

# THE IMPACT OF THE COMMON AGRICULTURAL POLICY ON LAND USE IN EUROPE

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**Keywords:** The Common Agricultural Policy, CAP, land use change, price support mechanisms, rural development, agri-environmental measures, Agenda 2000

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## Summary

At over 50% of the surface area of the European Union, agriculture is its most important land use. Since the inception of the CAP at the Treaty of Rome in 1957, there has been a transformation of the agricultural industry. Successive reforms have introduced additional measures to modify the agricultural use of land.

CAP measures range from the support of producer prices to production controls such as quotas and set aside and specific measures for Less Favoured Areas to enable farming to continue where production conditions are more difficult. During the same period, however, there have been major technological changes. The discovery of chemicals, plant and animal breeding, and improvements in machinery has led to large increases in wheat and maize production. Consumer preferences have also changed: less red meat (grass to wheat), olive to sunflower oil, butter (grass) to margarine (rape and sunflower). Greater affluence has increased the cost of labor relative to machinery and this has led, as in other industries, to specialisation. Thus, we can only say with certainty that the CAP has affected land use by introducing set-aside, and encouraging oilseed rape and more recently afforestation.

The CAP has probably provided suitable conditions for intensification and specialization and thus, contributed to changes in cereals, maize and grassland. It may have maintained the *status quo* with respect to the continuation of upland and arid extensive grazing systems with direct support measures. What we cannot know is how these land uses would have changed in the absence of the CAP. Moreover, most major changes in European agricultural land have not occurred during the lifetime of the CAP; for such large-scale land use conversions, we are obliged to look further back in time. This does not mean, however, that future impacts of the CAP on land use will not be significant.

## 1. Introduction

At over 50% of the surface area of the European Union, agriculture is its most important land use. Agricultural policy, therefore, has the potential to affect large parts of the European territory as well as the rural communities who depend upon it. The European

“*model*” of agriculture has always been based on the belief in a common policy that provides the framework for the protection of farm incomes, but which also regulates production, trade and the processing of agricultural products. This policy framework, which accounts for nearly half of the European Union’s budget, is known as the *Common Agricultural Policy (CAP)*.

Since its inception at the Treaty of Rome in 1957 until the present, the CAP has been at the heart of European political integration. During this time there has been a transformation of post-war agriculture, resulting in a largely self-sufficient industry. The CAP, however, has generated scepticism from many quarters ranging from farming organisations to environmentalists and consumer groups. Blamed for wasteful overproduction and high costs to the European consumer, through both higher food prices and taxation to maintain intervention, the policy has undergone numerous reforms to its market mechanisms throughout its 40-year history.

Each reform to the CAP has attempted to adjust the ways in which the agricultural industry uses its key resource of land. There are many examples of this in practice, for example the support of producer prices and their strong influence on profitability, farmer land use decision-making, and production controls such as set aside, agri-environmental measures and rural development policies. All of these form part of the so-called “*second pillar*” of the CAP. As a consequence, the CAP is often put forward as being the principal driver of land use change in Europe.

Whilst there is strong evidence for this contention, we must not forget that there are many other “*global*” drivers of land use change that may have played an important role in shaping rural landscapes. It is probable, for example, that land use change would have occurred in the absence of the CAP, although it is difficult to say whether these changes would be similar or completely different than those we have observed over the past 40 years. The contention, therefore, that the CAP is the major driver of land use change may not be straightforward, and we will examine this issue further in the following article.

This article starts with a brief review of the history of the CAP. This review highlights the various market mechanisms that are at the core of the policy and includes the range of rural development and environmental protection measures that have signalled a shift in what was a strongly producer-based policy to one that increasingly recognises the role of agriculture in the wider context of social development and the quality of rural environments. The paper then describes the evidence for land use and management change in Europe, based on statistical information. This leads into a discussion of the potential contributions of CAP as well as non-CAP drivers to the land use change observations. It concludes by making some tentative statements about the relative contribution of the CAP to the evolution of European land use, and by asking how European land use may evolve in the future.

## **2. Brief History of the Common Agricultural Policy**

### **2.1. The Early Years**

The Common Agricultural policy (CAP) evolved from the needs of post-war Europe to become self-sufficient in food production, to secure (the stability of) food supplies and to protect rural communities and farm incomes. The policy was first established in 1957 by the Treaty of Rome, when the European Economic Community was created. Article 39 outlined the objectives of a “*common agricultural policy*”:

- To increase agricultural productivity through technical progress and rational development,
- To ensure a fair standard of living for the agricultural community,
- To stabilise markets,
- To assure the availability of supplies,
- To ensure that supplies reached consumers at reasonable prices.

