A Review of European Experience of Integrating Environmental Objectives into Agricultural Policy and Practice

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The paper reviews the changing production patterns on European agriculture and the range of environmental effects that result. It identifies the prevailing models that have informed the development of policy for agriculture and environment, and relates these to distinct cultural perspectives and intervention strategies. The paper then examines in turn the evolution of the different strategies for improved integration of environmental objectives into agriculture. They include the reduction of support prices, formal environmental regulation, agri-environmental incentives and environmental cross-compliance. The European experience pursuing each of these is reviewed and it is concluded that effective environmental integration will require the pursuit of a combination of them.

Keywords: *Impact Model, "Public Good" Model, Cultural Perspectives, MacSharry Reform, Environmental Cross-compliance, Agri-environment Policy*

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I. Introduction

Agriculture not only produces food and fibre; it also shapes the rural environment. It is the single most important land use in the European Union, accounting for some 44 per cent of the land mass with a total utilised agricultural area of about 137 million hectares. A managed environment that ensures the productivity of that land is of course essential to the maintenance of primary production. Increasingly, also, modern society values the environmental resources associated with rural land use, including water supply, semi-natural habitats, wildlife, the historic pattern of land settlement and its cultural artefacts, landscapes and open spaces. For many of these resources to be conserved, the land must be managed and often this entails the continuity of certain farming practices. However, rapid changes in primary land use and technology have jeopardised the supply of these resources, leading to problems of pollution and the impoverishment of the landscape in some regions and to land abandonment, soil erosion and inappropriate management in others.

II. Changing Production Patterns

Agriculture remains a topic of considerable political, economic and environmental sensitivity within the EU, even though its share of economic activity is falling and there is no immediate concern about food security. Despite the presence of highly industrialised and intensive forms of production in some regions, there were still around 7.2 million people working in agriculture in 1997 in the EU, about 5 per cent of the total workforce, but rising to more than 10 per cent in some countries (Eurostat, 1999). In contrast to North America and many of the major OECD exporting

countries, farms remain relatively small, there is resistance to large scale structural change and a concern to maintain a 'European model of agriculture'. There is widespread political sympathy for the maintenance of family farms and a managed countryside and a willingness to accept considerable expenditure on policies intended to provide the sector with economic preference.

Agricultural policy in the EU has played an important part in the creation of a single market and a common legislative framework for diverse farming economies in an expanding Europe as well as addressing the range of issues common to most OECD countries. The environment has emerged as a significant issue in the last fifteen years, gaining particular weight in the last five. Indeed, the 'European model' would scarcely be coherent to a domestic or international audience without reference to environmental management and the cultural landscapes which contribute so much to regional identity.

The EU is both an agricultural producer and a trading bloc on a very large scale. It is the world's largest net importer of agricultural products. In 1997 unprocessed agricultural exports were valued at around Euro 17.5 billion, compared with imports of about Euro 29.6 billion. In the same year there was a significant surplus in trade in processed products (Eurostat, 1999). Although it is a net importer the EU is not confronted with serious concerns about food security because of the overall size of the economy and corresponding capacity to import food and other raw materials. Taken as a group, agriculture, forestry and fishing represented only about two per cent of GDP (Gross Domestic Product) in the EU in 1996, having fallen from six per cent in 1970.

Production of several commodities exceeds domestic requirements. Some exports take place on commercial terms, but others rely partly or wholly on export subsidies, for example beef and dairy products. Table 1 below shows trends for a number of important commodities over a ten year period. Wheat and maize

production have grown significantly, as has output of poultry and pig meat. By contrast, milk production has declined slightly since the introduction of quotas in the mid 1980s. Policy measures have had an important influence on production patterns in most sectors. In wine, for example, there has been an emphasis on increasing the quality of output, with substantial payments being made for restructuring and grubbing up the least competitive vineyards.

Arable crops and grass for livestock production make up the majority of farmland. Arable crop production is concentrated in the north-western part of the EU particularly France, Germany, the United Kingdom, and to a lesser extent Italy and Spain. Fruit and vegetables and permanent crops such as olives and vines are concentrated in the Mediterranean regions.

Table 1 Agricultural Production in the European Union; Annual Output of Some Major Commodities

Unit: million mt

commodity	1986	1990	1995	1996	1997
Milk, whole, fresh	125.3	117.1	122.3	121.4	119.2
Beef and veal	8.5	8.5	8.1	8.0	8.0
Sheep meat	0.9	1.1	1.1	1.1	1.0
Pig meat	13.8	14.7	15.9	16.4	16.7
Chicken meat	4.6	5.0	6.1	6.2	6.4
Eggs	5.2	4.9	5.3	5.2	5.1
Wheat	76.2	84.7	87.7	99.7	94.9
Maize	25.5	22.6	30.6	35.7	39.4
Apples	10.0	8.9	9.1	9.7	8.6
Oranges	5.3	5.4	5.3	5.1	6.0
Tomatoes	12.0	13.5	12.9	14.9	13.3
Wine	21.0	18.5	15.5	17.4	16.2

Source: FAO.

Cattle are the dominant form of livestock in economic terms, followed by pigs. France, Germany and the United Kingdom are the three countries with the largest cattle population, accounting for more than half of total in the EU. These three countries likewise account for 42 per cent of the total pig population. National livestock populations in the late 1990s are given in Table 2 which shows that some of the smaller countries, such as Denmark, the Netherlands and Belgium, account for a sizeable share of pig and poultry production, predominantly in intensive units.

Stocking density, measured as the number of livestock units per hectare of land, varies greatly and is highest in a cluster of regions with concentrations of intensive livestock production. Stocking density exceeds 2 livestock units per hectare on a regional scale in the Netherlands, parts of Germany, part of France (Bretagne), the northern part of Italy (Lombardy) and some parts of Spain (Galicia and Cataluna). This density is potentially close to the maximum compatible with EU legislation on nitrate concentrations in water, although much depends on farm management, climate and local geology.

Agriculture is characterised by a wide range of farming types. There are more than 7.3 million agricultural holdings and average farm size in the EU is less than 20 hectares. However, this figure masks huge differences in farm structure. While more than half of the holdings are less than 5 hectares in size, in total they occupy less than 10 per cent of farmland in the EU. By contrast, the largest three per cent of holdings account for more than 20 per cent of the land.

The farm labour force has reduced substantially during the past few decades with the increasing rationalisation, specialisation and concentration of production. It shrank by more than 10 per cent during the first half of the 1990s with the outflow of labour from agriculture exceeding 20 per cent in Germany and Portugal. In contrast, the use of other inputs, including machinery, fertilisers, agrochemicals and water has increased significantly, at least until recently.

