CLIMATEFOCUS

# Sector Profile: The European Union

**Author**: David Blandford, Pennsylvania State University

## A. Overview

Viewed from an economic perspective, agriculture in the European Union (EU) is a small and declining sector. It accounted for only 1.2% of total GDP and 5.3% of total employment in 2011 in the EU-27[1] (Table 1). But in terms of environmental quality agriculture is extremely important. Agriculture occupies 38.9% of the EU's land area and accounts for an estimated 44% of its water use.[2] Emissions of greenhouse gases (GHGs) from agricultural production in 2010, primarily methane and nitrous oxide, accounted for roughly 10% of total emissions ($CO_2$-equivalent)[3][4]. In comparison to its share of GDP agriculture is a highly GHG emissions-intensive sector. As demonstrated by Figure 1, ruminants, particularly cattle, which are major emitters of GHGs through enteric fermentation and animal waste, are a major component of EU agriculture. Dairy and beef production accounted for roughly 38% or the total value of output of agricultural products in the EU-27 in 2011. Other important contributors are cereals, which consume large quantities of nitrogen fertilizers in Europe.

The aggregate numbers conceal important differences between the Member States. In some of the less wealthy countries, generally newer members of the EU from Eastern Europe, such as Bulgaria, Hungary, Poland and Romania, the sector still accounts for a significant proportion of national GDP and employment. Agriculture is also more important economically in countries in Southern Europe, such as Greece, Italy and Portugal. Diversity is also reflected in average farm size. This is less than 5 hectares (ha) in countries such as Cyprus, Greece and Romania. In contrast, it is over 150 ha in the Czech Republic (largely as a remnant of former collectivization under communism). Even among the high-income countries of the EU there are differences in farm size, due to differing histories of structural change. In this context, average farm size of roughly 86 ha in the United Kingdom (UK; traditionally a net food importer) can be compared to 56 ha in Germany (also traditionally a net food importer) and the similar smaller farm size in France (traditionally a significant net food exporter). The major agricultural countries in the EU, measured in terms of the share of total agricultural output are France, Germany, Italy and Spain. These four countries collectively accounted for roughly 55% of the total value of agricultural production in 2011 (Table 1).

[1] Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK.

[2] European Commission. *Agriculture and Rural Development*. 2013. Available at: http://ec.europa.eu/agriculture/envir/index_en.htm.

[3] European Commission. *Eurostat: Agri-environmental indicator – greenhouse gas emissions*. 2012. Available at: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Agri-environmental_indicator_-_greenhouse_gas_emissions.

[4] Excludes emissions and removals due to land use, land use change and forestry (LULUCF).

| | Population | GDP per capita[1] | Agriculture share of GDP | Agriculture share of employment | Total area | Agriculture land share | Average farm size | Share of EU-27 agricultural output[2] | Share of EU-27 agricultural GHG emissions[3] |
|---|---|---|---|---|---|---|---|---|---|
| | million | €000 | % | % | 000 km$^2$ | % | ha | % | % |
| **Austria** | 8.4 | 32.3 | 1.0 | 4.9 | 83.9 | 34.3 | 19.3 | 1.8 | 1.6 |
| **Belgium** | 11.0 | 29.8 | 0.5 | 1.4 | 30.5 | 44.5 | 32.3 | 2.0 | 2.2 |
| **Bulgaria** | 7.5 | 11.2 | 4.2 | 19.9 | 111.0 | 40.3 | 12.5 | 1.0 | 1.4 |
| **Cyprus** | 0.8 | 23.0 | 1.8 | 4.6 | 9.3 | 12.8 | 3.1 | 0.2 | 0.1 |
| **Czech Republic** | 10.5 | 20.0 | 0.9 | 3.0 | 78.9 | 44.2 | 151.5 | 1.2 | 1.7 |
| **Denmark** | 5.6 | 31.4 | 1.2 | 2.6 | 43.1 | 61.4 | 64.6 | 2.8 | 2.1 |
| **Estonia** | 1.3 | 16.8 | 1.9 | 4.4 | 45.2 | 20.8 | 49.5 | 0.2 | 0.3 |
| **Finland** | 5.4 | 28.9 | 0.8 | 4.6 | 338.4 | 6.8 | 36.4 | 1.0 | 1.3 |
| **France** | 65.0 | 27.0 | 1.4 | 2.8 | 637.9 | 43.6 | 54.9 | 18.3 | 20.3 |
| **Germany** | 81.8 | 30.3 | 0.6 | 1.6 | 357.1 | 46.8 | 56.1 | 13.9 | 14.6 |
| **Greece** | 11.3 | 20.7 | 2.5 | 11.6 | 132.0 | 26.4 | 4.9 | 2.7 | 2.0 |
| **Hungary** | 10.0 | 16.5 | 2.9 | 7.2 | 93.0 | 50.4 | 8.8 | 2.0 | 1.8 |
| **Ireland** | 4.5 | 31.9 | 1.1 | 4.6 | 70.3 | 71.0 | 35.7 | 1.8 | 3.9 |
| **Italy** | 60.6 | 25.3 | 1.6 | 3.9 | 301.3 | 42.7 | 8.0 | 12.1 | 7.3 |
| **Latvia** | 2.2 | 14.7 | 1.3 | 8.8 | 64.6 | 27.8 | 21.6 | 0.2 | 0.5 |
| **Lithuania** | 3.2 | 15.5 | 2.9 | 8.5 | 65.3 | 42.0 | 13.7 | 0.6 | 1.0 |
| **Lux.** | 0.5 | 68.9 | 0.2 | n.a. | 2.6 | 50.7 | 65.5 | 0.1 | 0.1 |
| **Malta** | 0.4 | 21.3 | 0.9 | 2.8 | 0.3 | 34.8 | 0.9 | 0.0 | 0.0 |
| **Netherlands** | 16.7 | 32.9 | 1.3 | 2.6 | 37.4 | 50.1 | 26.4 | 6.6 | 3.6 |
| **Poland** | 38.2 | 16.4 | 2.4 | 12.7 | 312.7 | 46.2 | 9.6 | 5.7 | 7.5 |
| **Portugal** | 10.6 | 19.4 | 1.3 | 10.7 | 91.9 | 39.9 | 12.1 | 1.6 | 1.6 |
| **Romania** | 21.4 | 12.3 | 5.9 | 32.6 | 238.4 | 55.8 | 3.6 | 4.5 | 3.6 |
| **Slovakia** | 5.4 | 18.4 | 0.8 | 3.2 | 49.0 | 38.7 | 79.0 | 0.6 | 0.7 |
| **Slovenia** | 2.1 | 21.3 | 1.3 | 8.4 | 20.3 | 23.8 | 6.5 | 0.3 | 0.4 |
| **Spain** | 46.2 | 24.7 | 2.0 | 4.1 | 505.4 | 47.0 | 24.6 | 10.5 | 8.7 |
| **Sweden** | 9.4 | 31.7 | 0.4 | 2.0 | 447.4 | 6.9 | 43.8 | 1.4 | 1.7 |
| **United Kingdom** | 62.5 | 27.3 | 0.6 | 1.3 | 244.1 | 64.3 | 85.7 | 6.8 | 9.9 |
| **EU-27** | **502.6** | **25.2** | **1.2** | **5.3** | **4,411.2** | **38.9** | **14.6** | **100.0** | **100.0** |