The Stresa Conference of 1958 laid down the key principles that were to guide the policy: free trade between the Community Member States); priority for the Community’s agricultural products; and a common agricultural budget. However, it was not until 1962 that a common market organisation (CMO) was established for cereals.

The core of the CAP is a set of mechanisms (the CMOs), which attempt to control the markets for agricultural products within the European Union. These mechanisms are based on price support (whereby producer prices are maintained above world levels through intervention buying), *import levies* (that raise the price of imports to a *threshold price* above world prices, and an export subsidy (the “*refund*”) that compensates producers who sell at the world market price which are less than the European intervention price. In this way, European producer prices are always maintained at levels above the world market price. Figure 1 gives an example of this for wheat.

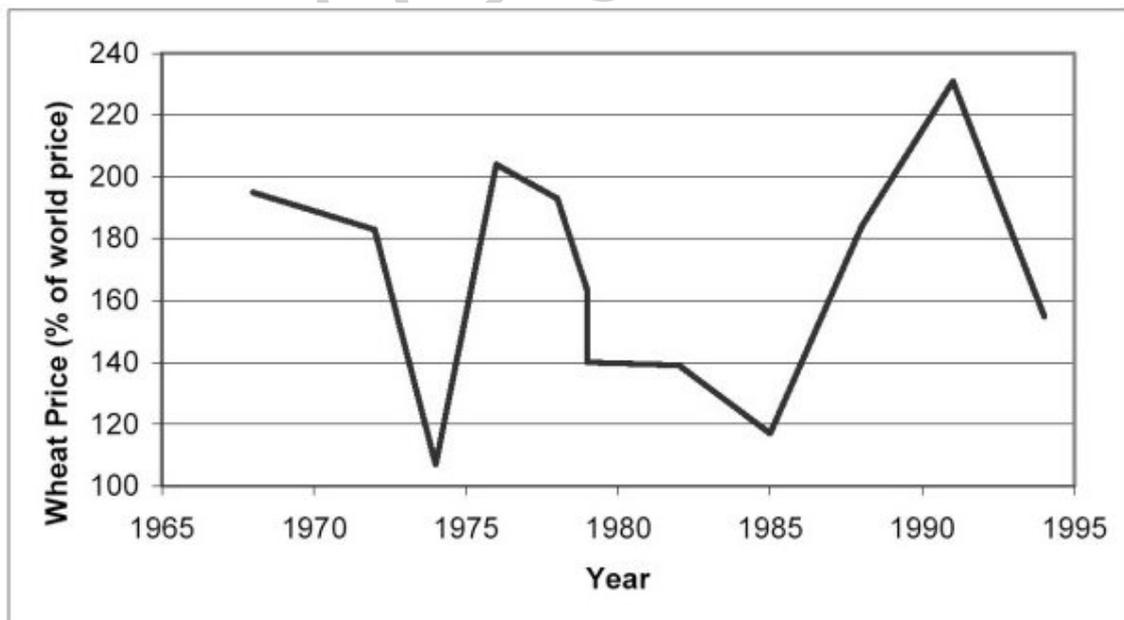


Figure 1: European wheat prices as a percentage of the world price (Source of data: Eurostat for the period 1968-80, and OECD for the period 1979-94).

The early years of the policy were a great success with agricultural output growing steadily from 1962 to 1972, prices for consumers remaining relatively low and stable and self-sufficiency being largely achieved by the original six Members. One policy objective, however – *the desire to protect rural living standards* – came to dominate the way the CAP was implemented.

Thus, guaranteed prices on products were set relatively high, encouraging both good and bad farmers to remain in the industry with the result of overproduction, mounting public stocks of agricultural products and a surge in agricultural spending. At a time when technological advances also fuelled the problem, it became clear that the market management policies were increasingly unable to meet the needs of Community agriculture, especially with respect to the social and economic environment of farms and the promotion of more diversified production.

## **2.2. Price Mechanism and Structural Reform during the 1970s**

During the 1970s, the first of many changes were made to the price support mechanisms of the CAP. These were based on modifications to the price policy and market intervention that sought to regulate output and control spending. At the same time, it was recognised that reforming the price support policies alone would not resolve the structural problems faced by the industry. The *Mansholt Memorandum* of 1968 and the Directives of 1972 and 1975 attempted to tackle structural reform by encouraging the creation of more viable farms by assisting the disappearance of small farms and their replacement by larger units. Various initiatives included training for farmers (Directive 72/161), financial assistance for the youngest farmers, and pensions for older farmers (Directive 72/160), investment in modernising farm holdings (Directive 72/159), and for the first time, a program to assist “*less-favoured areas*” (Directive 75/268).

