common grazing. The Regulations included post movement testing on leaving the common and introduced multiple tests for animals moving between the farm and common. This made little sense for biosecurity (the commons are often, probably usually, the lowest risk area for TB) and further discouraged the use of the commons for cattle grazing at a time when numbers were already at a low point (probably the lowest ever). If a farmer is under TB restriction and is unable to keep the cattle that tested clear on their land, isolated from other cattle, the main option is to sell the cattle at a special market – the prices at such a market can be very low or in the case of hardy hill cattle non-existent.

Story in a nutshell

A small group of farmers worked with the State Veterinary Service now called Animal and Plant health Agency (APHA) to provide locally appropriate solutions to these problems. A model plan was designed by farmers in close cooperation with APHA to provide the basis for a risk assessment on individual commons, with the aim of reducing the burden from inappropriate regulation whilst retaining the necessary measures to minimise the risk of spreading TB. Holding areas, off the common but treated as being part of the common for this purpose, are identified to reduce the need for multiple movement tests every time cattle leave the common to go to the bull (bulls are not permitted on the common land) or for veterinary purposes. On the basis of such a plan, licences are issued to avoid post-movement testing off the common. Such plans are in place for most of the individual commons on Dartmoor affecting ca. 300 cattle graziers.

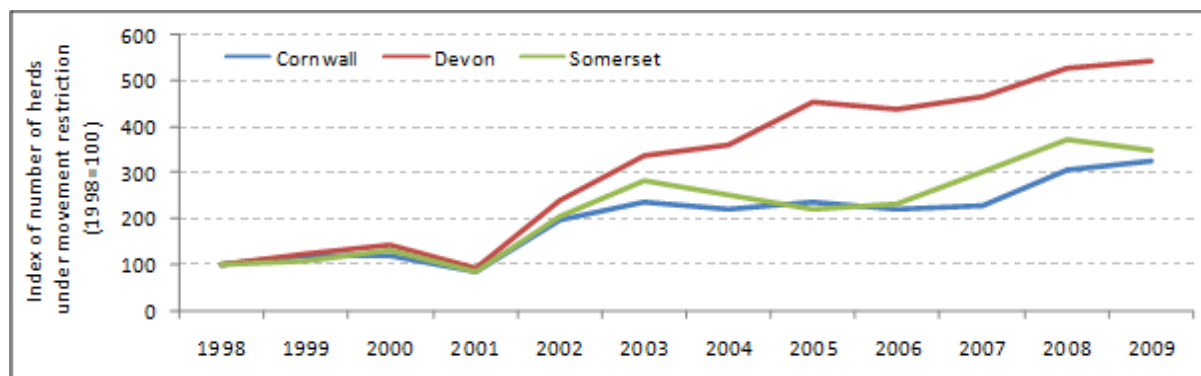


Figure 2 Index of number of herds under movement restriction

What does TB Control Plan achieve for HNV farming?

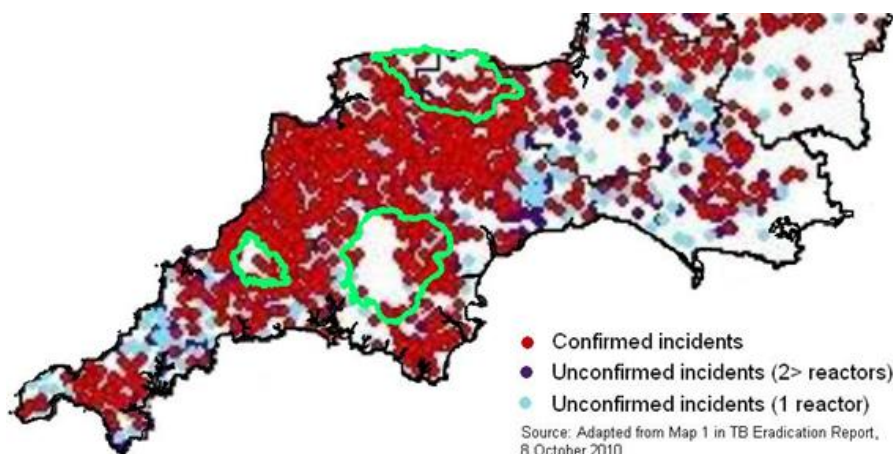


Figure 3

- Devon is in the High Risk Area for TB in the UK, requiring annual tests.
- TB Regulations including multiple movement tests are proving to be a deterrent to cattle grazing moorland, resulting in undergrazed vegetation vulnerable to wild fire.
- 2 out of every 3 farmers on Dartmoor have been under restriction (TB) within the last 2 years.
- Plans provide State Vets with information to enable a risk assessment following a positive TB test and provide alternative to multiple testing regime that deters farmers from putting cattle on commons, thus allowing a higher level of commons use than otherwise.

