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French country report for the inventory on landscape and nature conservation

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French Country Report

for the Inventory on

Landscape and Nature Conservation

Presented to the EU workshop on "Landscape and Nature Conservation"

Stuttgart, Germany

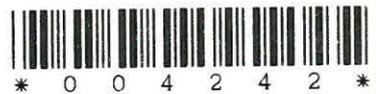
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cantons in France), a third of the cantons are experiencing a decrease in population. These cantons represent 50% of the territory but only 2% of the total population (Houée, 1996).

This urbanisation has two consequences: on the one hand, the spatial expansion of the cities conflicts with other uses of the surrounding land, destroying many valuable landscapes. On the other hand it creates a strong demand for nature. The expansion of the cities and the correlated land consumption by transportation infrastructures has been very important in France. From 1982 to 1990 the developed areas rose from 3,271,000 ha to 3,762,000 ha (61,000 ha per year). The major part of this increase, about three quarters, corresponds to a loss of agricultural land (Cavailhès and Normandin, 1994). This leads to landscape deterioration as well as limited access to open space and countryside. While the amount of surface area involved in the quarry industry and mining is small compared to other land-uses, the impact on the landscape is significant. Every year 500 million tons are extracted from the French subsoil (IFEN, 1994). When the entire land surface is removed there is a large amount of "tailings" or residual rock, which create visual pollution. The extraction of materials from the rivers is an important cause of wetland loss.

With respect to the demand for nature, it is clear that as people get richer their demand for countryside amenities increases, since the income elasticity for this type of goods is high. That the countryside is more and more popular is observable through the increase in the number of people involved in hiking. Occasional hikers numbered 1,900,000 in 1984 and 3,900,000 in 1989, whereas the number of regular hikers grew from 840,000 to 2,200,000 during the same period (IFEN, 1994). In 1993 the number of national park visitors was around 2 million a year. Farming tourism, which concerned only 2% of the farms in the 1988 agricultural census, is a growing activity reflecting the increased demand for space.

Another significant indicator is the amount of farm property purchased by non-farmers, which rose in the 1980s. It represents nowadays almost a third of the area sold on the land market and well over half of the property value that changes hands. The purchase of second homes makes up another part of the market and represents an important demand, since one fifth of rural dwellings are second homes. The countryside that attracts these urban people is located in regions characterized by their rural amenities and the quality of their landscape: Vosges, Morvan and Northern Massif Central, Limousin, Périgord, Pyrénées, Cévennes, Alps, as well as Sologne and parts of the mixed woodland and pastures of Western France (Cavailhès et al., 1994). Amenities alone cannot explain this location in the country; accessibility, budgetary decisions, etc are also influential, but demand for the landscape is clearly involved.

2.2 Deterioration of landscape by agriculture

Historically agriculture has made a significant contribution to the landscape in large areas of France, even if it has been a major modifier of the rural environment, and if ecosystem change is embedded in agricultural processes. However, when in the sixties agriculture became a sector closely linked with input suppliers strengthening the productivity of the soil, a disruption to the generations of farmers previously practising agricultural techniques in harmony with the environment occurred.

The ways in which intensification has damaged the landscape may be analysed under a number of headings. First of all as indicated in table 1, there have been very important changes in land-use.

Table 1: Changes in main categories of land-use in million ha (1970 - 1994)

	1970	1994
Area used for agriculture	32.5	30.6
of which arable land	16.8	18.0
of which permanent grassland	14.1	12.6
Wooded area	14.2	14.6