**Table 1:** Basic Agricultural Statistics for the EU-27, 2011.[5]

[5] Notes: 1 Purchasing power parity, 2 Value of agricultural production at producer prices, 3 $CO_2$ equivalent of CH4 and N2O emissions, 2010 data. Excludes emissions from agricultural transport and energy use and emissions or removals from land use change (LULUCF); n.a. = not available; Source: Directorate-General for Agriculture and Rural Development. *Agriculture in the European Union, Statistical and Economic Information*. Brussels: European Union, 2012; *European Union Eurostat: Agri-environmental indicator – greenhouse gas emissions*. 2012. Available at: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Agri-environmental_indicator_-_greenhouse_gas_emissions (accessed 2013-14).

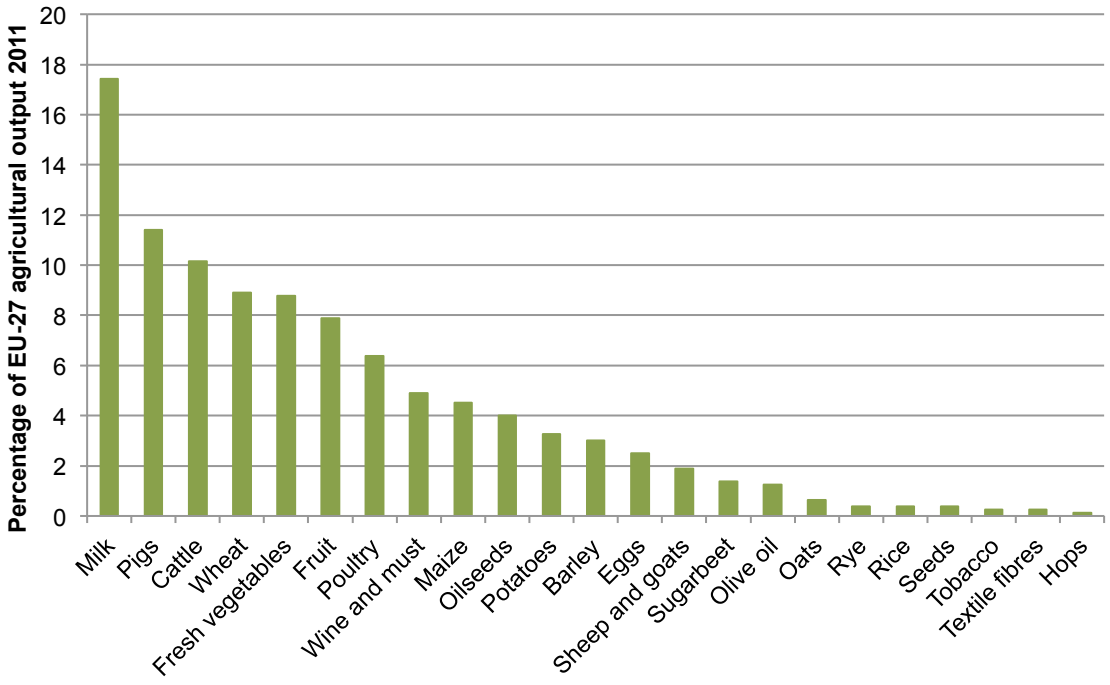


**Figure 1:** Composition of agricultural output in the EU-27 in 2011.[6]

There are also notable differences in the emission-intensity of agriculture in the EU. Countries that have intensive agricultural systems, with substantial cereals production or large numbers of ruminants, particularly cattle, tend to generate higher levels of emissions in comparison to their contribution to the share of agricultural output. This applies to France, Germany, Ireland and the UK, for example. Countries that tend to produce large amounts of high value crops, such as horticultural crops (examples are Italy, the Netherlands and Spain) tend to generate lower emissions in comparison to the value of output. Intensive agriculture does not correlate completely with emissions. Denmark generates a smaller proportion of EU GHG emissions than its contribution to the total value of output, primarily because its livestock sector is dominated by lower-emitting pigs, rather than cattle as in Ireland, for example.

In common with other high-income countries, such as the United States, the structure of agriculture has been changing dramatically in the EU. The number of farms and farm-related jobs has been in decline since the 1970s. The total number of farms has increased as EU membership has expanded (see below for a brief history), but on a constant comparative basis (in terms of membership) the number of farms declined by roughly 2% per year between 1975 and 2007 and the rate appears to have accelerated since.[7] Some of the older members of the EU, such as Denmark and Ireland, have experienced more rapid rates of decline than the EU average, as have some newer members, such as Bulgaria and Estonia. Rates of decline have been more modest in some older EU members, such as Belgium, Greece, Germany and Italy. In some

[6] Note: only includes products subject to market management measures in the EU, plus potatoes. Income from agricultural services and other sources is excluded. The products covered accounted for roughly 80% of farm income in 2011. Source: Directorate-General for Agriculture and Rural Development. *Agriculture in the European Union, Statistical and Economic Information*. Brussels: European Union, 2012.

