**European Agricultural Policies and Landscape**

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**1. The introduction of landscape in EU rural policies**

Europe has a great variety of agricultural landscapes that reflect differences in biophysical conditions, farm management practices and cultural heritage. Farmers play a crucial role in shaping and maintaining landscapes, that is why the European Commission has recognized the significance of agriculture and its relationships with landscapes "the fundamental basis for the European Agricultural model, comprising a multifunctional agriculture sector and the part it plays in preserving the landscape" in Agenda 2000 (Jongman 2004). Consequently, increasing attention was given from policy makers and researchers to the state of European landscapes. Several major and gradually more and more interlinked policy instruments dealing with landscapes have been developed through the years. Among these are The Convention on Biological Diversity (CDB), 1992; The Pan-European Biological and Landscape Diversity Strategy (PEBLDS), 1995; The European Landscape Convention (ELC), 2000, and recently the initiatives developed by the Ministerial Conference on the Protection of Forest in Europe (MCPFE). This awareness appears to reflect a new concept in which the landscape offers a spatial unit for sustainable land management through the integration of sectoral activities, but also present rural development strategies, promoted by the Common Agricultural Policy (CAP) as probably the most important tool affecting landscape changes as well as the conservation and valorization of rural landscape resources.

The growing importance of landscape in CAP is largely due to the introduction of the concept of multifunctionality, while after the McSharry reform on 1992, there has been a change from traditional economic incentives to production, to a support oriented also to non market values of agriculture, a also the first studies on the economic value of landscape resources (Willis and Garrod 1993, Walsh, Ward, Olienyk 1989). The background on the debate on multifunctionality , as process of agricultural policy reform, started in the mid 1980s, but the term "multifunctional agriculture" emerged at international level during the Rio Earth Summit in 1992. The emergence of this concept responds to a wide range of concerns about important world wide changes in agriculture and rural areas. These include the progressive urbanization of population, the globalization of markets, the effects of technological changes, the public good aspects of agriculture and associated landscape both for developed and developing countries, the way to consider off-farm activity and income, the longer term disbenefits of some form of agriculture, and the many challenges to achieve food security and how to address the problem. Several important issues and challenges has been faced by policy makers in their attempts to restructurate agricultural support based on multifunctionality, income support to farmers has been increasingly tied to stewardships and social objectives , rather than production objectives that dominated until the late 1980s. This process has opened the door also to a growing consideration of both material and immaterial factors connected to agriculture and the recent introduction of concept as the "quality of life " of rural population.

As a consequence of these new approach the new "Common Agricultural Policy" (CAP) has underlined a change of paradigm, as environmental considerations have become a major concern. The cultural background of this strategy relates to the global approach to sustainability, largely affected by the "degradation" paradigm, emphasising the negative role of man in the environment, as an agent depleting the ideal state of "naturalness". This was justified by an intensification of production processes leading to an exert pressure on natural resources and environment. Policy measures of high price level also favoured intensive agriculture and an ever increasing use of fertilisers and pesticides. Pollution of natural resources like water, soils and certain ecosystems can be considered as undesirable side effect of these policies. Further consequences are high treatment cost for environmental damage which has to be paid by public. This is the context in which that context agri-environmental programme came into power with the aim to encourage less intensive production, both to reduce market surpluses and to alleviate environmental pressure. With the reform of CAP this kind of instruments was generated which had a specific focus on environment. Environmentally friendly production methods, as well as survive and enhancement of endangered traditional livestock breeds and cultivars are main action fields of the AEPs. Environmentally friendly production methods cover measures like the reduction or renunciation of the use of mineral fertilisers, the management of organic manure, the reduction or renunciation of the use of pesticides, the extension and share of grassland, the management of crop rotation to prevent groundwater pollution, the cultivation of green cover crops, organic farming, extensive cultivation of field margins. In the same time survive and enhancement of old agricultural breeds and cultivars are covered by measures like maintenance and further development of varieties of endangered animal, species and rare crops, preservation or improvement of the extent of ecological valuable areas, preservation or improvement of high stem fruit orchards (Weinstoerffer and Girardin 2000). According to Agenda 2000 farmers should observe a minimum level of environmental practice as part-and-parcel of the support regimes, but that any additional environmental service, beyond the basic level, should be paid

for by society through the agri-environment programmes. In all EU member states AEP are in use, but extent and content of the programmes are rather different. Together with agricultural policy a strong initiatives on Forest Policies was taken through the action of the Ministerial Conference on the Protection of Forest in Europe, basically reinforcing the environmental value of forests, promoting the extension of forest cover, the conservation of biodiversity, the protective function, the productive functions as well as social and economic functions (MCPFE 2003). But only recently, during the Vienna Conference in 2003, a specific resolution was taken to promote cultural values, while scientific guidelines to introduce landscape in forest policies have been developed in 2007 (Agnoletti 2007). These guidelines still need to be introduced in forest policies by the European Ministers, but they are meant also to implement the European Landscape Convention.