## **2.3. Less Favoured Areas (LFAs)**

The introduction of direct aid and specific measures for Less Favoured Areas (LFAs) was proposed as a means of enabling farming to continue in areas where production conditions were more difficult. Its goals were a combination of economic, social and environmental reasons. Directive 75/268 (which is now integrated into Regulation 950/97) defined the concept and geographic extent of LFAs, establishing three distinct types:

- *Mountain and hill areas* (about 20% of the Utilised Agricultural Area, UAA), where altitude and slopes reduce the growing season and the scope of mechanisation;
- “*Simple*” LFAs (34% of the UAA), marked by poor soils and low agricultural incomes;
- “*Specific handicap*” LFAs (2% of the UAA), small areas with poor water supplies, periodic flooding, etc. where agricultural activity should be continued in order to maintain the countryside

LFAs benefit directly from specific measures set out in Regulation 2328/91: compensatory allowances per animal and/or per hectare and investment aid for farm modernisation or grazing improvement (for a minimum of three years on farms of at

least three ha). They also benefit indirectly from the favourable implementation of other measures (e.g. top-ups on sheep premiums or additional quotas) and the greater impact that other measures have in LFAs (e.g. agri-environmental measures and direct aid for extensive farming).

The proportion of the European UAA, classified as LFAs grew from 36% in 1975 to 55% in 1995, the areas varying considerably between member states (0% in Denmark, where the scheme is not yet applied and 98% in Luxembourg). According to the European Commission, the LFAs (at 55% of the UAA) include nearly one third of the cattle and dairy production and two thirds of the sheep in the EU.

## **2.4. Budgetary stabilisers during the 1980s**

Despite the reforms of the 1970s, the EC agricultural budget reached crisis proportions during the 1980s, resulting in the introduction of budgetary stabilisers such as “*Milk quotas*” in 1984 to limit both production and the cost of intervention, and “*Maximum Guarantee Quantities*” (MGQs) in the late 80s that allowed for the proportional reduction in support prices of subsequent years if actual production exceeded the MGQ.

## **2.5. The 1992 MacSharry Reforms**

Following production surpluses, EU budget crises, as well as international trade agreement pressures, it became clear that a more radical reform of the CAP was required. The 1992 MacSharry reforms sought to tackle these problems by lowering intervention prices, and replacing the resulting losses of farm income by direct area-based payments. At the same time, a range of further policies was introduced that addressed environmental protection, rural development and structural reform.

### **2.5.1. Arable Area Payments and Set Aside**

The area payments were conditional on a certain proportion of arable land on each farm (specifically cereals and oil crops) being set aside to reduce total production. The original 1992 set aside requirement was fixed at 15%, but this has changed over the years reducing to 5% in 1996/97, but returning to 10% at present. The original intention was for set aside land to be part of a rotation (to avoid the least productive land being set aside, and therefore affecting the aim of reducing production). From 1994, however, a non-rotational form of set aside (for a minimum of five years) was made available to farmers based on an additional 5% of land above the rotational requirement.

More recently, the distinction between rotational and non-rotational set aside has been abolished, being replaced with “obligatory” set aside that can be for a fixed location, or moved between fields each year. In addition to the basic obligation, voluntary set aside is also possible on land up to the maximum cropped area for which payments are being claimed. Set aside land can also be used for tree planting and non-food crops such as bio-fuels.

### **2.5.2. Livestock**

Prior to 1992, the livestock policies of the CAP had, as for arable crops, encouraged

increased production resulting in greater animal numbers. The MacSharry reforms sought to tackle this problem by reducing the intervention price for beef by 15%. As a result, premiums for cattle were increased to compensate for loss of income, provided farmers reduced stocking densities from 3.5 to 2 LU/ha from 1996 onwards. Additional payments were available for reductions to 1.4 LU/ha. On the whole, these measures encouraged extensive livestock production. The exception was in regions where extensive grazing was previously the norm and traditional stocking densities were already < 1 LU/ha, e.g. the Dehesa and Montado land use systems of Spain and Portugal. In these cases, stocking densities actually increased.

### 2.5.3. Agri-environmental Measures

Whilst the CAP had traditionally focused on market support and structural reform, the 1990s also witnessed an expansion in policies aimed at environmental protection. Regulation 2078/92 (Agri-environmental measures) is a general framework that was implemented by member states through zonal programs. Premiums are paid to farmers (based on loss of income) on a voluntary and contractual basis (minimum five years) for a number of different actions, including:

- Reducing the use of fertilisers and plant protection products or developing organic farming production methods;
- Changing to or maintaining extensive crop production, or converting arable land to extensive grassland;
- Reducing stocking rates (per ha) of sheep and cattle;
- Using farming practices that are compatible with the protection of the environment, countryside and landscapes;
- Maintaining abandoned agricultural land or woodlands for environmental protection;
- Establishing reserves, natural parks or hydrological protection systems by setting aside land for at least 20 years;
- Managing land for public access and leisure activities.

