

The Common Agricultural Policy (CAP) towards 2020: How can fit farming in the marginal areas of the EU

Rafael Caballero

Abstract— On the context of the last debate on CAP reform post-2013, recently launched by the EU agriculture commissioner, we have reviewed the Position Document of four interested NGOs against the Position Document of the European Commission (EC) on the issue of High Nature Value (HNV) farming systems, most frequently linked to the Less Favoured Areas (LFA) of the European Union (EU). Our main argument is that multifunctional objectives should be related to multi-scale categorization of European rural landscapes by structure and functions. Current available evidence on the status of HNV farming systems support the view that these systems are under modern external and internal disturbances leading to indifference and loss of territorial identity. These systems face particular challenges and constraints not properly addressed in the Position Document of the EU Commission. By contrasting the narratives of the Position Documents and the available evidence, we concluded that the inclusion of one particular scheme in support of HNV farming is a main subject for improving discussions in relevant arenas and to connect important policy decisions with the evidence-base on the one hand and stakeholders' views on the other.

Keywords— Agricultural Policy; High Nature Value farmland; Large Scale Grazing Systems; Territorial Identity; CAP Reforms.

I. INTRODUCTION

There is a wide consensus on the requirement to amend the current CAP. This consensus is shared from the EU staff to European farmers and consumers, although different reasons and interests are at the stake. Many stakeholders are involved and the structure and functions of the European rural landscape is also diverse. We are aware that a knowledge-based policy reform is frequently uncongenial with short-term

views and decisions of policy makers [1], but as occurred with past reforms, a short-cut route may deliver a never-ending process of policy reform.

The EU kicked off, earlier on 2010, a new debate on the reform of the CAP post-2013 subsumed into a bigger argument about the EU next five-year budget. Under this context, the foundations of European agriculture and trends of reforms are disputed. The improved final version of the EC Position Paper [2] was launched on 18th November, 2010¹. As part of this open debate, five leading farming and environmental NGOs published one general position document in March 2010² and four related NGOs released one complementary document in September 2010³ concentrated on HNV farming. Also a reaction to the EC Position Document is available [3]. In this review, we will refer to the four NGOs' Position Document as narratives and proposals of the three documents. We will deal with the foundations for providing support to farming in the marginal areas of the EU and particularly to Large Scale Grazing Systems (LSGS), a dominant operative use of HNV farmland. LSGS are cultural landscapes emerging from the interaction of human behaviour and natural resources. They are broadly defined as extensive systems of grassland management located mainly in harsh environments and marginal areas. LSGS represent a community of livestock

¹ Available at http://ec.europa.eu/agriculture/cap-post-2013/communication/com2010-672_en.pdf. Accessed, February, 2011.

² BirdLife, European Environment Bureau (EEB), European Forum on Nature Conservation and Pastoralism (EFNCP), International Federation of Organic Agriculture Movements (IFOAM), World Wildlife Fund (WWF). Proposal for a new EU Common Agricultural Policy. Available at <http://cap2020.ieep.eu/assets/2010/6/10/NGO-CAP-proposal.pdf>. Accessed December 2010.

³ EFNCP, BirdLife, Butterfly Conservation Europe, WWF. CAP reform 2013, last chance to stop the decline of Europe's High Nature Value farming? Available at www.efnecp.org/high-nature-value-farmland/cap-reform-2013/. Accessed January 2011.

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Rafael Caballero is with the Instituto de Ciencias Agrarias (CSIC). Finca Experimental La Poveda. Ctra. De Campo Real km 1. 28500Arganda del Rey. Madrid, Spain. (corresponding author phone: 34-91-8700941; fax: 34-91-8714655; e-mail: rcaballero@ccma.csic.es). The author wishes to thank the European Commission for funding three consecutive research projects within the Framework Program (1990-2005) on the discipline of extensive systems of grassland management.

farmers sharing productive forms, traditions and cultural values that, in turn, shapes the environment [4], [5]. LSGS have changed over time under different disturbances and pressures and the path of change is an essential part of their identity.

In the words of the EU agriculture commissioner “farmers in the HNV areas need to make a living, but cannot compete with others more lucrative types of farming. As a result, low-intensity farming systems, all over Europe, face abandonment or intensification”. And in the words of the EU environment commissioner “agri-environment and Natura 2000 compensation payments are simply not sufficient when it comes to very extensive and remote farming areas. Hence the clear need to re-allocate a proportion of direct payments to HNV farming”. Put together, this narrative encompasses some promising steps but also some underlying assumptions. For the first, it recognises HNV farming as a separate farming category or type of farming. For the second, economic comparison between different types of farming does not make much sense and, otherwise, it assumes that the only way of avoiding abandonment or intensification is an increase of direct or compensation payments. In the words of the two commissioners, HNV farming is inherently uneconomic and low-input farming is a proxy for lack of action and endogenous development.

In the Position Document of the EC [2], the maintenance of public support is founded on the consideration that withdrawing would lead to more intensive farming with increased environmental pressures and, at the same time, marginalisation and abandonment of less competitive areas. But the simplistic assertion of maintaining the EU “farming activity” depends on how support is regionally-targeted more than on the overall level of EU farming activity. Fundamental differences and challenges are derived from intensively-farmed and marginal areas. For example, farming abandonment and loss of inherent biodiversity are challenges of marginal areas while food security and environmental pressures are substantial to intensive areas. Maintaining farming activity and

a proper demarcation of the European countryside are not related in the Position Document of the EC.

If it is promising to discuss the inclusion of one particular HNV scheme it is more important to deal with an ex-ante analysis of the effectiveness. The Position Document of the EC only envisage a compensation payment within Pillar 2 (rural development) while the Position Paper of the four NGOs [6] proposes one scheme of direct payments. For the former, not even a word is devoted on how payments would be tailored to regional needs. For the latter, the references are not encouraging. Up to now, the European Commission has promoted national mapping of HNV areas and indicators to monitoring changes as a policy tool for identification on the ground [7], but methods and criteria for targeting payments are not available [3]. For HNV farming systems, and particularly LSGS, a typology of policy relevance is required within a framework methodology [5]. This analysis should unveil general challenges as well as assets and constraints in particular systems. From this, a more cost-effective allocation of funds can be derived.

We will review the Position Document of the EC against the Position Document of the four NGOs on the issue of challenges posed by HNV farming. The review comprises an ex-post analysis of recent CAP reforms and policy instruments, a discussion of the foundations (principles) for policy reforms and, against this background, a reaction to the narrative-proposals of both Position Documents. Our main objectives are to improve discussion in relevant arenas and to connect important policy decisions with the evidence-base on the one hand and stakeholders’ views on the other.

II. MAIN CHALLENGES AND CONTRASTING NARRATIVES

In this section, we will address two main challenges, the food security and the socio-economic and cultural one. The former, extensively referred in the EC Position Document, is of much less relevance than the latter for the continuity and coherence of HNV farming systems. In the EC Position Document, arguments of landscape conservation and farming activity are intertwined. For LSGS, the production objective is not a global

challenge at the EU scale, but the maintenance of a certain level of farming activity is a main challenge of most European LSGS.

Because food is basic to life, agriculture is expected to achieve competing and overlapping goals that change over time and from place to place. Food security is a primary challenge in developing countries while in developed countries alternative views and concerns are also relevant, such as food quality, peoples' health, animals' welfare or environmental concerns.

Given these conflicting aims, the EC Position Document produced some contradictory accounts and proposals. Food security is linked to modern farming and food processing techniques and alternative goals and views to food supply can be achieved by proper regulation, even outside of the CAP. The paradox here is that those farm types more directly linked to the main goals of the alternative view are almost disregarded in the EC Position Document. On the other hand, the four NGOs' Position Document is sceptical towards the main challenge of food security and straightforward to HNV farming, but not very clear on how to sustain farming in the marginal areas of the EU for the potential delivery of public goods and services. Neither of both argument and challenges can be disregarded at the EU scale, but differentiating goals by type of farming are needed for sensible proposals.

A. The food security challenge

The analysis and thinking of the EC Position Paper is full of arguments about this challenge. This argument fits the perspective of increasing food demand worldwide and uncertainty and volatility of agricultural markets. It surely also fits the interests of the agri-food industry, a large beneficiary of current EU handouts. However, how do decoupled, non-targeted and blankets handouts to farmers ensure European food security is a question not yet explained in the EC Position Paper, if we follow the words of the four NGOs' Position Paper.