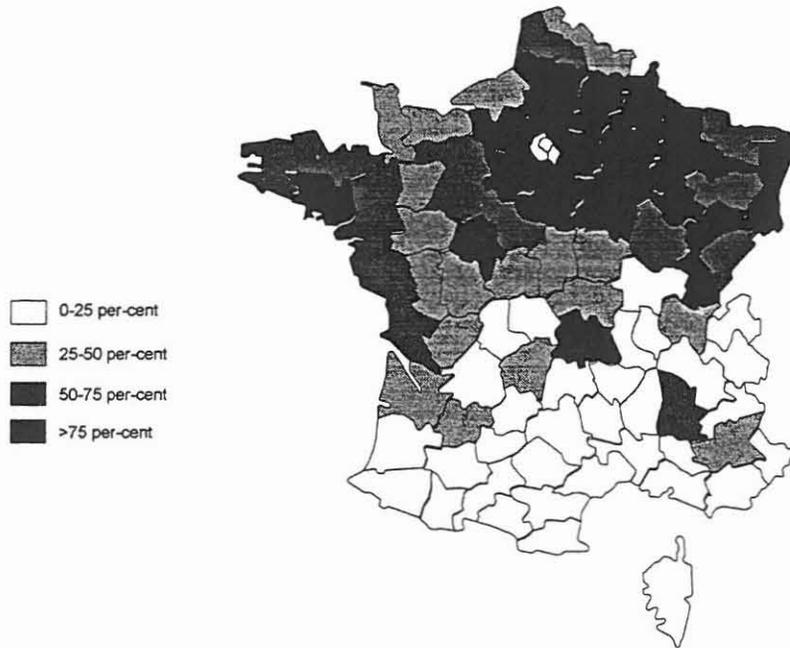
Source: Agreste, 1996

Regarding cropping patterns, the most significant aspect for the environment was the shift between arable land and permanent grassland. The area used for agriculture decreased between 1970 and 1994. If we consider the principal categories of crops there is a dramatic increase in wheat from 3.7 million ha in 1970 to 4.3 million in 1994 and to a lesser extent in maize (from 1.4 to 1.7 million ha). The development of monoculture has created a landscape which most people do not find attractive, and an increased intensity of land-use with its consequences being the destruction of biotopes and the contamination of surface and ground waters.

Comparable developments have taken place in the livestock sector characterised by a dramatic increase in intensive animal husbandry, notably of pigs, poultry and cattle. Local effects of this intensive farming concern visual amenity since high-quality rural landscapes are damaged by the erection of grain silos and modern agricultural buildings for animals. However, the quantity of manure produced by intensive animal husbandry, combined with the inorganic fertilisers used on crops, cause large quantities of nitrates and phosphorus to run off into rivers. This over-supply of nitrogen leads to the eutrophication of slow-running and surface waters. Eutrophication also occurs in estuaries and marine waters. This results in a disruption of the ecosystems, with algae growth disturbing the oxygen balance, and this subsequently results in the death of fish. In addition, algae can emit bad odours.

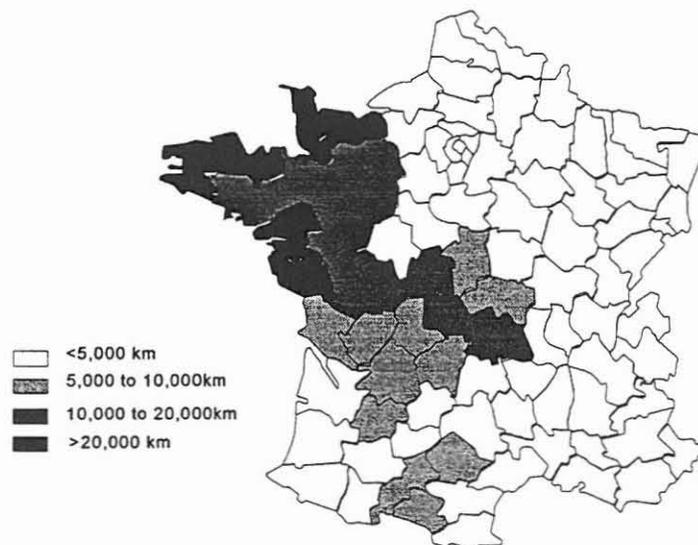
Otherwise, intensification and specialisation have come about through major structural changes, i.e. a rapid increase in the average farm size (from 13 ha in 1955 to 35 ha in 1993) involving the substitution of machines for manual labour. The number and the power of machines used per square kilometre of arable land has continued to rise leading to soil compaction and erosion. Furthermore, the ever-increasing size of machines calls for wider plots which are obtained through land amalgamation and plot consolidation. Since 1945 over 15 million hectares have been consolidated, this represents half of the area used for agriculture. As indicated in map 1, the consolidation of landholdings has been very important in Northern France, mainly in the Bassin Parisien where cereal farming dominates, but also in the East (Alsace) and in the West (Bretagne and especially Morbihan). Puy-de-Dôme in the Massif Central has also seen significant land consolidation.