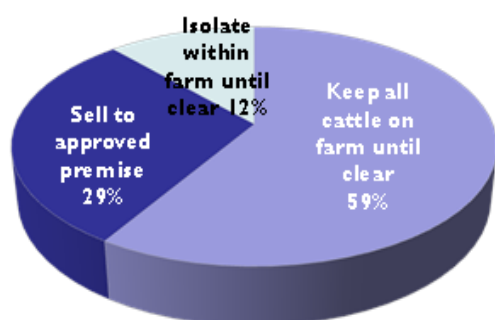


Figure 4

Cattle grazing is an essential ingredient of HNV farming on the commons and loss of cattle grazing was already a significant issue before TB. When South-west England became a high risk TB area, with strict and onerous biosecurity rules in place, cattle farmers faced impractical Regulations. This resulted in some farmers deciding not to put cattle on the commons and many more farmers considering such a move. Two out of every 3 farmers on Dartmoor will have been affected by TB in the last two years. When

under restriction options for farmers are few; 29% sell to approved premises (not possible for hardy slow growing cattle breeds) but the rest (71%) have to keep the cattle on the farm until the herd tests clear. This has huge practical implications –no silage, hay making and high costs. Farmers say ‘TB could be the end of grazing cattle on the commons; not the disease, but the rules’. (It has already led to a tendency towards finishing of cattle, rather than the traditional selling of stores and this has implication for breed type).

Achievements

A Common’s TB Control Plan enables the state vets to undertake a risk assessment that may allow cattle to return to the common. The plan also reduces the need for post movement tests on the common (impractical) and introduces the concept of holding areas (to be treated as part of the common) allowing free movement between the holding area and common without incurring need for movement tests. Reducing the burden of impractical regulations allows cattle farmers to continue to graze the moorland. The process encourages better dialogue between state vets (APHA) and farmers.

How does the TB Control Plan respond to the HNV LINK innovation themes?

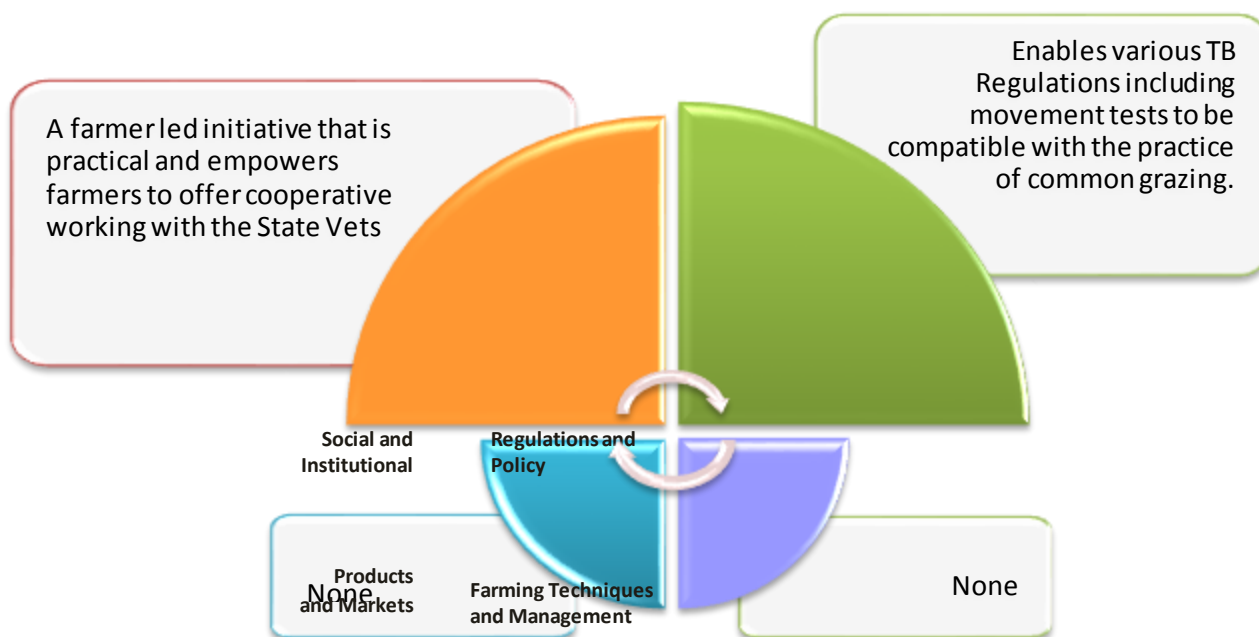


Figure 5 The framework HNV-Link used for evaluating innovations for high nature value farming.