There is nothing wrong in the EU objective of securing food supply under proper markets mechanisms. However, this objective is embedded in a fuzzy rhetoric of environmental

sustainability while specific details on how to implement the Soil Strategy or the Water Framework Directive are not properly addressed as real territorial challenges.

On the other hand, food security is not a main function on HNV farming systems. Although taking up large expanses of the European countryside-in some countries near than 50% of rural land [7], they only share a small proportion of total food production. In this case, arguments about landscape conservation, food quality and maintenance of indigenous products and cultural values are more relevant as catalysts of other side-effect assets (ie, rural jobs in marginal areas). Even in some most developed EU countries, the current LSGS are mostly hot spots of environmental conservation with a much secondary productive orientation.

But the EU Commission is also responsible in dealing with farming in the marginal areas with "specific natural constraints" where a large part of European environmental values are concentrated [8]. Loss of extensive grass-based livestock systems could occur and would be undesirable [9]. In this case, the EC Position Paper assumes arguments about "environmental change", "territorial balance" or "equitable and balanced CAP support". These arguments require a proper demarcation of the European countryside, but the past spatial scale of the LFAs disappeared from the EC Position Document and the new HNV farmland only appeared at the end of the document, only as an unexplained acronym and mixed with Natura 2000, two related but functionally differentiated demarcations [5]. A large narrative of challenges, objectives and policy instruments is blurred if the spatial focus of attention is not clearly defined. In stressing the challenge of food security, the EC Position Document continues to exert the influence of the CAP over the intensive livestock and feed production sector, particularly ruminant production, which is somewhat at odds with moves towards greater market orientations and decoupling of direct payments from production since 2005.

On this issue, the Position Paper of the four NGOs is more specific as its deal particularly with HNV farmland. Its main proposal of one HNV System Support Scheme of targeted

direct payments (Pillar 1) is not captured in the EC Position Paper that only assumes a compensation payment to HNV farmland under the Rural Development framework (Pillar 2). Under Pillar 1, only references to supporting areas with “specific natural constraints” and risk of abandonment are included but these areas are not substantiated and much less the unprecedented scale of the abandonment challenge.

B. The socio-economic and cultural challenges

The EC Position Paper recognises that income in rural areas is considerably lower (by about 40% per working unit and by about 50% per inhabitant) than in urban areas. These mean figures, however, obscure a large variability between intensively farmed and marginal areas. The four NGOs’ Position Paper substantiated these differences and made a criticism to the EU Commission of not presenting a clear picture of which farm types and areas face the main income challenge.

Similarly, the EC Position Paper recognises the role of farming through generating side-effects activities such as tourism and trade and, in some regions, as the basis of “local traditions and social identity”. But the role of farming in shaping the European landscapes should be differentiated across bioregions and farming types [10]. On the other hand, the four NGOs’ Position Paper stated that HNV farming systems should be valued by its true multi-functionality and that “attempts to convert such landscapes to competitive full-time farming following the intensification model of recent decades would entails enormous environmental costs”. Some evidence on the effects of this path of change is available (see section 3), but the four NGOs’ Position paper also stated that these HNV farming systems “cannot be fossilised”. This contrasting narrative requires the design of an alternative transition path towards sustainable development of European pastoral systems [11]. A large part of these systems are in need of sustainable intensification for regeneration and continuity and the paradox here is that low-intensity and fossilised LSGS are more congenial than low-intensity and lively working HNV landscapes.

For example, open access to boreal forests and northern alpine pastures in Fennoscandia [12]-[14], maintenance of open pastures in the Italian’s Alps [15]-[17], maintenance of indigenous Wallachian sheep’s breeds and their mobile LSGS in SE European countries [18] or blending crops, grasslands and forest in the unique dehesa landscapes of SW Spain [19] are the result of a working land perspective with management practices for coherence and continuity. A main challenge for these and many other European landscapes in the marginal areas [20] is a proper transition pathway towards sustainable pastoral development. This would require the design of a framework policy instrument for modelling changes not contemplated in both Position Documents [11].

III. REVIEW OF EVIDENCE

Available evidence is not particularly related to HNV farming as this concept was not considered in past CAP reforms as a policy tool. However, marginal agricultural areas of the EU have been supported since the CAP inception through different schemes. In this review, we will deal mainly with the most recent reforms.

As the German Environmental Advisory Board stated [21], [22], in the short to medium-term, financial support to adjustment to EU rules on environmental objectives can be required but, in the long-term, monitoring rules for fair competition are required and only financial support to non-intensive farming systems in the Less Favoured Areas (LFA) where most EU environmental values are concentrated [5], [23]. This sensible approach, however, assumes a proper differentiation of European landscapes by structure and functions, an objective looked for in several EU-funded research projects [24]-[28], but barely reached and much less taking hold as policy instrument [29]-[32].

At a large extent, the general trend towards intensification of EU agriculture has continued irrespective of recent CAP reforms and new policy objectives. The empirical evidence is abundant, at the pan-European [33], [34], national [35]-[37] and at the regional [38]-[40] scales, and the post-productivist

paradigm of the multifunctional model is contested [41], [38], [42].

The striking point is that this trend is taking holds irrespective of the level of intensification. The recent CAP reforms has proven ineffective for delivering non-intensive farmland in the EU and stated objectives such as slowing biodiversity decline by 2010 has not been reached. In this case, both intensification and abandonment processes are operative, with an open and ongoing debate about how ecological services flows can be maintained from upland and LFAs and how the corresponding farming communities can be sustained [43], [20], [44].

In Spain, for example, the EU accession in 1986 and corresponding financial flow has not interrupted the downward trend of traditional farming systems, particularly livestock systems in the LFAs [5]. Depopulation and abandonment in these areas has led to land use changes with significant effects on some environmental services and public goods. A review of evidence suggests that biodiversity [45], [5], forest wildfires incidence [46], [47], erosion control and soil quality [48]-[50], and water quality and watershed stewardship [51], [52] can be affected. Similar results are recorded in other Mediterranean regions [53]-[57]. If ample scientific evidence is available and most pundits suggest underlying socio-economic causes for land abandonment, it is a paradox that the main causes for exiting from farming have been much less investigated [58], [59] as well as the inability of the current CAP to address this issue [39], [5].

Ample evidence on the effectiveness of particular policy schemes suggest mixed effects or clear inefficiencies, the latter particularly in marginal areas. In many instances, more than one single scheme is operating in the same area at different spatial scales (plot, farm and region) or even interacting with some regional regulations on land or livestock management [60]. Under these conditions, the effects of particular schemes are difficult to assess.

The Single Payment Scheme (SPS) was only devised in 2003 under the mid-term review of the CAP and Council Regulation (EC) N° 1782/2003, with the aim of promoting a more market-oriented and competitive agriculture. The biggest change was

to remove the link between farm support and production (decoupled direct payments). However, some coupled forms of support have continued to exist in particular sectors (ie, sheep and goats). The SPS is recently implemented in some MS under totally or partially-decoupled options. The SPS is offered to farmers on the basis of area farmed rather than quantities of commodities produced, and requirement of some management practices for land stewardship (cross-compliance). The short time elapsed since implementation makes difficult an assessment of its effects. Some models of production decisions predict a reduction of stocking rates after decoupling or negative farm income and land abandonment in marginal areas of the UK if the SPS were to be removed [44]. Modeling scenarios in European marginal areas also predict abandonment, homogenization of landscapes and low biodiversity values in phasing out transfer payments [61]. If rated by farmers' attitudes, only a minority of farmers (30%) in three EU countries would alter their current land uses under an SPS-decoupling scenario [62]. Other studies suggest that supplementary premiums could balance the negative effects of decoupling for livestock production in marginal areas [63]. Most of the available evidence suggests that livestock systems in marginal areas cannot survive without some kind of support [4], but we do not have evidence in support of a generalized SPS based on historical rights and cross-compliance [21]. It seems that the decoupling option of the SPS was more a concession of EU negotiators with an unfolding WTO agenda and Green-Box compatibility [64].

The EC Position Document does not clearly propose one SPS in support of HNV farming systems. If one were to be included, as in the four NGOs' Position Document, the available evidence suggests that it would be regionally-targeted and not decoupled from production or based on historical rights.