[7] Directorate-General for Agriculture and Rural Development. *EU Agriculture Economic Briefs – Structural Development in EU Agriculture*. Brussels: European Union, 2011.

countries the number of farms has remained relatively stable or has increased slightly (e.g. Malta, Poland and the UK), due to changes in definitions of what constitutes a farm or legal changes relating to the ownership or utilization of agricultural area. Despite these differences, the general tendency in EU agriculture is for the number of farmers to decline and for the area worked by individual farmers to increase (e.g. by purchasing or renting land owned by others). Average farm size increased from roughly 17 to 22 ha in the EU-15[8] between 1995 and 2007, for example. Despite this, the accession of some new member countries with a large number of small farms (less than 5 ha), such as Romania, and the continued persistence of small farms in some older members, such as Greece, means that the EU still has a relatively large number of small farms. In 2007, for example, over 55% of farms in the EU were 5 ha or less[9]. Structural change has also been reflected in the displacement of labor by machinery. The rate of decrease in the number of agricultural workers has tended to equal or exceed the rate of decline in the number of farms, and the rate of decrease appears to have accelerated due to high rates of exit of labor in some of the newer members, such as Bulgaria and Hungary. The farm population is ageing rapidly and more than half of all EU farmers are 55 years or older. In countries such as Greece, Italy and Portugal 36-47% of farmers were 65 years or older in 2007. The ageing trend is caused by low exit rates from farming by elderly farmers and low entrance rates by younger farmers. In Portugal, for example, only 2.2% of farmers were under the age of 35 in 2007. The ageing of the farm sector generally exceeds that for the population as a whole in the EU.

## B. Major influences and trends

Agriculture in the EU is a major recipient of public funds. In 2011 expenditures on agriculture at the EU level accounted for 42% of total EU expenditures[10]. The 42% figure can be compared to agriculture's contribution to GDP of roughly 1% or to employment of 5% (Table 1). EU agricultural policy and expenditures are discussed further below. Public opinion is important in influencing the thinking of policymakers, at least in as much as the framing of messages that are communicated to the public about the role of agriculture in Europe and in justifying high rates of public financial support for the sector. In a recent survey of public opinion 56% of respondents considered that supplying the population with food that is healthy and safe is the main responsibility of farmers in society, but 25% selected the protection of the environment as their principal role.[11] In terms of future policy priorities, 93% expressed support for preservation of the countryside and 89% for helping farmers to face the consequences of climate change; 87% supported linking financial support for famers to compliance with rules relating to environmental protection, food safety and animal welfare. Also 83% of respondents thought that farmers should contribute to the production of renewable energy - a similar proportion believed that farmers should be encouraged to produce organic products.

While recent survey results seem to suggest that the public supports the use of biotechnology in European agriculture (77% of those in the 2010 survey), earlier surveys suggested that a negative attitude exists to the use of genetic modification, which is a major focus of biotechnology in the sector. In the most recent EU survey that addressed the issue directly, 58% or respondents expressed opposition to the use of genetically modified organisms (GMOs) in farming.[12] The use of GMOs in European agriculture is tightly controlled and attempts to conduct field trials with GM varieties of crops are often vigorously opposed, if not actually disrupted, by activist groups. As a

[8] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK.

[9] Directorate-General for Agriculture and Rural Development. *EU Agriculture Economic Briefs – Structural Development in EU Agriculture*. Brussels: European Union, 2011.

[10] Additional expenditures by Member States are not included in this figure.

[11] Directorate General for Communication. *Attitudes of European Citizens Towards the Environment*. Brussels: European Commission, 2008.

[12] Ibid.

result of this and pressure to achieve environmental and other objectives, plus perceived deficiencies in the structure of European agriculture, such as the ageing farm population, concerns are often expressed about the prospects for productivity increases and the ability of the sector to remain competitive globally while developing an economically and environmentally sustainable agriculture.[13]

Hard evidence on trends in productivity in European agriculture is hard to come by and the limited data that exist present a mixed picture (Figure 2). It appears that total factor productivity in agriculture (the data include forestry and fisheries) has tended to outperform that in the economy as a whole in recent years in European countries for which data are available, although that does not mean that productivity has been increasing in all cases. But in general, productivity growth has tended to fall below that in the United States, for example.[14] It appears that viewed from the perspective of lackluster economic performance of many European economies in recent years, agriculture appears to have done somewhat better, but for most countries the numbers do not suggest that productivity increases are substantial and this casts doubt on whether they will be large in the future.

Policymakers and farmers in Europe therefore have a delicate path to tread. On the one hand they would like to present the sector as one which is sensitive and responsive to addressing public concerns over issues such as environmental quality and sustainability, but on the other hand they are worried that limitations on access to new technology and increasing demands to improve environmental performance will undermine the competitive position of European agriculture globally. That concern would be particularly important if multilateral or bilateral efforts to liberalize agricultural trade are successful. EU agriculture is currently protected by tariffs that might have to be reduced in future trade agreements. Concerns are sometimes expressed by farm leaders and politicians that Europe may face a food insecurity problem as a result of the competitive challenges faced by European agriculture, presumably defined in terms of an absolute lack of food, but this seems extremely far-fetched for one of the richest regions in the world. Nevertheless, failure to increase productivity in agriculture could contribute to higher real prices for food – a possibility which applies not only to Europe but also globally. There remains a continuing conflict in the formation of agricultural policy in Europe between those who would like the emphasis to be placed on increasing production and those who prefer the emphasis to be placed on enhancing agriculture's role in the provision of public goods, such as landscape and biodiversity, and reducing negative externalities, such as pollution. Both of these arguments can be used to bolster the case for providing public support for farmers, but the nature of that support and the way it is used would be very different. This issue is discussed further below in the context of changes in EU agricultural policies and the way these may evolve in the future.

[13] See, Directorate-General for Agriculture and Rural Development. *EU Agriculture Economic Briefs – Structural Development in EU Agriculture*. Brussels: European Union, 2011.

[14] The large rate of growth for agriculture in Germany is likely due to a significant increase in earnings from sale of renewable energy since 2007. A similar phenomenon appears to be reflected in the US data due to expanded use of biofuels.

