Organisation for Economic Co-operation and Development
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ENVIRONMENTAL PERFORMANCE OF AGRICULTURE IN OECD COUNTRIES SINCE 1990:

France Country Section

This country section is an extract from chapter 3 of the OECD publication (2008) ***Environmental Performance of Agriculture in OECD countries since 1990***, which is available at the OECD website indicated below.

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A summary version of this report is published as ***Environmental Performance of Agriculture: At a Glance***, see the OECD website which also contains the agri-environmental indicator time series database at: http://www.oecd.org/tad/env/indicators

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BACKGROUND TO THE COUNTRY SECTIONS

Structure

This chapter provides an analysis of the trends of environmental conditions related to agriculture for each of the 30 OECD member countries since 1990, including an overview of the European Union, and the supporting agri-environmental database can be accessed at *www.oecd.org/tad/env/indicators*. Valuable input for each country section was provided by member countries, in addition to other sources noted below. The country sections are introduced by a figure showing the national agri-environmental and economic profile over the period 2002-04, followed by the text, structured as follows:

- ***Agricultural sector trends and policy context:*** The policy description in this section draws on various OECD policy databases, including the *Inventory of Policy Measures Addressing Environmental Issues in Agriculture* (*www.oecd.org/tad/env*) and the Producer and Consumer Support Estimates (*www.oecd.org/tad.support/pse*).
- ***Environmental performance of agriculture:*** The review of environmental performance draws on the country responses to the OECD agri-environmental questionnaires (unpublished) provided by countries and the OECD agri-environmental database supporting Chapter 1 (see website above).
- ***Overall agri-environmental performance:*** This section gives a summary overview and concluding comments.
- ***Bibliography:*** The OECD Secretariat, with the help of member countries, has made an extensive search of the literature for each country section. While this largely draws on literature available in English and French, in many cases member countries provided translation of relevant literature in other languages.

At the end of each country section a standardised page is provided consisting of three figures. The first figure, which is the same for every country, compares respective national performance against the OECD overall average for the period since 1990. The other two figures focus on specific agri-environmental themes important to each respective country.

Additional information is also provided for each country on the OECD agri-environmental indicator website (see address above) concerning:

- Details of national agri-environmental indicator programmes.
- National databases relevant to agri-environmental indicators.
- Websites relevant to the national agri-environmental indicators (*e.g.* Ministries of Agriculture)
- A translation of the country section into the respective national language, while all 30 countries are available in English and French.

Coverage, caveats and limitations

A number of issues concerning the coverage, caveats and limitations need to be borne in mind when reading the country sections, especially in relation to making comparisons with other countries:

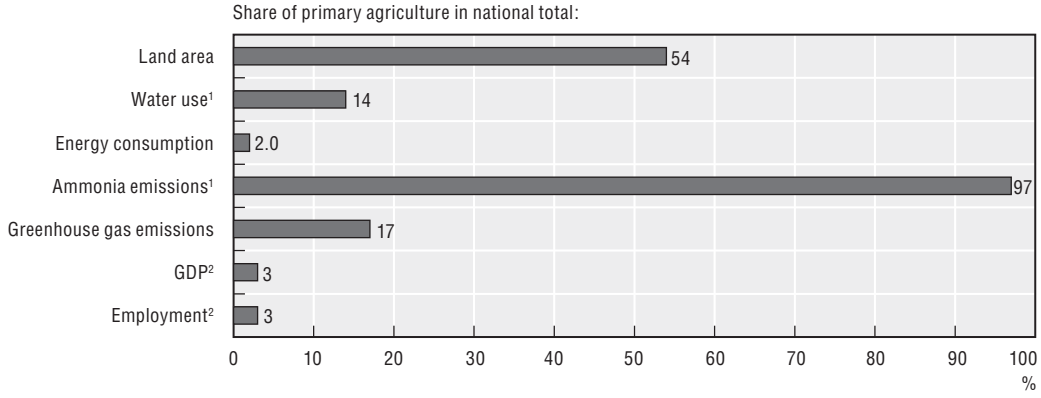
Coverage: The analysis is confined to examination of agri-environmental trends. The influence on these trends of policy and market developments, as well as structural changes in the industry, are outside the scope of these sections. Moreover, the country sections do not examine the impacts of changes in environmental conditions on agriculture (*e.g.* native and non-native wild species, droughts and floods, climate change); the impact of genetically modified organisms on the environment; or human health and welfare consequences of the interaction between agriculture and the environment.