- **Social and institutional:** Communal grazing has a unique set of issues that new TB Regulations failed to recognise. Dialogue between state vets and farmers led to collaborative working to secure a solution. Although cattle herds are “hefted” or “leered” to specific parts of the common and rarely mix with other cattle on the same common policy makers assumed otherwise. Demonstrating that farmers could work together and consider the implications of a TB breakdown in a neighbours herd gave the vets confidence in the proposals.
- **Regulation and Policy:** Regulations and policy are rarely designed for common grazing resulting in impractical and poor practice. Examples include: 1. all cattle movements over 10 miles requiring a movement test. 2. Post movement tests when leaving the common – impractical because the facilities to retain and test on the common do not exist.

The process that made it happen and critical factors for success

- Farmers sought solutions and contacted APHA.
- Certain individuals in Defra/APHA willing to progress practical solutions.
- Investment of agency staff and farmers’ time. Production of maps and communication with farmers undertaken by commons’ associations.
- Series of 5 meetings with agency staff (4) and farmers (5) produced draft plan for wider consultation.
- Change of APHA staff threatened process as new staff/vets not aware of plans.



Figure 6

Defra proposed new regulations in January 2014. After concerns raised by farmers/commoners Defra officials visited Dartmoor. Critical meeting between three AHVLA (now APHA) vets and six Dartmoor commoners in February proposed idea of plan to provide necessary info for risk assessment and better understanding of how commons/cows operate. Drafts exchanged between APHA and farmers, led to agreed process by mid-summer.

Critical to success was certain individuals willing to contribute time and expertise alongside willingness by APHA staff to find a practical solution.

Recent changes of staff within APHA threaten the process due to a poor understanding of the plans and how they operate. Failures to ensure new staff are made aware of previous agreed procedures and process now of concern. However, the innovations are significant enough that they should be taken on board at a higher level in APHA and rolled out with local adaptation in other high risk TB areas of the UK – failure to do so thus far is extremely disappointing, given the supposed commitment to ensuring that control measures are risk based.

Lessons learnt from this innovation example, and its potential replication

- Collaborative working between farmers (practical) and policy/regulators resulted in better understanding plus a solution.
- The approach of a plan and holding areas are now applied to other commons in south-west England
- There needs to be willingness to participate in discussions and to produce a solution from all parties.

The policy-makers had failed to recognise the significant difference between common grazing and herds kept on one enclosed farm. Farmers prepared to explain the differences can be very successful.

The principle of joint working between practitioners and regulators is easily replicated but requires engagement and element of trust from both sides.



Figure 6



Figure 7



Figure 8

UK, Dartmoor – innovation example 1

THE DARTMOOR VISION

<http://www.dartmoor.gov.uk/living-and-working/farming/moorland-vision>

- **Location:** Dartmoor
- **HNV system:** Extensive grazing, sheep & cattle on rough upland pastures
- **Scale of operation:** all the open moorland on Dartmoor – c. 45,000 ha. of which 80%+ is common land.
- **Timespan:** valid to 2030
- **Keys to success:** Endorsed by farmers and all agencies, provides guidance to local AE delivery and resolves disputes over conflicting demands on the same area of land



Figure 1

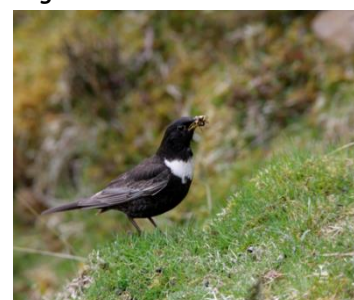


Figure 2 A ring ousel (*Turdus torquatus*), photo by RSPB

Problems addressed by this example

Poor communication between various government agencies and between those agencies and farmers. The Vision was initially an exercise to address what farmers perceived to be different demands from archaeologists and ecologists, often on the same piece of land; farmers were not confident there was a long term view of what was intended to be achieved by agri-environment schemes.