Table 2 Number of Livestock in the European Union by Member State in 1997 (x 1,000)

Unit: 1,000 head

member state	cattle	sheep	pigs	chickens
Belgium/Luxembourg	3,284	155	7,313	43,000
Denmark	2,030	170	11,100	19,224
Germany	15,760	2,324	24,283	102,731
Greece	542	9,244	904	28,500
Spain	5,914	23,981	19,269	126,000
France	20,664	10,463	14,976	231,489
Ireland	6,757	5,391	1,665	11,491
Italy	7,240	10,920	8,090	138,000
Netherlands	4,366	1,674	14,253	93,106
Austria	2,198	384	3,680	13,950
Portugal	1,285	6,300	2,365	27,000
Finland	1,150	103	1,394	5,230
Sweden	1,784	470	2,338	11,000
United Kingdom	11,609	42,559	7,992	130,939
EUR 15	84,583	114,138	119,621	981,660

Source: FAO.

Inorganic fertiliser consumption is high relative to other parts of the world but in most countries peaked during the second half of the 1980s, and has fallen or stabilised since then. A reduction of almost 10 per cent occurred in the EU between 1985 and 1990, and it fell by a further 5 per cent between 1990 and 1995 (Brouwer and Lowe, 1998). It is expected to fall again in the future, despite increasing in some countries recently. The average application of nitrogen from fertilisers is 74 kg per hectare of

utilised agricultural area and ranges across Member States from less than 40 kg/ha in Greece, Portugal and Austria to well over 100 kg/ha in Belgium/Luxembourg, Denmark, Germany and the Netherlands. A range of application levels for different crops are shown in Table 3.

Table 3 Nitrogen Application by Member State in 1997/98

Unit: kg N/ha

member state	grassland (fertilised)	wheat	permanent crops fruit, vineyards)	agricultural area in use
Belgium/Luxembourg	148	155	50	115
Denmark	180	133	n.a.	107
France	74	155	35	86
Germany	92	149	35	109
Greece	n.a.	84	53	38
Ireland	113	160	n.a.	88
Italy	15	95	70	47
Netherlands	254	185	60	184
Portugal	42	80	48	32
Spain	39	89	49	48
United Kingdom	117	187	50	88
Austria	33	115	34	38
Finland	117	85	40	88
Sweden	75	110	n.a.	80
EUR-15	93	135	53	74

Source: European Fertiliser Manufacturers Association (EFMA).

Pesticide use in the EU is also high, reaching a total of around 300 million kg of active ingredients in 1996. Pesticide sales fell by 13 per cent during the first half of the 1990s, mainly as a result of the introduction of new compounds requiring lower

dosages, farm management changes and tighter legislation, including targeted pesticide reduction programmes in Scandinavia and elsewhere. Pesticide consumption figures fluctuate annually and increase in some years but the expectation is for a further fall, partly driven by technical change, and growing environmental restrictions. There is a small but expanding organic sector in most EU countries and the use of 'integrated' forms of production is also increasing. Several countries have set targets for the growth of organic production over the next decade or so.

III. Linkages Between Agriculture and Environment

3.1 Interactions between Agriculture and Environment

The relationship between agriculture and the environment is complex, giving rise to both beneficial and benign effects as well as harmful ones. (See OECD, 1997 for an investigation of issues and policies related to the environmental effects of agriculture, and CEC, 1999a which highlights the available statistical information on agriculture and the environment in the EU). Interactions between agriculture and the environment can be classified according to the following themes (Brouwer and Lowe, 1998):

- Soil quality (in terms of contamination, erosion, desertification, nutrient supply, organic content, moisture balance, and compaction of soils due to the use of heavy machinery). Changes in land use practices - such as deforestation, the removal of hedgerows, overgrazing, neglect of soil conservation methods, the farming of uncultivated land - can damage soils. Soil erosion, often linked to changing agricultural practices, is one of the most severe rural environmental problems in Mediterranean countries. Some 115 million hectares are estimated to suffer from

water erosion, and 42 million from wind erosion. The application of livestock manure in most cases improves soil quality, but excessive levels may saturate and degrade soils as well as cause water pollution.

- Water quality and water quantity (leaching of nutrients and pesticides, water extraction and drainage). Contamination of both ground and surface waters caused by high levels of manure and inorganic fertiliser use is a serious problem in some parts of Europe, particularly where there are concentrations of intensive livestock production or large areas of specialised crop production. Nitrate and phosphate loading and the run-off of livestock wastes can cause significant water pollution problems. The excessive use of pesticides poses a widespread threat to the environment. High levels of pesticides in water are associated mainly with areas of intensive arable crops and horticulture. Water quantity problems arise in regions where water consumption exceeds critical levels in relation to the available water resources. A growing area of farmland in Europe is irrigated, and agriculture is the single most significant user of water in the Mediterranean countries (for example, accounting for over 80 per cent of total national water consumption in Spain). Over-abstraction causes the water table to lower, leading to the drying out of wetland areas and, in coastal regions, the ingress of brackish water and the salinisation of groundwaters.
- Air quality (emissions of ammonia and greenhouse gases). Emissions of ammonia contribute to acidification of soils and water, and agriculture is responsible for around 95% of the total. Volatilisation from livestock excretions is the major source of this type of pollution. Agriculture is responsible for about 11 per cent of total greenhouse gas emissions in the EU but is the principal source of methane (accounting for 41 per cent of EU emissions, mainly from enteric fermentation in cattle) and nitrous oxide (accounting for 51 per cent of EU emissions, mainly from

the incomplete breakdown of nitrates in manure management and soil fertilisation) (European Commission, 2001).

- Biodiversity (i.e. biological diversity, including genetic, species and ecosystem diversity). The biodiversity of much of the EU is found on, or adjacent to, farmland and is considerably affected by agricultural management and practices. Overall, for example, agricultural habitats support the largest number of bird species of any category of habitat in Europe, including the largest number of threatened species (Tucker and Heath, 1994). The major threat to this biodiversity is the intensification of agriculture which has led to widespread impoverishment of habitats and reduction in species. However, about two fifths of the EU's agricultural area remains under low intensity systems - mainly either grazing land under various systems of livestock management or permanent crops (olive trees, vines and fruit and nut trees) under traditional management. They support semi-natural habitats and wildlife species of considerable conservation importance, but may face the threat of abandonment or of intensification. In Spain alone there are more than ten million hectares of farmland of high nature value (Beaufoy *et al*., 1994).
- Landscape (including preservation of landscapes by farming systems with high nature value). Marginalisation of land used agriculturally, by which certain farmland areas cease to be viable, can lead to the abandonment or neglect of traditionally farmed landscapes. On the other hand, intensification of agriculture may lead to the loss of important landscape features, such as hedges and ponds, the enlargement of fields and the replacement of traditional farm buildings with industrial structures.