Definitions and methodologies for calculating indicators are standardised in most cases but not all, in particular those for biodiversity and farm management. For some indicators, such as greenhouse gas emissions (GHGs), the OECD and the UNFCCC are working toward further improvement, such as by incorporating agricultural carbon sequestration into a net GHG balance.

- ***Data availability, quality and comparability*** are as far as possible complete, consistent and harmonised across the various indicators and countries. But deficiencies remain such as the absence of data series (*e.g.* biodiversity), variability in coverage (*e.g.* pesticide use), and differences related to data collection methods (*e.g.* the use of surveys, census and models).
- ***Spatial aggregation*** of indicators is given at the national level, but for some indicators (*e.g.* water quality) this can mask significant variations at the regional level, although where available the text provides information on regionally disaggregated data.
- ***Trends and ranges in indicators***, rather than absolute levels, enable comparisons to be made across countries in many cases, especially as local site specific conditions can vary considerably. But absolute levels are of significance where: limits are defined by governments (*e.g.* nitrates in water); targets agreed under national and international agreements (*e.g.* ammonia emissions); or where the contribution to global pollution is important (*e.g.* greenhouse gases).
- ***Agriculture's contribution to specific environmental impacts*** is sometimes difficult to isolate, especially for areas such as soil and water quality, where the impact of other economic activities is important (*e.g.* forestry) or the "natural" state of the environment itself contributes to pollutant loadings (*e.g.* water may contain high levels of naturally occurring salts), or invasive species that may have upset the "natural" state of biodiversity.
- ***Environmental improvement or deterioration*** is in most individual indicator cases clearly revealed by the direction of change in the indicators but is more difficult when considering a set of indicators. For example, the greater uptake of conservation tillage can lower soil erosion rates and energy consumption (from less ploughing), but at the same time may result in an increase in the use of herbicides to combat weeds.
- ***Baselines, threshold levels or targets for indicators*** are generally not appropriate to assess indicator trends as these may vary between countries and regions due to difference in environmental and climatic conditions, as well as national regulations. But for some indicators threshold levels are used to assess indicator change (*e.g.* drinking water standards) or internationally agreed targets compared against indicators trends (*e.g.* ammonia emissions and methyl bromide use).

3.8. FRANCE

Figure 3.8.1. **National agri-environmental and economic profile, 2002-04: France**



StatLink http://dx.doi.org/10.1787/300128822483

1. Data refer to the period 2001-03.
2. Data refer to the year 2003.

Source: OECD Secretariat. For full details of these indicators, see Chapter 1 of the *Main Report*.

3.8.1. Agricultural sector trends and policy context

Agriculture is a significant player in the economy. Agri-food exports accounted for around 13% of total exports, and primary agriculture for nearly 3% of GDP and 3% of employment in 2003 (Figure 3.8.1). The volume of farm production increased slightly by 2% over the period 1990-92 to 2002-04, but purchased farm input use decreased for: pesticides (–10%), although was subject to considerable annual fluctuation; inorganic nitrogen fertilisers (–9%) and phosphate fertilisers (–46%); direct on-farm energy consumption (–9%), and the area farmed declined by nearly 3% (Figures 3.8.2, 3.8.3 and 3.8.4).

France has four broad and highly diverse agro-ecosystems. Northern France is typified by large-scale farming, of both crops and livestock; the west and central regions are predominantly mixed farming regions with grassland and cropping; the south is typically characterised by farming methods influenced by the Mediterranean climate; and the Alpine regions combine mountain farming interspersed with semi-natural areas.

