

# Agriculture



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## Agriculture

Farming has a big influence on Europe's landscapes and the quality of its environment. With farmers managing almost half of the EU's land area, the agricultural sector is a major source of pressure on Europe's environment. Over the past five decades, the EU Common Agricultural Policy (CAP) - accounting for around half of the EU budget — has encouraged the sector to become rapidly modernised and agricultural production itself to increase intensification.

As a result, the agricultural sector is responsible for a large share of the pollution of surface waters and seas by nutrients, for the loss of biodiversity, and for pesticide residues in groundwater. Reforms of the CAP in the 1990s, and measures taken by the sector itself, have brought about some improvements, but more is needed to balance agricultural production, rural development, and the environment.

**Farmers represent only 4.7% of the European Union's (EU's) working population, yet manage nearly half of the EU's land area. Farming has a big influence on Europe's landscapes and the quality of its environment.** Over the past five decades, main tool supporting EU agriculture - the EU Common Agricultural Policy (CAP) accounting for around half of the EU budget — has encouraged the sector to become rapidly modernized and agricultural production itself to increase intensification; as such CAP has the growing globalization of the world's economy. Nethertheless, it is strongly recognized that agricultural sector specific characteristics provide huge potential for the provision of public goods, specifically in a field of the environment. Therefore the future CAP will be even more targeted on support diversity for all its farmers and for the rural areas in Europe, as it generates the public goods which European society expects.

The loss of traditional farming practice to intensive agriculture throughout the EU has led to: soil erosion, water pollution, over-exploitation of water resources the loss of biodiversity (semi-natural habitats, wild species) pesticide-born damage and risks for human health. Reforms of the CAP in the 1990s, 2003 and 2008 have brought about some improvements, but more is needed to balance agricultural production, rural development and the environment. The ongoing monitoring of environmental concerns into the CAP has its aims among others in achieving win-win situation for all 3 CAP elements in the future. The post 2013 would certainly give more opportunities to preserve and use natural resources better in Europe's agricultural areas, while meeting demand for food, fiber, feedstock and bio-energy. Stronger ecosystem connection the new multifunctional CAP would have also the potential to serve biodiversity better.

Farming is changing to provide many services that society demands, it generates important impacts on the environment, which, dependently on agricultural practices applied, might be

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very negative or very useful:

- Soil erosion by water and wind, which affects close to 15 % of EU land, with specific problems concentrated in the Mediterranean and Eastern European region.
- Greenhouse gas emissions from agriculture have declined across Europe since 1990, particularly in the new EU Member States.: EU-27 GHG emissions from agriculture decreased by 120 Mt CO<sub>2</sub>-equivalent (-20 %) between 1990 and 2008. Emissions from all subsectors, except rice cultivation, decreased significantly. GHG emissions from agriculture accounted for 10 % of total GHG emissions in 2008 (+0.2 % compared to 2007). Contrary to the energy related sectors which are dominated by CO<sub>2</sub> emissions, N<sub>2</sub>O (57 %) and CH<sub>4</sub> (43 %) are the predominant GHGs in agriculture. Half of the emissions derive from microbiological activities in agricultural soils, 30 % from enteric fermentation and nearly 20 % from manure management In 2008, an estimated 7.8 million ha of agricultural land is directly devoted to the production of renewable energy from primary biomass sources for the EU-27. Moreover, it is worth noting that radiative forcing numbers on N<sub>2</sub>O and CH<sub>4</sub> differs much from this one of CO<sub>2</sub> (accordingly to the IPCC AR4[1] respective numbers are 0,16 (W\*m<sup>-2</sup>), 0,48 (W\*m<sup>-2</sup>) and 1,66 (W\*m<sup>-2</sup>). Further efforts to decrease all above mentioned GHG emissions and to increase the positive role of farmland as a carbon sink need to be made.
- Climate change is a crucial factor influencing recently observed processes such as i.a. changes in phenology, length of growing season and northwards shift of crops species (IPCC, 2007a). Therefore, the whole Europe needs to tackle shifting and future implementation of more effective cropping systems (caused by both: seasonality and structures' changes). Growing atmospheric CO<sub>2</sub> levels and temperature increasing changes and would continue to alter the composition of crops and grasslands (also the range of native/alien pests and diseases) as a longer growing season not only increases crop yields and insect populations but also favors the introduction of new species in areas that were not previously suitable for these species. These observed facts are particularly important for the northern latitudes. Locally at southern latitudes, the trend is towards a shortening of the growing season (with consequent higher risk of frost damage from delayed spring frosts) which together with the phenological phases shortening would result in negative crop-cycle shortening. These latter needs to be tackle with appropriate farm practices adaptations. Generally, climate-related increases in crop yields are expected mainly in northern Europe (by about 10 %) with reductions (of 10 % or more) in the Mediterranean and the south-west Balkans.
- The agricultural sector is the most important contributor of land to artificial developments needs. Evolution of the UAA of EU 27[2] shows decrease in UE-27 UAA from 2003 until 2007 of 0,18% (with respectively 172 794 350 ha UAA in 2003, 171 996 200 in 2005 and 172 485 050 in 2007). The land use change from agriculture to artificial surfaces (defined as urban residential sprawl and sprawl of economic sites and

