PART I

Chapter 2

Developments in Agri-environmental Policies in OECD Countries

This chapter describes the various policy measures implemented to address agri-environmental issues in OECD countries, and especially those policies that provide transfers to farmers. It reviews natural resource-use issues in agriculture, objectives of agri-environmental policies, and specific policy instruments used to achieve these objectives. The chapter concludes with an analysis of the trends in agri-environmental payments.

Agricultural production affects water, air and soil quality, influences eco-systems and biodiversity and shapes rural landscapes. Many of these environmental effects — which are very diverse across OECD countries — can be considered either negative or positive externalities or as public goods, for which private markets either function inadequately or are non-existent. While there are multiple factors explaining farmers' choices of what and how to produce, economic incentives have a large role in determining what farmers do individually and collectively. Indeed, agricultural production is highly responsive to market signals as farmers try to increase their revenue and decrease their costs. When markets signals for environmental goods are weak or absent the result can be that individual activities taken collectively fail to reduce environmental harm sufficiently or to supply enough environmental benefits. However, it is important to recognise that some farmers are self-motivated to undertake farm practices that are beneficial to the environment and to resource conservation.

The overarching function of agri-environmental policies is therefore, in principle, to correct for the incentive failures resulting from missing markets to ensure the protection and enhancement of the environment. OECD countries have taken many different approaches to finding the best policies to accomplish this goal.

In recent decades, the agricultural sector in OECD countries has experienced important technological and economic developments along with closer integration of agriculture into the global agri-food system, leading to higher agricultural productivity and more output. Increasing public awareness, together with the wider availability of information,[1] has led to societal demands to improve the environmental performance of agriculture and to increased farmer awareness. In addition, investments in better tracking of the environmental performance of agriculture have helped to identify potential environmental problems associated with agricultural activities and a better understanding of the effects of different agricultural policy measures on the environment.

Agriculture is a sector in which policy plays a significant role in most OECD countries. Agricultural policies provide monetary transfers that influence – directly or indirectly and to varying extent – what and how much to produce, where and under what conditions. This, combined with environmental regulations require farmers – either at their own cost or with the aid of subsidies – to adopt certain practices or deliver particular outcomes creates a complex web of incentives and disincentives for farmers, the net environmental effect of which may be unclear.

The predominant forms of agricultural support in OECD countries in the past forty years have been closely linked either to commodity outputs or the use of inputs. Support to OECD farmers (%PSE) accounted for about 23% of total farm receipts on average in 2006-08 (compared with 37% on average in 1986-88), most of which (56%) is still linked to production and input use, although this is down from 86% in 1986-88. Policies linked to production and unconstrained input use may have provided incentives to producers to increase the intensity of production (resulting in more variable inputs per hectare) and to

expand farming on to environmentally sensitive land and thereby contributed to existing environmental problems, such as the pollution of water, soil and air, and the over-use of scarce resources — particularly water (OECD, 2001). However, in a number of OECD countries, policies supporting agriculture have also helped to maintain certain agricultural production activities — such as the management of meadows, grasslands, uplands and terraces — that are associated with environmental benefits, such as biodiversity, flood and drought control.

To correct for (or take into account) these externalities or public goods, a range of agri-environmental policy measures have been developed in OECD countries, and their size and importance has increased over time. In addition to providing policy transfers to producers to achieve environmental goals, the measures applied also include regulations and directives, taxes, emission/consumption quotas and requirements, such as keeping land in good agricultural and environment condition under cross-compliance. The *Inventory of policies addressing environmental issues in agriculture* (*Inventory*) developed by the OECD in co-operation with member countries, provides an account of this broad range of policies, focusing not only on agricultural policies addressing environmental issues (agri-environmental policies) but also on environmental measures (*e.g.* regulatory requirements) affecting agricultural production and practices.

The analysis presented here aims to describe the mixes of policy measures applied and in more detail those policy measures addressing agri-environmental issues which provide transfers to farmers. The first section describes the objectives of environmental policies. The next section provides a broader view of the policies addressing environmental and resource-use issues in agriculture and the third section focuses in more detail on the agri-environmental policies covered by the monitoring and evaluation analysis (agri-environmental payments). Most of the information in this chapter is drawn from the OECD *Inventory* and the *PSE/CSE* database and its documentation. Although the 2009 *Monitoring and Evaluation* report is primarily concerned with developments in 2007 and 2008, this chapter also considers the longer term development of agri-environmental policies.

Targeting policies to address environmental issues in agriculture

The objectives of agri-environmental policy are often easy to state in general terms but difficult to define and measure precisely. Moreover, the intention of some policies is to address several objectives at the same time, either because objectives are interconnected, or because a change in a farm activity can have multiple effects. This section will try to clarify some of these issues by providing a look at the main objectives in agri-environmental policy.

Agriculture is the dominant user of land and water in most OECD countries. As a result, many policies provide payments that are directed towards specific farming practices on farmland (input use, technology), land allocation to specific use (conversion of arable land to grassland, extensive pasture, green cover) or for land retirement (long-term environmental set-aside, land conservation, afforestation of agricultural land). Such policies can have the objectives of improving for example soil quality, water quality, biodiversity and cultural landscape. Which of these are the most important and relevant often depends on local conditions. Addressing these objectives represents the most important part of agri-environmental policies in terms of either payments provided or the land area included in the programme.