Story in a nutshell

The process of designing and creating a vision for the moorland began in 2003, while the Vision itself was completed and adopted by the statutory agencies and farmers in 2005. A long term (25 year to 2030) vision was produced for Dartmoor's moorland. It encompasses all the open moorland on Dartmoor – c45,000 ha. of which 80%+ (35,000 ha) is common land and describes what the agencies want the vegetation (HNV) and archaeological landscapes on the moorland to look like in 2030. The Vision is owned and endorsed by the main regulatory agencies and by the farmers. The process used to achieve the Vision was as valuable as the final product (a map) in securing a shared understanding of what each contributor wanted the moorland to look like in 25 years' time. All relevant agencies contributed and endorsed so provided confidence to farmers that they all wanted the same thing.

A new process of identifying archaeological landscapes helped farmers and agencies better understand priorities, introducing a new concept, PALs – Premier Archaeological Landscapes. These are mapped areas that contain important (internationally important) archaeology that requires to be set in a suitably managed landscape. Adoption of PALs enabled the ambitions of ecologists and archaeologists to be compared and assessed with the top priority taking precedence. This is very helpful to farmers with responsibility for managing such areas.



Figure 3



Figure 4



Figure 5 A vision for moorland Dartmoor map (link to a bigger image below)
http://www.dartmoor.gov.uk/_data/assets/pdf_file/0013/1070140/Moorland-vision-Map-with-illustrations.pdf

What does The Vision achieve for HNV farming?

- Confirms consensus amongst agencies for a farmed landscape – farmers have a future.
- Provides clarification on what vegetation is wanted and where.
- Resolves disputes between the land management required for archaeology and for biodiversity.
- Identifies where priority habitats are and where they are wanted in the future.
- Includes other public benefits: carbon storage (92m tonnes), water, public access.

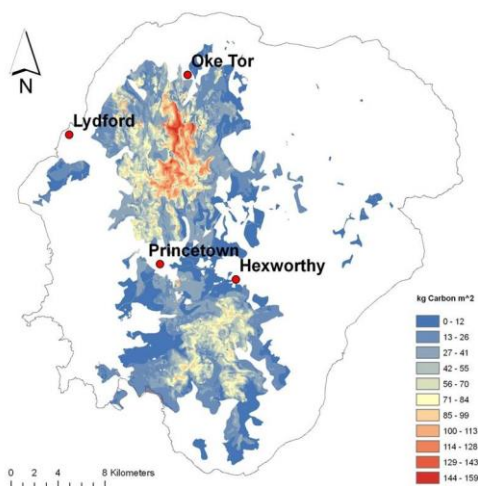


Figure 6 Distribution of peat soils/carbon

Achievements

- The process resulted in a clear picture of what vegetation was wanted and where, not least for farmers, who now know what they are to achieve. Detailed management is then set out in the agri-environment agreements that are underpinned by the Vision.
- The invention of a process to resolve potential conflicting demands for different land management on the same area of ground.

Improved economics of HNV farming

- Better understanding of the intended outcomes for agri-environment agreements resulted in an increased uptake of this important funding resource

Maintaining or improving HNV values

- The full suite of HNV vegetation (Annex 1 and non-Annex; within and outwith designated sites) was addressed through the process and included in the Vision.

How does The Vision respond to the HNV LINK innovation themes?