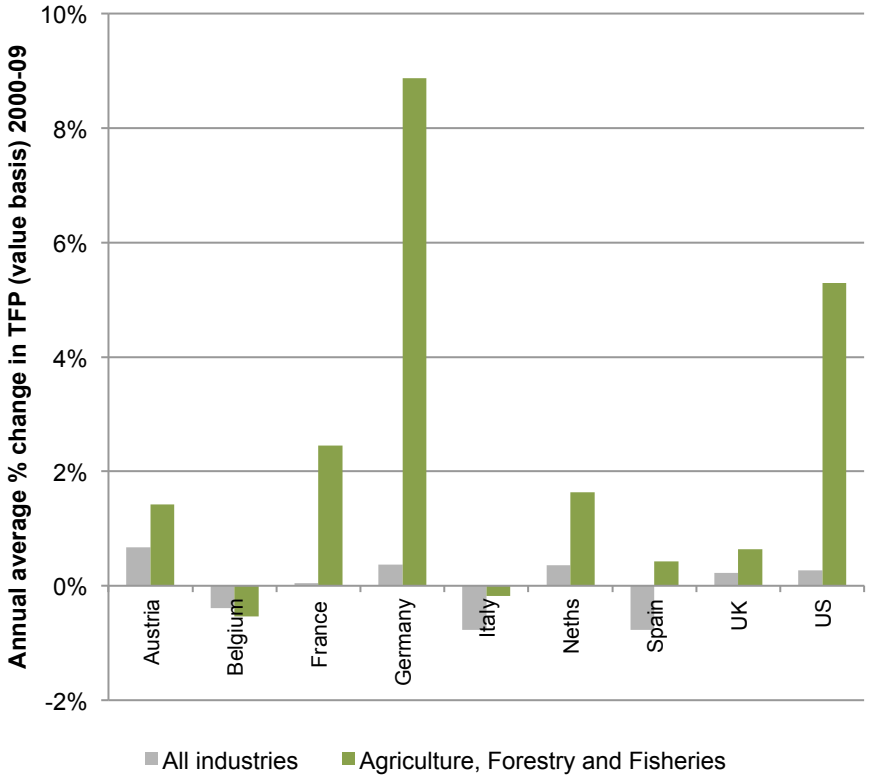


**Figure 2:** Average change in total factor productivity in all industries and agriculture, forestry and fisheries in selected countries, 2000-2009.[15]

# C. Agricultural policies

## C.1 Overview

Agriculture has played a key role in European politics since the end of the Second World War. The European Economic Community (EEC), the forerunner of today's European Union was created in 1957 with the signing of the Treaty of Rome by the six founding members - Belgium, France, Italy, Luxembourg, the Netherlands and West Germany. Measures to promote economic integration were key elements in the postwar reconstruction of Europe. The closer political ties that economic integration was expected to create was viewed ask vital for the achievement of a lasting peace after decades of intermittent conflict. The Treaty of Rome called for the creation of the Common Agricultural Policy (CAP) that would allow the free movement of agricultural products between Member States but would also provide protection from low-priced imports (Community Preference). The CAP, which was formally introduced in 1962, was a pivotal element in the politics of the EEC since it provided opportunities for France, which had a major agricultural sector, to export products to West Germany, whose comparative advantage lay in industrial products, which could be exported to France. Other countries with relatively advanced agricultural sectors, such as the Netherlands, and those that had substantial number of small farms that would be otherwise uncompetitive, such as Italy, also had major interests in the successful operation of the policy.

[15] Note: TFP measured on a value basis. The graph shows a simple average of year-to-year changes. Source: Computed from *EU KLEMS*: Growth and Productivity Accounts, data in the ISIC Rev. 4 industry classification, rolling updates, 2013. Available at: http://www.euklems.net/.

The EEC underwent a major expansion over the years, both in terms of membership and the scope of its political institutions. Denmark, Ireland and the UK became members in 1973. Greece joined in 1981, followed by Portugal and Spain in 1986. The European Union, whose creation signaled an expansion of aims beyond the original one of economic integration, was formally established in 1993. Austria, Finland and Sweden joined the Union in 1995. The largest expansion in membership occurred in 2004 with the accession of Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia. The addition of Bulgaria and Romania in 2007 resulted in a Union of 27 member countries. The 28th member, Croatia joined on July 1, 2013. Several other countries are currently in accession negotiations, including Iceland, Serbia and Turkey. Iceland, Lichtenstein and Norway as members of the European Economic Area (EAA) have trade agreements with the EU and adopt legislation that follows most EU laws relating to a single market, with the exception of those relating to agriculture and fisheries.[16] Switzerland, although not a member of the EAA, has a similar arrangement with the EU.

The European Parliament was created in 1979. Prior to this date, legislative proposals were made by the European Commission (EC) (the civil service of the EEC) and negotiated with the Council (composed of government representatives from Member States – Ministers of Agriculture in the case of agricultural policies). An important change was introduced with the Lisbon Treaty in 2009, since this granted the Parliament a major expansion of legislative powers and co-decision-making with the Council. The addition of the Parliament has introduced a new and complex element into agricultural policymaking in the EU and this is likely to have a major impact on how policy evolves in the future. The implications for the next policy phase (2014-2020) are discussed below.

## C.2 Agricultural policies, plans and programs

As noted above, when the CAP was created a major aim was to provide for the free flow of agricultural products between Member States and Community Preference, i.e. supported prices that would be higher than those on world markets. Imports were regulated through a system of variable tariffs that varied inversely with world prices. If famers could not sell their products in the EEC above minimum prices set under the policy, they could sell these to public intervention agencies. Over time, high domestic prices discouraged domestic consumption of some products, e.g. grain, and encouraged increased production. At the same time there were major technological innovations in European agriculture that led to higher output - increasing productivity was also a stated objective for agriculture in the Treaty of Rome. The result was an expansion in purchases of agricultural products by intervention agencies. Most of the stocks accumulated were exported through the use of export subsidies - creating trade conflicts with other countries that viewed their competitive position to be undermined by subsidized EEC exports.