Some policies target specific areas to address specific environmental issues (spatial targeting). This is, for example, the case of water-dependent ecosystems in Australia — in the Murray-Darling Basin; or the United States — Great Lakes; or the European Union where the EU Nitrate Directive is applied in areas with high levels of nitrate pollution and areas with high biodiversity, landscape and environmental values identified in EU member states within the project *Natura 2000*. To an increasing extent, agri-environmental programmes are applied under an overarching framework (at the national, EU level) which sets the main guidelines, with specific policy measures being defined and applied at lower administrative levels (at the state or provincial level). This is the case in ***Australia***, ***Canada***, and the ***United States***. In the ***EU***, policies are implemented at member-state level (under the overarching EU framework) and, in some states, at even lower administrative levels (such as provinces, regions or länder, or even local level). This is the case, for example, in ***Austria***, ***France***, ***Germany***, ***Italy***, ***Spain*** and the ***United Kingdom***.

Regulations and some other policy measures, such as tradable permits, are generally targeted to a specific environmental (resource-use) **issue**, such as soil or water quality or biodiversity.

Environmental objectives (and outcomes) are precisely defined and measurable for only a limited number of programmes providing agri-environmental payments. Most of these payments are for specific (well-defined and controlled) management practices which are intended to provide environmental outcomes over and above a reference level (defined as, for example, the minimum level of environmental performance as determined by regulations, or "good farming practices"). In most cases, outcomes of these programmes are defined by the area which is under a specific management practice, which may be a somewhat crude proxy as to whether the environmental quality parameter has been achieved.

Soil protection/soil quality

The main issue of soil protection is the risk of **soil erosion**. The soil erosion risk comes from natural forces (water erosion, wind erosion) and from soil cultivation practices (cultivation of fragile soils, overgrazing, poor uptake by farmers of soil conservation practice, etc.). The main issue of soil quality is soil organic content and soil contamination, resulting from excessive or inadequate applications of chemical inputs used in agriculture and from industrial pollution deposits in soils – such as contamination by heavy metals (the latter issue is beyond the scope of agri-environmental policies and is addressed by environmental legislation).

Soil erosion is primary addressed by basic environmental regulations concerning soils, including **good farming practices**[2] outlined by most OECD member countries. Many OECD Member countries have also developed programmes promoting practices specifically targeted at reducing the risk of soil erosion. More specifically, the main farming practices promoted to reduce the risk of soil erosion are: transfers of arable land to grassland, extensive use of pastures, green cover (mainly in the winter period), or no-tillage or low-tillage practices. Some countries use programmes promoting the long-term retirement of vulnerable land from agricultural production. Afforestation of agricultural land is promoted in some OECD countries. However, in term of land transferred, afforestation is of minor (or local) importance. The Conservation Reserve Program (CRP) is the most important agri-environmental programme in the United States, in terms of budgetary expenditure and area covered. The main purpose of the CRP was initially to combat soil erosion, but, as the

programme evolved, other objectives were added, including amelioration of habitat and water quality, carbon sequestration and air quality improvements.

Other soil degradation processes (compaction, acidification, toxic contamination, sodicity and salinisation) largely relate to specific regions in some countries and are addressed both by regulatory requirements and policies designed and implemented at regional (local) levels. Apart from financial incentives provided to farms, budgetary support is also provided to finance technical assistance to farmers attempting to address soil erosion problems.

Water quality/water protection (including reduction of pollution)

Across all OECD countries a large number of policies addressing environmental issues in agriculture are related to water quality and resource availability. The issue of water quality is addressed by a wide set of regulations. These regulations concern not only the use of water and management of water resources, but also strict regulations on the use of potentially polluting inputs such as pesticides, industrial fertilisers and manure (storage, management and field application) and land management measures to prevent the polluting agents from reaching surface waters and/or groundwater.

Water quality and reduction of water pollution are a dominant issue in most OECD countries. Apart the above-mentioned regulatory requirements, a range of policy measures are applied to address this issue. The most common are payments for agricultural production conditional upon reduced use (or no use) of pesticides and fertilisers (such as extensive production, integrated production, organic farming), green cover and buffer strips. These measures are applied mainly in European countries and, more recently, in Japan and Korea.

The EU Nitrate Directive defines areas vulnerable to nitrates in its member states, and sets guidelines to establish the maximum permitted level of nitrates in water. Moreover, the action programmes developed to implement the directive, establish the necessary measures to ensure that nitrogen of animal origin spread on the land (manure fertilisation) does not exceed 170 kg per hectare. It also makes it mandatory for farmers to ensure that fertiliser use is well balanced to supply the needs of crops. EU member states have designed and implemented some agri-environmental measures to further reduce nitrogen losses in water that go beyond the statutory obligations. Reduced use of fertilisers, converting arable land to extensive grassland (pasture), green cover and crop rotation are the main instruments implemented by member states to reduce nitrates in water. In addition, the Water Framework Directive imposes the objective of achieving good water status by 2015.

Also in areas with higher nature values (such as catchment areas for drinking water, natural reserves) or environmentally vulnerable zones (Environmentally Sensitive Areas – ESAs), many OECD member states apply stricter regulations concerning the use of agricultural inputs and farming practices. Some countries provide compensation to farmers (for income foregone) in these areas. As mentioned above, many of the policy measures designed to address the issue of water quality and water pollution may also have positive effects on soil quality, biodiversity and landscape.