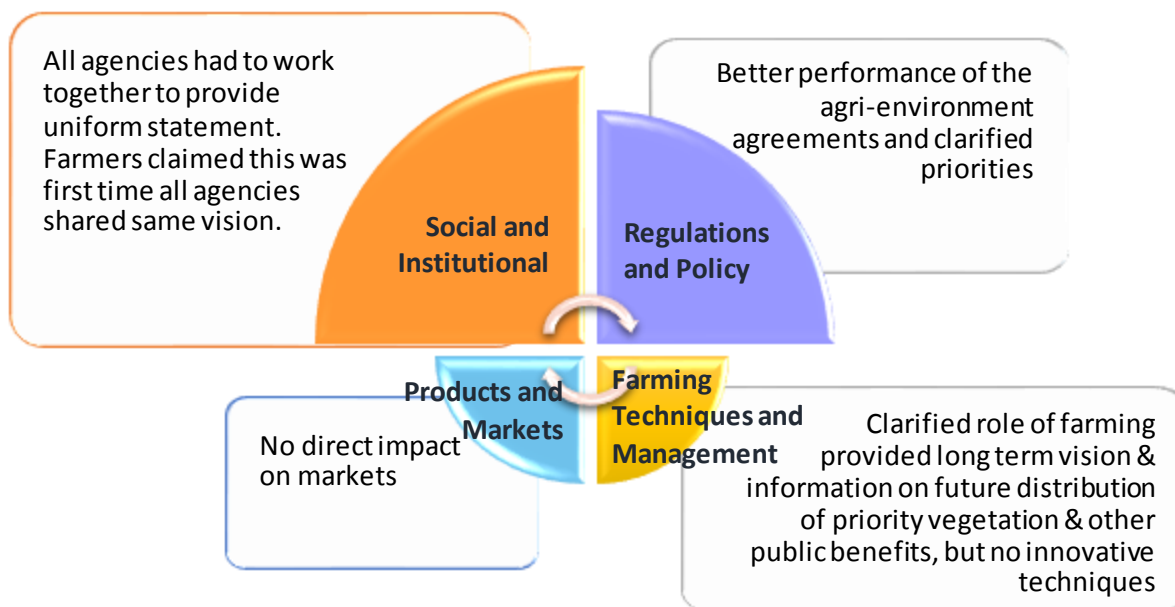


Figure 7 The framework HNV-Link used for evaluating innovations for high nature value farming.

The Vision has social, institutional and practical benefits. Although originally designed to overcome a perceived difference of ambition from different government agencies the vision concept now links innovative delivery (of land management) with policy providing a practical solution to help those farmers within an agri-environment scheme to be able to better understand what the objectives of that agreement are and why the agreement seeks certain objectives. It also provides a longer term framework (25 years).

The process that made it happen and critical factors for success

- Action designed to address a specific problem identified by farmers.
- Independent facilitator employed to secure agreement between all agencies.
- Sufficient funding and capacity.
- Funded by all agencies so owned by all.
- Secured agreement on draft vision with professionals before asking farmers to comment and then endorse

The DNPA initiated the proposal following concerns from farmers that they had little faith in the agencies long term view of Dartmoor and conflict between the aspirations of the archaeologists and ecologists. An independent facilitator was employed and the process was to secure agreement between all the ecologists and then the archaeologists and then bring their agreed positions together to see if there was conflict. There was very little overlap of ambitions, both groups’ visions could be accommodated to each other.

All the government agencies with responsibility on Dartmoor participated. They eventually signed off the Vision and by doing so clarified their position. Farmers claimed this to be the first time that agencies had clearly stated that they wanted a farmed landscape to continue. The farmers then ground-truthed the draft, i.e., asked themselves whether it could be delivered, and then signed it off.

The process that was developed to deliver the Vision has been used successfully elsewhere. The employment of a facilitator was the only significant cost. Providing sufficient time was very important, enabling full participation by those busy with other work.



Lessons learnt from this innovation example, and its potential replication

- Vision restricted to moorland, fails to provide vision for inbye land.
- NGOs did not participate.
- Process, including use of Premier Archaeological Landscapes (PALs) used to produce vision for Bodmin Moor and moorland units on Exmoor.

NOTES: The Vision process has been used on Bodmin Moor (a similar discrete upland in south-west England). It is suitable for replicating on other uplands or discrete areas to resolve conflict between different land management for differing outcomes.

The following aspects of the Vision process were found to be valuable:

- Independent facilitation by someone with access to statutory agencies and farmers.
- Sufficient time allocated to secure participation
- Adoption of a term to describe discrete areas of high archaeological value that require a landscape selling – Premier archaeological Landscapes (PALs).
- Timing of meetings tailored to participants (farmers met in the evening at less busy times of the year)
- Ambitions of various disciplines captured on maps that could be shared and amended.
- Process improved communication between agencies as well as between agencies and farmers.
- Designed to complement and enhance existing delivery mechanisms and not to replace (AE agreements).
- Useful so it is still used and referred to.

The process did not include NGOs; if it were to be repeated, some NGOs would be invited to contribute so they could learn about the ambitions and constraints facing the farmers whilst contributing their information.



Figure 8

High Nature Value farming: Learning, Innovation and Knowledge: www.hnmlink.eu & info@hnmlink.eu

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

This project is funded by
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research and innovations programme



UK, Dartmoor – innovation example 5 DARTMOOR COMMONERS' COUNCIL

- **Location:** Dartmoor, UK
- **HNV system:** Extensive grazing, cattle, sheep and ponies on rough upland pastures
- **Scale of operation:** 36,000 ha.
- **Timespan:** Established in 1986, ongoing
- **Keys to success:** Governance with legal powers that is farmer led and elected from the local farming community.