Fig 1: Land consolidation as a percentage of the land-used for agriculture (results by "département")



Source: Agreste (1996)

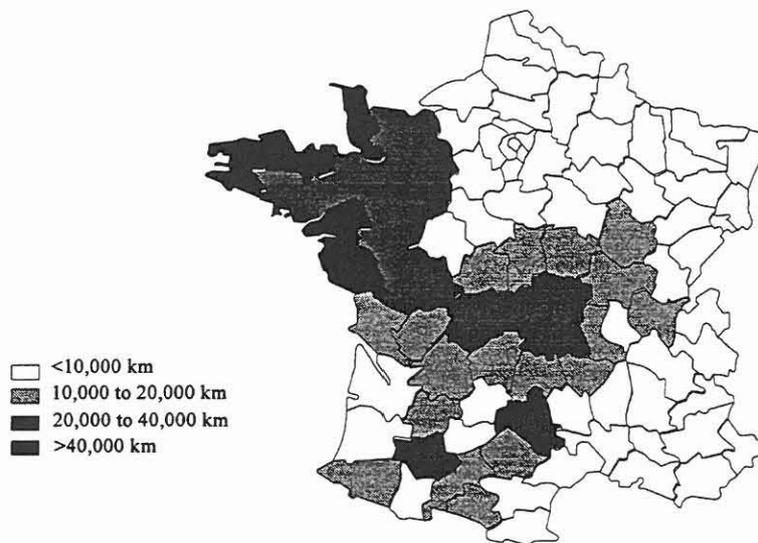
Fig 2: Hedgerow length in 1963-1980 (in km)



Source : Pointereau and Bazile (1995)

The most important effect of plot consolidation on the landscape and nature is the elimination of features such as hedgerows, groves and isolated trees. The best index of this loss of quality is the rate of hedgerow removal. The national survey of forestry, which is carried out every 12 years, gives detailed information. Between the two last surveys 536,000 km of hedgerows had been removed (Pointereau and Bazile, 1995). Figures 2 and 3, which give the prevalence of hedgerows at the time of the first survey (1963-1980) and the rate of removal respectively, indicate that regions with the longest hedgerows have the highest rate of removal. Five "départements", all located in the western part of the country, contained 25% of the total hedgerow length. There are Côtes d'Armor (102,000 km), Finistère (79,120 km) Vendée (51,100 km), Manche (46,736 km) and Loire-Atlantique (41,160 km). In these five "départements" the total removal between the two surveys reached 200,000 km.

Fig: 3. Hedgerow removal between the two surveys (1963-1980 / 1977-1990)



Source : Pointereau and Bazile (1995)

3 The legal context

Whilst demand for leisure use of the countryside increased, intensification and urbanisation have damaged the quality of the landscape. These changes have recently been observed and a specific conservation and management policy was implemented in July 1993 with the Countryside Act. In fact, there is an important history of French regulation which started at the end of the 19th century introducing the protection of particular sites. This point is considered in the first subsection. Following this, the regulation was extended to protect natural sites and historical monuments in the middle of the century. This aspect is examined in the second subsection. Finally a more general legal framework is defined which covers large parts of the territory. Using Rouso (1995) we present this evolution from specific to ecological units, and from protection-oriented regulations towards a more comprehensive approach involving management of the whole countryside.