In many OECD countries there are regulations to determine how much water is available to irrigators (agriculture) and how much must be retained for environmental purposes. In addition to regulatory requirements, a wide set of policy instruments related

to water are used across OECD countries. Irrigation accounts for a major share of water use in most OECD countries and excessive groundwater extraction levels are a concern in many areas, particularly in the drier regions of Australia, southern Europe and parts of the United States. Some countries (*e.g.* ***Australia***, some states in the ***United States***) manage a system of water abstraction rights and a system of tradeable quotas and permits for water use.

Biodiversity

Biological diversity (biodiversity) is the variability among living organisms and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems. This variability is naturally caused by the evolution of living organisms in the context of the biotic and abiotic factors in their environment. Human intervention can have a significant effect upon biodiversity.

In countries such as ***Australia***, ***New Zealand*** and North America, valued habitats are predominantly associated with natural areas that include grasslands, wetlands, native forests and bush. In some cases such areas have been placed at risk by the development of agriculture. For example, in the ***United States***, the conversion of grasslands and wetlands to cropland has been attributed with contributing to the decline of a number of rare species. Some of the currently applied policies are designed to correct this trend, and are mostly applied in specific localities.

Agricultural biodiversity is largely created, maintained and managed through a range of farming systems. OECD countries employ a variety of policies and approaches to reconcile the need of agricultural production, drawing on plant and livestock genetic resources, and yet reduce harmful biodiversity impacts, especially on wild species and habitats.

Policies addressing objectives such as wild species diversity and ecosystem diversity are prominent in the European countries. Indeed, in Europe, many of the most valued wildlife areas tend to be semi-natural habitats, where species have co-evolved with traditional agricultural practices over many centuries. Such habitats have come under increasing pressure from changes in farming practices – including increased field size, reduced crop rotations and increased fertiliser and pesticide use or from agricultural land abandonment.

Policies applied to enhance or preserve agricultural biodiversity can be grouped according to the three levels of agricultural biodiversity: (i) genetic diversity; (ii) species diversity; and (iii) ecosystem diversity.

Genetic diversity – most OECD countries carry plant and livestock genetic resource conservation activities either in the form of *in situ* (on-farm, in-field) or *ex situ* (gene bank) conservation. Under the Rural Development Regulation, most EU member states provide payments for conservation of endangered crop and livestock species or per head of endangered livestock species. In the United States, the *in situ* conservation is primarily a private-sector activity and no financial assistance is provided.

Species diversity – policies in this area typically target wild species that use agricultural land as primary habitat – for example, populations of selected bird species that are dependent on agricultural land for nesting and breeding. Farmers are remunerated for voluntary adoption of farming practices which contribute to preserve wild species on agricultural land (such as reduced use of chemical inputs, extensive management of grassland with late mowing, creation and maintenance of field strips, hedges, shrubs).

Ecosystem diversity – policies aimed at achieving the objectives related to ecosystem diversity promote a specific land-use pattern (in most cases, the extensive use of grassland). Some of these policies require a transfer of agricultural land to other use (such as changing arable to grassland, or the creation of wetlands and ponds), while other policies promote the creation of semi-natural habitats on agricultural land (such as farm woodlands, fallow land). These activities are often considered as also contributing to addressing Landscape objectives.

Landscape

Landscape objectives can vary from site-specific to very generic ones, and are subject to various sets of policies. They are implemented mainly in European countries, ***Japan*** and ***Korea***, where the cultural landscape has been shaped by agriculture over many centuries. EU member states and ***Switzerland*** provide payments to construct, improve and/or maintain specific (fixed) landscape elements such as: trees (individual or ranges), hedges, stonewalls, ponds and marshes. In most cases, these elements also contribute to other environmental objectives, such as soil and water protection and biodiversity.

Landscape objectives are also associated with payments supporting changes in land use either in the form of exit from agricultural land (afforestation, agricultural woodland, creation or restoration of wetlands and ponds) or changes in agricultural land use (transfer from arable land to extensively used grassland, green fallow, and floral fallow). Norway associates the landscape objective with a general payment to all agricultural land, provided that farmers comply with good farming practices.

Climate change — air pollution

Farming accounted for about one-quarter of total OECD acidifying emissions, 8% of the use of potential ozone-depleting substances and 8% of greenhouse gases (GHGs) in 2002-04, OECD (2008a). Shares are higher for specific air pollutants: 90% of anthropogenic ammonia emissions; nearly 75% of methyl bromide emissions and for GHGs about 70% of nitrous oxide and over 40% of methane. The contribution of agriculture to greenhouse gas emissions varies considerably across OECD countries; in ***New Zealand*** nearly 50% of the country's GHGs arise from pastoral agriculture.

Many countries are adopting policies to motivate farmers to alter their farming practices, such as changing livestock manure disposal methods and soil tillage practices, which can lower GHGs emission rates per unit of output volume and which can also have co-benefits in reducing ammonia emissions and increasing soil carbon stocks. The uptake of these practices is in some cases enforced by regulations and supported by investment subsidies (manure storage and management) or encouraged through government farm extension services and financial assistance to farmers. On the other hand, these practices may also increase pesticide use, with negative impacts on the environment.

Programmes providing incentives for less intensive use of agricultural land, lower and better-managed use of fertilisers (see above) also contribute to reduced air pollution, ammonia and GHG emissions, as well as the programmes taking land out of agricultural production (afforestation, land conservation programmes, extensive use of grassland). The latter also contribute to carbon sequestration.