3.2 Policy Models of Agriculture and the Environment

Two separate and relatively simple models of the relationship between agriculture

and the environment have informed the development of policy:

- the 'impact' model, where environmental impacts are directly associated with agricultural activities, especially input use (e.g. more fertiliser use leading to more pollution, or headage payments potentially stimulating overstocking). The model portrays an agriculture operating largely in opposition to the environment. Therefore a reduction in the intensity of production will normally lead to an improvement in environmental quality. It follows that policies to improve the environment should restrict agricultural activity.
- the 'public goods' model, where environmental attributes arise as joint products from farming (e.g. the pastoral landscapes maintained by grazing systems, or the management of hedgerows that provide a habitat for wildlife). The model is premised on agricultural systems or farming practices that have co-evolved with the environment, often over substantial periods of time, to the extent that there is a close interrelationship between the valued characteristics of the environment and certain features of the farming system. The 'public goods' model therefore suggests a more complex and indeterminate relationship with production: it assumes that different levels of intensity will lead to different mixes of environmental quality. The implications are less clear cut, but often are taken to imply that policy should support agricultural systems, especially where the major environmental threat arises from a decline or abandonment in agricultural uses.

While the 'impact' model tends to be used in assessments of more intensive production systems and such non-market effects as pollution and soil erosion, the 'public goods' model tends to focus on more extensive systems and on such non-market effects as management of landscape and wildlife habitat. The two though are not necessarily incompatible but may be complementary in so far as they highlight different facets of the relationship between agriculture and the environment. In most

contexts, indeed, there can be elements of both. For example, in intensive arable areas, the management of field boundaries (such as hedges, ditches and field margins) is more appropriately considered from the perspective of the ‘public goods’ model: properly done, it may yield such benefits as reduced erosion, diminished agricultural run-off, wildlife conservation and landscape management. On the other hand, in extensive systems overgrazing of fragile environments (such as on thin, infertile soils) exemplifies the ‘impact’ model.

Changes in agricultural technology or broader farming systems, perhaps induced by shifts in policy or prices, may entail alterations in the underlying relationship between agriculture and the environment and affect the relative relevance of the two analytical models. For example, overgrazing of moorland by sheep would accord with the ‘impact’ model: a reduction in the level of bought-in feed might be assumed to lead to more extensive and less damaging grazing. But if there were also a significant reduction in labour input, such farming systems could go over to a low level of management such as ‘ranching’, with consequent environmental losses arising from both under and over grazing. The lack of incentive to maintain environmentally appropriate practices would thus accord with the ‘public goods’ model.

It may well be then that, starting from a relatively high level of agricultural support and intensive production, a decline in support will first bring about environmental enhancement, but beyond some point, further reduction may lead to environmental decline as farmers abandon unprofitable marginal land. The environmental consequences may range from invasion of undesirable scrub species (in temperate zones) to desertification (in the Mediterranean) to loss of flood and erosion mitigation (in hilly and mountainous areas). The occurrence of such system changes (as well as more obvious movements up or down a spectrum of intensity of inputs) underlines the coarse and unpredictable impacts of such macro interventions as price

adjustments; and points to the need specifically to maintain or establish desired farming systems or practices, in order to achieve environmental objectives.

The complexity, potential ambivalence and local variability of the relationship between agriculture and the environment help explain the multiplicity of varied measures that states typically deploy to tackle agri-environmental problems, including persuasion, incentives, penalties and controls. The choice of measures depends on how the problem is defined, the physical and socio-political context and the underlying model of agriculture and the environment. The two models indeed seem to point to different strategic responses. The 'impact' model emphasises a combination of market mechanisms (including cuts in supported prices or production subsidies, or the imposition of input taxes) and controls over farming practices to tackle the impacts, to achieve efficient, sustainable agriculture. In contrast, the 'public goods' model emphasises a combination of market mechanisms, protective environmental designations and incentives to support conservation-oriented practices.

3.3 Differing Cultural Perspectives

The characterisation of agri-environmental problems (and hence the choice of measures to address them) is not entirely determined objectively, but is the subject of cultural and policy traditions. Put simply, some policy sectors, interest groups and national cultures are inclined to see farmers as custodians of the rural environment; and others are inclined to see agriculture as intrinsically exploitative of the environment.

At the broadest international level one can distinguish between New World and Old World perspectives, and these have shaped the way the rural environment has been treated in world trade debates (Hodge, 2000). On the one hand, New World commentators and trade negotiators typically emphasise the 'impact' model and stress the synergy of reduced agricultural support and environmental improvement (Abler and

Shortle, 1992; Anderson, 1992; Zilberman *et al*., 1997). On the other hand, Old World commentators and negotiators are far more likely to emphasise the 'public goods' model and argue that the reduction of agriculture to areas competitive at world prices would lead to a significant loss of environmental benefits (Buckwell, 1989; Russell, 1993; Trail, 1988). These different perspectives are rooted in history and geography.

For Old World (or settled) societies, typified by western and central Europe, industrialisation and modern state formation in the 19th and early 20th centuries generally coincided with large scale urbanisation. Different classes were brought into close proximity in the industrial cities. In constructing or reinterpreting national identities, common reference points were sought in order to transcend class conflicts and bind different social groups together. Nation building therefore stressed people's common rural roots and not infrequently played upon notions, however fanciful, of a cohesive, pre-industrial, agrarian world.

Nation building in New World (or settler) societies had other challenges to face - namely how to bind together immigrant groups from disparate religious, social, ethnic and national backgrounds. Such people typically had forsaken their 'Old World' roots. Amongst the foces binding them together was a sense of creating a new life and a new society. Settler societies therefore were disposed to emphasise the role of the frontier or the outback as a distinctive formative and unifying experience. This established the ideal of the wilderness as a place of struggle and renewal out of which common purposes and values were forged through the subjugation of nature. Simplistic though this was - not least with regard to the presence of native people - it engrained a more polarised view of land use.

In wrapping nature and the rural environment into national identities at the time of modern state formation, we can thus see a crucial distinction between the traditional

rural and agrarian ideal of settled societies with its emphasis on continuity, history, rusticity and common roots; and the wilderness ideal of settler societies with its emphasis on breaking with the past, renewal, the conquest of nature and a common destiny.