Table 2: The main measures regarding landscape and nature conservation

1861	Public purchase of 1,000 ha of the forest of Fontainebleau
1887	Protection of artistic and historic monuments
1906	Protection of natural sites
1913	Act for historic buildings
1930	Protection of natural monuments and sites of "artistic, scientific, legendary or picturesque" interest
1943	Act protecting the nearby surroundings of historic monuments
1960	Setting up of National Parks
1975	Coastal Protection Act
1985	Mountain Act
1993	Landscape Act

Source: Own compilation

3.1 The protection of specific sites at the end of 19th century

The second half of the 19th century is characterized by the romanticism of the French elites, with a pronounced interest in cultural inheritance through archeology, ancient monuments and sites of particular interest. For instance the first conservation land purchase by the public sector took place in 1861 with the purchase of 1,000 ha of the forest of Fontainebleau to preserve the countryside which was immortalised by the Barbizon school in their paintings.

However, the role played by the voluntary bodies, in particular the Touring Club de France and a range of associations concerned with recreation in mountain areas was important. Their lobbying activities resulted in the law of 1906 concerning the protection of natural sites which enlarged the law of 1887 protecting artistic and historic monuments (Baraque, 1985). In December 1913 the act on historic buildings was passed. This act, in force ever since, is used today to protect not only historic castles but all kinds of interesting buildings such as ancient factories, railway stations and hotels.

According to the level of the monument's historic interest, two levels of protection are possible. In the most demanding case, the monument is classified as a place of historic interest ("*le classement*"). Any changes require the agreement of the ministry in charge of historic buildings. Less restrictive is registration ("*l'inscription*") where changes are possible if the agreement of the regional director of cultural affairs is obtained.

The law of 1930 proposes the same type of protection for natural monuments and sites of "*artistic, scientific, legendary or picturesque*" interest with classification and registration. Farming without any agreement is possible for registered sites only. In June 1993 the number of classified sites was 2,564 whereas registered sites were twice as numerous (IFEN, 1994).

Originally, these laws aimed at protecting "*small-scale*" nature: particular rock formations, waterfalls, unusual trees and so forth. They were based on a *type-of-monument* approach. Nowadays this type of regulation is used to prevent the destruction of green areas, as well as flora and fauna in general. For instance, the Massif des Maures, which stretches for several tens of thousands of hectares, is classified. During the first half of 1993, 18 sites were regulated corresponding to 11,627 ha. All these sites are specific, but all unique (surroundings of the city of Carcassonne, the pond of Aigues-Mortes, the gorge of Héric in Hérault, are some examples).

3.2 Extended protection of the sites and the monuments in the middle of the 20th century

As mentioned above, existing laws have been used in a more extensive way to protect the surroundings of the sites, but the February 1943 act aims at protecting the area surrounding historic monuments for up to a 500m radius. In 1992 there were 40,450 protected areas (IFEN, 1994). The Malraux Act (4th August 1962) enlarges the area of protection in urban zones in which there are architectural sectors presenting a cultural, artistic or historic interest. The Malraux Act proposes a management system for entire sectors designated by the authorities as being in need of safeguarding. It corresponds to a land-use plan which includes the restriction and the rehabilitation of large parts of urban zones.

However, the most important conservation initiative is the setting up of the National Parks (2nd July 1960). National Parks are initially designated because of their value as "*important sanctuaries of nature*", but an important feature of these areas is that they cover land which is inhabited, largely privately owned and used economically. Therefore it is necessary for their management to take into account their value for conservation, amenity and recreation to society as a whole on the one hand, and to recognize an indigenous "*human*" element on the other hand. Consequently there is a compelling regulation which distinguishes two types of areas :

- ⇒ a central area, characterized by wilderness, generally uninhabited, with strict protection. Sometimes, the core is a reserve in full, where fauna and flora are protected for scientific reasons ;
- ⇒ around this central area, there is a peripheral zone used economically by an indigenous population. The regulation has implications for the objectives and operations of such designated areas, placing particular emphasis on integrating rural conservation with other land-use, particularly agriculture.