Farming is mainly supported under the Common Agricultural Policy (CAP), with support also provided through national expenditure within the CAP framework. Support to EU15 agriculture has declined from 39% of farm receipts in the mid-1980s to 34% in 2002-04 (as measured by the OECD Producer Support Estimate). This compares to the OECD average of 30% [1]. Nearly 70% of EU15 farm support is output and to a lesser extent input linked, but this share was 98% in the mid-1980s. EU and national budgetary support to French farmers is was over EUR 12 (USD 11) billion per annum in the period 2002-04, of which 82% is funded by the EU [2].

National expenditure on agri-environmental programmes increased over the 1990s, and now accounts for 15% of total national agricultural expenditure [2]. The *National Rural Development Plan* aimed over 2000-06 to promote: diversified cropping patterns; crop rotation; and sustainable farming practices, through providing payments to especially encourage, for example, extensive management of pastures, hedge maintenance, and conversion of arable land to grassland [3]. Also, support is provided for integrated farm management; and conversion payments for organic farming, which occupied nearly 2% of agricultural land and increased fivefold between 1996 and 2003 [4, 5]. A programme to control water pollution from livestock effluents covers a maximum of 60% of the costs of constructing manure and slurry storage facilities, as well as all the costs resulting from improving production practices. This programme covers about 50 000 farmers and amounts to EUR 1.28 (USD 1.28) billion over 2000-06, a nine-fold increase since the early 1990s [6]. Support has been provided to voluntary initiatives, such as *Ferti-Mieux*, to encourage improved farm nutrient management, but this support was ended in 2003 [7, 8]. Pollution taxes are levied on nitrates for large livestock producers, based on emission estimates; and on pesticide sales relative to toxicity [leading to pesticide producers paying pollution taxes of EUR 40 (USD 50) million in 2004], while products containing atrazine were banned in 2002.

Farming is subject to economy-wide environmental and taxation measures, and international environmental agreements. A diesel tax concession (about one-seventh of the normal rate) is provided to farmers, worth about EUR 950 (USD 1 190) million annually in terms of budget revenue forgone 2004-06 [1]. Irrigation is supported through subsidised infrastructure capital costs (40% to 85%), equal to around EUR 26 (USD 32) million in 2006, and reduced water charges (about one-fifteenth of household charges) [1, 9, 10]. Commitments under ***international environmental agreements***, such as lowering nutrient loadings (into Lake Geneva, the Rhine, and the North Sea), and ammonia emissions (*Gothenburg Protocol*) also affect farming.

3.8.2. Environmental performance of agriculture

One of the key agri-environmental challenges concerns water pollution. Water pollution is an issue given high priority by public opinion [11]. Meeting the EU *Nitrate Directive*, as well as the requirements of international environmental agreements related to nutrient loadings in coastal water and ammonia emissions, pose a considerable challenge. The overall intensity of farm input use and land use changes are a source of biodiversity stress, while soil erosion and competition between agriculture and other water users are further concerns in some regions.

Although very much localised, soil erosion is increasing in some regions. The off-farm impacts of soil erosion are high, with over 5 500 catastrophic events and 34 300 buildings damaged between 1985 and 1995, as well as adverse impacts on roads and aquatic ecosystems [12]. The main areas affected by erosion are the Northwest, through intensive agriculture; and the Rhone valley and the Southwest, where vineyards and spring crops cover large areas [13, 14]. In the Northwest, reduction of crop diversity, ploughing up of grasslands, and an increase in soils left bare over winter, have caused increased erosion and associated problems such as muddy flows, turbid drinking water, and more frequent flooding through soil sediment filling water channels [7, 15, 16]. In other regions, erosion is aggravated by high rainfall and steep slopes, or by urbanisation and road construction [15, 16].