The effects of agricultural policies on landscape have been subjected to contrasting evaluation, largely because of the freedom left to member states for the implementation of strategies and actions in the national Rural Development Plans and the different ideas about landscape of administrators and decision makers, often denying the cultural origin of European landscapes and the crucial role played by farmers, foresters and shepherds. The large majority of EU landscapes have been shaped by farming and forestry (see fig..1) and rural landscape can be considered as "the form that man, in the course and for the ends of his productive agricultural activity, consciously and systematically imposes to natural landscape". This definition, given by Emilio Sereni in 1961, explains the core concept of cultural landscapes already anticipated by Carl Sauer (1926): "The cultural landscape is fashioned from a natural landscape by a culture group. Culture is the agent, the natural area the medium, the cultural landscapes the result". The same view was expressed by Dr. Franz Fischler, the European Commissioner responsible for Agriculture, Rural Development and Fisheries, in his speech, *Feeling the Pulse of the CAP* at Cernobbio, on 19 October 2001*: "We must use our rural development policy to make sure that farmers farm in a way which is environmentally friendly and which contributes to the preservation of our landscape, which, may I say, is essentially a man-made landscape, created by generations of farmers over hundreds of years.*

Most of the contradictions on the application and evaluation of CAP to landscapes is based on the assumption that actions developed in favour of the improvement of the "natural" features of the territory are also improving landscape quality. From a scientific point of view there is no evidence of this, as traditional rural landscapes can show reduced environmental features , as few trees, or no trees at all, as well as a reduced amount of species or very high level of fragmentation, as the landscapes existing in the Mediterranean area. As a result, the agri-environmental measures have often not been developed according to an appropriate assessment of the local context, nor to specific landscape objectives, but rather to nature conservation demand taking advantage of "set aside" , introducing wooded areas, or vegetal elements, into former agricultural land (Berger, Kaechele, Pfeffer 2006). These has been made also with the implementation of "ecological networks" creating green elements to connect different habitats, taking the physical structure of the network as a model to apply the idea of the role played by an ecological network. Looking at the last 20 years of CAP we can see that pressures deriving from socioeconomic development and environmental policies have not stopped landscape degradation but often increased the speed of intensification or extensification without a real evaluation of the effects on landscape quality. The lack of attention regarding landscape is also tied to the will to defend the interests, however lawful, of economic activities which consider regulations about the landscape limiting or possibly damaging to their activity in the agricultural sector. This reflects also the matter of accepting the concept of a gradual evolution from a merely productive role to a role of landscape preservation, which some farmers themselves still find hard to grapple, while this is slowly happening for environmental aspects.

**2. Effect of EU polices on landscapes**

An evaluation of the effects of EU policies on landscapes lacks of specific tools, that are instead already been developed for other purposes, therefore we can only present general statements supported by some local data but not by systematic observations and a common methodology. In Europe we are generally witnessing the advancement of the forest at the rate of 0,08% per year, that means 12 million hectares from 1990 to 2005, today more than 40% of European land is covered with forest. Existing tools as the Land Accounts for Europe 1990-2000 (LAE) made by the European Environmental Agency using Corinne Land Cover (CLC) can help to understand only some of the changes, as both time (10 years) and spatial scale (1:100.000, minimum mapping unit of 25 ha) are not suited for refined analysis (EEA 2006). At regional level a monitoring system for Tuscany (Italy) has been established based on sample areas studied at 1:5000 from 1800 to 2000, the results shows dramatic landscape changes, as also significant differences in the same areas covered by CLC. Considering a wider time and spatial scale Italy shows a spectacular increase of woodlands of almost 300% in the last 100 years, with 2.000.000 ha more between 1985 and 2007, while about 50% of farmed land has been abandoned. In this case results differ from CLC, also because the statistical methods adopted, but also suggest that CAP has favoured this process. Similar trends can be observed analysing the evolution of forests in northern and central Europe according to specific local studies (e g. Sweden and Austria).
LAE shows that, except for some countries, as Spain, France and Greece, afforestation trends prevail, occurring on abandoned farming and grazing areas, extended by set aside and afforestation, often creating homogeneous cover with very little spatial diversity. The simplification of forest management methods that have been reduced to just a few

typologies has also contributed to the impoverishment of diversity. The structural diversity of the woodlands shaped by traditional management practices was related not only to many wood products, but also to the secondary products (e.g.. resin, acorns) and to the agro-forestry systems (e.g. shrubland management, selection system coppices, chestnut orchards, grazed forests) that characterized several landscapes. During the past decades the process of structural simplification was also accelerated by the effects of the management programs aimed at favoring processes of renaturalization of forest areas that hastened the disappearance of certain forests such as the chestnut orchards, whose important historical and landscape value is clearly evident. Afforestation often promoted the spread of conifers, but many afforestations were made on already forested lands confirming not only the protective goals but also the intention to create plantations suitable for wood production, replacing forests with little economic value. The artificial conifer plantations are often characterized by poor esthetics due to the geometric nature of the planting schemes, also typical of broadleaved plantations promoted by EU 20/80 of 1992. The low landscape quality of both conifer and broadleaved formations generated strong critics, from the UK to Italy.