More evidence is available on the effects of policy instruments under Pillar 2, mostly Agri-environment Scheme (AES), since its final inception in the year 1992 (CAP Agri-environment Regulation 2078/92) and translation into national and regional regulations a few years latter. The AES is the central area-

based measures of the second pillar of the CAP and can be implemented at several spatial scales, even at the plot scale. Regional governments, in their Regional Development Plans (RDP) can devise a wide-basket option, but proper scientific foundations for inclusion of particular management practices are not required. In practice, several AESs can interact with other regional regulations in contiguous landscapes and, under these conditions, the effectiveness of particular schemes is difficult to assess. Most frequent criticisms of AES relate to lack of validation in their cost-effectiveness of result-oriented objectives [65] and lack of participation of farmers and other stakeholders in their design [66]-[68], [40], [69]. Pan-European assessment of AES has only shown mixed effects [70] and other more recent study based on impact models [71] indicated that the design of around half (51%) of analyzed agri-environment packages in seven EU countries was based on “common sense” judgements about their possible impact, around one third (34%) were based on quantitative models that use theoretically sound evidence, and only one sixth (16%) were based on quantitative models that provide statistical predictions of how changes in agricultural practices will have specific environmental impacts.

In fact, the schemes of agricultural support require an analysis across different objectives with a prospect of positive, neutral or negative influence. In a mixed cereal-sheep system (south central Spain), a “package” of AESs and internal regional regulations on land and sheep management improved the finances of arable farmers but showed deleterious effects for the land-based sheep operation and the habitat suitability of steppe birds [60]. On the opposite, management alternatives of proven positive influence do not have a correspondence in policy schemes or even the latter may acts against some particular functions of the agricultural system [72]. All of this evidence suggests that a territorial demarcation and objective environmental functions should be stated before AES design under proper scientific foundations. AES “packages” should be disregarded or at least their potential interaction effects assessed on different functions or structures of the farming systems.

The EU Rural Development Policy (RDP) was launched in 2000 as the new second pillar of the CAP with the aim of promoting rural development (Council Regulation CE N° 1257/99), and AES was integrated into this second pillar. Regions had to adapt their Regional Plans to the Council Guidelines. In some ten years after design not much evidence is available on the effectiveness of RDP across countries or particular regions. Some principles and priorities of newly accessed countries are reviewed [73], [74] and difficulties for adaptation stressed [75]. Some criticism stressed concerns of a primary focus on agriculture at the expense of wider rural interests [76]. The Council Regulation (EC) N° 1695/2005 includes measures to enhance job opportunities in rural areas under axis three (economic diversification) withholding a minimum 10% of RDP funds for this objective over the scheduled period (2007-2013). In spite of this, the EU Court of Auditors also concluded that the RDP in Europe is ineffective because it continues to allow MS to adopt a predominantly sector approach with the primary focus on the agricultural sector (Special Report N° 17/2006). It is even doubtful as to which extent measures for diversification of jobs in the countryside and improvements of the quality of life can be entrenched in CAP regulations. One pan-European study on the effectiveness of RDP programs [32] highlighted the need for further institutional adaptation to enable effective delivery. At this point, we have more questions than answers. The RDP is structured under three thematic axes or core objectives (competitiveness, environment and quality of life and economic diversification). How actions on these three axes can be articulated under a plethora of spatial scales (plots, farms, regions, HNV farming systems) and policy schemes (Less Favoured Areas, AES, HNV, Natura 2000 zones) is at the least unclear, as well as proper coordination with measures under the first pillar [22].

Summarizing, most of the available evidence on effectiveness of policy instruments is related to AESs as the oldest and most extending environmental instrument of the CAP. Ex-post and modelling evaluation methods still prevail [77]-[82], instead of statistically-designed experiments with defined criteria and

objectives [83], [84] or pilot pre-implementation studies. We found studies showing positive, negative and mixed effects, the results being largely site specific and depending on the spatial deployment, targeted environmental function and level of agricultural intensity, with the more dubious results in high intensive targeted areas [85]-[90]. For cross-country comparisons, the results more frequently showed mixed effects [70], [78], [91], and higher cost-effectiveness for implementation in low intensive agricultural areas [92], [93], [84], [94]. Paradoxically, the AES is more extensively implemented in countries with intensive-dominant areas such as UK and The Netherland, where available scientific evidence showed the more dubious effects. May be for this reason, a trend towards implementing AES in Reserve Zones is apparent [95], [96]. The debate on the AES' effectiveness is yet open as looked scientific evidence is following the path of policy design and not the reverse.

Despite adjustments to CAP in the last two decades, intensification of EU agriculture in some regions and concurrent abandonment in others remain the major threat to the EU agro-ecosystems. For the latter areas, abundant literature on the deleterious effects of farm abandonment and phasing out of support suggest the requirement of a particular scheme for these areas in support of continued non-intensive land management. The EC Position Document only proposes compensation payments for marginal areas under the RDP tier. The four NGOs' Position Document clearly proposes one specific scheme of direct payments under Pillar 1 and suggests the current French agri-environment scheme (*Prime Herbagère Agroenvironnementale* or PHAE) as the basis to provide targeted support to HNV farms [3].

IV. PRINCIPLES

A. Cultural v nature landscapes

What we currently see across Europe are cultural landscapes with a strong tradition of human influence on land uses interacting with nature laws. Man has shaped European nature and historical account and knowledge of rural landscapes is a first foundation for design of present land uses [97], [10].

Policy reforms based on the view of pure nature and out-of-man hands are prone to derail as management tools. European rural landscapes have the capability of delivering public goods but also human-induced functions. Frequently, the formers are an effect of the latter. On this ground, the policy objectives stated in the four NGOs' Position Document are somewhat unbalanced. Although recognising that it is important to support the viability of those farming systems which underpin the delivery of public goods, the relationship between individual landowners and the delivery of public goods and services is somewhat blurred. Indigenous cheeses, for example, are produced in many mountain and less favoured areas of the EU. Are this private function and their potential market capabilities uncongenial with the delivery of public goods and services in these areas? And more important, can these public goods and services be delivered without a "working land"? Available evidence, at least in Mediterranean areas, says not [5]. The argument of a "working land" versus a "public goods" construction of the agri-environmental relationship [64], [98] is largely disregarded by current evidence in the LFA of the EU.

In recognising the cultural identity of European rural landscapes, another corollary can be derived. The two Position Documents state as a key objective that innovation and a knowledge-based approach must be central to the transition towards sustainable farming, but we cannot see any policy instrument in support of this approach, particularly for those rural landscapes lagging behind of development and research support.

B. Devolution

Most recent reforms of the CAP have been based on the principle of devolution of responsibilities to national and regional scales of government. The EU assumes that better on-the-ground knowledge and targeted objectives can be reached at lower scale of government. However, planning at this scale does not assure that the real stakeholders and their interests are represented and that the objectives of the EU can be reached or even addressed. This can be the case when ideology and

short-term views overrule knowledge-based and EU-linked policy design.

The CAP is the main component of the EU budget and the objectives of land stewardship and lively rural landscapes are pan-European reaches. The EU cannot disregard its responsibilities out in the hands of national and regional governments. The EU should devise a framework regulation and tracks plans of lower scale governments for accomplishment of European objectives and available research results. Although the current array of knowledge is far from satisfactory and heterogeneous across rural landscapes and farm categories, there is a large base of research of policy relevance.

The EU has to change from many to less regulation and more policy instruments attached to each policy scheme and in the hands of the regulator. The cost of too many regulations is not only the salaries of a few thousands officials, but much more the cost of insensible or not accomplished regulations falling on those regulated.