Policy instruments to address environmental issues in agriculture

The mixes of policy instruments, applied in OECD countries to achieve their various environmental objectives, reflect the overall policy approach to the sector; the specific environmental issues and their perceived linkage to agriculture activities; the nature of property rights related to the use of natural resources (land, water and vegetation); and societal concerns related to environmental issues. In addition, "suasive" measures are intended to change perceptions and priorities within farmer's decision framework by heightening the level of environmental awareness and responsibility. Such measures can be delivered in the form of training or knowledge and information sharing, as well as forms of "moral suasion" such as social pressure, negotiation, the threat of regulatory action or retaliation by others whether customers or society in general. Hence, they may encourage farms to develop and abide by voluntary codes of conduct.

Regulatory requirements

Although less visible in policy analysis and policy debate, environmental regulations (regulatory requirements) are at the core of policies addressing environmental issues in agriculture. All OECD countries pursue policy and/or regulatory measures to prevent the negative impact of agriculture on the environment. Most of these regulations are related to the use (storage, handling, plant and animal application) of agricultural inputs (pesticides, industrial fertilisers, manure) which have the potential to cause negative environmental effects (in terms of soil, water and air pollution). These regulatory requirements range from outright prohibitions, to input standards and resource-use requirements. Most of these regulations are applied across the farm sector. However, in areas with higher environmental values (natural reserves), drinking water catchment areas, environmentally sensitive areas, or those close to densely populated areas, further regulations may be applied. Over time, these regulatory requirements have generally been applied more broadly, and as awareness of the risks develop, they have become more stringent.

All OECD countries have agreed to implement the Polluter Pays Principle. This principle agreed and developed by the OECD in 1972, is intended to avoid distortions in international trade and investment and to allocate costs of pollution prevention and control measures to encourage rational use of scarce environmental resources. Some countries provide financial assistance to farmers (generally in the form of investment subsidies) to comply with stricter environmental regulations where this is consistent with the allocation of property rights between farmers and society. An increasing number of regulatory requirements also derive from state, provincial, regional or local measures under the framework of over-arching national regulatory policy and law, in order to accommodate the local nature of many environmental concerns.

Some OECD countries (***Australia, New Zealand***) rely mostly on regulatory requirements to address environmental issues in agriculture. Besides the regulations, specific environmental issues are addressed mainly through environmental programmes targeting specific areas. In many cases farmers and landowners (grouped in local initiatives) are involved in these programmes, which may be supported by short-term financial assistance to facilitate group activities improving environmental sustainability and self-reliance of the agricultural sector. Financial support may also be provided in the form of technical assistance and extension, with some support going to investments in infrastructure and on-farm investments. Besides regulatory requirements, ***Canada*** also relies mainly on

extension and community-based measures and more recently on rather limited payments for specific farming practices.

Agri-environmental payments

Other countries (***EU member states, Norway, Switzerland*** and the ***United States***) have also developed a wide range of voluntary programmes that provide farmers with agri-environmental payments in return for the adaptation of specific farming practices aimed at securing positive environmental effects and/or providing public goods (such as landscape, biodiversity, flood control) that go beyond the country's "reference level". Although these programmes include a large range of measures, most of the agri-environmental payments are related to the support of extensive forms of farming, such as the sustainable extensive management of grassland or pastures.

Most OECD countries support organic farming. Organic production methods can contribute to improving the environmental performance of agriculture, in particular through low (or no) use of chemical inputs. Although often yields are lower than through "conventional" farming systems. While in some countries the support is limited to the development of regulations concerning organic production and the setting of certification institutions, other countries grant financial support to farmers in the period of transition from conventional farming to organic farming.

Programmes providing payments to retire agricultural land from commodity production and transfer it for environmental purposes are also implemented in a range of countries (Australia, EU member states, the United States). These programmes mainly provide payments for conversion of agricultural land to wetlands, forest and long-term environmental set-aside. However, in most countries these programmes have a rather limited importance, with the exception of the ***United States***, where payments for the retirement of agricultural land (such as the Conservation Reserve Program) account for the largest share of agri-environmental payments in the US.

Some OECD countries do not appear to feature prominently in the use of agri-environmental payments. In ***Japan*** and ***Korea*** agri-environmental payments have been introduced only recently and represent a very minor share in total support to agriculture. In ***Mexico*** and ***Turkey*** agriculture is relatively important in terms of the national economy and employment and these countries may have other priorities for limited budgetary resources for agriculture.

Environmental taxes

Environmental taxes and charges are applied in a rather limited number of countries on the sale of inputs identified as having a potentially adverse impact on the environment. Taxes and charges are currently levied on pesticides in ***Denmark***, ***France***, ***Italy***, ***Norway*** and ***Sweden***, while fertiliser levies are applied in ***Italy***, ***Sweden*** and in some states of the ***United States***.

Tradable rights and quotas

Other economic instruments, such as tradable rights and quotas, are used in a limited number of countries. These include tradable rights for the development of wetlands in the ***United States***, tradable water extraction rights (implemented on a state/regional basis in the United States), and implemented across states and regions in ***Australia***. Tradable rights

based on environmental quotas, permits and restrictions do not yet appear to play a significant role in agri-environmental policy, despite the growing use of such measures for environmental policy design in other sectors. One area in which some OECD countries are looking at the possible use of tradable permits concerns GHGs from agriculture, but no emission trading system for agriculture is yet in operation[3].