France has seven National Parks covering a total area of 12,758 square kilometres which corresponds to 2,2 %of the territory. Table 3 gives more information about these parks.

Table 3: *The French National Parks*

Name of the Park (established in)	Location (départements)	Total area (km ²)	Central area (km ²)
Cévennes (2nd September, 1970)	Lozère, Gard, Ardèche	3,115.0	840.0
Guadeloupe (7th March, 1989)	Guadeloupe	296.7	173.8
Les Ecrins (23rd March, 1973)	Hautes-Alpes, Isère	2,704.0	918.0

Mercantour (18th August, 1979)	Alpes-Maritimes, Alpes de Haute-Provence, Var	2,150.0	685.0
Port-Cros (14th December, 1963)	Var	7.0	--
Pyrénées Occidentales (23rd March, 1967)	Hautes-Pyrénées, Pyrénées Atlantiques	2,560.6	457.0
Vanoise (7th July, 1963)	Savoie	1964.8	528.4
Total		12,758.1	3,602.2

Source : IFEN (1994)

The National Parks were centrally initiated and approved, in consequence they are managed by an administration created with a "top-down" hierarchical framework under the control of the Ministry of the Environment.

In the same spirit as with the central areas of the National Parks there are also natural reserves which are older since they were set up by the 2nd May 1930 Act. These reserves concern areas of high ecological value with scarce or threatened resources. Nowadays, there are 114 reserves with an average size smaller than the National Parks.

Furthermore a set of 27 Regional parks covering 8% of the territory exists. These parks are generally situated in economically disadvantaged areas with a relatively high percentage of employment in farming, low population density, and difficult natural conditions, but they are characterized by their "natural beauty".

These Regional Parks originated in the legislative period marking the normalisation of the post-war decentralisation movement, with a first wave during the seventies (20 parks established from 1969 to 1980), and a second wave during the eighties (7 other parks established from 1985 to 1991). Consequently they have a governing Park Committee of local and regional representatives and a permanent technical staff funded by central and local government. The Regional Parks receive the majority of their funds directly from local and regional bodies, and national and European contributions are channelled through these bodies.

In contrast to National Parks, uninhabited in their central areas, the Regional Parks aim at the maintenance of communities and the reversal of rural decline. For this reason conservation is considered as a practice which requires active management rather than the static protection of valued land. This involves an integrated approach to conservation and development issues. Schemes are developed through a process of consultation between farmers, agricultural and environmental administrators, academic researchers, and elected people.

Due to coordination problems between the local and central government in setting park objectives and allocating resources, a decree of 25th April 1988 imposed greater national scrutiny of park funding and park performance. Funds are only given for specific park activities, and all Regional Park designation is subject to appraisal and review every ten years by the Ministry of the Environment.

3.3. A more comprehensive approach

Legislation has made progress in setting up a more comprehensive approach to the countryside through the Coastal Protection Act and the Mountain Act on the one hand, and the Landscape Act on the other hand.

3.3.1 Coastal Protection Act

In order to safeguard threatened coasts and lake shores a national government agency, the Coast and Lake Shore Conservancy Authority (Conservatoire de l'Espace Littoral et des Rivages Lacustres) was established in the spirit of the British National Trust. It was set up by the Law of 10th July 1975, and this administrative body is defined by the Rural Code (act L 243, R 243). Its sole task is to purchase land to maintain the natural inheritance and to preserve it for future generations. This act applies to the 277 continental coastal "*cantons*" and the overseas coastal "*cantons*" (the *Départements d'Outre Mer*). It is not only shoreline that is considered, since sectors bordering large stretches of water are also taken into account in order to manage ecological units. These units represent a length of 6,933 km and an area of 5,141,000 ha.