New World countries, usually with relatively low population densities, typically have a rather segregated physical geography related to 19th and 20th century land settlement. Typically extensive areas are given over to export-oriented commodity agriculture (the 'Farm Belt', the Pampas, the Prairies, etc.); and separate large-scale areas more specifically reserved for their environmental and ecological functions (wilderness areas, National Parks, etc.). From this perspective, the European view of the countryside as a cultural landscape and a lived-in rural environment additionally acting as an amenity of everyday life for the (non-agricultural) majority of the population is an alien notion. The European view reflects their generally higher population densities and more interwoven pattern of rural and more urban land uses. Rural areas are rarely exclusively agricultural zones, although profoundly shaped by farming over time, and the contemporary focus on their role of "living spaces" has strong historical roots.

Indeed, for centuries, Europe has been distinguished by cultural landscapes created by farming and woodland management practices. There is evidence of farming activity in both southern and northern Europe from the late Neolithic period. By the late Roman Empire a large proportion of the land area in France, Germany, the Iberian Peninsula, Italy and Greece had been converted to agricultural use. Subsequently, the area of natural forests and wilderness was reduced to a small remnant, in marked contrast to the situation still pertaining across the New World.

Until the middle of the twentieth century there was relatively little conflict between agricultural and environmental objectives in Europe other than the large scale

soil erosion which has occurred particularly in parts of the Mediterranean. Subsequently, the processes of intensification and industrialisation have created a range of pressures now familiar in most countries. At the same time, as societies have become more affluent and mobile, new non-productive uses are emerging for rural areas and the rural environment is increasingly valued for its own sake as well as for the recreational opportunities it provides.

Until the 1970s, the dominant population trend across Europe was urbanisation - the concentration of populations in larger urban centres, driven by the concentration of employment there. The rural concomitant of this trend was rural depopulation, and particularly the loss of younger and more economically active people. This was partly a result of the 'pull' of growing urban economies, but also the produce of technological changes allowing agriculture to shed labour. Since the 1970s, the overall pattern has become more complex. Depopulation is still the dominant trend in most of the more geographically peripheral regions. In contrast, other rural areas are experiencing population growth, largely through urban out-migration. Some accessible parts of rural Europe, particularly those closer to larger urban centres, have experienced counterurbanisation as more affluent people choose to move from towns and cities into rural areas, either to commute to work, to retire, or to work in new or growing business sectors in the countryside.

Traditionally rural areas have been seen as zones of production and places of work. Increasingly, though, they have come to be appreciated as places to live in and as sites for leisure. This transition depends significantly upon levels of affluence and the spread of post-materialist values in society. As people move beyond concerns with material security and embrace quality of life issues they place increasing value on the opportunities rural areas provide for living space, recreation, the enjoyment of amenity and wildlife, and a wholesome and pleasant environment. These tendencies

are most marked in the most advanced economic regions of the EU which have large, middle-class commuter belts, but also in attractive peripheral areas which have developed increasingly important socio-economic functions relating to tourism, second homes, retirement and nature protection.

3.4 Development of Policy for Agriculture and the Environment

The two models of the relationship between agriculture and the environment have influenced policy in different contexts. The pressures for price liberalisation that shaped the 1992 CAP reform were informed primarily by the 'impact' model. This echoed the dominant perspective on the environmental problems of modern agriculture in the leading liberalising countries, such as Australia and the USA. It also reflected the judgement of European economists and many environmentalists that the CAP's high and protected prices encouraged the over-use and inefficient use of inputs leading to problems of pollution and over-intensification (see, e.g. Bowers and Cheshire, 1983). As the environment Directorate-General of the European Commission (then DGXI) argued:

> The integration of environmental considerations into agriculture should be relatively easy …because the necessity to reduce over production corresponds to the environmental objective of reduced intensity of land use (DGXI, 1994, p.27).

A similar outlook informed the extension of EU environmental legislation and the polluter pays principle to cover various agricultural activities seen to pose unacceptable damage and to be in need of restraint.

Within each policy field, though, the 'public goods' model has also gathered some currency. The agri-environment Regulation, an important elementof the 1992 reform of the CAP, embodied this model. There has also been a growing appreciation in environmental policy circles of the positive role that farming plays in the management

of the countryside (Beaufoy, Baldock, and Clark, 1994). Indeed, since the late 1980s, environmental policy makers have increasingly looked to the agricultural sector, not only as a source of environmental pressures, but also as a potential mine of opportunities for achieving policy change and redirecting resources towards appropriate management of the rural environment. The policy measures pursued are hybrid ones that go beyond the classic options of price reform and regulation, including agri-environmental incentive payments and environmental cross-compliance. Below we examine each of these policy strands in turn.

3.5 Price Liberalisation and the Environment in the MacSharry (1992) and Agenda 2000 Reforms of the CAP

Agriculture within the European Union (EU) is covered by a supranational policy framework – the Common Agricultural Policy. The Treaty of Rome (1957), which established what is now the EU, laid down the foundations of the CAP, but did not mention the environment at all. The priority at the time was to increase agricultural productivity; protection of the rural environment was not a concern. The extensive modernisation of European agriculture thus took place with little regard for the environmental consequences. Increasingly, though, the CAP attracted criticism for its role in driving changes in agricultural land use and farming practices that were detrimental to the countryside.

The CAP was subject to a major reform in 1992 – the so-called MacSharry reform, named after the then European Commissioner for Agriculture, Ray MacSharry – and for the first time environmental protection was acknowledged as an objective of the CAP. Agriculture had come under gathering pressures in the preceding years to improve its environmental performance.

The 1992 CAP reform was mainly aimed at restoring market balance and

improving the competitiveness of the main arable and livestock sectors, through controlling output and lowering of prices. In the early 1980s, market and price policies were the main instruments to pursue the objectives of the CAP of increasing agricultural productivity and seeking a fair standard of living for the farming community. Limits on production were a feature of few CAP regimes, one exception being sugar where there were quotas on supported production.

In the 1980s the potentially unrestrained increase of agricultural production came to an end with the introduction of dairy quotas and the 'stabilisation scheme' for cereals. The level of regulation, especially for arable crops, increased substantially as a result of the 1992 reform. This was achieved mainly by setting limitations on rights to support payments in the livestock and arable sectors and introducing quasi-compulsory set aside that obliged most cereal farmers to withdraw a proportion of their land from production. In addition, reductions were introduced in guaranteed output prices. For this, farmers were compensated: in the arable sector by area based direct payments; and in the livestock sector by increases in headage payment rates. Eligibility for this aid was restricted, to the area normally used for arable crops before the reform and limits on the total number of sheep and beef cattle on which claims could be made. There were also new limits on the number of livestock per hectare on which subsidy could be claimed - primarily to contain the growth of production and limit expenditure.