Environmental cross-compliance

Environmental cross-compliance — which involves measures linking minimum environmental standards to agricultural support programmes, is used in the ***United States, the European Union*** and ***Switzerland***, and has been implemented more recently in ***Korea***. Some EU member states (*e.g.* the ***United Kingdom***) have been using environmental cross compliance since the 1990s. From 2005, cross compliance (including environmental components) has become compulsory in the ***EU15.*** In the new EU member States (EU 12), part of cross compliance applies already and full cross-compliance will be introduced between 2009 and 2013**.**

Community-based approaches

A number of countries, including ***Australia, Canada*** and ***New Zealand***, place emphasis on the use of community-based approaches to address environmental issues, through supporting collective action to address environmental degradation (*i.e.* pollution as well as direct impacts through habitat removal/degradation). These approaches tend to target farmers' self-interest in environmental conservation on a catchment area basis, and make use of local expertise in solving environmental problems.

Research and extension

Most OECD countries have directed greater attention towards improving the knowledge base relating to environmental issues in agriculture over the past two decades, through increased spending on agri-environmental research, often undertaken in co-operation with private sector interests. One notable trend in this area has been the development in a number of OECD countries of agri-environmental indicators to track environmental performance.

Greater emphasis has also generally been placed on communicating information to farmers on environmental issues via technical assistance and extension, in order to induce voluntary changes in farming practices and improved environmental outcomes. Such measures feature an increasingly comprehensive array of information, and now employ a wide range of communication tools, such as the Internet.

More attention has also been directed at providing consumer information on the environmental attributes of products, in order to meet the demands of an increasingly well-informed and discriminating public. In particular, a range of eco-labelling standards and certification processes have been employed in OECD countries over past two decades, particularly in relation to organic or integrated agricultural production processes, which indirectly influence production practices at farm level.

Agri-environmental payments in the overall framework of agricultural policy

Current environmental conditions and concerns in many OECD countries are, to some extent, the result of past and ongoing agricultural policies providing substantial production-linked support and subsequently boosted farm output and affected resource

use, farming practices and environmental quality. Improvement of the environmental performance of agriculture is thus closely linked to the reform of agricultural policies. The policy measures addressing environmental issues in agriculture have to be considered as part of the whole set of agricultural policy measures applied and evaluated in the broader context of agricultural policy reform. This part provides more detailed information on programmes providing agri-environmental payments to farms applied in OECD countries.

Agri-environmental payments in OECD countries

In terms of policy description, the *Inventory of Policies Addressing Environmental Issues in Agriculture* (*Inventory*) contains detailed information on the policies applied in OECD Member countries. In the Inventory, agri-environmental payments are classified in three categories: (i) payments based on farming practices; (ii) payments based on land retirement; and (iii) payments based on farm fixed assets (Box 2.1).

Box 2.1. **Classification of agri-environmental payments in the Inventory**

Payments based on farming practices are policy measures granting annual monetary transfers (including implicit transfers such as tax and credit concessions) to farmers. They provide payments to farmers to implement more environmentally friendly farming practices that go beyond those required by regulation and/or defined as "good farming practices".

Payments based on land retirement – programmes under this category provide payments to remove land or other factors of production from production for environmental (resource conservation) purposes.

Payments based on farms' fixed assets are policy measures granting farmers a monetary transfer (including implicit transfers such as tax and credit concessions) to offset the investment cost of adjusting farm structure or equipment to adopt more environmentally friendly farming practices.

Payments based on farming practices

Payments based on farming practices have been increasingly applied over past decades, in most of the European OECD countries (EU member states, Norway and Switzerland) and also in the United States. More recently, such payments have been introduced in Japan and Korea.

The ***European Union*** co-finances, with EU member states, a wide range of agri-environmental payment programmes based on farming practices under an overarching framework of EC regulations.[4] Prominent among these measures are payments to support the adoption of less input-intensive farming practices. EU member states also implement a variety of programmes providing payments to compensate other forms of less input-intensive and/or more environmentally friendly farming practices. This includes, for example, organic production, integrated production, and programmes to promote extensive crop production (low use of fertilisers and pesticides) and extensive management of grassland (livestock grazing with restricted uses of fertilisers and low stocking densities, extensive meadows with restricted mowing practices). Most EU member states also offer agri-environmental payments based on farm practices to target biodiversity and cultural landscape objectives. A variety of programmes provide payments

to recompense farm practices that preserve specified cultivated areas (*e.g.* ***Portugal, Sweden, Italy***) or rare (endangered) animal breeds/crop varieties or other flora and fauna (most of EU member states). To prevent soil erosion some countries (*e.g.* ***Spain***) support the conversion of arable land to extensively used grassland (pastures or meadows). Other countries (***Belgium***, ***France***, ***Finland, Italy,Spain*** and ***Sweden***) provide payments for catch crops or green/winter cover.

In most EU member states the programmes providing payments based on specific farming practices are available on a voluntary basis to farmers who are permitted to select an appropriate combination of those practices to be eligible to receive payments. However, some countries (*e.g.* ***Finland, Ireland***) have set basic scheme programmes requiring farmers to comply with a set of practices required by these schemes (five basic measures plus one optional in ***Finland***; 11 measures in ***Ireland***) in order to obtain the payment.