The Conservancy receives an annual state budget, and land held by the organisation is inalienable. By mid 1993, in 314 transactions, a total of 580 km of shoreline were purchased corresponding to a total area of 41,779 ha. Concerning the size of the sites, 172 are under 50 ha, 46 between 50 and 100 ha, 81 between 100 and 500 ha, and 4 over 1,000 ha. If we consider the type of purchased shoreline, it appears that 48.3% are rocky coasts, 32.4% sandy coasts, 13.8% wetlands and 5.5% various areas (IFEN, 1994).

The Conservancy does not manage any of the sites it owns. There are management agreements with local authorities (communities and *départements*) and sometimes this role is delegated to voluntary organisations or farmers. To preserve or re-establish traditional land-use, the Conservancy proposes covenants which place legal restrictions on land-use. According to the state of the ecosystems, the management is oriented towards either simple conservation or restoration. The choice between these two options is done following an eco-audit when such assessment is possible.

There is coordination between the national and local levels. Specifically, the Conservancy makes decisions on its purchasing programme closely together with the *départements* and regions through councils composed of elected members which examine the operations of the Conservancy. Programmes of coordination are then drawn up which define the sites where responsibility is reserved for the *départements*.

3.3.2 Mountain Act

The Mountain Act of 9th January 1985 is based on the same principles : there are specific problems for these spaces and they need a comprehensive approach. Such an approach must take into account aesthetic aspects but also the historical, economic and sociological elements that define a mountainous massif. The "*Mountain Act*" deals with 5,600 communities and aims at controlling the impact of economic development on the landscape.

3.3.3 Landscape Act

The Landscape Act of 8th January 1993 is more general than the Coastal Protection and the Mountain Acts. It gives the state possibility to intervene in order to protect any noteworthy landscape. It aims at integrating landscape in land-use plans, in areas of protection of architectural sectors, and the entrance to towns. Nowadays any programme of land development or land management has to take into account the countryside. These programmes include land consolidation even if there are still problems with the removal of hedgerows and ploughing up of permanent pastures, or destruction of woodlands and scrub. The underlying philosophy of this law is its extension from the protection of interesting natural features to more ordinary areas. For instance, building licences must take into account information about landscape in the land-use-plans (Plans d'Occupation des Sols, POS), which define the zones for urbanisation and those which are reserved for other uses such as agriculture, mineral exploitation and recreation. The building itself and the surroundings must be integrated with the environment. Finally, the new legal developments permit better management of the landscape through the protection of sites, ecosystems and the countryside. Furthermore, specific agreements with important public bodies were set up in 1993. French Telecom has undertaken to bury any new extension or renewal of its network. It is foreseen that in the year 2000 about two-thirds of the lines surrounding ancient monuments or sites of particular interest will be hidden. Electricité de France, the public body producing and distributing electricity, will bury 55,000 km of electric lines within a 4 year period.

3.4 Implementation of EC Regulation 2078/92

The application of Regulation 2078/92 in France has given rise to numerous and specific measures (Boisson and Buller, 1996). Two types of measures can be detailed : those that apply to the entire French area, and those that are focused on regional level or local zones.

3.4.1 The ESA scheme

Regulation 2078/92 represents an endorsement of the original ESA approach included in Article 19 of EC Regulation 797/85. After an initially slow start, the number of designated ESAs has grown rapidly from 22 in 1991, to 61 by 1993. Potential target zones were identified by the four types of environmental issue to be addressed : those threatened by water pollution, those of particular interest for rare and threatened species, those of extensive pastoral agriculture threatened by farm abandonment, and those subject to forest fires. Table 4 presents the 61 ESAs accepted for central government funding. Of this total 34 only have been accepted by the EC for cofunding.