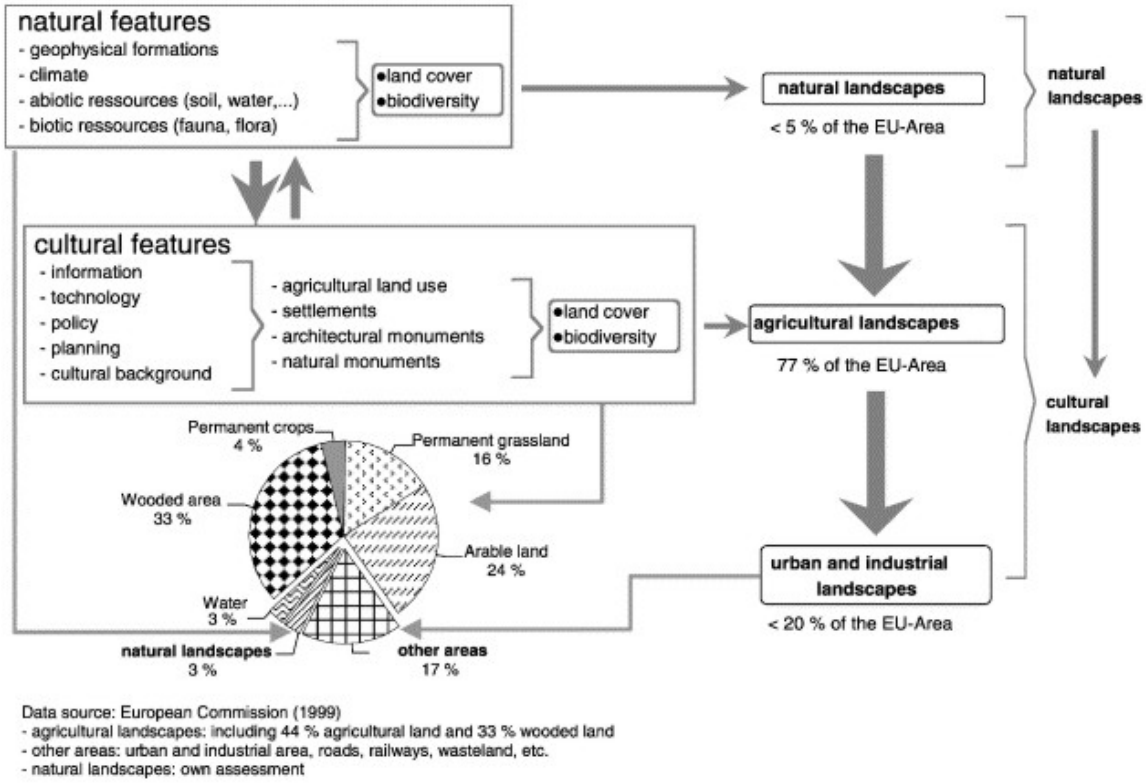


Fig. 1 – Map showing the major role played by cultural landscape in Europe.

Concerning farmed areas, over time agricultural systems have generally moved towards a reduction of their extensions while CLC shows opposite directions in the short term. In the more favourable areas suitable for supporting the cultivation models and technical resources of industrial farming, and therefore the processes of intensifying and simplifying production, there has been growth of farming systems based on external energy inputs. These are efficient (but not always) in economic terms and appropriate for market globalization, but fragile from the ecological standpoint and often harmful in environmental terms. There are cases like Spain where many forest areas have been turned into farmed land according to CLC. On the other hand, in the areas that are not suitable for crop simplification and intensification, such as mountain territories, there is an ongoing – and spreading - process of marginalization. This, in turn, leads to the abandonment of activities and settlements, with artificial reforesting or, more frequently, processes of spontaneous renaturalization. In any event, the evolutionary processes of farming systems lead to differences and changes over time, and in space, of biodiversity in landscape terms (considering the landscape as a whole of ecosystems), as well as the internal specific and intraspecific composition of the farming systems themselves. Complex landscape mosaics have been turned into simplified structures ( - 45% of diversity in Tuscany), while their restoration is prohibited by law and by scientific approaches claiming that fragmentation is dangerous for biodiversity (Larsson 2001). In reality, the traditional multi-crop farming systems are disappearing partly because of the persistence of policies that do not support them and favor single-crop systems instead. These new systems are characterized by large, homogeneous crop units that are rarely divided or connected by trees, hedges, or plant barriers with little natural or semi-natural areas (forested strips, wet zones, etc.) within their boundaries. Their biodiversity is reduced because market needs and production organization (e.g. mechanization) over time and in space lead to management approaches