The main objectives of the 1992 reform were to control output, introduce a measure of "decoupling" of farm supports from production (making the CAP more acceptable in the GATT negotiations) and improve market balance. Nonetheless, it was expected that there would be indirect environmental benefits and there were also efforts to integrate some environmental requirements into the CAP. Thus it was anticipated that the changes in market and price supports should in principle lead to less intensive production methods, and it was anticipated that this would have indirect

environmental benefits. In particular the reduction in prices was expected to lead to a less intensive use of pesticides and nutrients in the cereals sector and a reduction of emissions (methane, ammonia, nitrate, animal wastes) from livestock farming. Stocking density limits on the payment of beef premia were likewise expected by some to encourage extensive production methods. For the first time national governments were permitted to impose conditions on beef and sheep premia in order to protect the environment. In the arable sector, quasi-compulsory set-aside became a key means of production control and was seen by the Commission to be potentially beneficial for the environment through alleviating the pressure exerted by farming activities. The EU rules specifying the set-aside scheme included provisions regarding the maintenance and use of the land set-aside in order to protect the environment.

The MacSharry reform was clearly motivated by the need to restrain output of certain key commodities, to contain the rising costs of the CAP and to allow the EU to reach an accommodation with the United States in the GATT negotiations in which agricultural policy figured prominently. By changing the balance of the CAP so as to reduce the role of price support and provide farmers with a larger proportion of their income through direct payments, some of the pressures for continued expansion were curbed. At the same time, a new debate about the justification for compensation payments was inevitable. With transfers from the state to the farming community now more explicit and subject to international as well as domestic scrutiny, the relevance of environmental concerns to the underlying legitimacy of the policy became more apparent.

It would be wrong, however, to see in this and subsequent policy initiatives the triumph of environmental concerns alone. Instead, environmental arguments have coincided with other powerful arguments for agricultural policy reform and together these have induced notable changes. The strain placed on the already overstretched

budgets by the accession of the southern European states, the mounting costs and public scandal of burgeoning agricultural surpluses, and rising international opposition to the dumping of surpluses on world markets, have demanded consideration of means of curbing overproduction and the public costs of farming supports. Thus, some agricultural policy makers have responded to environmental concerns, not necessarily through any deep convictions, but because of a perceived coincidence between the aims of environmental improvement and the need to reduce agricultural output, thereby contributing to the alleviation of surplus and budgetary problems. At the same time, in northern Europe farming leaders, in a context of chronic oversupply of staple products and falling farm incomes, have begun to look to the provision by farmers of environmental 'products', in order to underpin or renew their claims for public support.

In the Commission's proposals for the package of CAP reforms agreed in 1992 the first objective of the CAP was thus reshaped as follows: “Sufficient numbers of farmers must be kept on the land. There is no other way to preserve the natural environment, traditional landscapes and a model of agriculture based on the family farm as favoured by the society generally” (European Commission, 1991, pp. 9-10).

Expectations that the 1992 market and price reforms would significantly alleviate pressures on the environment through a pronounced scale back in intensive production have not been fulfilled. Overall the usage of agro-chemicals has not been greatly affected, as the European Commission itself has conceded (European Commission, 1997b). In part this has been due to the unexpectedly high level of world cereal prices which followed the reform. Obligatory set-aside was another production-control measure that was expected to be environmentally beneficial by diverting land out of production. Undoubtedly, it can have environmental benefits but this depends largely upon how it is managed. Whereas set-aside managed for conservation objectives can deliver a wide range of benefits (such as improved biodiversity, habitat restoration and

reduced water pollution), its management for agronomic or economic expediency can be neutral or environmentally damaging (Firbank, 1997). Regulation 2293/92 required Member States to “apply appropriate measures which correspond to the specific situation of the land set aside so as to ensure the protection of the environment” (Article 10). Potential benefits, though, have been reduced by the lowering of the set-aside obligation (from 15% in 1993/4 to 5% in 1998/9), by the failure of some Member States to establish rules for the appropriate management of set-aside, and by revisions to the regulations that have increased the scope for non-food production (e.g. industrial oilseeds) on set-aside land.

Turning to the reforms in the livestock sector, there were hopes that the new stocking limits applying principally to the increased headage payments for beef animals would provide some impetus towards extensification. A maximum stocking density of 2 Livestock Units (LUs) per hectare was applied to the basic beef premia, with an additional extensification premium available for those farms with densities below 1.4 LUs/ha. However, these limits applied only to the number of animals for which premia were claimed and not to the actual number on the holding. In any case, small producers were exempt from the limits. For many other farms the stocking rates were too high to bite. In practice, therefore, the measures have had little effect in encouraging the extensification of production. The limits of 2 and 1.4 LUs/ha have also been critisised for not reflecting the wide variation in carrying capacity of grazing land and for being set too high for environmentally beneficial management.

The 1992 reforms undoubtedly created a more helpful pattern of agricultural policy intervention from an environmental perspective even though the immediate results fall short of some of the more exuberant claims. The introduction of a requirement on all Member States to operate agri-environment schemes was particularly significant, as discussed below.

Between 1997 and 1999, the European Union engaged in another round of reform of the Common Agricultural Policy. This was part of the broader initiative known as Agenda 2000 which sought to establish the overall budget for the EU for the period 2000-2006. Additional changes to the CAP were seen to be necessary to prepare for the coming enlargement of the EU and for the reopening of world trade negotiations on agriculture. There was also concern within the European Commission to respond to the broadening public demands on agriculture and the countryside. Political agreement on the Agenda 2000 reforms was achieved in March 1999 after the direct intervention of heads of state. The changes made to the CAP are significantly less ambitious than those the Commission had earlier proposed and many are to be revisited in 2002/2003. The key changes continue in the direction set by the MacSharry reforms of 1992, with price cuts linked to increases in direct compensatory payments. The main commodity sectors covered were arable crops, beef and wine (with dairy reform being put off until 2005). Rural development (including agri-environment support) was elevated to the status of the "second pillar" of the CAP, thereby altering the architecture but without significant growth in the funds available, which are still around 10 per cent of the total.

Agenda 2000 proved to be only a very partial reform of the CAP which arguably failed to meet its main economic and political objectives. Because the reform does not reduce the overall level of subsidies and payments to the agricultural sector and does not decouple compensation payments from production on a more significant scale, it is likely to be subject to fierce challenge in the coming WTO round when the EU will face strong pressures to further liberalise policy and especially to reduce area payments to cereal producers, currently classified within the WTO "Blue Box".

From an environmental and countryside perspective, the Agenda 2000 results are disappointing because they:

- prolong many production subsides which continue to encourage intensification or

have other damaging consequences;

- postpone reform of the EU dairy regime which has been associated with intensive production, therefore contributing to nitrate problems and farm waste pollution;
- make insufficient progress in transferring CAP funds from the production related regimes to the “second pillar” of the policy; and
- leave unreformed the regimes for many Mediterranean products and for sheep meat.