C. Diversity

Diversity of European rural landscape in structure and functions is frequently considered as a constraint for policy design. It is assumed that generalised policy frameworks cannot fit the wide array of situations. As a consequence a plethora of policy schemes is the response under many-options fit-all approach. This paved the way for national and regional government to adjust their particular land uses and farming structures to the basket-options and not the other way round. National and regional governments should justify the selection of the proper scheme(s) suited to their own structures and functions in order to better reach European objectives. In short, sensible policy design should consider European diversity as an asset more than as a constraint. The main problem out of this trap is the poorly-defined system of land use categorisation and attached transition pathways. For the purpose of policy reform, we do not require an “atomistic” approach as if scientific knowledge were the objective. However, we should differentiate, as much as possible, those

landscapes with inherent potential environmental assets (environmental enhancement) to those others where environmental assets cannot be disregarded, but mitigation techniques and tools are required (environmental mitigation) for proper environmental management [98]. The available evidence, however, does not support a differentiation between working-mitigation landscapes in northern and central areas of the EU and public goods-abandoned landscapes orientation in the southern areas [99], as environmental values does not cut across particular regions [100], [23]. On this fundamental land use principle, previous efforts on land categorization are based on vegetation types and target species of European conservation concern [100], [7]. One step forward is required to link these landscapes to the underlying culturally-rooted farming systems, to which conservation management schemes should be applied [5]. On this issue, neither of both Position Documents provides tools for targeting support. The EC Position Paper only points to areas with “specific natural constraints” and the four NGOs’ Position Document based its approach on land-based indicators and mapping of potential HNV areas. Individual farmers and their practices is the subject of support, not public goods potentially attached to mapped areas.

D. Land-based policy schemes

This principle, somewhat related to the former, may merit some considerations. When we examine the jargon used in past policy reforms, the first impression is of a complex and not well defined terminology most frequently unrelated to “on-the-ground” rural landscapes and land uses. If we, as potential experts, have difficulties in getting agreements, how can we pretend to explain this jargon to farmers, consumers and taxpayers? Most of this jargon represents human constructions unrelated to real landscapes and land use practices (ie, Pillar 1 and Pillar 2 of the current CAP). We need policy design as rooted as possible on real facts of rural life. For example, the four NGOs’ Position Document proposes the French PHAA agri-environment scheme (Pillar 2) as a model for one SFS scheme to HNV areas within Pillar 1. If one direct payment

scheme is proven as effective, why compensatory payments are required?

The land-based principle is rather opposed to the sector-based approach as has been the foundation in past CAP reforms. The sector-based approach does not differentiate across farming categories. Within one sector (ie, cattle or sheep and goats), we have to differentiate those pastoral herding-dominant operations of those indoor-dominant operations mainly unrelated to land based resources. Both are under the realm of different farming categories and require particular operational tools previous to sensible policy design.

E. ECOL-ECON interplay

Nature laws and human-induced land uses and practices are intertwined on-the-ground, but greatly separated in Europe under different categories of disciplinary research. Both are needed, but greater co-ordination effort is required for proper research and policy reform. Any proposal of CAP reform should be the result of this integrative effort, with particular disciplines adding to the final result. We have to avoid contradictory objectives and uncongenial policy instruments as much as possible, and instead of looking for congenial effects. In this case, categorisation by disciplines and contrasting objectives is more a hazard than an asset [26], [27].

The current CAP has stirred a conflicting view of objectives and interests between farmers and environmentalists. The two Position Documents state public goods as the main asset to be provided in steering land use. They also state that environmentalists and farmers should work congenially. This is good and much needed principle, but farmers are steered by profit. If environmentalists are only steered by public goods, how can they work congenially? Is really the market a Trojan horse for the environment or may be the reverse? Concerning farming in the marginal areas, a link between HNV farmland and the underlying LSGS and particular farming practices is required for proper targeting of support [101].

The Position Document developed by the four NGOs interested in nature conservation and sustainable farming states the principle of holistic solutions for complex problems while

of refusing short sighted and misguided fixes. It also frequently states the requirement for embracing change in a way that provides clear “direction of travel” along “the sustainable path that is so badly needed” This sustainable path, however, is not probably unique and does not appear in neither of both Position Documents.

There are others and important stakeholders attached to the issue of CAP policy reform such as farmers, consumers, national and regional governments and the EU staff. Previous CAP reforms, lack of policy instruments for co-ordination of design and implementation. The general principle of partnership farming for future CAP reform is highly regarded as a general objective of a more visible CAP to the whole society. We need integrated reforms, not a plethora of unrelated Directives and policy schemes.

V. A REACTION TO THE BACKGROUND

The open debate on the CAP reform, launched on early 2010 by the EU agriculture commissioner, was structured around four main questions (topics) and only agent-views were requested. Structured tools for the exercise were not foreseen and available evidence not properly taken into account. Under these conditions, further discussions on funds allocations are not properly rooted. However, on this section we will follow the main topics of the open debate, concentrating on support to the marginal areas.

A Why the EU need a scheme in support of HNV farming?

Mr Ciolos, the agriculture commissioner, talks of “compensate farmers for the provision of public goods” and Mr Bruno Le Maire, the French farm minister, of “making an idealistic choice: more food security while paying attention to the environment”. As we have shown on this review, these arguments do not cut across the wide array of European farming situations and need to be subsumed under a proper farming categorisation.

Working papers underway are stressing the importance of extensive systems of grassland management as potential repository of nature and social values. For the whole rural

landscapes, the delivery of public goods is emerging as the main rationale for policy reforms [8], [102], [103]. It is not a surprise that environmental NGOs have been quick to rally behind the slogan of “public money for public goods” [104]. This latter is a broad concept that suits to non-demarcated rural territories. All European rural landscapes have the potential capability of delivering some type and rate of public goods, but the delivery of public goods linked to agricultural management are in the hands of farmers controlling production factors (including land ownership) and farming practices within particular farming systems. Almost none of potential public goods is priced on markets and the precise rate of delivery under particular land use is barely known. Beneficial management and the delivery of public goods are related and we need to choose one or the other, but the arrow of causality is from the former to the latter.

Regarding the vision of the Position Paper by the four NGOs, we are aware that “sustainability” is an overused buzzword that need to be defined by some criteria and indicators and being related to particular farming categories and functions. Without this, it is difficult to further define operational principles and much less a policy architecture that should be aimed at particular farming categories and functions. From the Foreword, statements such as “encourage farmers to shift towards”, “truly sustainable farming”, “embracing change in a clear direction of travel” and others similar make little sense if unrelated to particular farming categories and functions. For example, what means sustainable farm business? Is the same in vibrant than in marginal communities?

In short, we need a CAP reform in support of European marginal farming systems, where a large part of environmental values are concentrated, and not because they can provide public goods but because this important environmental function depends on the continuity of their culturally-rooted farming practices. It is this continuity and coherence of farming in the marginal areas what is at the stake.

B Why a reform of the CAP is required?

A certain policy is wasteful if it use more resources than required and it is ineffective if does not reach the desired

results. We may add that the current CAP, as a whole, does not distribute financial and staff resources according to its own objectives and is not accountable of taxpayers’ money.

The Position Document of the four NGOs provides some insightful examples of the situation, but does not state the main causes for these effects. It is that a large part of financial resources are allocated to rural landscapes of limited environmental value? It is that a large part of policy schemes are untargeted (as the Position Document states)? Or it is that a plethora of schemes interacting on a particular landscape may produce contrasting and mixed effects? We may agree with the document in the adjectives, but for reasons not clearly stated. On the other hand, the EU agriculture commissioner recognised “the clear need to re-allocate a proportion of direct payments to HNV farming”, but this has not materialised in the EC Position Document.

The Position Document of the four NGOs states that “a key objective of the policy should be to accelerate the transition towards more sustainable farming systems”. In this case, the rate of change is important (history means action and change is inevitable), but more important is the pathway of change, particularly for purely traditional forms of productions. We cannot “accelerate” the change without indicating a route and, in this case, rural history of land uses and farming practices may provide important lessons for proper pathways. On the other hand, the EU has excelled and devoted much more research effort to conventional farming mitigation than to functionality of HNV farming systems. In the latter case, we still are in the phase of proper location and inventory, notwithstanding relevant research efforts in particular systems. For these landscapes a policy instrument should be integrated in the policy design on this pursuit.

Once more this problem should be related to particular farming categories and farming systems. Under conventional farming, we have ample evidence and mitigating tools. In other farming categories (ie, extensive and traditional farming systems), the evidence is still blurred and inconclusive. For example, we are still dealing whether grazing in the less favoured areas is positive, neutral or negative regarding the

provision of some public goods (ie, biodiversity or soil quality). If we attach to a negative perspective, we will do nothing for the overhauling of these less-favoured systems. The Position Paper of the four NGOs presumes a positive influence, but it is not instrumental in the requirement to increase the evidence.