Water pollution from agriculture remains important. Pollution from industry and households has largely stabilised [7, 15, 17]. Agriculture contributes almost 75% of nitrate and 22% of phosphorus loadings into surface water. Farming is also a major source of groundwater pollution [9], and pesticide contamination of water bodies is widespread. Water pollution is especially important in the North and West [9]. In Brittany, for example, by 2006 less than 1% of inhabitants received water in excess of European Nitrate Standards part of the time. This pollution is associated with high animal stocking densities and intensive use of fertilisers [18]. In 2003, 8-9% of the population were supplied water whose content exceeded the pesticide standard at least once. For coastal waters (the English Channel – La Manche – the North Sea and Brittany) farming is the main cause of eutrophication and detection of pesticides is common [7]. Agriculture's share of the water pollution tax was only 4% in 1998 [17]. Over 1997-2002 farmers paid 1% of water pollution and withdrawal charges to Water Agencies, while receiving 10% of the Agencies' investment aid [15].

Declining agricultural nutrient surpluses are reducing the pressure on water quality. Nutrient surpluses have declined over the period 1990 to 2004, notably for phosphorus, and are below the OECD and EU15 averages expressed in terms of surplus nutrient intensity per hectare of agricultural land (Figures 3.8.2 and 3.8.4). But while France adopted the EU *Nitrates Directive* in 1993, given the lack of progress in reducing agricultural water pollution the area of *Nitrate Vulnerable Zones* (NVZs) was extended in 1999. In 2002, in response to a ruling by the European Court of Justice that France had contravened the Directive, the area of NVZs were further expanded, especially to control eutrophication of La Manche (the Channel) and the North Sea, but by 2007 the NVZ area was expected to be stable [15]. Two-thirds of the nitrogen discharged into La Manche from the River Seine is of agricultural origin [15].

While overall there has been a downward trend in pesticide use, water contamination appears to be widespread and is a cause of concern. Since 1990 although there was a significant annual fluctuation in pesticide use (Figure 3.8.3), the frequency of application, expressed as the average number of approved doses applied annually per hectare of cropland, between 1993-94 and 2000-01 increased by 10%, although information for other crop years is required to determine a long term trend. In 2002 80% of surface water and 57% of groundwater samples contained pesticides; 40% of surface water and 21% of groundwater had levels requiring decontamination for drinking purposes; and almost 7% of water contained a level of pesticides excluding its use for drinking purposes [17, 19]. Between 1996 and 2000, highly persistent pesticides, such as DDT, lindane, and their derivates, were found in many monitoring points along the coast, despite the ban on their use being in place for several decades [7, 19].

Agriculture's use of water has risen, heightening competition between different water users in some regions (Figures 3.8.2 and 3.8.4). The area of irrigated land increased by around 480 000 hectares between 1990-92 and 2001-03, from 5% to 9% of the total agricultural area. This was due to changing cropping patterns, especially the switch from horticultural crops to maize, soya beans and sunflowers, linked to CAP support raising incentives to use irrigation water [10, 20]. Farming accounts for about 14% of total water use (2001-03), with its share in groundwater use increasing from around 10% in the mid-1980s to 17% by the mid-1990s, compared to stable national usage [21]. In some water scarce regions, where agriculture's share of total water use is higher, there are growing conflicts for access to water resources between different users (farmers, urban, industrial); and over the maintenance of water flows for aquatic ecosystems [22].

Agricultural ammonia emissions have remained virtually unchanged since 1990. Ammonia emissions from agriculture, which account for 97% of total ammonia emissions, decreased by 0.3% between 1990-92 and 2001-03 (Figures 3.8.2 and 3.8.3). Total ammonia emissions by 2001-03 (768 000 tonnes) were below the 2010 target (780 000 tonnes) agreed by France under the *Gothenburg Protocol*, being one of only a few EU15 countries to meet its Gothenburg target at this stage. France has now stopped use of the fungicide ***methyl bromide*** in the primary agriculture sector, but it is still used in treating timber.