The above mentioned policies refer mostly to agri-environmental policies applied under the Rural development programmes applied in the period 2000-06. In 2007, implementation started for the rural development programme for the period 2007-13 (although payments were provided for programmes adopted in the earlier period), with all Rural Development Plans (RDPs) agreed by November 2008. The programmes to provide agri-environmental payments to farms (under the Axis 2 of the RDR) were developed in all EU Member States, although the importance of the agri-environmental payments in the RDP varies across countries (for more detail, see Chapter 5 on EU policy development, Figure 5.8). EU member states continue to develop measures in place during the previous programming period and to introduce new measures, in particular in new member states where agri-environmental measures were not compulsory during 2004-06. In addition to agri-environmental payments per se, Axis 2 also offers specific funding to co-finance *Natura 2000* measures that aim to preserve biodiversity in most valuable and threatened sites; and measures linked to the Water Framework Directive (Directive 2000/60/EC), as well as support for non-productive investments for improving the environment and the countryside.

Payments based on farming practices have also been implemented in other European countries. In ***Switzerland*** the Federal Agricultural Law adopted in 1996 (amended regularly in a four-year period) offers a range of payments based on different standards of agricultural practices. Most of these payments continue to be applied under the agricultural policy for the period 2008-11. Under voluntary programmes, payments are provided to farmers for specific biotypes, such as extensive grasslands, floral fallows, high-stem fruit trees, and hedges. Payments are also provided to support the extensive cultivation of grains and oilseeds, and for organic farming. ***Norway*** introduced payments to support organic farming in 1991, and currently offers an organic conversion payment, which is paid per hectare, together with on-going area and headage payments for organic farmers. In the period 1994-2001 payments were also granted to support mountain dairy farming in order to contribute to the maintenance of the cultural landscape through summer animal grazing in mountain areas. From 1994 under payments for changed soil conservation a per-hectare payment is granted for not cultivating erodible soils in autumn and for planting cover crops in cereal fields and grass strips around water courses. In 2004, Norway introduced a general landscape payment under which a fixed-rate payment is granted per hectare of all agricultural land, provided that the farmer complies with good farming practices. In ***Iceland***, payments are provided to farmers who qualify to participate

in soil conservation and forestry schemes designed to prevent desertification and soil erosion (sand encroachment) and the restoration of degraded land.

The ***United States*** provides payments to support voluntarily adopted, environmentally friendly farming practices, based on a cost share and incentive basis, through a wide range of programmes. Some of these programmes are applied throughout the US, while others target specific areas where there are specific environmental or natural resource concerns. Most of these programmes also finance the technical assistance necessary on farms to develop and implement those programmes. The Environmental Quality Incentives Program (EQIP) was established by the 1996 Farm Act (amended under the 2002 FSRI Act and continued in the 2008 FCEA Act) to provide financial and technical assistance to farmers to promote the adoption of environmentally-friendly practices in environmentally sensitive areas, mainly to reduce soil and water resource problems. EQIP provides assistance of up to 75% (but more typically 50%) of the costs of certain conservation practices, such as nutrient management, manure management, integrated pest management, irrigation water management, and wildlife habitat management (60% of the fund's budget is spent on livestock-related concerns). Farmer contracts are for 1 to 10 years. The Conservation Security Program (CSP), (part of the 2002 FSRI Act), has been implemented since 2004. This voluntary programme provides payments to producers for adopting or maintaining a wide range of farm practices that address one or more areas of concern, such as soil, water or wildlife habitat. It provides equitable access to benefits for all producers, regardless of size of operation, crops produced, or geographic location. In contrast to other conservation programmes, CSP focuses on operations that already have addressed environmental problems, while keeping land in production. Up to 2008, the programme provided three tiers of participation that differ in contract length and total payments, according to the amount of treatment and the portion of the agricultural operation being offered. Payment limits per farms are differentiated according to the three tiers. Other programmes providing payments for farming practices are the Ground and Surface Water Program (GSWP), the Farmland Protection Program (FPP), and the Grassland Reserve Program (GRP).

The 2008 Farm Act (FCEA) continues the evolution of **environmental conservation programmes** begun in the 1985 Farm Act. The 2008 Farm Act re-authorizes almost all 2002 Farm Act conservation programmes, increases in spending by nearly USD 8 billion, modifies several programmes, and creates several new conservation programmes. The FCEA 2008 objectives continue to shift the conservation focus from land retirement to environmental protection of agricultural lands in production (working lands) by increasing funding for the Environmental Quality Incentives Program (EQIP) and new Conservation Stewardship Program (CSP) (successor to the Conservation Security Program). Chapter 14 on ***United States*** provides more detailed information on these policy changes.

In ***Canada***, the main agri-environmental programmes are implemented under the Agricultural Policy Framework (APF) applied for 2003-08. These programmes are financed (or co-financed) from the Federal budget, but the delivery mechanism is developed and implemented by Provinces. The National Farm Stewardship Program provides payments based on specific farming practices and technical assistance. In 2008, annual spending was CAD 112 million and around 44 000 contracts for Beneficial Management Practices (BMPs) were signed. Green Cover Canada also provides financial and technical assistance to farmers and focuses on land conversion, critical areas, and shelterbelts (expenditures raised from CAD 4 million in 2003/04 to CAD 29 million in 2007/08). The National Water Supply Expansion Program provides technical and financial assistance to Canadian

producers (in the form of one-off or transitional payments) to help develop, protect and enhance long-term agricultural water supplies (expenditures rose from CAD 5 million in 2003/04 to CAD 28 million in 2007/08). Moreover, it is necessary to have a completed and approved Environmental Farm Plan to be eligible for National Farm Stewardship Program funding.