By the late 1980s it was clear that the EEC faced structural surpluses for a range of agricultural products, including grain, beef, dairy products and wine. Various measures were tried to control the surpluses but they did not solve the problem. In 1992 a major reform of the CAP was introduced (the MacSharry reform, named after the then Commissioner for agriculture, the principal official in the Commission responsible for the sector). Price support levels were reduced significantly for key products, such as cereals and beef. Producers were compensated for this reduction by direct payments. This change was an important factor in reaching an agreement with the United States and other countries on negotiations under the General Agreement on Tariffs and Trade (GATT), which sought (among other things) to impose enhanced international

[16] Norway held a referendum on membership of the EEC in 1972 but the proposal to join was defeated by 53.5% to 46.5%. Membership was again rejected in a second referendum in 1994 in which fisheries policy was a major issue. Norway has the most highly protected agriculture in the world, according to data provided by the Organization of Economic Cooperation and Development (OECD). Its fisheries policies are generally acknowledged to result in good management of marine fish resources. Wild and farm-raised fish are the second largest category of exports after oil and natural gas.

disciplines on policies affecting trade in agricultural products. The Uruguay Round that concluded in 1994 resulted in the creation of the World Trade Organization (WTO) and an Agreement on Agriculture containing disciplines (rules) on the provision of domestic support for agricultural products.

The "Agenda 2000" reform of 1999 introduced a further shift in the CAP. Price and income support measures were grouped under the so-called Pillar I of the CAP, while a Pillar II focusing on rural development (broadly defined) was added. Pillar II comprises a range of multi-annual programs, including environmental programs, jointly funded by the EU, Member States and private beneficiaries. In 2003 a further significant step was taken when some decoupling (abandonment of the linkage between current production and support) was introduced. The new system of decoupled payments (single farm payments) also required cross-compliance – all producers had to satisfy statutory management requirements (i.e. regulations affecting agriculture) while those receiving direct payments had to maintain good agricultural and environmental conditions (GAEC) relating to soil, water, habitats and maintenance of permanent pastures. In 2008 a specific funding line was added to Pillar II (rural development policies) to cover initiatives relating to climate change.

The two-pillar structure of the CAP has important implications for the pursuit of environmental objectives. Pillar I measures can be used to pursue environmental objectives by defining the conditions under which farmers receive payments. Since the size and structure of these payments are pre-determined, there is limited scope for individual Member States to change these objectives, although since the actual distribution of payments is the responsibility of the Member States, the efficiency with which they undertake this affects targeted outcomes.[17] In contrast, Pillar II programs require co-financing, typically provided by the governments of Member States. This offers considerable scope for States to choose what activities they will support under Pillar II. To the extent that the costs and benefits resulting from environmental externalities and public goods that tend to be addressed under Pillar II are largely local this is logical. Where it breaks down is where costs and benefits are substantially non-local since a Member State may choose not to develop a program to address the issues. This is particularly relevant to the case of GHG emissions for which underinvestment in mitigation activities could well result from the devolution of initiative for program development and implementation to Member States. To date, some Member States (e.g. the UK) have embraced the use of Pillar II to develop agri-environmental programs; others (e.g. Greece) have chosen to do very little in this area, apart from using funds to promote organic farming. In general many northern Members have tended to be more active in the pursuit of environmental objectives than southern Members of the EU and newer members from the East. The latter have tended to be more focused on obtaining funds to support their farmers. If this difference in focus continues, it does not bode well for a future expansion of programs under Pillar II to address climate change issues in some parts of the EU.

**The evolution of the CAP and environmental objectives: Changes to the CAP for 2014-2020**

Agreement between the Council and the Parliament on the CAP and the overall EU budgetary framework within which it will operate was reached in November 2013. The policy is complicated and there are many detailed provisions. The focus in this paper is on provisions relating to environmental aims and their implications. As indicated above the decision-making process has involved consideration of proposals initially put forward by the European Commission by both the Council (agriculture ministers and their officials) and the Parliament. Table 2 provides a summary of key elements with an assessment of the potential contribution of the original proposals by the Commission and the measures adopted in the compromise agreement between the Council and the Parliament. The table is divided into three categories. The top part covers the most important

[17] Irregularities in the use of funds, such as a failure by farmers to meet specified conditions for the receipt of funds can be punished by fines. Some Member States (e.g. the UK) pass these fines on to the farmers that fail to comply; others, such as Greece, do not do this and it is taxpayers that pay the bill. The latter approach undermines substantially the ability to enforce compliance with conditions attached to payments at the farm level.

measures under Pillar I - direct payments to farmers. The second part covers policies under Pillar II – expenditures on Rural Development. The third part of the table covers some other issues that relate to future expenditures, including the future distribution of funds among Member States and between Pillar I and Pillar II, cross-compliance, and provisions relating to Farm Advisory Services which are expected to play a key role in improving the economic and environmental performance of the agricultural sector.

A key feature of the Commission's proposals for changes to the CAP was to strengthen the linkage between direct payments to farmers and environmental performance. This is the so-called "greening" of the CAP. Several potentially positive aspects of greening are included in the table, for example, the promotion of crop diversification, the maintenance of permanent grassland, the creation of ecological focus areas devoted to environmental purposes on farms, and the application of penalties for non-compliance with environmental requirements. The special status accorded to organic farms was questionable since organic agriculture is not necessarily compatible with reducing GHG emissions. What has emerged as a result of deliberations in the Council, and more particularly in the Parliament, is a dilution of greening. A few changes are positive, for example, a likely ban on plowing in Natura 2000 areas (nature protection areas established under the 1992 Habitats Directive). But overall, in comparison to the original Commission proposals, the environmental focus under Pillar I has been diluted substantially through exemptions and other changes.

Although not a part of greening, the provision for regionalization in the Commission's proposal opened up the possibility for a more targeted use of direct payments in Member States in support of agri-environmental objectives. This would permit a reallocation of payments away from the old model, which was based on historical patterns of production, to one based on agronomic or other criteria. Thus, for example, funds could be redistributed from farms with low potential to generate environmental goods to those in the opposite category. It must be stressed that this was only a potential outcome of regionalization since Member States would have discretion in setting regional priorities. The amount of discretion allowed under the final policy appears to have increased and this may result in less redistribution of payments among farms.