3.6 Environmental Regulation of Agriculture

The development of EU environmental policy has gradually impinged upon agriculture in ways which have increasingly raised questions concerning the interactions between agricultural and environmental policies. For example, the Drinking Water Directive (80/778), proposed in 1975 and finally agreed in 1980, was intended to standardise water quality norms across the Member States in order to protect human health. Sixty-two standards (or ‘parameters’) for different substances were laid down, along with guidelines for monitoring water quality. The implementation of the Directive over a number of years revealed previously unpublicised contamination of drinking water supplies in various parts of Europe, including from agricultural pesticides and nitrates. This widespread evidence of agricultural pollution and the rising costs of remedial action triggered a second round of environmental legislation to attempt to tackle the problems at source. The Nitrates Directive (91/676), intended to alleviate major sources of water contamination by nitrates, introduced a range of measures designed to reduce leaching and run-off from farmland. There has been no parallel EU measure to curb pollution from pesticides but there are limits on pesticide residues in food specified in EU Regulations. Over time, responsibility for the authorisation of pesticides is being transferred from national to the EU level. Under Directive 91/414 on the registration of plant protection products,

the Drinking Water Directive standard for pesticide concentrations was introduced as an important criterion in the 'uniform principles' at the heart of the EU authorisation process.

The other EU environmental measures of particular relevance to agriculture include the Environmental Assessment Directive, the Birds Directive and the Habitats Directive. While these have not impinged directly on agricultural policy to any large degree, they represent an increasing body of environmental legislation influencing agricultural management.

Several of the main EU Directives affecting the agricultural environment are mired in implementation difficulties. Many of these stem from the opposition of agriculture ministries and of farming groups to possible restrictions on farming practices, and the lack of resources to compensate farmers for the costs involved. In addition the costs and inconvenience of monitoring and enforcing measures applying to large numbers of small farming operations have deterred many national administrations from pursuing a legislative approach of the kind well established in industrial pollution control. The difficulties in establishing and implementing a framework of environmental regulation for agriculture have encouraged environmental policy makers to turn their attention to the reform of agricultural policy, firstly to reduce some of the pressures for intensification on the environment but, secondly and increasingly, to inject environmental requirements or objectives into farm support measures.

3.7 Environmental Standards and Cross-Compliance

In parallel to environmental legislation there have been some advances in integrating environmental concerns into the different commodity regimes of the CAP. Obligations on land management attached to the set-aside regime, discussed above, are one example. In 1992, for the first time, national governments were permitted to attach

environmental conditions to the direct payments which farmers are eligible for in the sheep and beef cattle sectors. The UK was the only Member State initially to take up this option, with the aim of preventing over grazing. This occurs in some areas partly as a result of the incentives which farmers have under the CAP to keep large numbers of stock eligible for headage payments.

This proved a precedent in that the 1999 CAP reforms included a new measure which required Member States to consider the nature and extent of environmental problems associated with particular agricultural sectors and to take appropriate action. Where farmers receive direct support, Member States are under a general obligation to take "the environmental measures they consider to be appropriate in view of the situation of the agricultural land use or the production concerned and which reflect the potential environmental effects". Member States have considerable latitude in deciding what is appropriate and may choose from one of the following measures:

- support for agri-environmental schemes;
- general mandatory environmental requirements;
- specific environmental requirements as a condition for direct payments.

The third action explicitly permitted the attachment of environmental conditions to direct payments. More generally known as environmental “cross-compliance”, this has been adapted from a rather different approach utilised in the United States. Member States may also decide on proportionate penalties to apply for environmental infringements involving, where appropriate, the reduction or even the cancellation of direct payments to errant farmers.

Under Agenda 2000, action by Member States is no longer optional as it was for sheep and beef premia under the MacSharry reform. There is now a formal obligation on them to specify appropriate environmental measures. Moreover, they must do so in relation to all sectors (not just livestock) that benefit from direct payments to farmers.

Potentially, this undoubtedly represents a major extension, across sectors and countries, of the principle of attaching environment conditions to farm payments. Indeed, where there is the will, there is now the scope to take a comprehensive approach to specifying environmental requirements for supported agricultural sectors. In principle, this should involve identifying the variety of ways in which supported farm production can damage the environment and the combination of regulations, cross-compliance and incentives to prevent it.

Member States, though, are left with considerable discretion over how to proceed. In some respects, this is quite appropriate as the environmental impact of agricultural production vary considerably by farming system and region. However, within the discretion ceded to them, it would seem quite possible for Member States to adopt, if they choose, a rather formularistic and cursory stance to their responsibilities. The way is certainly open for divergent approaches in terms of both the degree and the nature of the action taken. The very limited response to the cross-compliance option under the MacSharry reforms does not indicate enthusiasm for the measure within Member States. Without a stronger, more co-ordinated and more accountable common framework for action, some states are likely to succumb to lobbying aimed at blocking any effective steps towards environmental protection that might adversely affect the competitiveness of domestic producers.

3.8 Agri-environment Policy

Of the different initiatives to strengthen the environmental dimension of the CAP, perhaps the most important has been the introduction of agri-environment programmes partially funded from the CAP budget. These are mechanisms for providing farmers with an incentive for environmentally sensitive management, which may consist of maintaining existing practices or introducing new ones. In most cases farmers sign an

agreement to conform with specified rules over a number of years, typically five, in return for annual payments. Agreement may be standardised or relatively flexible, allowing greater adaptation to different local conditions.

Agri-environment programmes in their current form in Europe stem from two separate, but sometimes parallel, policy debates:

- a need to broaden agricultural policy beyond the traditional preoccupation with supporting production and productive investment and to begin to reward farmers for other ‘services’, notably management of the rural environment. This need stemmed both from internal pressures such as rising environmental consciousness and the increased emphasis on supply control from the 1980s onwards. External pressures came particularly from international trading partners; expressed most forcibly in the GATT negotiations. The accession of Sweden, Finland and Austria to the EU in 1995 gave further impetus to the implementation of policy, although it occurred after the policy instrument had been put in place.
- an environmental debate about the best means of ensuring appropriate management of land, particularly with regard to nature conservation or landscape objectives. In the post War years designation of protected areas, such as National or Regional Parks usually accompanied by controls on development and certain land use practices, was the lynchpin of nature conservation and landscape policies as applied to farmland. However, by the 1970s it was becoming clear that farmers could not be simply obliged to maintain practices which were essential for conservation, other than in a small number of key protected areas. Such practices might include late cutting of pasture, to protect nesting birds or encourage flowering plants for example. Elsewhere, it was becoming increasingly difficult to persuade farmers to maintain practices which were not in their own economic interest. Hence, the need arose to compensate farmers and other landowners for maintaining or reintroducing

environmentally sensitive practices. Many of the first examples of such payments were on wet grassland in northern Europe where there were growing economic incentives to intensify production, greatly reducing the environmental value of the land.