In ***Mexico***, a programme for sustainable agriculture and productive reconversion in recurrent zones of natural disasters, provide area and headage payments to farmers who develop a rural sustainable development project and/or a productive project of conversion. In 1999, ***Korea*** introduced direct payments to farmers eliminating or restricting the use of fertilisers and pesticides in drinking water conservation areas. The programme was revised in 2002 to extend the application of incentive payments to the whole country. Three basic schemes are available to farmers who voluntarily join the programme (organic farming: no pesticides, no chemical fertilisers; pesticide-free: no pesticides, limited use of chemical fertilisers; and low agrochemical: limited use of pesticides and chemical fertilisers). In 2004, Korea introduced payments to support environmentally friendly livestock farming to farmers applying specific manure management practices and maintaining limited stocking densities. Additional payments per farm are provided to farmers managing appropriate landscape architecture (elements) around farm livestock facilities. In 2007, ***Japan*** introduced direct payments for environmentally friendly farming to farmers committing themselves to reduce the use of chemical fertilisers and pesticides to a half of the conventional farming practice in the region.

In ***Australia***, the activities of the National Heritage Trust were extended from 2002-03 to 2006-07 and the Trust's former 23 programmes were consolidated and simplified into four overarching programmes: (i) Landcare Program — reversing land degradation and promoting sustainable agriculture; (ii) Bushcare Program — conserving and restoring habitat for Australia's unique native flora and fauna, which underpins the health of landscapes; (iii) Rivercare Program — improving water quality and environmental condition in Australia's river systems and wetlands; and (iv) Coastcare Program — protecting coastal catchments, ecosystems and the marine environment. The Landcare, Bushcare and Rivercare programmes included measures to encourage the uptake of sustainable farm practices, implemented through collective communities., These programmes ended in June 2008 and were replaced by a new ongoing government initiative, Caring for our Country that aims to achieve an environment that is healthy, better protected, well-managed and resilient, and provides essential ecosystem services in the context of a changing climate. Caring for our Country is designed as an integrated package with the goal of promoting a business approach to investment; clearly articulated outcomes and priorities; and improved accountability. An initial investment of AUD 2.25 billion has been provided for the first five years (1 July 2008—30 June 2013) of the initiative. Strategic results will be focused on six national priority areas: (i) the national reserve system, (ii) biodiversity and natural icons, (iii) coastal environments and critical aquatic habitats, (iv) sustainable farm practices, (v) natural resource management in remote and northern Australia, and (vi) community skills, knowledge and engagement.

Payments based on land retirement

Programmes under this category provide incentive payments to retire land from commodity production and convert the land for environmental purposes. Such programmes have dominated agricultural conservation expenditures in the ***United States***

since the mid-1980s. The major land retirement programme is the Conservation Reserve Program, which was introduced under the 1985 Food Security Act. The CRP provides an annual rental payment to farmers who enrol in 10 to 15-year contracts to retire land from production. Since 1996, CRP rental payments have averaged more than USD 1.5 billion a year, or around 95% of total expenditure spent on land retirement. As part of the 2002 FSRI Act, the maximum acreage eligible for CRP payments was increased from 14.7 million hectares to 15.8 million hectares. The Wetland Reserve Program in the ***United States*** provides annual cost-share payments or lump-sum payments and technical assistance to producers for implementing an approved wetland restoration and conservation plan, and providing a permanent or long-term easement. Under the 2008 FCEA land retirement programmes continue, with particular emphasis on wetlands. The maximum set-aside area under the Conservation Reserve Program, which is the largest conservation programme in terms of total annual funding, will be decreased from 15.9 million hectares down to 12.9 million hectares, beginning in 2010. However, the maximum enrolment area covered by the Wetlands Reserve Program is increased by 0.3 million hectares to over 1.2 million hectares.

In 1993, ***Switzerland*** introduced land retirement payments under its Green Fallow and Floral Fallow programmes, in order to promote biodiversity and habitat protection. Agri-environmental land retirement payments also exist in the ***European Union***. Most EU member states have implemented various land retirement programmes for various environmental purposes — particularly to protect water supplies and biotope reserves — under the Agri-environment Regulation (No.078/92) and the Rural Development Regulation (No.1257/99 and No.1698/2005). For example, as part of the Rural Development Programmes, a number of EU member states implemented a range of land retirement payments targeting a variety of environmental objectives, including wetland restoration, long-term environmental set aside, *etc*.

In 1992, the ***European Union*** also introduced a forestry scheme (Council Regulation No.2080/92), later encompassed by Rural Development Regulation (No.1257/1999) and subsequently further developed in the 2007-13 RDR (No.1698/2005), which granted support towards planting costs for the afforestation of agricultural land. Payments supporting the afforestation of agricultural land were also provided in other OECD countries, such as ***Iceland***, ***Mexico***, ***Japan*** and the ***United States***.

Payments based on farm fixed assets

In the ***United States***, the Environmental Quality Incentives Program covers up to 75% of the investment cost of installing or implementing structural changes to promote environmental objectives, with a particular emphasis on addressing the environmental problems associated with the livestock sector — such as constructing animal waste management facilities and creating buffer filter-strips at the edge of fields. In 2000, Agriculture Management Assistance (AMA) was also made available in fifteen states to provide cost-share payments to enable farmers to carry out activities to address environmental issues, including the construction or improvement of water management structures, irrigation structures, and the planting of trees to form windbreaks, or to improve water quality.