Table 4. Characteristics of French ESAs by type (1994)

	numb of ESASs	Total amount of annual payments (million FFr) ¹	Surface area of ESAs (ha)	Eligible area (ha)
water pollution	3	2.2	7,400	5,700
sensitive ecosystems	30	52.5	220,700	83,700
farming retreat	24	33.1	492,000	106,600
forest fire prevention	4	4.7	17,200	9,200
total	61	92.5	737,300	205,200

Source: CNASEA, 1995.

Considerable differences exist among the various ESA types as indicated by table 5 which gives the characteristics of the agreements.

Table 5: Characteristics of the agreements according to type of ESAs (1994)

	Number of contracts	Area under agreement (ha)	Average area under agreement per contract (ha)	Average payment per contract (1000FFR)
water pollution	131	4,356	33.25	14,214
sensitive ecosystems	4,152	71,163	17.14	11,587
farming retreat	1,266	33,780	26.68	11,374
forest fire prevention	70	4,648	66.40	35,957
total	5,619	113,947	35.87	11,900

Source: CNASEA, 1995.

3.4.2 National measures

The grassland premium is a nationwide measure aimed at protecting low density grazing lands. This 300 FFr premium per hectare of permanent grassland 1995 is granted to farmers who comply, for five years, with the following prescriptions:

- no decrease of permanent grassland acreage (both in absolute and relative terms),
- LSU/ha < 1.4 if the share of permanent grassland in total acreage is smaller than 75%; LSU/ha < 1 otherwise, where LFU is livestock unit,
- maintain permanent grassland, hedges, field gutters and ditches,
- permanent grassland acreage ≥ 3 ha,
- non eligible for a retirement scheme.

The maximum eligible acreage is 100 ha (maximum total premium is FFr 30,000). The full amount per hectare (x) is: FFr 200 (1993), FFr 250 (1994), FFr 300 (1995, 1996, 1997).

¹ ECU 1=FFr 7.18 (1994)

Amount per hectare is adjusted to take into account the number of LSU/ha (y). Real amount per hectare equals:

- x if $0.6 < y < 1$,
- x if $1 < y < 1.4$ and the share of permanent grassland in total acreage is greater than 75%,
- $x * y / 0.6$ if $y < 0.6$.

Since the introduction of this measure 177,084 applications have been accepted by the end of 1994 corresponding to some 5.7 million hectares (CNASEA, 1995). The applications are concentrated in the Massif Central, an area characterised by extensive animal husbandry.

A specific policy concerning a sustainable development scheme has been implemented in France, although this measure is not explicitly in Regulation 2078/92. This new approach is based on "sustainable farm development plans" (Plans de Developpement Durable: PDD). The PDDs are voluntary farm management plans aimed at ensuring good countryside practices to improve agriculture's role in countryside management. They target individual farms regrouped in particular sites where a partnership between farmers, local policy makers, and representatives of the local population is possible. There are 750 farms located in 60 sites (CNASEA, 1995) for which development scenarios are approved after an environmental audit. Farmers then receive subsidies for a first five-year period. After an assessment the contract can be carried on for a new five-year period.

3.4.3 Regional and local measures

Regional and local measures are in fact the core of Regulation 2078/92. All these measures only apply within identified spatial areas defined at the regional level. Table 6 summarizes the package of the regional and local programmes.

Table 6: Regional and local operations under Regulation 2078/92

Measure	Level	Time Horizon	Incentive Amount
• Reduced use of agri-inputs			
• fertilisers (nitrogen)	Regional	Rotational period	FFr1,000/ha/year (\pm FFr200)
• chemicals, pesticides	" "	or	FFr 800/ha/year
• fertilisers and chemicals	" "	5 years	FFr1,200/ha/year
Conversion from arable to extensive grassland	Regional	5 years	FFr2,500/ha/year (\pm FFr20%)
Taking land out of agri.production	Regional	20 years	FFr3,000/ha/year (\pm FFr20%)
Conversion to organic farming	Regional	5 years	FFr700 to FFr4,700/ha/year (for 2 or 3 years) depending upon the crops
Rearing of threatened breeds	Regional	5 years	FFr300/eligible LSU/year