Agriculture is contributing to lowering national greenhouse gas (GHG) emissions. Farming contributes 17% (2002-04) of total GHG emissions, but there has been an 8% reduction over the period 1990-92 to 2002-04 (Figure 3.8.2), compared to stability of emissions in the rest of the economy [23]. Agriculture contributes to ***carbon storage***, and together with forestry, the soil carbon pool is the equivalent of 5% of total GHG emissions [24], thus helping to reduce GHG abatement costs [25]. Over the 1990s the capacity of agricultural soils to store carbon may have declined [5]. The expansion in agricultural biomass production for ***renewable energy*** can also help to lower GHG emissions. While this source of energy is growing rapidly its share in total energy consumption, however, remains less than 1%, and in transport fuel consumption less than 2% [15, 26, 27, 28]. Meanwhile, agricultural energy efficiency is improving, with a slight rise in the volume of farm production over the period 1990-92 to 2002-04 compared to a 9% decline in direct on-farm energy consumption (Figure 3.8.2).

Agricultural land use changes have had a mixed impact on biodiversity and landscapes. Agriculture occupies nearly 55% of the total land area, although the area farmed declined by nearly 3% between 1990-92 and 2002-04 (Figure 3.8.2). Substantial areas of farmland are classified by the Ministry of the Environment as areas of special importance for wildlife (ZNIEFF areas), with 24% classified as having a very "high nature" value and 36% classified as having "considerable biodiversity potential" [7, 15]. Although the overall impact, either positive or negative, is unclear, key changes in farmland use from a biodiversity perspective since 1990, have included the net conversion of farmland to forest and the conversion of wetlands to cropland. Almost 3 000 hectares of wetlands was converted annually to agricultural use between 2000-03, and there was a fourfold increase in the fallow area to over a million hectares by 2003 [29]. The area of farm hedges have increased from 360 000 to 610 000 hectares between 1990 and 2002 [29], partly because 15-20% of national hedges (in linear terms) are covered under hedge restoration schemes [3].

Agricultural activities are a pressure on the conservation of certain wild species. Farmland ecosystems contain the largest number of France's endangered species [15], and between 1989 and 2003 national bird populations declined by 3%, compared to a 25% reduction for birds using farmed habitats, although populations recovered slightly in 2004 and 2005 (Figure 3.8.3) [5, 15]. In 2000 the European Court of Justice found France had not properly implemented the EU *Bird Directive*, its network of *Special Protection Areas* for birds being the smallest share of the national land area in the EU15 [15]. Amphibians, reptiles and invertebrates, including bees, have been adversely affected by farm intensification such as the removal of small habitats [5, 30] and the use of farm chemicals, including eutrophication of aquatic habitats [15]. Biodiversity and landscapes may have also been adversely affected by the net conversion of pasture to arable land (Figure 3.8.3) [31], especially since 1992, and the switch to area based farm payments [32].

Overall, according to the Ministry of Agriculture, the diversity of farmed landscapes has been greatly reduced. This has largely been due to the standardisation of farming practices; rationalisation of production systems; and enlargement of field sizes; while there has been encroachment on farming landscapes from urbanisation. Recent evidence suggests, however, that the heterogeneity of farmed landscapes might be increasing [33], although livestock herding and pasture areas in mountain regions have declined to the detriment of landscapes and biodiversity [7], despite support programmes to maintain these areas [15, 34].

3.8.3. Overall agri-environmental performance

Overall agri-environmental performance has been mixed. While agricultural activities are a key source of water pollution, decreasing levels of nutrient surpluses and pesticides are lowering pressure on the environment. But in the north and west regions, where the intensity of farming is high and production has risen, problems of soil erosion and water and air pollution are acute. Irrigated farming, that in the past was concentrated in Mediterranean regions, is now well developed in the south-west, central and Rhone Valley regions, increasing pressure on water resources which can damage aquatic ecosystems. The overall intensity of farming practices and land use changes are damaging biodiversity, with reductions in farm bird populations and loss of grasslands to arable crops. However, the efficiency of purchased input use has improved, with an increase in the volume of farm production at the same time as a reduction in fertiliser, pesticide and energy use [5, 15]. In addition, agricultural greenhouse gas emissions have been lowered, and renewable energy produced from agricultural biomass expanded.