that are opposed to the maintenance of either permanent or temporary crop associations or rotations, leading to the cultivation of a reduced number of species represented by a reduced number of genetically very similar varieties or breeds. The combination of farming and livestock breeding, typical of traditional agricultural systems was interrupted in the single-crop systems: animals no longer play any complementary role in farm production (working, recycling crop residues, organic fertilizer, etc.) and are removed from the farms to create autonomous production units, thereby further impoverishing biological diversity. The operation of the single-crop farm system does not depend on its own biodiversity: the reduction of crop rotation or associations with leguminous crops, confining animal breeding to indoor stables with the transformation of wastes from a resource into a problem, the lack of the biological controls provided by birds and insects as a consequence of the disappearance of green corridors or natural areas lead to the need for greater use of external energy (for fertilization, to control predators, parasites and weeds, etc.). Technological changes in favour of industrialized form of agriculture have also been promoted by CAP, as reported in several EU countries and generated strong critics, especially in the UK (MARS 1995). A long term perspective confirm a strong trend towards the reduction of farmed land, from the very north to the very south of Europe, with Sweden showing a reduction of 52,5% between 1900 and 2000, Austria 25% and Italy a reduction of 50% in the same period, but it should be noted that while in Sweden we have a reduction of famed land to just 8% of the total land, in Italy we have still more than 40% of farmed land, therefore the danger of the total loss of this landscape is a greater threat for Sweden. The absence of significant patterns of simplification and extensification across Europe claimed by CLC is very probably linked to the scale of the observation. In this respect EU policies have strongly influenced the quality of rural landscape, that means the internal features or arable land or forest, even when the extension of these land uses has not changed.

Concerning pastures and meadows they have generally suffered a strong decrease in the last century in favour of forest land. CLC shows that some countries, especially Ireland, have transferred land between pastures and arable in the last ten years, while Czech Republic and Germany have turned significant amount of arable land into pasture. Once again the spatial and temporal scale of the analysis makes a difference. In Sweden, Finland, Estonia Latvia, Italy and the Alpine areas, pastureland have been continuously decreasing. Pastures has always made an essential contribution to the biodiversity of the farming-forest-pasture systems. In the nineteenth century in the Mediterranean areas at least 25 types of pastures and meadows among a total of 65 land uses in approximately 1000 hectares could be fund. In 2004 the same areas shows a reduction to 2 types (Agnoletti 2007). A great part of the reduction of pastures concern wood pastures, they pastures served multiple purposes, providing shelter for grazing livestock during summer, lowering the ground level temperature and often were part of a cycle that called for either maintenance with management techniques that gradually replaced the trees or progressive replacement of the forests with grain crops – a transitional phase – over multi-decade cycles. In this cycle, in all the Mediterranean area, an important role was played by prescribed fires normally used by shepherds and farmers to clear fields after harvest and for the maintenance of pasturelands, today this practice is often considered a crime. The contemporary management of these extensive lands threatened by the abandonment is involved in a net of contradictions between, on the one hand, ideology of Nature and conservation and on the other hand willing of management and economic development of the mountain. In the French Pyrenees mountains the agro-pastoral landscapes are still relatively well preserved, especially in high mountain, because of the maintenance of an important livestock and recent reorganization of modes of exploitation managing pastures by fire (Eychenne – Niggel 2003) . In this case the recovery of the agro-pastoral landscapes is today a local consensus, and the support for some traditional practises is recognized as one of the essential tools for this purpose, while in some countries as Italy fire is generally seen as a danger for nature and landscape. In this respect no actions is presented in the new CAP to support the removal of a forest in order to restore a pasture, while afforestation has been always supported with economic incentives.

**3. The new CAP 2007-2013**

The new EU agriculture reform (CAP) is not directly addressing the problem of landscape. Landscape protection is recalled in the items 15, 31, 35 of the dir. 1628 of 2005, but the only specific economic measure is the one in the article 57-b in Axis 3, concerning the support for studies and investments concerning conservation and valorization of rural landscape. In the remaining part of the document landscape is often put together with environment, in relation to the need of preserving "landscape and the environment", not clarifying the distinction between the two terms that often overlap. Concerning the introduction of a decoupled single farm payment for EU farmers, independent from production, this is probably going to again favour the abandon of traditional cultivations, usually the less remunerative for farmers, who will not be interested in saving these types of cultivation without specific measures. On the other hand linking the payments to compliance with environmental, food safety, animal and plant health and animal welfare standards, as well as the requirement to keep all farmland in good agricultural and environmental condition, will strengthen the environmental impact of the new Cap. Despite this limitations, an interpretation of the new CAP for landscape is possible, as occurred with the official introduction of landscape as a "strategic objective" of the national rural development plan 2007-2013 in Italy.