Problem being addressed:

A Dartmoor Commons Association was formed in 1954, a federation of 32 local common's associations. The Dartmoor Commons Association lacked enforcement powers and remit to ensure the number of grazing animals did not exceed an individual's common rights, correct animal husbandry on the commons and the appropriate management of the common land. Specific issues included damage from winter feeding, erosion and over burning.

Story in a nutshell:

The old Dartmoor Commons Association worked with the DNPA and Devon County Council (who largely funded the work) to secure new legislation - the Dartmoor Commons Act 1985. This legislation enabled the formation in 1986 of the Dartmoor Commoners' Council with enforceable powers (the Regulations) to manage the commons. The Council is composed of <28 members, 20 of which are elected from the local farming community, 2 from the National Park Authority, one from the Duchy of Cornwall, two co-opted members and a veterinary surgeon. A chairman is elected from the within the Council who is responsible for ensuring the Council's business is undertaken correctly. A member of staff (secretary) is employed to ensure the register of rights is updated and correct together with supporting the commoners with issues relating to their rights. The Council's Regulations address animal husbandry (health, condition and no bulls or rams), timing of grazing (reduced winter grazing) and the burning of the vegetation.

All farmers wishing to activate his/her rights and graze animals on the common land must pay an annual fee to the Council. The revenue so raised enables the register to be maintained and the functions of Council to be fulfilled. The number of registered grazing rights on Dartmoor is impressive; totalling some 95,745 livestock units that can be used for sheep, cattle or ponies (most rights state which animal they refer to). In practice the numbers actually grazed today are much smaller, and although 915 farmers register their rights to graze (78,985) many farmers choose not to activate their grazing.

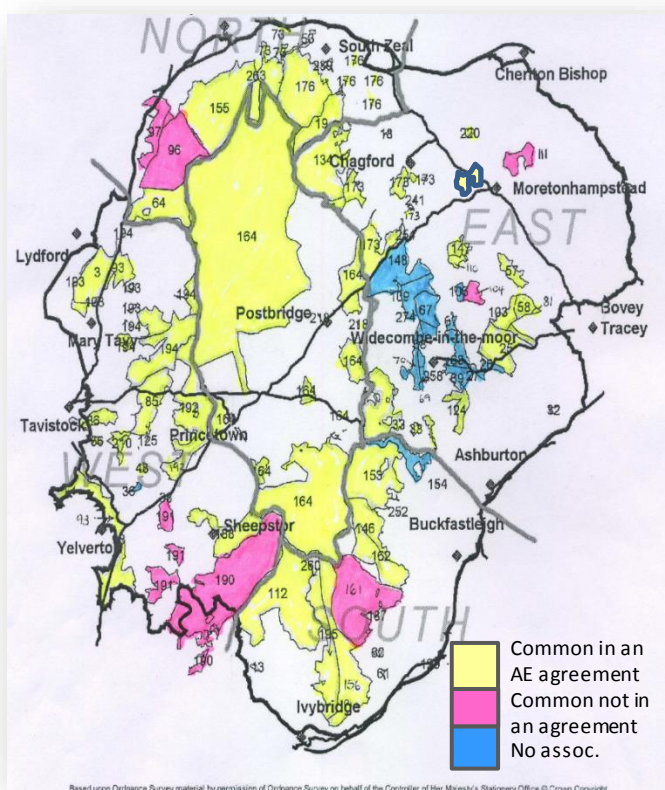


Figure 1

Council has imposed regulations that require all graziers to remove their stock (except ponies) for “clear days” to ensure all stock are properly marked, in good health and are grazing within their permitted area. Farmers failing to register their rights and found to be grazing stock can be fined as can any grazier who fails to abide by the Council’s Regulations can be taken to court and fined and their animals removed from the common. In practice these powers are rarely used (3x in 30 years) but act as a deterrent for poor behaviour.

For 30 years the Dartmoor Commoners’ Council was unique as a Council in Britain. The 2006 Commons Act enabled other councils to be established. 2 other Councils are being established with a third group of commoners considering applying

What does Dartmoor Commoners’ Council achieve for HNV farming?