Agri-environmental monitoring and evaluation is being strengthened [15, 35]. Monitoring of nutrients and pesticides in water bodies is well developed, although agricultural pollution from endocrine disrupters, antibiotics and pathogens are poorly understood [15]. An indicator of pesticide use pressure has been established under the 2006-09 *Interministerial Plan for the Reduction of Pesticide Risks*. Agricultural land use information is being further improved [36, 37]. Data on trends in agricultural water use are limited, but, since 2000, irrigators without a water meter and withdrawal licence no longer receive CAP support [15]. Monitoring of soil erosion [12], soil organic stocks, biodiversity and farmed cultural landscapes need strengthening, while estimates of the environmental costs of agricultural water pollution would be informative for policy makers [17].

Recent policy changes may improve performance. By the end of 2003 nearly 40% of farmers and 28% of agricultural land were included under agri-environmental measures [3]. Provisions under EU *Agenda 2000* and the *2003 CAP reforms* will involve, from 2005/06, the use of cross compliance targeted at farming practices intended to benefit the environment, such as: maintaining grass strips; not burning straw and crop residues; using rotations; monitoring irrigation water; and enforcing a set of statutory minimum agri-environmental practices [3, 30, 31]. From 2003 a new regulation on natural risks delineates areas of erosion risk, where farmers and land owners are obliged to apply soil protection measures against erosion [12].

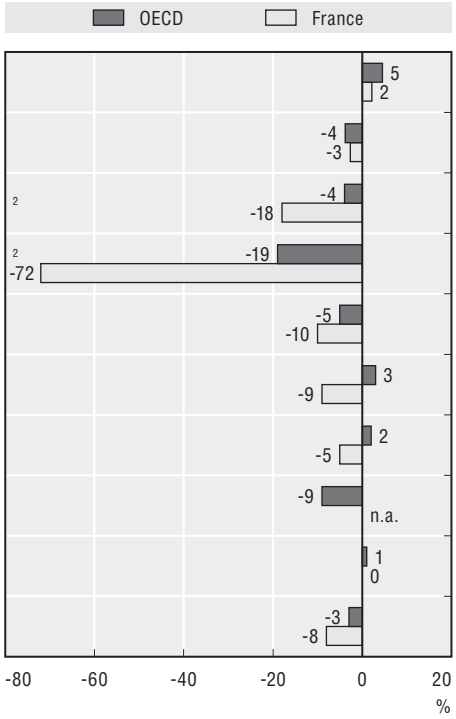
In terms of reducing water pollution, payments to farmers are now conditional on respecting the EU Nitrates Directive, with improved fertiliser management practices already observed and likely to further reduce nutrient surpluses. From 2007 with the end of the programme on containing agricultural pollution, support from Water Agencies to farmers will be redirected to support for environmentally beneficial practices instead of support for investments. Starting in 2008, a new tax system will be applied to nitrogen and

phytosanitary products leading to an increase in the number of livestock farms taxed. The adoption of a *National Biodiversity Strategy* in 2004, which includes agriculture, could help toward improved conservation. A *biofuel production scheme* from 2005 aims to raise the share of biofuels in transport fuels to nearly 6% by 2010, through production support and fuel tax reductions. Biomass and animal waste used for energy generation already benefit from higher tariffs into the national grid [26].

But many environmental issues still need attention. To comply with the EU *Water Framework Directive* further effort will be required to curb agricultural ***nutrient pollution*** [3, 15, 17]. Agricultural water pollution is imposing a cost on society in terms of treating drinking water supplies to meet nutrient and pesticide standards; and also causing harm to aquatic ecosystems. ***Subsidised water*** pricing for irrigation does not provide incentives to conserve water resources. ***Adverse impacts on biodiversity*** have been partly reduced through agri-environmental measures in grassland and mixed farming regions [3], but more effort will be required if France is to improve its performance under the EU's *Bird and Habitat Directives* and reduce threats to habitats and wild species [15]. Agriculture has succeeded in ***reducing GHG emissions and energy use***, and increased renewable energy production, but concessions on fuel used by farmers provide a disincentive to improve energy efficiency, and help further reduce greenhouse gas emissions.