C What tools or policy instruments are required?

The main problem with the proposed architecture in the EU Position Document is that the schemes do not clearly relate to particular landscapes and functions. MS and regional governments will again most probably select a basket and only the Commission oversight may not prevent conflicting and contradictory spending. For example, under the proposed architecture, direct payments, agri-environment, HNV and Natura 2000 schemes can interact on the same landscape, producing blurred, mixed or even contradictory effects. On the opposite, if main environmental or socio-economic functions of particular farming categories and landscapes are stated and best management practices unveiled, we may have a better rationale for selection of the most appropriate scheme or a convergence of schemes for achieving the objectives.

The proposal of one HNV scheme is better aimed at non-intensive and large-scale farming systems, mostly located in the less favoured and handicapped areas of the EU. These areas concentrate a large part of potential environmental values and services but, at the same time, are in the most danger of abandonment and/or intensification. This support scheme should be considered a “rising star” of the whole proposal if the EU really wants to integrate environmental values and concerns in the new CAP. Not only because the potential environmental values of these areas, but also because these systems have been traditionally deprived of technical, managerial and financial support.

This state of affairs and current trends are based on common ground assumptions that these systems are inherently unprofitable (only true if compared to a different conventional farming category), and that, left to their own, as relatively undisturbed “natural ecosystems”, they will continue to provide agronomic and environmental services [105]. For

example, regarding the biodiversity function of many HNV grassland types of European conservation concern, we have ample evidence that either abandonment or conventional intensification may derive undesired results [5].

The main problem with HNV policy is that we have to move to the design phase without much knowledge of previous phases (ie, location, inventory of main assets, structure, constraints and alternative practices of beneficial management). This short-cut route in the transition pathway is, however, unavoidable given the current state of affairs. For this reason, the HNV scheme may introduce a knowledge-based policy instrument to further refine the supporting system with better targeting and more cost-effective support and funding priorities. As a starting point, the EU may gather and evaluate all available scientific evidence and rely upon a body of independent experts in particular systems to work together with the EU and regional governments. A regulatory framework for HNV farming systems must be required as a playground for successive developments and regional plans.

Regarding the design of the HNV scheme in the Position Document of the four NGOs, the HNV support system is presented as a more tightly targeted and successor of the current scheme for the Less Favoured Areas (LFA). This latter, however, is only aimed at scaling-up farmers’ income in handicapped areas by a flat-rate payment and barely related to HNV farmland, environmental values or methods of production. A first proposal for identification and location of HNV farming systems should be carried out by the EU and MS and these systems attached to particular European bioregions. The current endeavour by the European Environment Agency (EEA) of linking bioregions and vegetation types of European conservation concerns may go a step forward by linking bioregions and HNV farming systems where these vegetation types and targeted conservation species are present.

On the other hand, the EC Position Document contemplates the granting of a generalised, basic, decoupled and compulsory scheme of direct payments and one area-based additional income support to farmers in areas with “specific natural

constraints” as a “complement to the support given under Pillar 2”. Is this complement also compulsory? How can promote sustainable development or targeting support to “active farmers” if it is decoupled from farming practices? We would be mixing schemes aimed at different space scales, farming categories and functions. The proposed HNV scheme of direct payments for marginal areas should be detached from the basic, decoupled and generalised scheme of income support (if this would make sense). It rests the question of whether it can be compulsory or voluntarily-adopted. Directives should be compulsory, not schemes. At a large landscape scale of HNV farmland, many farmers can be involved and not all attached to the non intensive principle of HNV farming. These latter may not integrate their operations in the scheme, but compliance with baseline Directives should be compulsory. A progressive majority of farmers adopting the HNV scheme may indicate sensible design and implementation. Some institutional arrangement for contracting and monitoring with local bodies or farmers’ associations are required. The question of institutional management is of the utmost importance in the HNV farming systems, but barely addressed in the two Position Documents. If we are looking for landscape functions, we need a collective of farmers involved with congenial interests and social cohesion. The prospective HNV scheme should also contemplate funds for technical and managerial support to farmers’ institutions (ie, pastoral associations) and one-off capital expenditure for those farmers or groups entering the HNV support system after an overhauling of farming infrastructures.

The two Position Documents contemplate the Natura 2000 areas as a separate policy and management support of direct payments and the EC Position Paper as also the subject of compensatory payments under Pillar 2. If this were to be the case, Natura 2000 and HNV schemes would frequently interact, as the latter currently defined, is based on environmental values rated in the former (vegetation types and target species in the EU Directives). Natura 2000 is and has been a useful scientific tool for location and inventory of

European nature values but, as focussing in the habitat/biotope perspective and not in a farming system approach, cannot be considered a useful management scheme. Financial support is awarded to farmers and their management practices, not to vegetation types and target species.

VI. CONCLUSIONS

The central strand of this review is the future policy for marginal agricultural areas on the post-2013 CAP reform of the EU. The rationale for this reform has been subject to greater scrutiny than previous reforms. The open debate launched by the EU Commission has stirred agents-views and the interests of stakeholders. In this review, the positions of some relevant NGOs with interests in nature conservation and sustainable development were dealt with those of the EC. We found contrasting narratives and objectives and lack of available evidence, particularly in dealing with support to marginal areas. The EC Position Document stressed the challenges of environmental changes and territorial balances but it is not very specific on how to single these challenges to particular areas and how to provide targeted support. The Position Paper of the four NGOs is more specific on singling the support to HNV farming systems but does not provide clear tools and objectives for targeted support. Targeted income support to farmers in marginal areas is not the same that targeted support in pursuit of lively working landscapes. For the former, only area-based payment schemes can be required. For the latter, disclosing of beneficial management practices in particular LSGS are required as subject of support. The challenges of environmental changes and territorial balances should be embedded in a concept of dynamic landscapes. Many cultural, social and environmental values that depend on the continuity of farming in the marginal areas are at the stake. Although rated as final document, we concluded that a refinement of the EC Position Document is required before a new CAP architecture comes into effect. The territorial identity of European rural landscapes has not been considered as foundation for policy design. Instead of, policy schemes are the main subject but, as instrumental tools, is not

the foundation for progressive knowledge. If we are looking a knowledge-based foundation for policy design, the issue of territorial identity is relevant. On the same path, a mere 40 years or so after the first CAP debate began may not seem to end up.