The axis 1 of CAP: -"improving competitiveness of the agriculture and forestry sector"- holds no direct indications concerning the development of the quality of agricultural production promoting landscape as an added value. There is

in fact an underestimation of the role of landscape within several productive sectors. However, the strategy that might be developed by each country could easily considers the added value represented by landscape resources. The market value of wood products, foods coming from agricultural areas, cheese coming from wooded pastures, as well as tourism, can be strongly supported by the added value of the cultural landscapes from which they are derived. This is a crucial factor in the increasing competition at national and international market level. Landscape resources represent a unique factor of competitiveness for each country or region that cannot be reproduced by a competitor in another country. This is particularly important for local products. A cheese produced in a specific landscape pattern can increase its market value if the producer is also caring for the conservation of the cultural landscape. An interesting case of this added value is the role played by woodlands in wine regions. Market studies shows that many of the reason why consumers buy a bottle of wine are not related to quality, but rather to the cultural values included in the bottle, recalling historical and cultural factors. In many areas of Europe is unthinkable to separate the landscape from the wine. Therefore, preserving historical landscapes is an economic action equivalent in importance to increased or improved production or the quality of wine. The economic actions should support the conservation of the relations between landscape and products, but also services linked to the maintenance of landscape, offering subsidies not only to farmers but also to administrations and local groups for the promotion of typical products. The initiatives might promote also training courses on traditional practices, teaching courses to develop local expertise, supporting the conservation of material evidence, rural architecture and the use of traditional raw materials in the farms.

The axis 2 -“improving environment and countryside”- might offer some possibilities, especially when it refers to preserving farmed landscapes, although it is not clear what is meant exactly by protecting both natural resources and landscape in rural areas, while the indicators suggested in the guidelines for rural development do not help in this respect. The rural landscape is a cultural creation, pushing for more renaturalization might work for heavily industrialized areas, but the use of agri-environment measures to recreate traditional mixed cultivations, wood pastures, tree rows, pollard trees, hedges and landscape mosaic would often be better than recreating “pristine forests” even for ecological networks, because we do not necessarily need large forest areas to connect habitats. It should be remembered that the loss of biodiversity is also linked to the reduction of vegetal species introduced by farmers in some millenniums of history and anima species living only in farmed land. Biodiversity should also consider “spaces” created by the different land uses, typical of many traditional landscapes. This diversity is today dramatically reduced by abandonment and consequent advancement of forest vegetation on old fields, or by the extension of mechanized monocultures. Therefore, measures concerning afforestation and also the agri-environmental measures need to be carefully evaluated since many would simply use these subsidies because they are there, despite the fact that what they really need is something else. About organic farming, which is a very positive initiative under many aspects, it must be remembered that organic products can be made in Sicily or in Sweden, but their production does not ensure the conservation of the landscape. It is instead time to close the circle “quality of the food - quality of the landscape” favouring a strong correlation between the two. There is the strong need to define the context in which actions occurred, while studies based on a multitemporal approach must be undertaken to select the correct tools in order to avoid further degradations of landscape by inappropriate actions.

The axis 3 -“the quality of life in rural areas and diversification of rural economy”- could actually represent a good opportunity. The conservation and development of cultural values should play an important role for the attractiveness of rual landscapes for both, visitors and local populations. The appreciation of rural areas is related not just to intrinsic environmental qualities (e.g. air, soil, vegetation etc.) but also to perceptions about the identity of a place given by the quality of its landscape. The sense of identity of a place is created by economic, social and cultural aspects, through time and space and it is made up by meanings often assigned on specific landscapes features. The preservation of such features contributes towards higher quality of life for local populations through material and immaterial means. These features improve people’s lives and make them happy by fulfilling their recreational, emotional and spiritual needs, and their sense of identity while they contribute to local economy by enhancing the aesthetic and spiritual qualities of the landscape and attracting visitors. Therefore, strategies should be developed that will promote activities to link the conservation and promotion of landscape values important for the well being of local population and visitors. Concerning diversification of the economy, if this could include services like the restoration and management of landscape and the promotion of agritourism, which would create new jobs. For now tourism has not always been seen as the direct results of farming activities. In this respect the conservation of cultural landscapes might represent an economic opportunity even without having a productive landscape in terms of crops. In other words, the simple maintenance of cultural landscape represents an economic activity in itself, with people employed just for this purpose. Unfortunately, there is not a clear understanding of how landscape affects even the usual tourism forms, such as the one linked to museums or historic city centres, because when many visitors are travelling from one place to another it is also to appreciate the landscape. It is also interesting to see how a large portion of this tourism is presented as “ecotourism” , clearly proposing the issue of the appreciation of the natural values of territories, whereas they are mostly cultural. It is useful to view what also happened in countries like the USA, where employment in landscape services has seen a spectacular growth between 1972 and 2003 accompanied by a strong decrease of entrepreneurs and

employees in the traditional productive activities in agriculture or forestry. It would not be unrealistic to imagine a similar development especially for those regions offering important landscape resources.