- Council can regulate stocking rate and timing of stock on the commons
- Numbers of feral ponies controlled
- Improved health of grazing animals
- Negotiated improved TB Regulations and equine movement regulations

Achievements

An up to date register of rights, ensuring grazing animals do not exceed rights. Prior to the Council become established in 1986 the commons were considered (by many observers including some commoners) to be over stocked resulting in damage to the condition of the HNV vegetation (particularly blanket bog and heaths), the moorland was burnt too frequently and the areas burnt were too large and the livestock were in poor condition. There was also some abuse of grazing rights with farmers grazing more animals than their rights permitted.

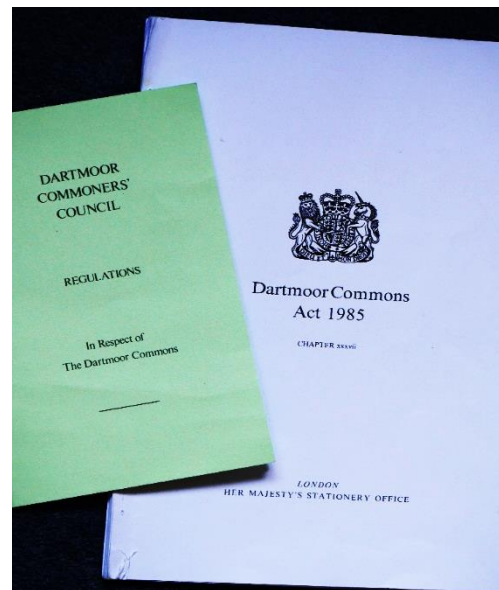


Figure 2

Council’s Regulation and subsequent enforcement have addressed:

- Good husbandry of all livestock on commons; grazing animals shefted/leered, animals properly marked, diseased animals removed from the common and restrictions on stallions, bulls and rams.
- Ensure commons not over stocked; introduction of clear days, counts and checks.
- The conservation and enhancement of the natural beauty of the commons, HNV farming by controlling burning, prohibiting motor vehicles and stock prohibition periods.

How does Dartmoor Commoners' Council respond to the HNV LINK innovation themes?

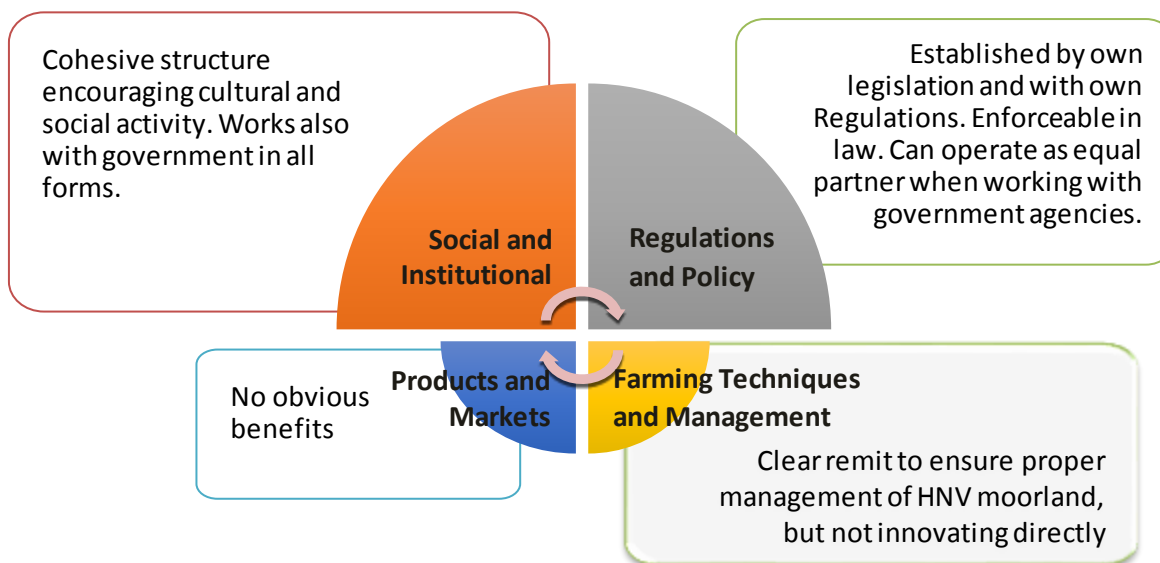


Figure 3 Shows how this innovation addresses the four themes of the HNV-Link innovation framework.