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REFERENCES

- [1] J. Holmes, and R. Clark, "Enhancing the use of science in environmental policy-making and regulation," *Environ. Sci. Policy* 11, 702-711. 2008.
- [2] EC, The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future. COM (2010) 672 final. European Commission, Brussels. 2010
- [3] G. Beaufoy, "CAP reform 2013-EC communication raises hopes for a more balanced policy that could help low-intensity farming". *La Cañada* N° 25, 1-3. 2010.
- [4] R. Caballero, J. Riseth, N. Labba, E. Tyran, W. Musial, E. Molik, A. Boltshauser, P. Hofstetter, A. Gueydon, N. Roeder, N., H. Hoffmann, M. Belo Moreira, I. Seita Coelho, O. Brito, and A. Gil, "Comparative typology in six European low-intensity systems of grassland management". *Adv. Agron.* 96, 351-420. 2007.
- [5] R. Caballero, F. Fernandez-Gonzalez, R. Perez Badia, G. Molle, P.P. Roggero, S. Bagella, P. D'Ottavio, V.P. Papanastasis, G. Fotiadis, A. Sidropoulou, and I. Ispikoudis, "Grazing systems and biodiversity in Mediterranean areas: Spain, Italy and Greece". *Pastos* 39, 1-155. 2009
- [6] G. Beaufoy, K. Marsden, "CAP reform 2013. Last chance to stop the decline of Europe's High Nature value farming"? European Forum on Nature Conservation and Pastoralism (EFNCP). 2010. Available at www.efnecp.org
- [7] M.L. Parachini, J.E. Petersen, Y. Hoogeveen, C. Bamps, I. Burfield, and C. van Swaay, "High Nature Value farmland in Europe. An estimate of the distribution patterns on the basis of land cover and biodiversity data". Report EUR 23480 EN. Luxembourg. 2008. http://agrienv.jrc.ec.europa.eu/publications/pdfs/HNV_Final_Report.
- [8] T. Cooper, K. Hart, and D. Baldock, "Provision of public goods through agriculture in the European Union". Report prepared for DG Agriculture and Rural Development, Contract 30-CE-0233091/00-28. Institute for European Environmental Policy (IEEP). London. 2009.
- [9] J. Bartley, K. Hurt, and V. Swales, "Exploring policy options for more sustainable livestock and feed production". Final Report for Friends of the Earth. Institute for European Environmental Policy (IEEP). London. 2009.
- [10] U. Emanuelsson, *The Rural Landscapes of Europe-How man has shaped European nature*. Forskningsrådet Formas. Stockholm, Sweden. 2009.
- [11] R. Caballero, X. Fernandez-Santos, "Transition pathways to sustainable pastoral systems in Europe". *Geoforum* (submitted for publication). 2011.
- [12] J.A. Riseth, B. Johansen, and A. Vatn, "Aspects of a two pasture-herbivore model". *Rangifer* (special issue) 15, 65-82. 2004.
- [13] B.C. Forbes, "The challenges of modernity for reindeer management in Northernmost Europe". In: B.C. Forbes, et al (eds). *Reindeer management in northernmost Europe: linking practical and scientific knowledge in social-ecological systems*. Ecological Studies 184. Springer, Berlin pp 11-25. 2006.
- [14] A. Berg, "Reindeer herding and modern forestry-the historical impact on forests of two main land users in northern Sweden". Doctoral Thesis N° 2010:45. Swedish University of Agricultural Sciences. Umea, Sweden. 2010.
- [15] M. Corti, "L'alpeggio nelle Alpi lombarde tra pasato e presente". *SM Annali di San Michele* 17, 31-155. 2004.
- [16] G. Cozzi, M. Bazzotto, and G. Rigoni Stern, "Uso del territorio, impatto ambientale, benessere degli animali e sostenibilita economica dei sistemi di allevamento della vacca da latte presenti in montagna. Il caso studio dell'Altopiano di Asiago". *Quaderno Sozoalp* 3, 7-25. 2006.
- [17] A. Cavallero, P. Aceto, A. Gorlier, G. Lombardi, M. Donati, B. Martinasso, and C. Tagliatori, *I tipi pastorali delle Alpi piemontesi*. Alberto Perdisa Editore. Bologna, Italy. 2007.
- [18] C. Draganescu, "Romanian strategy for the management of farm animal genetic resources". Country report for SoW-An-GR. Bucharest. 2006.
- [19] T. Plieminger, F.J. Pulido, "Dehesa, Spain: blending grasslands, crops and forests". In: Veen, P., Jefferson, R., de Smidt, J., van der Straaten, J. (eds.). *Grasslands in Europe of high nature value*. KNNV Publishing, Zeist, The Netherland pp. 275-282. 2009.
- [20] R. Caballero, A. Gil, and X. Fernandez-Santos, "An expert survey on sustainability across twenty-seven extensive European systems of grassland management". *Environ. Manage.* 42, 190-199. 2008.
- [21] F. Isermeyer, A. Otte, S. Dabbert, et al., "Statement about the decision taken by the Council of the European Union concerning the reform of the Common Agricultural Policy of 26 June 2003". *Berichte uber Landwirtschaft* 82, 165-172. 2004.
- [22] GEAB (German Environmental Advisory Board), "Statement for the EAFRD Regulation, COM (2004) 490 of the Scientific Advisory Board on Agricultural Policy, Sustainable Farm Management and Rural Development at the Federal Ministry of Consumers". *Berichte uber Landwirtschaft* 83, 5-13. 2005.
- [23] P. Veen, R. Jefferson, J. de Smidt, and J. van der Straaten, (eds.), *Grasslands in Europe of high nature value*. KNNV Publishing. Zeist, The Netherlands. 2009.
- [24] S. Petit, B. Elbersen, "Assessing the risk of impact of farming intensification on calcareous grasslands of Europe: A quantitative implementation of the MIRABEL framework". *AMBIO* 35, 297-303. 2006.
- [25] A. Hopkins, B. Holz, "Grassland for agriculture and nature conservation: production, quality and multi-functionality". *Agronomy Research* 4, 3-20. 2006.
- [26] M. Partidario, W. Sheate, O. Bina, H. Byron, and B. Augusto, "Sustainability assessment for agriculture scenarios in Europe's mountain areas: Lessons from six study areas". *Environ. Manage.* 43, 144-165. 2009.
- [27] K. Knickel, M. Kroger, K. Bruckmeier, and Y. Engwall, "The challenge of evaluating policies for promoting the multifunctionality of agriculture: When good questions cannot be addressed quantitatively and quantitative answers are not that good" *J. Environ. Policy Plan.* 11, 347-367. 2009.
- [28] M.J. Metzger, R.G.H. Bunce, M. van Eupen, and M. Mirti, "An assessment of long-term ecosystem research activities across European socio-ecological gradients". *J. Environ. Manage.* 91, 1357-1365. 2010.
- [29] F. Leger, D. Vollet, and G. Urbano, "The difficult match between a territorial policy instrument and the industry-centred tradition of French agricultural policies: the Land Management Contract (LMC)". *Int. Rev. Administrative Sci.* 72, 377-393. 2006.
- [30] E. Andersen, B. Elbersen, F. Godeschalk, and D. Verhoog, D., "Farm management indicators and farm typologies as a basis for assessment in a changing policy environment". *J. Environ. Manage.* 82, 353-362. 2007.