Reduced stocking densities for livestock	Regional	5 years	FFr1,500/removed/LSU/year
Flora and fauna protection	Regional	20 years	Based on past income max = FFr3,000/ha/year
Local programmes <ul style="list-style-type: none"> • ecological interests • land abandonment 	Local	?	Individual agreements based on extra costs or lost of profit

Source: Bonnieux and Rainelli (1995)

4 Research

Some significant economic studies exist which deal with landscape and nature conservation. Two studies deserve specific attention. Both use the contingent valuation (CV) approach and they are based on face-to-face surveys to determine willingness-to-pay (WTP) of the public. They reach reliable monetary values which are incorporated in cost-benefit analyses.

Le Goffe P, Gerber P, 1994. Coûts environnementaux et bénéfices de l'implantation d'une sablière en zone périurbaine, le cas de Pacé. Unpublished Report, INRA, Rennes (France).

The authors consider a limited portion of land on the outskirts of a metropolitan area. The WTP of the resident population for landscape preservation is estimated and used to assess a conservation programme.

Bonnieux F, Le Goffe P, 1996. Cost-benefit analysis of landscape restoration : a case study in Western France. EU Workshop on "Landscape and Nature Conservation" Stuttgart, (Germany), September 26-29, 1996.

This paper is based on a case study related to a project of restoration of hedgerows. Over a 100-year time horizon this project would be profitable since its internal rate of return would be around 5% . Nevertheless private benefits are not enough to carry out restoration. It is required to take amenities and recreational values into account to justify public expenditure.

Colson F, Stenger A, 1996. Interpretation of an application of the contingent valuation method to agricultural landscapes : the problem of embedding effects. Unpublished Paper, INRA, Nantes (France).

The main contribution of the paper is to address the issue of geographical part-whole bias. The test is not conclusive. The main drawback, however, is related to the survey itself since it is a mail survey.

There is a very limited number of hedonic price studies whose objective is to value landscape and countryside amenities. The first one encompasses all of France with the dependent variable equalling the rent for a vacation house.

Jacques A, Blouët K (1995). Valeur des paysages agricoles et tourisme rural. Unpublished Report to the Direction de la Prévision. Ministère de l'Economie et des Finances. Paris.

A similar research restricted to Brittany provides more valuable findings. For example in accordance with most hypotheses, fodder crops and intensive livestock farming cause the rent value of vacation houses to decrease, whereas permanent grassland seems to have the opposite influence.

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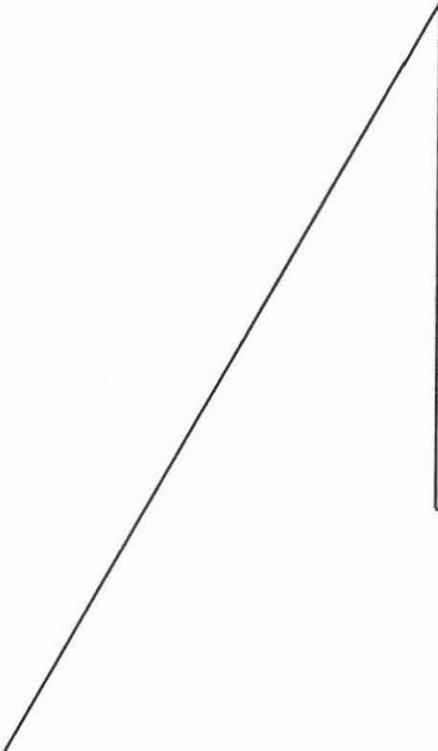
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Policies for Landscape and Nature Conservation in Europe

**An inventory to accompany the workshop
on „Landscape and Nature Conservation“
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Policies for Landscape and Nature Conservation in Europe

**An inventory to accompany the workshop on
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Policy Measures To Control Environmental Impacts From Agriculture

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