**4. Strategies, actions, indicators**

It is evident that a change in the approach of the commission towards landscape is required if CAP wants to really incorporate landscape in rural development. In this respect EU should develop a specific policy for landscape as the one set up for nature starting from 1973, when priorities were established in the first Action Programme for the Environment. In the following decades specific financial instruments were created for nature conservation and a long series of directives have been enhanced leading to Habitat Directive and Nature 2000. It is worth noting that while nature conservation objectives were achieved through the establishment of protected areas, and environmental quality objectives can be achieved through single actions, (e.g. rugulatoins concerning the use of pesticides and chemical fertilizers to reduce pollution), landscape requires a planning approach at and appropriate spatial scale, involving economical social and environmental strategies, as also the European Landscape Convention suggests. It is also true that in view of an inexorable degradation of traditional landscapes some countries have created rural parks and landscape parks. It is worth noting that in regions like Tuscany (Italy) well renown for its landscape the first Rural Landscape Park was established only in 2007, using the only existing legal tool, the creation of a new protected area, since no other legal instruments have ever been developed for this purpose (Agnoletti 2006). In these areas man has a crucial role, while regulations for nature conservation may present limitations not always suited for landscape restoration and valorization. In the rural landscape park of Moscheta policies were developed in order to promote:

a. *Conservation* – the activities for conserving and maintaining the *significant* features of the landscape.

b. *Requalification* – the activities aimed at improving the features of the landscape fabric.

c. *Management of landscape resources* – the activities aimed at guaranteeing the proper "maintenance" of the landscape in order to guide and harmonize the changes brought about by natural and socioeconomic processes.

d. *Valorization of landscape resources* – the activities aimed at obtaining the maximum benefits from the exploitation of the landscape' potential from the socioeconomic and environmental standpoints.

To achieve these goals, the following strategies were implemented :

a) identification of the landscape's characteristics within the respective context.

b) monitoring the processes that generate changes

c) governing these processes

d) limiting real and potential negative impact on the landscape heritage

e) identifying the criteria and indicators for landscape management

f) promoting conservation and valorization activities

In order to pursue these objectives and prior to define the actions needed, specific cognitive frameworks of the landscape resources were drafted. The purpose of these cognitive frameworks is to identify:

- *physical characteristics*
- *biological characteristics*
- *socioeconomic characteristics*
- *land usage structure*
- *human settlements*
- *typologies and models of evolutionary dynamics*
- *natural and anthropic factors responsible for the dynamics*
- *historical and cultural values*
- *scenic values*
- *social perceptions of the landscape*
- *types of tourist/recreational uses*

**4.1 The need for indicators**

European documents look at landscape from the point of view of public perception and historical meaning, rather as the “total character of a region”, a stated in the EU questionnaire evaluating rural development plans (Reho 2006), but a real possibility to assess landscape need also the development of specific indicators. This with the aim of

introducing tools to measure and evaluate the trends related to landscape dynamics as well as the objectives achieved with rural development. A first step for the implementations of landscape indicators in sustainable forest management has already been made using three main sets of indicators (Agnoletti et al. 2007):

1 *Significance*
2 *Integrity*
3 *Vulnerability*

4.1.1 Significance

This term is applied to landscapes expressing important values represented by a number of qualities that can be described by several indicators:

***1. Landscape patterns***

Landscapes are highly significant for local and national cultural heritage. They are characterised by specific features of their matrix, in terms of vertical and spatial diversity. Changes induced in the structure of the matrix may degrade their significance. This indicator is particularly important also because it addresses biodiversity at landscape level; a feature rarely monitored but highly vulnerable in the context of the current rapid changes in rural areas.

***2. Single historic land uses***

Single land uses due historical traditional practices can be considerably important for the local history. Entire landscape patterns may not be existing any more , due to changes occurred in the socioeconomic or natural conditions of a region , but single land uses can survive according to specific activities still occurring.

***3. Material and evidences***

This indicator is suited to assess the significance of buildings or structures associated with rural activities

***4. Documentary evidence***

Historical written or printed documents related to rural world

***5. Bio - cultural evidence***

Veteran trees and culturally modified trees for the production of acorns, fodder (e.g. pollard trees), tar, resins, or other products, as well as hedges, tree avenues *etc*. significant for local history

***6. Cultural traditions***

This refers to immaterial factors, such as events, ceremonies, place names, representative of ethnic groups or local communities.

***6. Traditional knowledge***

Traditional knowledge associated to the use of trees, herbs, woods, nuts, agricultural techniques, management practices *etc*

***7. Social perception***

The perception of historical, aesthetic and spiritual qualities created by economic, social and cultural aspects, through time and space, is essential of the cultural identity of a place.

The indicators listed in each category are interlinked and can be used in combination. The same indicator (e.g., single land uses) can be described or measured in terms of significance, integrity and vulnerability.