- [31] Z. Roca, M.D. Oliveira-Roca, "Affirmation of territorial identity: A development policy issue". *Landscape Use Pol.* 24, 434-442. 2007.
- [32] J. Dwyer, N. Ward, P. Lowe, and D. Baldock, "European rural development under the Common Agricultural Policy's "second pillar": Institutional conservatism and innovation". *Regional Studies* 41, 873-887. 2007.
- [33] N. Bayfield, P. Barancok, M. Furger, M.T. Sebastia, G. Dominguez, M. Lapka, E. Cudlinova, L. Vescovo, D. Ganielle, A. Cernusca, U. Tappeiner, and M. Drosler, "Stakeholders perceptions of the impact of rural funding scenarios on mountain landscapes across Europe". *Ecosystems* 11, 1368-1382. 2008.
- [34] C. Stoate, A. Baldi, P. Beja, N.D. Boatman, I. Herzon, A. van Doorn, G.R. de Snoo, L. Rakosy, and C. Ramwell, "Ecological impact of early 21st century agricultural change in Europe- a review". *J. Environ. Manage.* 91, 22-46. 2009.
- [35] F. Krausmann, H. Haberl, N.B. Schulz, K.H. Erb, E. Darge, and V. Gaube, "Land-use change and socio-economic metabolism in Austria-Part I: driving forces of land-use change". *Land Use Pol.* 20, 1-20. 2003.
- [36] I. Hodge, D. Ortiz-Miranda, "An institutional transactions approach to property-rights adjustment: An application to Spanish agriculture". *Environ. Plan. A* 39, 1735-1751. 2007.
- [37] F.L. Mould, "Grazing management strategies in the United Kingdom". *International Workshop on New Opportunities for Dairy and Dual Purpose Ruminant Systems in Latin America*. Ixtapan de la Sal, Mexico. 2008.
- [38] N. Waldford, "Productivism is allegedly dead, long live productivism. Evidence of continued productivist attitudes and decision-making in South-East England" *J. Rural Stud.* 19, 491-502. 2003.
- [39] T. Lasanta, M.L. Marin-Yaseli, "Effects of European common agricultural policy and regional policy on the socioeconomic development of the central Pyrenees, Spain". *Mountain Res. Dev.* 27, 130-137. 2007.
- [40] M.H. Lenihan, K.J. Brasier, "Scaling down the European model of agriculture: the case of the Rural Environmental Protection Scheme in Ireland". *Agr. Hum. Values* 26, 365-378. 2009.
- [41] G.A. Wilson, "From productivism to post-productivism and back again? Exploring the (un)changed natural and mental landscapes of European agriculture". *T. Inst. British Geographers* 26, 77-102. 2001.
- [42] J. Dibden, C. Potter, and C. Cockling, "Contesting the neoliberal project for agriculture: Productivist and multifunctional trajectories in the European Union and Australia". *J. Rural Stud.* 25, 299-308. 2009.
- [43] M.P. Eichhorn, P. Paris, F. Herzog, L.D. Incoll, K. Mantzanas, M. Mayus, G. Moreno, V.P. Papanastasis, D.J. Pilbeam, A. Pisanelli, and C. Dupraz, "Silvoarable systems in Europe-past, present and future prospects". *Agroforest. Syst.* 67, 29-50. 2006.
- [44] S. Acs, N. Hanley, M. Dallimer, K.J. Gaston, P. Robertson, P. Wilson, and P.R. Armsworth, "The effect of decoupling on marginal agricultural systems: Implications for farm incomes, land use and upland ecology". *Land Use Pol.* 27, 550-563. 2010.
- [45] R. Tarrega, L. Calvo, A. Taboada, S. Garcia-Tejero, and E. Marcos, "Abandonment and management in Spanish dehesa system: Effects on soil features and plant species richness and composition". *Forest Ecol. Manag.* 257, 731-738. 2009.
- [46] S. Vallecillo, L. Brotons, and S. Herrando, "Assessing the response of open-habitat bird species to landscape changes in Mediterranean mosaics". *Biodivers. Conserv.* 17, 103-119. 2008.
- [47] A. Gil-Tena, L. Brotons, and S. Saura, "Mediterranean forest dynamics and forest bird distribution changes in the late 20th century". *Global Change Biol.* 15, 474-485. 2009.
- [48] G. Pardini, M. Gispert, "Impact of land abandonment on water erosion in soils of the Eastern Iberian Peninsula". *Agrochimica*, 50, 13-24. 2006.
- [49] J.R. Lesschen, L.H. Cammeraat, A.M. Kooijman, and B. van Wase-mael, "Development of spatial heterogeneity in vegetation and soil properties after land abandonment in a semi-arid ecosystem". *J. Arid Environ.* 72, 2082-2092. 2008.
- [50] M. Seeger, J.B. Ries, "Soil degradation and soil surface process intensities on abandoned fields in Mediterranean mountain environments". *Land Degrad. Dev.* 19, 488-501. 2008.
- [51] J.M. Garcia-Ruiz, D. Regues, B. Alvera, N. Lana-Renault, P. Serrano-Muela, E. Nadal-Romero, A. Navas, J. Latron, C. Marti-Bono, and J. Arnaez, "Flood generation and sediment transport in experimental catchments affected by land use changes in the central Pyrenees". *J. Hydrol.* 356, 245-260. 2008.
- [52] J.I. Lopez-Moreno, M. Beniston, and J.M. Garcia-Ruiz, "Environmental change and water management in the Pyrenees: Facts and future perspectives for Mediterranean mountains". *Global Planet. Change* 61, 300-312. 2008.
- [53] V.P. Papanastasis, "Land abandonment and old field dynamics in Greece. In Cramer, V.A., Hobbs, R.J. (Eds.). *Old Fields: Dynamics and Restoration of Abandoned Farmland*. Island Press, London. 2007.
- [54] M. Koulouri, C. Giourga, "Land abandonment and slope gradient as key factors of soil erosion in Mediterranean terraced lands". *Catena*, 69, 274-281. 2007.
- [55] A. Coreau, J.L. Martin, "Multi-scale study of bird species distribution and of their response to vegetation change: a Mediterranean example". *Landscape Ecol.* 22, 747-764. 2007.
- [56] R. Sluiter, S.M. de Jong, "Spatial patterns of Mediterranean land abandonment and related land cover transitions". *Landscape Ecol.* 22, 559-576. 2007.
- [57] C. Sirami, L. Brotons, I. Burfield, J. Fonderflick, and J.L. Martin, "Is land abandonment having an impact on biodiversity? A meta-analytical approach to bird distribution changes in the north-western Mediterranean". *Biol. Conserv.* 141, 450-459. 2008.
- [58] G. Breustedt, T. Glaubien, "Driving forces behind exiting from farming in Western Europe". *J. Agr. Econ.* 58, 115-127. 2007.
- [59] T. Petanidou, T. Kizos, and N. Soulakellis, "Socioeconomic dimensions of changes in the agricultural landscape of the Mediterranean basin: A case study of the abandonment of cultivation terraces of Nisyros Island, Greece". *Environ. Manage.* 41, 250-266. 2008.
- [60] R. Caballero, X. Fernandez-Santos, "Grazing institutions in Castile-La Mancha: dynamic or downward trend in the Spanish cereal-sheep system". *Agr. Syst.* 101, 69-79. 2009.
- [61] B. Reger, P. Sheridan, A. Otte, and R. Waldhart, "Potential effects of direct transfer payments on farmland habitat diversity in a marginal European landscape". *Environ. Manage.* 43, 1026-1038. 2009.
- [62] R.B. Tranter, A. Swinbank, M.J. Wooldridge, L. Costa, T. Knapp, G.P.J. Little, and M.L. Sottomayor, "Implications for food production, land use and rural development of the European Union's Single Farm Payment (SFP): Indications from a survey of farmers' intentions in Germany, Portugal and the UK". *Food Policy* 32, 656-671. 2007.
- [63] G. Canali, "Common agricultural policy reform and its effects on sheep and goat market and rare breeds conservation". *Small Ruminant Res.* 62, 207-213. 2006.
- [64] C. Potter, M. Tilzey, "Agricultural multifunctionality, environmental sustainability and the WTO: Resistance or accommodation to the neoliberal project for agriculture"? *Geoforum* 38, 1290-1303. 2007.
- [65] B. Matzdorf, J. Lorenz, "How cost-effective are result-oriented agri-environmental measures?-An empirical analysis in Germany". *Land Use Pol.* 27, 535-544. 2010.
- [66] E. Defrancesco, P. Gatto, F. Runge, and S. Trestini, "Factors affecting farmers' participation in agri-environmental measures: A northern Italian perspective". *J. Agr. Econ.* 59, 114-131. 2008.
- [67] R.J.F. Burton, C. Kuczera, and G. Schwarz, "Exploring farmers' cultural resistance to voluntary agri-environmental schemes". *Sociologia Ruralis* 48, 16-37. 2008.
- [68] V. Beckmann, J. Eggers, and E. Mettepenningen, "Deciding how to decide on agri-environmental schemes: The political economy of subsidiarity, decentralisation and participation in the European Union". *J. Environ. Plan. Manage.* 52, 687-716. 2009.
- [69] K. Prager, J. Freese, "Stakeholders involvement in agri-environmental policy making-Learning from a local and a state level approach". *J. Environ. Manage.* 90, 1154-1167. 2009.
- [70] D. Kleijn, R.A. Baquero, Y. Clough, et al., "Mixed biodiversity effects of agri-environment schemes in five European countries". *Ecol. Lett.* 9, 243-254. 2006.
- [71] J. Primdahl, J.P. Vesterager, J.A. Finn, et al., "Current use of impact models for agri-environment schemes and potential for improvements of policy design and implementation". *J. Environ. Manage.* 91, 1245-1254. 2010.
- [72] R. Caballero, "Stakeholders interactions in Castile-La Mancha, Spain's cereal-sheep system". *Agr. Hum. Values* 26, 63-74. 2009.