A third focus in the Commission's proposals was on knowledge transfer and innovation through Pillar II (Rural Development programs). In contrast to Pillar I, programs under the second pillar require co-financing by Member States, so a key issue is the extent to which individual Member States would find options under this pillar to be attractive in meeting domestic objectives. The emphasis on knowledge transfer and diffusion appears to have been diluted in what has emerged from Brussels, primarily by weakening obligations for Member States to undertake activities in this area. In contrast some other changes relating to climate measures, risk management programs under Pillar II, and an expansion of the range of issues to be covered by Farm Advisory Services could strengthen efforts to promote climate change adaptation and mitigation efforts.

A number of other modifications made to the Commission's proposals seem likely to weaken the potential future environmental contribution of the CAP. A weakening of requirements under cross-compliance is a case in point. However, the greatest threat seems to be inverse modulation - the possibility of redistributing funds from Pillar II to Pillar I. Since most of the targeted agri-environmental measures are under Pillar II in the form of co-financed agri-environmental schemes implemented by Member States, the reduction of funding under Pillar II could limit the ability to pursue these programs and this could be exacerbated in Member States that have been affected severely by the aftermath of the global financial crisis in 2007/8. Modulation was originally introduced in 2005 to reduce direct payments under Pillar I and to transfer funds to Pillar II. This was consistent with the aim of achieving a more targeted use of EU funds through rural development programs. Reverse modulation seems to turn the clock back and to shift the emphasis in the use of funds away from achieving targeted objectives under Pillar II, such as improvements in environmental quality, to untargeted support for farmers.

| | European Commission proposal - with respect to pre-existing CAP | CAP for 2014-2020 - with respect to EC proposal |
|---|---|---|
| | **I. DIRECT PAYMENT** | |
| **Regionalization** | Potentially positive impact but depends heavily on model of implementation chosen by MS | Weakened requirements and expanded options imply negligible or negative impact |
| **Greening** | Potentially positive | Negligible or potentially negative |
| **A. Crop diversification** | Potentially positive | Effect weakened by expanded exemptions |
| **B. Maintenance of permanent grassland** | Potentially positive | Weakened by changes in provisions but strengthened by ban on plowing on Natura 2000 sites |
| **C. Ecological Focus Areas** | Potentially positive | Likely negative due to exemptions |
| **D. Greening equivalency** | Negative since organic farming automatically qualifies | Potentially enhanced negative by expanded list of qualifying practices |
| **E. Greening penalty** | Positive | Weakened but still positive |
| **Small farmers' scheme** | Negative due to exemption from greening and essentially an exemption from cross compliance | Same effect as EC proposal |
| **Areas with Natural Constraints** | Positive depending on MS actions | Potentially positive but weakened |
| **Coupled payments** | Potentially positive but potential negative effects of coupled support remain | Potential negative effects increased by relaxation of limitation on usage |
| **Capping of payments** | Potentially positive | Negative:<br>• no obligation to have a maximum<br>• much lower threshold<br>• much lower % of reductions<br>• MS can be exempted if they make use of 5% of the national envelope for redistributing payments<br>• "saved" money had to go to innovation, now it just has to go to Pillar II. |
| | **II. RURAL DEVELOPMENT** | |
| **Fostering knowledge transfer and innovation** | Potentially highly positive depending on MS implementation | Weakened due to reduced conditionality on MS |
| **Enhanced emphasis on agri-env. climate measures** | Positive | Positive and enhanced by higher minimum requirements on spending |
| **Funding for risk management programs** | Positive | Positive |

| III. OTHER ISSUES | | |
|---|---|---|
| **External convergence** | Potentially influential but effects on environmental aims uncertain | Basically the same as EC proposal |
| **Cross-compliance** | Positive, particularly stress on protection of wetlands and carbon rich soils | Severely weakened (e.g. protection of wetlands and carbon rich soils, Water Framework Directive and Sustainable Use of Pesticides all removed) |
| **Modulation (transfer of funds from pillar I to II)** | Potentially positive | Positive effect could be enhanced by increase in allowable percentage (from 10% to 15%) |
| **Inverse modulation (transfer from II to I)** | Possibly negative | Enhanced negative through expanded eligibility and increase in allowable percentage (from 5% to 15% or even 25%) |
| **Farm Advisory Services** | Mandatory expansion of issues to be addressed is positive | Strengthened by further expansion of issues covered, but weakened by removal of EC power to specify minimum qualifications for FAS bodies |

**Table 2.** Assessment of impact of changes in the CAP on EU environmental objectives.

**Box 1: Agri-environment schemes in the EU – the example of England**

The two principal agri-environmental programs in England are the Entry Level Stewardship scheme and the Higher Level Stewardship Scheme. Both of these are administered by Natural England (NE), a non-departmental body that is independent of government. In addition to administering agri-environmental programs, NE has the power to define ancient woodlands, areas of outstanding natural beauty and sites of special scientific interest, manage national nature reserves, oversee access to the countryside and recreation rights, and enforce regulations in these areas. Participation in both of the programs is voluntary. Roughly £ 400million (USD 640million) is spent annually on agri-environmental schemes in England.

**Entry Level Stewardship (ELS).** This scheme is open to all farmers in England and roughly 60% of the total agricultural land area is currently enrolled. Farmers and land managers sign a 5-year agreement to implement a series of management options designed to improve environmental quality. There is a menu of 65 options to choose from and each is assigned points. In general, applicants must achieve 30 points per hectare for the whole farm area to be eligible for a payment of £ 30 (GBP) per hectare. Examples of options are hedgerow management, maintenance of permanent grassland, maintenance of buffer strips along watercourses, and a range of wildlife habitat measures. The ELS has a stated general aim of "helping the natural environment to adapt to climate change by, for example, reducing greenhouse gas emissions and providing and protecting carbon storage." Options that relate to climate change in the current ELS relate to four areas: 1. Encouraging farmers to use a carbon accounting tool to enable them to assess GHG emissions and encouraging the selection of low emissions management options such as the use of cover crops; 2. Reducing soil erosion and increasing soil organic matter levels 3. Increasing tree cover to promote carbon sequestration; and 4. Improving habitat for wildlife to enable it to adapt to climate change.