The first measure to require all Member States to adopt this approach was agri-environment Regulation, 2078/92. This was agreed as part of the package of CAP reforms approved by the Council in 1992. It is referred to as an 'accompanying measure' because it supplemented the major reforms in the CAP market regimes and was intended to help farmers to adjust to a new form of agricultural support, as well as benefiting the environment. Although some Member States had introduced agri-environment measures in the 1980s, these were on a relatively small scale and the great majority were in northern Europe.

The new Regulation was remarkable in that it created an obligation on all Member States to introduce agri-environment programmes within a relatively short period and made available a significant budget for this purpose. For the first time, such programmes could be reimbursed from the mainstream CAP budget (the so-called Guarantee Section, conventionally used for direct support of agricultural production). This eliminated important financial constraints which had held back the growth of these schemes in the past. All Member States were able to obtain reimbursement of 50 per cent of the costs of schemes and in 'Objective 1 regions', the least developed parts of the EU, including the new Länder in Germany, the rate was 75 per cent. The new Regulation also widened the range of possible schemes which could be applied by Member States. For example, it became possible to provide aid for farmers agreeing to manage abandoned land in an environmentally appropriate way, or to reduce agro-chemical inputs. It was no longer necessary to focus agri-environment schemes on specified 'environmentally sensitive areas' as it had been in earlier versions of the

Regulation.

Implementation of the Regulation began in 1993. It has proceeded far more rapidly in some Member States than others. Initially, many of the early programmes to be approved by the European Commission were in Member States where there were existing agri-environment programmes which could be adapted or extended to comply with the new EU framework. The programme in Bavaria was one of the first to obtain approval. Over time, all 15 Member States have put schemes into place, although this process was not completed until 1996. New schemes are still being submitted for approval by the European Commission and existing ones continue to be amended and refined although the Regulation 2078/92 was replaced by a new, simplified scheme, forming part of the "second pillar" of the CAP in 1999. The current Regulation 1257/99, continues the same approach but giving more flexibility to Member States and putting greater emphasis on the integration of different measures for rural development and much less on compensating farmers for reductions in conventional support.

Consequently, implementation since 1992 can be seen as a dynamic process reflecting the different priorities and preoccupations of national and regional authorities which have considerable scope for designing their own schemes within the broad framework of the Regulation. The large measure of 'subsidiarity' granted to Member States has been one of the key features of the Regulations, providing the opportunity to match schemes to local conditions. For example, the maintenance of hay meadows is an environmental priority in some areas but is irrelevant over large areas where they do not exist. This flexibility is important from an environmental perspective but it can be difficult to compare the wide variety of schemes that have emerged.

Member States have taken full advantage of the discretion available to them. The result is a wide variety of measures with a range of objectives and obligations on farmers, implemented at different geographical scales varying from the local to the

national. Only a minority of schemes and a small proportion of total expenditure have been focused on specific areas which are 'homogenous in terms of the environment and the countryside' as proposed in the original Regulation. Many schemes apply throughout an administrative area, such as the Länder in Germany. Exceptions include the 'environmentally sensitive areas' in the UK, Denmark and the Netherlands and schemes focused on national parks, Ramsar sites etc, in Spain for example.

The scale of uptake can be judged from one of the few overviews published by DG Agriculture, the Directorate-General of the European Commission responsible for agriculture (see Table 4). They reveal that almost 80 per cent of expenditure in the first five years of operation of the Regulation was in five Member States, Germany, France, Austria, Italy and Finland. About 45 per cent was in Austria and Germany alone. The distribution of national expenditure follows a similar pattern, with the leading five Member States accounting for 95 per cent of expenditure. In the case of Austria and Finland it is worth noting that the large scale of the national agri-environment programme in part reflects the special terms of the accession agreement between these countries and the EU, whereby latitude was made available for special programmes to help farmers adjust to the lower agricultural commodity prices ruling under the CAP.

The figures in Table 4 indicate that certain Member States have given a high priority to agri-environment schemes but they do not necessarily coincide with those parts of Europe where the areas of either greatest nature conservation value or greatest agricultural pressures on the environment are to be found. For example, there are very large areas of high nature value agricultural land in Spain and Greece but both the level of expenditure and the area of land enrolled have been considerably below the EU average. This reflects in part a lack of strong national traditions of explicit environmental management of agricultural land, as well as the difficulties in designing and running incentive schemes for small-scale, traditional farming systems. At the

other extreme, the level of incentives potentially on offer has been insufficient to aid a significant switch to less intensive forms of production in such countries as the Netherlands, Denmark and Belgium where agrochemical loadings are unacceptably high.

Table 4: Cumulative CAP and Member State Expenditure 1993-1997 on Programmes under the Agri-environment Regulation in All Member States*

member state	cumulative expenditure, 1993-97 (mECU)			national share of cumulative CAP expenditure 1993-97 (mECU)
	CAP	member state contribution	total expenditure	
Belgium	3	3	6	less than 1%
Denmark	19	19	38	less than 1%
Germany	918	376	1294	24
Greece	11	4	15	less than 1%
Spain	125	42	167	3
France	509	509	1018	13
Ireland	163	54	217	4
Italy	432	282	714	11
Netherlands	25	24	49	less than 1%
Luxembourg	4	4	9	less than 1%
Portugal	148	49	197	4
UK	98	94	192	3
Austria	806	746	1553	21
Finland	399	399	798	11
Sweden	126	126	252	3
EU-15	3787	2458	6244	

Source: Commission of the European Community, 1997.
*Figures for 1997 are estimated.

By mid 1997, a total of 1.35 million agreements had been made with farmers in the EU as a whole, covering an estimated 17 per cent of all holdings. The agreements covered about 22.3 million hectares of land, representing about 17 per cent of the utilised agricultural area. More than half of the land enrolled was in France and Germany, together accounting for about 12 million hectares. However, the highest

percentage of agricultural land in schemes under the Agri-environment Regulation was in Austria, Finland and Luxembourg, where more than 70 per cent of land was signed up. Since these figures were published, there has been a further growth in schemes, particularly in Italy, which now has one of the largest agri-environment schemes in the EU, concerned mainly with reducing pollution from pesticides and nutrients. The original imbalance in favour of northern Europe is gradually being reduced as implementation spreads in Mediterranean regions.