- [73] L. Mazyliis, J. Tirviene, and K. Pargaliauskaitė, "Problems of the administration of the EU rural development policy measures". *2nd International Scientific Conference on Rural Development*. Kaunas, Lithuania. 2005.
- [74] P. Kaufmann, S. Stagl, K. Zawalinska, and J. Michalek, "Measuring quality of life in rural Europe-A review of conceptual foundations". *Eastern Eur. Countryside* 13, 5-27. 2007.
- [75] M. Gorton, C. Hubbard, and L. Hubbard, "The folly of European Union policy transfer: Why the Common Agricultural Policy (CAP) does not fit Central and Eastern Europe". *Regional Stud.* 43, 1305-1317. 2009.
- [76] A.G. Papadopoulos, C. Liarikos, "Dissecting changing rural development policy networks: the case of Greece". *Environ. Plan. C* 25, 291-313. 2007.
- [77] E. Mettepeningen, A. Verspecht, and G. van Huylenbroeck, "Measuring private transaction costs of European agri-environment schemes". *J. Environ. Plan. Manage.* 52, 649-667. 2009.
- [78] J.A. Finn, F. Bartolini, D. Bourke, I. Kurz, and D. Viaggi, "Ex post environmental evaluation of agri-environment schemes using experts' judgements and multicriteria analysis". *J. Environ. Plan. Manage.* 52, 717-737. 2009.
- [79] T. Koster, K. Vask, P. Koorberg, I. Selge, and E. Viik, "Do we need broad and shallow agri-environment schemes? Outcomes of ex-post evaluation of Estonian Rural Development Plan 2004-2006". *4th International Scientific Conference on Rural Development*. Noreikiskes, Lithuania. 2009.
- [80] G. Purvis, G. Louwagie, G. Northey, G. et al., "Conceptual development of a harmonised method for tracking change and evaluation policy in the agri-environment: the Agri-environmental Footprint Index". *Environ. Sci. Policy* 12, 321-337. 2009.
- [81] T. Delattre, J.B. Pichancourt, F. Burel, and P. Kindlmann, "Grassy field margins as potential corridors for butterflies in agricultural landscapes: A simulation study". *Ecol. Model.* 221, 370-377. 2010.
- [82] T.K. Gottschalk, R. Dittrich, T. Diekotter, P. Sheridan, V. Wolters, and K. Ekschmitt, "Modelling land-use sustainability using farm land birds as indicators". *Ecol. Indic.* 10, 15-23. 2010.
- [83] J.R. Rouquette, H. Posthumus, D.J.G. Gowing, G. Tucker, Q.L. Dawson, T.M. Hess, and J. Morris, "Valuing nature-conservation interests on agricultural floodplains". *J. Appl. Ecol.* 46, 289-296. 2009.
- [84] D. Kleijn, F. Kohler, A. Baldi, A. et al., "On the relationship between farmland biodiversity and land-use intensity in Europe". *P. Roy. Soc. B-Biol. Sci.* 276, 903-909. 2009.
- [85] A. Breeuwer, F. Berendse, F. Willems, R. Foppen, W. Teunissen, W. Schekkerman, and P. Goedhart, "Do meadow birds profit from agri-environment schemes in Dutch agricultural landscapes"? *Biol. Conserv.* 142, 2949-2953. 2009.
- [86] D. Chamberlain, S. Gough, G. Anderson, M. Macdonald, P. Grice, and J. Vickery, J. "Bird use of cultivated fallow "Lapwing plots" within English agri-environment schemes". *Bird Study* 56, 289-297. 2009.
- [87] F. Eigenbrod, B.J. Anderson, P.R. Armsworth, A. Heinemeyer, S.F. Jackson, M. Parnell, C.D. Thomas, and K.J. Gaston, "Ecosystem service benefits of contrasting conservation strategies in a human-dominated region". *P. Roy. Soc. B-Biol. Sci.* 276, 2903-2911. 2009.
- [88] M.M. Blomqvist, W.L.M. Tamis, and G.R. de Snoo, "No improvement of plant biodiversity in ditch banks after a decade of agri-environment schemes". *Basic Appl. Ecol.* 10, 368-378. 2009.
- [89] P. Swagemakers, H. Wiskerke, and J.D. Van der Ploeg, "Linking birds, fields and farmers". *J. Environ. Manage.* 90 (Suppl. 2), 185-192. 2009.
- [90] H. Posthumus, J. Morris, "Implications of CAP reform for land management and runoff control in England and Wales". *Land Use Pol.* 27, 42-50. 2009.
- [91] P. Batary, A. Baldi, M. Saropataki, F. Kohler, J. Verhulst, E. Knop, F. Herzog, and D. Kleijn, "Effects of conservation management on bees and insect-pollinated grassland plant communities in three European countries". *Agr. Ecosyst. Environ.* 136, 35-39. 2010.
- [92] L. Marini, P. Fontana, A. Battisti, and K.J. Gaston, "Response of orthopteran diversity to abandonment of semi-natural meadows". *Agr. Ecosyst. Environ.* 132, 232-236. 2009.
- [93] D. Gabriel, S.J. Carver, H. Durham, W.E. Kunin, R.C. Palmer, S.M. Sait, S. Stagl, and T.G. Benton, "The spatial aggregation of organic farming in England and its underlying environmental correlates". *J. Appl. Ecol.* 46, 323-333. 2009.
- [94] N. Redpath, L.M. Osgathorpe, K. Park, and D. Goulson, "Crofting and bumblebee conservation: The impact of land management practices on bumblebee populations in northwest Scotland". *Biol. Conserv.* 143, 492-500. 2010.
- [95] S.J. Butler, D. Brooks, R.E. Feber, J. Storkey, J.A. Vickery, and K. Norris, "A cross-taxonomic index for quantifying the health of farmland biodiversity". *J. Appl. Ecol.* 46, 1154-1162. 2009.
- [96] I. Hodge, M. Reader, "The introduction of Entry Level Stewardship in England: Extension or dilution in agri-environment policy"? *Land Use Pol.* 27, 270-282. 2010.
- [97] M. Antrop, "Why landscapes of the past are important for the future". *Landscape Urban Plan.* 70, 21-34. 2005.
- [98] K. Baylis, S. Peplow, G. Rausser, and L. Simon, "Agri-environmental policies in the EU and United States: A comparison". *Ecol. Econ.* 65, 753-764. 2008.
- [99] J.E. Olesen, M. Bindi, "Consequences of climate change for European agricultural productivity, land use and policy". *Eur. J. Agron.* 16, 239-262. 2002.
- [100] IEEP, "Final Report for the Study on HNV Indicators for Evaluation". Institute for European Environmental Policy-DG Agriculture. Contract 2006-G4-04. Brussels. 2007.
- [101] R. Caballero, "High Nature Value (HNV) grazing systems in Europe: A link between biodiversity and farm economics". *Open Agr. J.* 1, 11-19. 2007.
- [102] T. Cooper, H. By, and M. Rayment, "Developing a more comprehensive rationale for EU funding for the environment". Institute for European Environmental Policy (IEEP). London. 2010.
- [103] K. Hart, M. Rayment, and H. Lee, H., "Achieving a transition away from CAP direct payments". Institute for European Environmental Policy (IEEP). London. 2010.
- [104] IEEP, "Public goods emerging as a central rationale for future CAP support". Institute for European Environmental Policy (IEEP). CAP Policy Briefing N° 7. London. 2010.
- [105] D. Hillel, C. Rosenzweig, "The role of biodiversity in agronomy". *Adv. Agron.* 88, 1-34. 2005.

Rafael Caballero was born in the city of Pozoblanco in the Córdoba province of Spain, on September 15, 1946. After his Catholic schooling, Dr Caballero studied Agronomy in the Polytechnic University of Valencia and earned a Doctorate in Pasture and Forage Quality in the Polytechnic University of Madrid in 1975. He served as Professor of this University from 1970 to 1979 and as Associate Professor of the University Carlos III of Madrid from 2002 to 2005. Dr Caballero obtained a Fulbright Fellowship to study in the Range Science Department at Colorado State University in 1976 and a World Bank research Fellowship with the Fish and Wildlife Service in Fort Collins, Colorado in 1981. Since 1974 he has been a Staff Scientist of the High Council for Scientific Research of Spain and, since 2009, Main University Professor in Science and Engineering.

He has conducted most of his research on forage legumes quality and agro-pastoral systems. As vice-Director of the Animal Production Institute, he stressed the environmental and socio-economic synergies of mixed arable and sheep systems in the Mediterranean area. He coordinated the Spanish teams of three consecutive EU-funded research projects within the EU Framework Program (CAMAR CT 90-0002, Fair 96/1893 and EVK2-CT-2002-00150) on the discipline of extensive systems of grassland management and served as consultant of the EU in the field of Agriculture and Environment. He has published more than 150 research papers on national and international congresses and journals, about 50 rated in the Journal Citation Report (SCI journals).

Dr Caballero has been affiliate member, among others, of the American Association for the Advancement of Science, the New York Academy of Science, the American Society of Agronomy, the British Grassland Society, the British Society of Animal Science and the Spanish Grassland Society (Treasurer and Secretary). He has received nominations for biographical reference books such as Who's Who in the World, Who's Who in Science and Engineering and publications of ABI and IBC. In 1985 and 1990 he received the Agricultural Research Award of the regional government of Castile-La Mancha.