**Higher Level Stewardship (HLS).** This scheme is targeted to 110 areas across England identified as having the potential to generate the highest environmental benefits. Participants must usually already be participating in ELS or other schemes (relating to uplands or organic agriculture) to apply for funding. ELS promotes measures designed to conserve wildlife and maintain biodiversity, maintain and enhance the quality and character of landscapes, protect historic features, promote public access and understanding of the countryside and protect natural resources. The scheme has some secondary objectives, such as genetic conservation and flood management. As for ELS, helping the natural environment to adapt to climate change by reducing greenhouse gas emissions and protecting carbon storage is specified as a general aim of the program.

HLS is much more demanding in terms of management, is tailored to local conditions, and involves higher payments than ELS. Unlike ELS, it is a competitive scheme. Applicants choose from over 90 management options and sub-options relating to their land. Applications are chosen on the basis that for targeted areas they represent good value for money and that the proposed projects are likely to be successful. The detailed implementation of measures is contained in an individual Farm Environment Plan, developed in conjunction with an advisor from NE. Agreements last for 10 years, with the option of a break after 5 years.

A wide range of measures under HLS potentially relate to climate change mitigation or adaptation, some strengthening provisions in the ELS. Key areas are the preservation, restoration and improved management of woodland, moorlands and wetlands, and the promotion of low-input agriculture.

**Source**: *Natural England*. 2014. Available at: http://www.naturalengland.org.uk (accessed 2013-14); *GOV.UK*. 2014. Available at: https://www.gov.uk/.

## C.3 Climate change policies

The European Union (EU-15) had a commitment to reduce GHG emissions by 8% between 2008 and 2012 under the Kyoto Protocol. The EU-27 does not have a comparable obligation. However, the EU adopted unilaterally a target for reduction in its total emissions of 20% by 2020 compared to 1990 levels. GHG emissions from the EU-15 agricultural sector fell by 14.7% between 1990 and 2011. The reduction was due to lower use of fertilizer and manure and declining cattle numbers.[18] Although it is difficult to determine the impact of changes in the CAP on emissions, it is highly likely that the shift away from price support and towards decoupled payments made a major contribution to this result.

There are other EU and Member State policies that relate to mitigation in agriculture. The European Emissions Trading Scheme was launched in 2005 and is now in its third phase that runs from 2013-2020. A single EU-wide cap is now applied to industries that account for roughly 45% of total emissions. Companies are allocated tradable emissions permits. Agriculture is not included in the program, although industries that provide inputs to agriculture, such as energy companies and chemical companies, are included. The extension of the scheme to commercial aviation, including non-EU carriers operating in the EU, has been controversial and has led to disputes in the World Trade Organization. The issue remains unresolved. The scheme has been criticized for unduly generous allocation of emissions permits. Efforts by the European Commission to reduce the volume of permits have been blocked by the European Parliament.[19] The price of permits has fallen substantially since 2011 and at the end of January 2014 was roughly 5.5-5.75 Euro per ton.[20]

The UK established the world's first legally binding climate change target through the 2008 Climate Act. This aims to reduce GHG emissions by a minimum of 80% with respect to a 1990 baseline by 2050. Agriculture accounts for roughly 9% of UK GHG emissions. The Department of Environment, Food and Rural Affairs is responsible for working with farmers and land managers to achieve GHG reductions in agriculture. The devolved administrations in Scotland, Wales and Northern Ireland have their own programs in this area. These administrations include climate change objectives in their agri-environmental programs (see Box 1 for the example of England), but it is unclear how the necessary reduction in emissions will actually be achieved.

National policies can be important in a number of key areas, particularly relating to the use of inputs in agriculture and opportunities for generating income for farmers. For example, there are national differences in approaches to energy, both in terms of general energy policies and measures that affect agriculture directly. Approaches to other inputs, such as water, also differ. For the most part energy policies are left to Member States.[21] Thus Germany, for example, has been extremely active in phasing out the use of nuclear power and the use of fossil fuels and in promoting the development of renewable energy. It uses a complicated system of energy tariffs and subsidies to promote the use of wind and solar power. This has increased the cost of electricity to business and residential users, but has also created incentives for farmers to install wind and solar installations on their land, as well as to use biogas, to generate electricity. It is

[18] Joint Research Centre. *Latest EU greenhouse gas emissions data (2011): Lowest levels since 1990*. Brussels: European Union, 2013.

[19] *The Economist*. "Carbon trading: ETS, RIP?" 20 April 2013. Available at: http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets.

[20] By way of comparison, the average auction price for 2013 under the California emission trading scheme was around Euro 9 per ton.

[21] The EU has no comprehensive energy policy, although there are EU rules relating to national governments' management of domestic energy markets (e.g. competition in energy markets and the regulation of prices) and also rules relating to the promotion of renewable energy and energy efficiency in buildings.

estimated that farmers now receive up to 25% of their income from generating and selling renewable energy to the power grid.[22]

European farmers also benefit from preferential prices for inputs with potential implications for climate change. For example, farmers in a number of EU countries pay reduced or no taxes on fuel used on the farm. A study by the OECD concluded that 11 members of the EU-25 provided such concessions to farmers.[23] Farmers in the EU rarely pay a price for water reflecting its environmental and resource costs. As noted above, agriculture is a major user of water in the EU. In southern European countries, nearly 80% of total water use is for irrigation in agriculture. The lack of realistic pricing combined with poor infrastructure for conveying and distributing water results in major inefficiencies in water use.[24] A recent study of water use in the Union concludes that for water used in irrigation "it is essential that pricing structures provide more incentives for resource efficiency and allow more transparency in comparison to competing uses to avoid cross-subsidies from other parts of society. To remove adverse subsidies should also be a priority in future agricultural policy."[25]

## D. Voluntary initiatives

As noted above, the EU as a whole and some of its Member States have unilaterally adopted GHG emissions reductions targets and one Member State (the UK) has legislated GHG emissions reductions. There have also been some private initiatives, particularly focusing on the food industry. These relate to such things as carbon labeling. The first carbon labels for food were introduced in 2006 in the UK by the Carbon Trust, and the organization works with a number of food companies to reduce their carbon emissions. A large number of other carbon labeling initiatives have been launched since 2007. The majority of these are private voluntary standards initiated and implemented by retailers.