Figure 3.8.2. **National agri-environmental performance compared to the OECD average**

Percentage change 1990-92 to 2002-04[1]



Absolute and economy-wide change/level

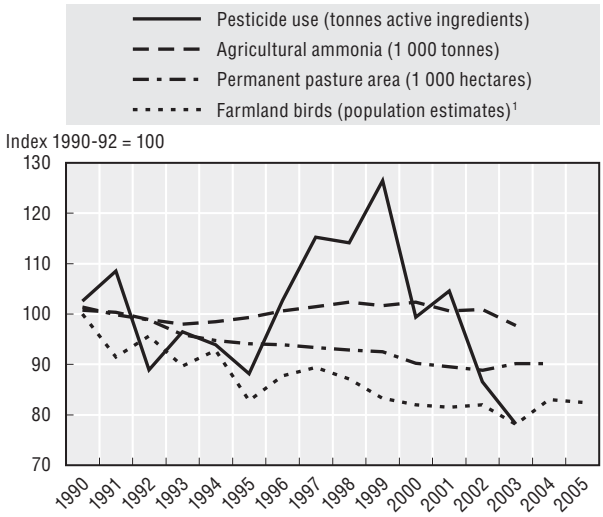
Variable	Unit		France	**OECD**
Agricultural production volume	Index (1999-01 = 100)	1990-92 to 2002-04	102	105
Agricultural land area	000 hectares	1990-92 to 2002-04	–809	–48 901
Agricultural nitrogen (N) balance	Kg N/hectare	2002-04	54	74
Agricultural phosphorus (P) balance	Kg P/hectare	2002-04	4	10
Agricultural pesticide use	Tonnes	1990-92 to 2001-03	–9 750	–46 762
Direct on-farm energy consumption	000 tonnes of oil equivalent	1990-92 to 2002-04	–297	+1 997
Agricultural water use	Million m^3	1990-92 to 2001-03	–225	+8 102
Irrigation water application rates	Megalitres/ha of irrigated land	2001-03	n.a.	8.4
Agricultural ammonia emissions	000 tonnes	1990-92 to 2001-03	–2	+115
Agricultural greenhouse gas emissions	000 tonnes CO_2 equivalent	1990-92 to 2002-04	–8 169	–30 462

n.a.: Data not available. Zero equals value between –0.5% to < +0.5%.

1. For agricultural water use, pesticide use, irrigation water application rates, and agricultural ammonia emissions the % change is over the period 1990-92 to 2001-03.
2. Percentage change in nitrogen and phosphorus balances in tonnes.

Source: OECD Secretariat. For full details of these indicators, see Chapter 1 of the *Main Report*.

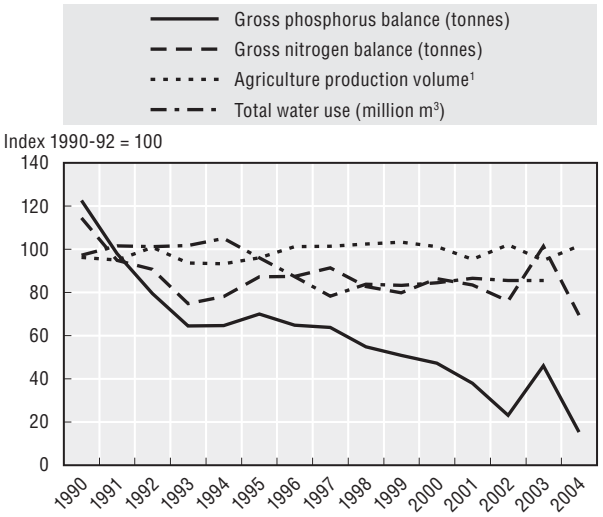
Figure 3.8.3. **Trends in key agri-environmental indicators**



1. Index 1990 = 100.

Source: OECD Secretariat.

Figure 3.8.4. **Trends in key agri-environmental indicators**



1. Index 1999-2001 = 100.

Source: OECD Secretariat.

StatLink http://dx.doi.org/10.1787/300136632603

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