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infrastructure) is the main reason of the UAA decrease. Different scenarios estimate that the formation of new artificial areas will increase by 1.2 to 3.7 % per year and that farmland will be the main contributor. Scenar 2020 [3] indicates that the land use in rural areas will change rapidly between commodities within the agricultural sector; between productive land and fallow land; and between sectors. In the period from 2000 to 2020, arable land will decrease by 5 %, grassland by 1 %, and permanent crops by 1 %; forest will increase in land cover by 1 %, and other natural vegetation by 2 %, recently abandoned land by 3 % and urban land by 1 %. In addition, CLC results show that the area of land use change from agriculture to artificial surfaces is underestimated. In total the lost of UAA for EU 24 (without Sweden, Finland and Malta) for artificial areas can be estimated to 81,140 ha/year. The loss of UAA can be affected for 61 % to the formation of new artificial areas and for 39 % to farmland abandonment. The flow of farmland abandonment is still lower than the flow of farmland 'artificialised'.

- The irrigable area in Mediterranean member countries has increased by about 20% between 1990 and 2005 whereas it declined in northern and Eastern European countries. In southern and eastern Europe irrigation is a key factor for agricultural productivity but causes significant environmental pressure on aquatic ecosystems and groundwater resources. In 2007, EU-27 irrigable area accounted for 8,8 % European Utilized Agricultural Area (UAA); c.a.6% of UE-27 UAA was irrigated[4].
- Pollution from agriculture is a major pressure on the quality of ground and surface waters in the EU, in particular in north-western countries. Diffuse pollution from agriculture provides about 30-40% of the nitrogen load and 50-60% for the phosphorus load in the Danube river. In the Baltic Sea catchment area the major anthropogenic source of waterborne nitrogen is clearly diffuse inputs. They constitute 71% of the total load into surface waters within the catchment area. Agriculture alone contributed about 80% of the reported total diffuse load[5]. This impacts on water quality and threatens species and ecosystems in the European seas.
- Agricultural nitrogen surpluses (the difference between all nutrient inputs and outputs on agricultural land) show a declining trend, thereby potentially reducing environmental pressures on soil, water and air. All European countries exhibit a nitrogen surplus. Overall however, these surpluses have declined since the mid-1980s, reducing the environmental pressures on soil, water and air. The adoption of nutrient management plans and environmental farm plans has had a key role in this reduction[6].
- Europe's biodiversity is inextricably linked to agricultural practices creating valuable agro-ecosystems across whole of Europe. A large number of highly valued wildlife species and semi-natural habitats types in Europe are dependant on continuing low-intensity agricultural practices. Areas where farming practices are associated with high biodiversity value are qualified as High Nature Value (HNV) farmland. Of the 231 habitat types of European interest targeted by Annex I of the EU Habitats Directive, 55

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depend on extensive agricultural practices or can benefit from them. Similarly, 11 targeted mammal species, 7 butterflies species and 10 orthoptera species, as well as 28 vascular plant species of Annex II of the EU Habitats Directive depend on a continuation of extensive agriculture.

- Negative trends on agricultural practices are consistent with reports from EU Member States on the conservation status of species and habitats types targeted by the Habitats Directive. Habitat types linked to agro-ecosystems generally have a relatively poor conservation status, with only 7% of assessment being favorable, compared to 17% for habitat types not related to agro-ecosystems.
- Organic farming is a farming system that has been explicitly developed to be environmentally sustainable, and is governed by clear, verifiable rules. It relies on a number of objectives and principles, as well as common practices designed to minimise the human impact on the environment, while ensuring the agricultural system operates as naturally as possible. Thus organic farming appears suitable for identifying environment-friendly farming practices. The increase of 7.4% in the total area under organic farming between 2007 and 2008 (as compared with 5.9% between 2006 and 2007) illustrates the continuing positive trend in the organic sector in the EU-27. In 2007, the area under organic farming accounted for 4.1% of the Total Utilised Agricultural Area in EU-27 (organic agriculture covers 7,8 million hectare in EU-27 thereof 1,5 million hectare in EU-12). Between 2007 and 2008, the number of producers (agricultural holdings) using organic farming methods within EU-27 rose by 9.5%. Taking into account no specific EU target on the share of organic farming area one may see a considerable number of EU Member States which have set targets for area under organic farming, often 10-20 % in 2010. EU agri-environment programmes and consumer demand are key factors for the above mentioned inclination as well as for this recent strong increase in trends.

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[1] Source: IPCC 4th Assessment Report (AR4), chapter 2: Changes in Atmospheric Constituents and in Radiative Forcing

[2] Source : FSS- Eurostat

[3] Source: The scenario study on agriculture and the rural world (Scenar 2020) of the European Centre for Nature Conservation

[4] Source: Eurostat, FSS 2007 (data on irrigation areas not available for Germany and Estonia), calculation: EEA

[5] Source: HELCOM, 2009; Eutrophication in the Baltic Sea – An integrated thematic

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assessment of the effects of nutrient enrichment and eutrophication in the Baltic Sea region.  
Balt. Sea Environ. Proc. No. 115B.

[6] EEA SEBI report 2009

 **Permalinks**