Whilst there is a wide variety of objectives for agri-environment schemes, there are four main groups, those concerned with:

the maintenance of low input farming systems, which are usually linked with environmentally sensitive practices. Most schemes concentrate on the maintenance of low intensity livestock farming, particularly beef cattle and sheep on grassland.

the reduction or control of pollution from agricultural land. Usually the main purpose is to reduce pressure on water resources.

the conservation of valued habitats and landscapes. Schemes are similar to some in the first group but more precisely directed and often limited to a geographical area or landscape type. Most schemes concentrate on trying to maintain appropriate management, usually based on traditional practices.

the promotion of organic or ‘ecological’ agriculture. Schemes are in place in every Member State to assist farmers to convert from conventional to organic production. Many, but not all, also provide continuing aid for those who remain in organic farming.

IV. The Next Stage

While good environmental management is at the heart of agri-environment measures, they also have an economic role. As the Commission points out, environmental ‘services’ can “improve the quality of life in the countryside and can

contribute to the diversification of economic activities, in particular through tourism. Such payments are also open for biomass and biofuels, provided that environmental protection is ensured". Agri-environment measures will continue to be an important element of the CAP in future.

Although the projected CAP funding available for agri-environment and other accompanying measures is only slightly higher than the current level of expenditure, there is little doubt about the strategic significance of the policy. It is the only obligatory measure within the "second pillar" and so must be implemented by all Member States. Over time, it is likely that more resources will be transferred away from market support into rural development and this process could have progressed considerably by the time that all the current Accession States become members of the Union from 2003/2004 onwards. Such a transition is a way of modernising agricultural policy in line with society's changing expectations and, at the same time, accommodating pressures from WTO to decouple support from production.

While agriculture contributes to a variety of social, cultural and environmental benefits on Europe, it is now established that payments for environmental 'services' represent a viable policy option, capable of considerable expansion over time. In Austria and Finland, a significant proportion of all CAP support is now channelled through agri-environment schemes. It will be interesting to see how far the group of Central and Eastern European accession countries now negotiating their own terms of entry with the EU will find that agri-environment schemes offer a potentially important element in their application of the CAP. If accession countries are not to be eligible for the sizeable, commodity-related direct payments available to EU farmers, as suggested in Agenda 2000, the significance of agri-environment and other rural development measures could be all the greater.

Within the interior of what often appears a monolithic policy machine, the CAP

contains a substantial range of different sectoral policy regimes, rural development initiatives and, more recently, environmental measures. Unlike in the United States there is no regular cycle of policy reform. Pressures for change accumulate as they did in 1992 and again in 1999, driven by external forces such as the GATT as well as internal concerns such as rising expenditure and excessive production of certain key commodities. Member States seek to maintain their own economic interests and share of the expenditure on agricultural support. However, they contribute a range of different cultural assumptions, socio-economic preferences and strategic perspectives to the evolution of the CAP. Whereas one group, including Denmark, Sweden, the UK and often the Netherlands favour a transition to greater liberalisation, others, including several southern European Member States prefer to defend the current model and strongly resist further concessions to trading partners in the international community.

The current negotiations within the WTO place the EU in a defensive position relative to the Cairns Group, many developing countries and the United States although less so than in the previous round of negotiations where the EU was less well prepared and the US position was more antagonistic. The defence of the CAP is a central part of the Union's overall negotiating strategy within the WTO but it is likely to progress considerably further in the direction of lower internal price levels, reduced or eliminated export subsidies and compensating increases in rural development and agri-environment measures. The latter could be targeted more effectively on clearly identified environmental and social needs.

The process of developing new policy instruments which are able to contribute to sustainable rural development whilst scaling back production related support is not unique to Europe. It is a dilemma in certain Asian countries as well. Over the next decade the EU's efforts to develop the new model of the CAP, promised in Agenda

2000, and to reach an accommodation with its international partners will be viewed with interest both internally and externally.

The very uncertain environmental consequences of the 1992 changes to CAP commodity supports reveal the limits of the ‘impact model’ of the relationship between agriculture and the environment. The environmental damage sustained under the CAP in recent decades will not necessarily be reversed by cutting farm prices in future. Continuing technological advances, socio-cultural changes in the farming community, the development of rural infrastructure and new farming styles all make an automatic return to ‘traditional’ landscapes or habitat features or low-input farming methods unlikely. Reducing output prices may lead to less intensive agriculture but this may not be of the kind which is required for environmental reasons and it may not occur in the right spatial location.

The environmental significance of recent CAP reforms is often exaggerated. Even in the relatively dispassionate explanation of the CAP and the environment produced by the European Commission in 1997 it is stated that “One of the central elements of the CAP reform was the encouragement of farmers to use less intensive farming methods, thereby reducing their impact on the environment and cutting the creation of unwanted surpluses” (European Commission, 1997). As we have seen, direct encouragement to use less intensive production methods was not a central hallmark of the reform and the full impact of reductions in institutional prices was rather different to that originally expected. While it is entirely legitimate to point to the potential environmental gains of a decoupling strategy this needs to be approached with due caution. Furthermore, opportunities were missed to amend the commodity regimes within the CAP in 1992 to provide more direct assistance for low intensity production. Further progress was made in 1999, for example by introducing the concept of environmental cross-compliance in a more prominent way but there

remains scope for substantial further amendment of the commodity regimes if the claims for environmental integration are to be justified.

By contrast, both the Commission and Member States have pursued the development of agri-environment programmes on a scale which would have been difficult to forecast prior to 1992. This has given substance to the "public goods" model within the CAP, reinforced in 1999 when the objectives of the revised Agri-environment Regulation were tightened and focussed clearly on the environment rather than farm incomes. As in 1992, the magnitude of change was exaggerated, with the European Commissioner for Agriculture emphasising the importance of rural development as the "second pillar" of the CAP while the budget for this critical element of European policy was tightly restricted.

In pursuing the integration of environmental objectives in agriculture, there is a requirement for a combination of effective basic regulation, more far reaching incorporation of environmental concerns into the CAP commodity regimes and the provision of adequate and well targeted incentives for providing environmental services. All three elements of this strategy have a central part to play and it is insufficient to rely on any one of them alone.

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整合環境目標於農業政策及經營之歐洲經驗回顧

Philip Lowe* and David Baldock**

本文回顧歐洲的農業生產型態之改變及其所造成之環境效果。文中指出形成農業與環境政策發展之模型，並探討這些模型與不同的文化觀點與干預策略之間的關聯。本文進而檢視各種為改進環境目標與農業整合策略之演進，這些策略包括價格支持之減除，正式的環境管制，農業環境誘因及環境相互承諾等。文中同時回顧了歐洲在尋求這些策略上的經驗，本文最後的結論是，有效的環境整合必需尋求這些策略的結合。

關鍵詞：影響模型、公共財模型、文化觀點、MacSharry 改革、環境相互承諾、農業環境政策

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