Another focus in the EU with a voluntary component has been the reduction of waste. The European Union's Waste Framework Directive[26] establishes the framework for waste policy and legislation in EU Member States, placing the emphasis on waste prevention and recycling. Examples of waste prevention measures identified in the legislation of particular relevance to the agro-food sector are:

- Voluntary agreements with consumers/ producers/ businesses/ industry to achieve indicators or targets in resource efficiency and product re-use;
- Environmental management systems conforming to ISO14001;
- The use of economic instruments such as incentives, taxes, deposits and obligatory payments, extending to the use of carbon taxes on packaging;
- Public awareness and information campaigns; and eco-labeling of products.[27]

[22] *Renewable Energy World*. "Lessons from Germany: solar energy opportunities for farmers." 25 September 2013. Available at: http://www.renewableenergyworld.com/rea/news/article/2013/08/lessons-from-germany-solar-energy-opportunities-for-farmers.

[23] Hill, B. and Cahill, C. "Taxation of European Farmers." *Eurochoices 6(1)*, 2007: 44-49.

[24] European Environment Agency. *Water for agriculture*. 2013. Available at: http://www.eea/europa.eu/articles/water-for-agriculture.

[25] European Environment Agency. *Towards efficient use of water resources in Europe*. 2012. Available at: http://www.eea.europa.eu/publications/towards-efficient-use-fo-water.

[26] 2008/98/EC

[27] Directorate General Environment. *Guidance on the interpretation of key provisions of Directive 2008/98/EC*. Brussels: European Commission, 2012

The food industry in several EU countries is making efforts to reduce product wastage. For example, food and drink manufacturers in the UK[28] signed up to a commitment to reduce water use with a goal of a 20% reduction by 2020. There were 70 active signatories as of mid-2012. The commitment resulted in a 14% reduction in water use (excluding that contained in products) by signatories over the period 2007-11.[29]

# E. Actors

As noted above, the principal actors in the formation of EU agricultural policy are the European Commission, which proposes changes in policy, the Council of Ministers and the European Parliament. The latter two bodies currently co-decide the final details of the policy to be adopted.

Public opinion has an important influence on agriculture and policymakers in many countries in the European Union. Environmental concerns have become increasingly important and have the greatest influence in the northern countries. They are less important in the southern and eastern countries of the Union. The role of environmental issues in the public consciousness and attitudes to EU agriculture has already been noted above. In the same public opinion survey referenced earlier, 77% of respondents believe that agriculture will suffer strongly from the effects of climate change in coming years and 82% believe that the EU needs to help farmers change the way that they work in order to tackle the issue.[30] Roughly 6 in 10 respondents expressed a willingness to pay 10% more for agricultural products if they are produced in a way that does not contribute to climate change. The survey summary notes that this is remarkable given that almost two thirds of respondents believe that agriculture is not a major cause of climate change.[31]

A range of non-governmental organizations (NGOs) is active in European agriculture and in lobbying for greater stress on the environment in agricultural policy. In 1974 environmental groups from EU Member States established the European Environmental Bureau. Some national NGOs are large and influential. The Royal Society for the Protection of Birds (RSPB) in the UK, for example, the largest wildlife conservation charity in Europe with over one million members maintains over 200 nature reserves. It is a member of Birdlife International, which has partner organizations in all 28 current Member States of the EU. A joint statement by environmental NGOs, including Birdlife, issued following the release of the Commission's proposals for changes to the CAP was supportive of the greening but critical that the proposed reallocation of spending was too timid in terms of targeting the use of public money to the supply of public goods.[32] Given the substantial weakening of the Commission's proposals discussed earlier it was to be expected that the organizations would be highly critical about the shape of the CAP that emerged in the agreement between the Council and the Parliament.

It is worth noting that RSPB was the second largest recipient of CAP funds in England in 2011, receiving £ 5.1million (roughly USD 8million). Another charity, the National Trust, was the largest recipient with over £ 8million (roughly USD 13million). The funds were primarily provided under Pillar II agri-environmental programs since both organizations are actively involved in landscape preservation and promotion of biodiversity in the countryside. They have been criticized in the

[28] ;embers of the Food & Drink Federation

[29] *WRAP*. "Food and Drink sector achieves Olympic-size water savings." 19 July 2012. Available at: www.wrap.org.uk.

[30] Directorate General for Communication. *Attitudes of European Citizens Towards the Environment*. Brussels: European Commission, 2008.

[31] Ibid.

[32] European Environmental Bureau. *Environmental and farming NGOs response to CAP reform communication: Rising to environmental challenges?* Brussels: European Environmental Bureau, 2010

farm press on the ground of "conflict of interest" in their lobbying on CAP reform, because of their participation in existing Pillar II schemes.[33]

National farmers' organizations and producers' groups are also highly active in trying to influence the CAP and Member State policies affecting agriculture. There is an association of European farmers and cooperatives, the *comité des organisations professionnelles agricoles* and *comité général de la coopération agricole de l'Union Européenne* (COPA-COGECA) that is very active in Brussels. In a press release on September 25, 2013 the organization welcomed the successful conclusion of negotiations on the future CAP observing that "The overall reform package is a significant improvement on what was originally proposed, being more realistic and with more practical solutions for farmers on several points."[34] The specific improvements are not identified in the press release, but since many of the changes reduced the original environmental emphasis of the Commission's proposal, it is probably realistic to assume that some of the changes that have reduced that emphasis are covered by this observation.

A range of other national and EU-wide organizations, for example those representing various parts of the food industry, also play a role in shaping EU policies on agriculture.

[33] *Farmers Guardian*. "RSPB denies conflict over 5 million euro CAP payment." 22 September 2013. Available at: http://www.farmersguardian.com/home/latest-news/rspb-denies-conflict-over-%C2%A35m-cap-payment/46748.article.

[34] COPA-COGECA. "Copa-Cogeca welcomes successful conclusion of CAP reform talks after final deal struck by EU negotiators on outstanding issues." 25 September 2013. Available at: http://www.copa-cogeca.be/Download.ashx?ID=1107853&fmt=pdf.