**4.1.2 Integrity**

"Integrity" measures the state of protection and management of a cultural landscape, a monument, or a tradition. A landscape still showing all its functionalities, at historical, environmental, and social levels, satisfies the requirements concerning the conservation of integrity. In order to maintain integrity it is necessary to maintain the elements necessary to express significance, and to monitor and assess the factors negatively affecting significance. This concept can be applied to material factors, such as architectural elements or landscapes, but even to immaterial factors such as ceremonies or traditions. The concept of integrity can be applied to indicators such as the *extension of cultural landscapes***,** since the integrity of a landscape is related also to the conservation of an appropriate extension of territory suited to maintain the elements needed to express significance. Other indicators of significance can reflect the same one used for significance*: Integrity of landscape patterns, Integrity of single historic land uses, Integrity of material evidences, Integrity of documentary evidences, Integrity of bio-cultural evidence, Integrity of cultural traditions, Traditional knowledge, Social perception.*

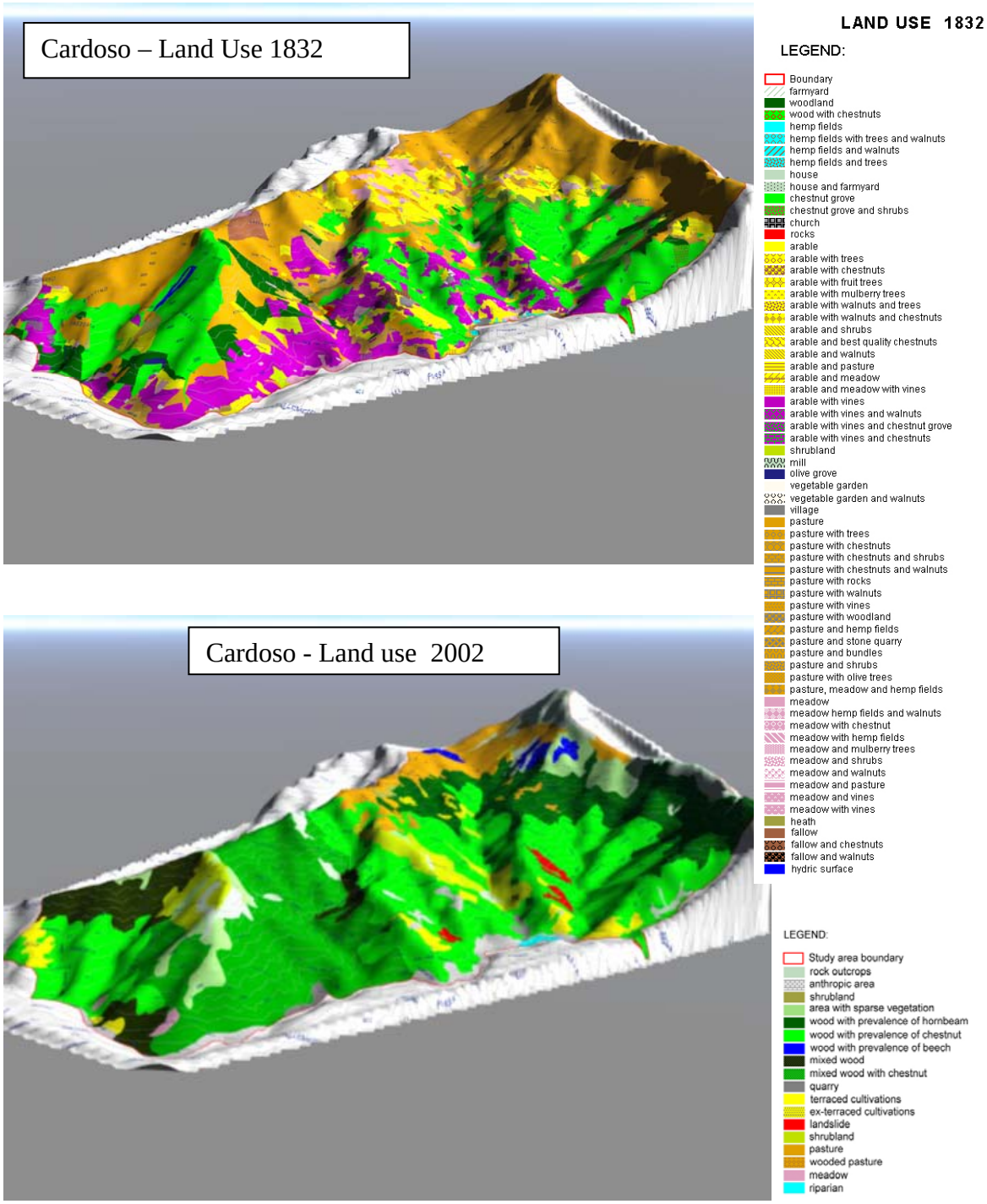


Fig. 2: 3D maps showing the reduction of the diversity of landscape mosaic between 1832 and 2002 in an area of the Apuane Alps in Tuscany (Italy) due to abandonment of agriculture and extension of forest cover (green colour) . A survey made also for 1981 shows that extension of forest cover continued to increase thanks also to policies developed by the region (Agnoletti 2007). The general official interpretation of forest increase occurring for all Tuscany given by the agriculture and forest department is an improvement of landscape quality due to the extension of forest cover made also through afforestation promoted with CAP.