- **Social and institutional:** The Council acts as a voice and sounding board for all issues. Encourages social cohesion and ensures cultural issues are not neglected and recognised as important drivers for wider Dartmoor management including HNV farmland. Ensures commons are better understood.
- **Regulations and Policy:** Council is established by Act of Parliament and can enforce powers through its own Regulations. Initially this was essential to ensure respect for enforcement, though by now, conformity has become normalised. A statutory function enables dialogue with policy, political and government officials.
- **Products and Markets:** No direct links.
- **Farming Techniques and Management:** The Council's Regulations require good land management, good animal husbandry and the continued functioning of the commons; regulating grazing to ensure HNV farmland is maintained and enhanced.

The process that made it happen and critical factors for success

- Influential leaders from within commoning community
- Support from local authority (Devon County Council) providing expertise and funding
- Self funding from levy on rights
- Council comprised of farmers from all parts of Dartmoor, elected by their fellow commoners.
- Addressed issues of concern (damage from winter feeding, over burning, erosion related to horses and over grazing).
- Fortunate in having a series of committed, well-respected chairpersons and excellent administrative staff.

The large number of commoners (850) and the large number of rights of grazing (145,000 for sheep, 33,000 for cattle, 5450 for ponies and 12,330 for non specified animals), even though not all of these are active/used, provide the critical mass necessary – through the payment of grazing fees - to deliver the capacity to provide regulation and enforcement, including an annually -updated register of rights.

The emergence of leaders from within the farming community has been a vital part of the Council's ability to command respect, but the role of it's paid staff and its unpaid chairpersons is also key; failure to find appropriate people would be a severe blow to the Council's work and the unpaid nature of the onerous role of chair makes it a potential Achilles' heel.



Figure 4



Figure 5

Lessons learnt from this innovation example, and its potential replication

- The model of DaCC is successful securing better management and less abuse of grazing rights.
- New legislation in 2006 enable Commons Councils to be created. So far 2 have been established.
- The model is applicable for different scale of common land, on Exmoor for 1 common and on Dartmoor for 32 separate associations.
- Establishment of a Council requires commitment from the commoners, new legislation and funding for legal fees and facilitation. Once established a Council can be self-financing.
- There has to be sufficient income to provide the necessary staff and reward work undertaken on behalf of the Council by its members and officers.

The benefits of a Commons Council

Those common associations considering establishing a commons council have identified a number of potential benefits:

- Regulation in respect of stock numbers and land management.
- A mechanism to overcome disputes and resolve long standing obstacles associated with land management and funding.
- Providing a consistent approach to divisive issues across a number of associations and commons. Such issues include the process of dealing with the number of rights held by individuals on a number of commons, clarifying the role of active and non graziers and reaching agreement with the land owners.
- A means of addressing disease control, bio-security and stock welfare.
- Removing the power of veto through the introduction of majority voting.
- The preparation and maintenance of a record of grazing rights (i.e. a live register).
- Empowering commoners and providing a stronger single voice.

Potential issues

Capacity to fund and steer the establishment process; sufficient members (commoners with an interest) to raise sufficient income; plenty of time to secure agreement and participation, inclusive for all commoners; availability of good support staff etc. and an awareness that funds need to be set aside to pay for them

Replication

The Dartmoor Commoners' Council model was used to inform new legislation, the 2006 Commons Act, that enables the creation of new councils for common land throughout England and Wales. To date only two areas of common have successfully applied for Council status and both still wait for Government approval of their regulations before they can become active. The process has proved expensive (Government has funded some of the process), complex and very slow, the capacity of Defra to respond and support is very poor. A third group of commoners (Cumbria Federation of Commoners) has agreed to apply for Council status but the expense and slow progress is acting as a deterrent.

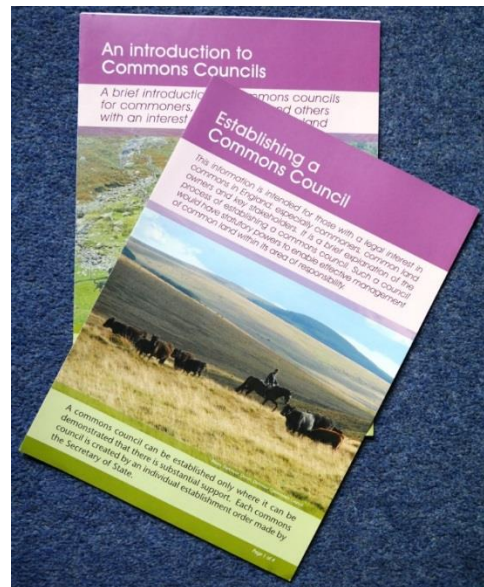


Figure 6

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