The regulation was implemented by the end of the 1995/96 growing season. Zonal programs were approved according to the level of compensation, the agricultural and rural characteristics of the area (abandonment, pollution, biodiversity), the impact of the program on the environment, and contributions to the reduction in production and market imbalances. Environmental priorities and implementation methods varied considerably between member states.

### 2.5.4. Afforestation

Whilst there is no common forestry policy, a number of measures have been introduced that affect the forestry sector and agricultural land. Regulation 1610/89, provided measures to promote forests in rural and less developed regions, with priority given to areas where forestry can help the economy, create jobs, encourage tourism and recreation, tackle erosion or protect soil and water resources. The *Community aid scheme for forestry measures in agriculture* (2080/92) aimed both to control agricultural production and contribute to long-term forest resources (including environmental

benefits such as CO<sub>2</sub> absorption). Financial aid is given (on a contractual basis) to cover the costs of afforestation, forest maintenance, income loss and investment to improve existing farm woodland (e.g. to reduce fire loss under Regulation 2158/92). The measures were expected to generate 700,000 ha of forests by 1997 and to contribute to the improvement of about 300,000 ha of existing woodland.

### 2.5.5. Organic Production

Regulation 2092/91 controls the production of “organic” agricultural produce. This sets out strict requirements, which must be met before agricultural products (whether produced within or outside of the EU) may be marketed as organic. The agri-environmental measures in Regulation 2078/92 encouraged conversion to, and maintenance of, organic farming by providing financial compensation to farmers for any losses incurred during conversion.

### 2.5.6. Nitrates Directive (91/676)

The Nitrates Directive has sought to reduce pollution of groundwater from diffuse agricultural sources, including the application of organic and inorganic fertilisers and their storage. The directive required member states to establish “codes of good agricultural practice”, and to designate “vulnerable zones” where land drainage may lead to pollution. The codes of good agricultural practice were mostly implemented on a voluntary basis, and on the whole not funded. The implementation of the *Nitrate Vulnerable Zones* (NVZs), however, included a number of compulsory measures:

- Bans on the use of fertilisers during certain periods;
- Limits on fertiliser applications (as a function of the characteristics of the NVZ);
- Limits on the application of livestock manure (no more than 170 kg N / ha);
- Conditions determining the amount of on-farm storage for livestock manure.

Some countries have designated their entire land areas as a NVZ, i.e. Denmark, the Netherlands and Luxembourg.

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### Biographical Sketches

**Mark Rounsevell** is professor of Geography in the Department of Geography at the University of Louvain, Louvain-la-Neuve, Belgium. Professor Rounsevell's research focuses on the effects of environmental and policy change on land use systems, particularly in rural and peri-urban areas. He is involved in several projects for the European Commission that develop modeling approaches for the assessment of land use change, including methodologies based both on optimization and multi-agent techniques. Such models are used to evaluate the impact of alternative future scenarios of climate and socio-economic change on the agricultural management of rural landscapes. A further area of interest is the influence of policy and agricultural management on greenhouse gas emissions from land-based sources, including the potential for carbon sequestration. He has contributed to the Intergovernmental Panel on Climate Change second and third assessment reports and the International LUCC project (Land Use and Land Cover Change).

**Eric Audsley** is Head of the Mathematics and Decision Systems Group at Silsoe Research Institute, UK. He has over 30 years experience of applying mathematical, operational research and systems modelling techniques to the analysis and optimisation of decisions concerning agricultural systems. One of the main areas he has developed is the application of linear programming to whole farm modelling in ways that allow complete flexibility of choice of cropping and machinery, constrained only by agronomic and physical factors, in determining long-term optimal profit. Models have been developed for arable, horticultural and grass farm systems. He has also developed a number of models to examine decision-making with uncertainty using probabilistic optimisation models such as dynamic programming. Recently the models have also been developed to calculate environmental emissions such as nitrates and pesticides as a function of the type and timing of operations, and to carry out multi-objective optimisation of whole farm systems.

**Diana Mortimer** is employed by the Joint Nature Conservation Committee, which is the national and international UK Government wildlife adviser. She is currently working on the implementation of the Water Framework Directive in the UK and the impacts of dynamism on the coastal zone for conservation management. Diana has worked for both government and non-governmental organizations examining the effects of agricultural policy on land use and land cover across Europe, with particular reference to impacts on nature conservation. Her PhD research at University College London examined the policy

networks associated with the development and implementation of agri-environment schemes in England. Other research has examined the impacts of climate change on agricultural land use in England and Wales.

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