**4.1.3 Vulnerability**

Vulnerability represents the fragility of cultural factors due to the features of processes affecting significance and integrity. Vulnerability measure also resistance to change. Some landscapes are very vulnerable to abandonment, their features degrading in a relatively short time (e.g. terracing, chestnut orchards *etc*), whilst others are less affected by the suspension of traditional practices and more resistant to changes In the same way also immaterial factors such as traditions, ceremonies, or local knowledge can be more-or-less affected by changing socioeconomic conditions. Therefore, it is important to asses the different degree of vulnerability of each item representing significance, but also the factors that can be interpreted as potential dangers.

Vulnerability can be applied to the elements representing significance: *Vulnerability of Landscape pattern, Vulnerability of single historic land uses, .Vulnerability of material elements, Vulnerability of documentary evidences, Vulnerability of Bio-cultural evidences, Vulnerability of Cultural traditions.* The assessment of vulnerability requires also to consider the factors affecting vulnerability:

***1. Forest activities***

Vulnerability due to forest activities presenting a potential or direct danger for cultural factors (e.g. afforestations, inappropriate silvicultural methods , forest utilisation *etc*)

***2. Agricultural activities***

Risk due to farming activities presenting a real or potential risk for cultural values (e.g. extension of industrial cultivation )

***3. Industrial activities***

Risk due to industrial activities directly or indirectly affecting cultural values

***4. Urban development***

Risk due to factors and process directly linked to expansion of urban areas or infrastructure, as well as planning activities negatively affecting the historical features of rural landscapes.

***5. Demography***

Risk due to demographic factors presenting an actual or potential risk for cultural values (e.g. landscape patterns very fragile to abandonment )

***6. Climate changes***

Risk due to the effect of possible climate change.

**References**

Agnoletti M., Marinai, V., Paoletti, S., *The Project for the Rural Landscape Park of Moscheta (Tuscany, Italy)*, in: Agnoletti M., ed. 2006, The conservation of cultural landscapes, CAB International, Wallingford and New York.

Agnoletti, M., 2007, The degradation of traditional landscape in a mountain area of Tuscany during the 19th and 20th centuries: implications for biodiversity and sustainable management. Forest Ecology and Management 249 (1/2), Special Issue on Traditional Knowledge, 1-139.

Agnoletti, M. et al., 2007. Guidelines for the implementation of social and cultural values in sustainable forest management, a scientific contribution to the implementation of MCPFE – Vienna resolution 3, IUFRO Occasional Paper N.19.

Berger, G., Kaechele, H., Pfeffer, H., 2006, The greening of the European Agricultural Policy by linking the European wide obligation of set aside with voluntary agri-environmental measures on a regional scale, environmental Science and Policy, vol 9, issue 6. 509-524.

Eychenne-Niggel, C., 2003, Trente ans de relance pastorale pastorale en Ariège: le temps de la maturité. Les enseignements de l'enquête pastorale de 1999 et du recensement agricole de 2000. *Sud-Ouest Européen* 16, 5-14.

European Environmental Agency, Land Account for Europe 1990-2000, EEA, Copenhagen.

Fowler, P.J. , 2003, World Heritage Cultural Landscapes, WH papers 6, UNESCO WHC, Paris.

Larsson, T.B., 2001. Biodiversity evaluation tools for European Forests. Ecol. Bull. 50.

MARS, 1995, The Monuments at Risk Survey of England 1995, An English heritage strategy document. (http://csweb.bournemouth.ac.uk/consci/text_mars/marsint.htm)

MCPFE, 2003, Improved Pan-European Indicators for Sustainable Forest Management, MCPFE, Liaison Unit, Vienna (www.mcpfe.org) .

Jongman R.H.G., 2004, Introduction, in: Jongman R.H.G., ed., The new dimension of the European Landscape, Springer, Dordrecht.

Reho, M., 2006, Le misure per la tutela e valorizzazione del paesaggio introdotte dalla nuova PAC. Valutazioni di efficacia in relazione ai fattori di contesto e alle modalità di gestione, in: a cura di F. Marangon, Gli interventi paesaggistico-ambientali nelle politiche regionali di sviluppo rurale, Franco Angeli, Milano. 20- 41.

Sereni E., 1997, History of the Italian Agricultural Landscape, Princeton University Press, Princeton. (reprint, first edition 1961)

Weinstoerffer, J., Girardin, P., 2000, Assessment of the contribution of land use pattern and intensity to landscape quality: use of a landscape indicator Ecological Modelling, Volume 130, Issues 1-3, 1 June, 95-109.

Walsh, R.G., Ward, F., Olienyk, J., 1989, Recreational demand for trees in national forests. *Journal of Environmental Management*, 28: 255-269.

Willis, K. e Garrod, G. , 1993, Multiple Criteria and Nearly Optimal Solutions in Greenhouse Management., Agricultural System, 3:289-303.