A number of structural payment programmes have also been implemented in the ***European Union*** under the Rural Development Regulation (No.1257/99, and No.1698/2005). Almost all member countries implemented programmes providing subsidies for investment in manure storage, processing and application capacities. In many cases, these

investments were provided to enable farmers to comply with the strengthened environmental regulatory requirements aiming to improve the environmental impact of breeding activities. This is particularly the case of the new EU member states. For the new rural development programme period 2007-13, the expected environmental impacts of the investments have been assessed before their implementation to avoid negative effect on the environment. Furthermore, support for investments in irrigation structures was granted only to replace the old installations with new water saving systems. Several investment projects have been approved with the aim of reducing ammonia emissions from stables and promoting the rapid incorporation of manure in arable land in order to limit ammonia emissions.

Tax and credit concessions are sometimes used to offset the investment cost of adjusting farm structure or equipment to promote environmental improvements. For example, since 1999, ***Japan*** has provided concessionary loans to farmers for capital expenditure to promote more environmentally sustainable farming. Supported projects are administered by prefecture authorities and include the purchase of agricultural machinery, such as compost storage facilities, compost spreaders, and infrastructure improvements, such as manure storage facilities. Federal Government tax concessions were introduced in ***Australia*** in the 1980s in order to promote a range of environmental objectives, including the prevention of land degradation and water conservation. Some countries have also introduced payments in kind. For example, in ***Canada***, under the Shelterbelt Program, trees and shrubs are distributed (free of charge) to qualifying landowners in the Prairie Provinces for shelterbelt planting in agricultural areas, in order to enhance environmental sustainability and biodiversity. This programme was supplemented in 2001 with the introduction of the Shelterbelt Enhancement Program, which is aimed at improving the success of shelterbelt planting as to promote the sequestration of greenhouse gas emissions, as part of Canada's Action Plan 2000 on Climate Change.

One other development has been the introduction of structural cost-share programmes specifically designed to assist farmers in meeting the costs of environmental regulatory requirements. For example, in 2000 the ***United States*** introduced Soil and Water Conservation Assistance to help landowners comply with Federal and State environmental laws and make beneficial, cost-effective changes to cropping systems, grazing management, nutrient management, and irrigation.

Agri-environmental payments in the PSE classification

In this section the analysis is based on the *Inventory* information and on the information on payments to specific programmes contained in the OECD PSE/CSE database and its documentation. Programmes providing agri-environmental payments are part of the PSE database (which provides information on their evolution over time and the ways in which they are implemented) but are not explicitly identified[5]. The agri-environmental payments identified in the *Inventory* are presented for the ***European Union***[6], ***Norway***, ***Switzerland*** and ***United States*** (Table 2.1). These countries were selected as they have developed the broadest scope of programmes providing agri-environmental payments to farmers and have applied them for a longer time period. Some other countries (***Japan***, ***Mexico*** and ***Turkey***) have only recently started to introduce agri-environmental payments and/or the level of these payments in the overall support is extremely low. ***Australia***, ***Canada*** and ***New Zealand*** have been implementing agri-environmental projects for a longer time, but are making a very limited use of payments to farms (and, where payments

are made, this is in the form of one-off or transitional payments) and their support to agri-environmental programmes is provided mostly through general services.

This part focuses on those agri-environmental measures that provide payments to farmers and hence are included in the PSE. However, in the PSE payments to farms are classified according to the *implementation criteria* and not by *objectives* or *impacts*. Box 2.2 provides an explanation on how the agri-environmental payments are classified in the PSE. As was illustrated in Part 2 of this chapter, the mixes of policy instruments to address environmental issues in agriculture are broader than agri-environmental payments, and the mix varies from one country to another. In countries such as ***Norway*** and ***Switzerland***, there are significant regulatory requirements to achieve improved performance. This means that the level of agri-environmental payments by themselves does not account for all of the efforts of countries to reach their environmental objectives related to agriculture. It should be also noted that farm support related to environmental cross-compliance and payments to less favoured areas are not included in agri-environmental payments as defined in this chapter (discussion on which payments to less favoured areas can be considered as agri-environmental payments is ongoing in the OECD in the context of the *Inventory* project).

Some budgetary spending addressing environmental issues finances general services to the sector. However due to a lack of detailed information concerning the expenditures on general services (GSSE), the transfers related to agri-environmental policies cannot be separated from the overall figures (such as expenditures on research, development, extension, or infrastructure).

Box 2.2. **How agri-environmental payments are classified in the PSE**

The PSE classification is based on implementation criteria (see Annex 1.C). This means, for example, that the category "payments based on non-commodity outputs" includes only those agri-environmental policies under which payments are directly related to (based on) the provision of specific non-commodity outputs. However, policies that are based on area or animal numbers or some other implementation criteria, although they may be implemented with the aim of improving environmental performance, are classified according to the primary basis on which the policies are implemented. Such policies are currently classified as "payments based on area/animal numbers/receipts/income" or, in the case of payments financing investment, they are classified as "payments based on input use". In these cases, further information concerning the nature of the policies is given through the use of labels.

With respect to agri-environmental programmes, the label based on input constraints (voluntary or compulsory), is the most appropriate, as these policies require farmers to reduce the use of inputs or to apply specific farming practices. Work is on-going to further refine the new classification in order to provide more comprehensive information on the content of those categories and sub-categories that currently may contain rather heterogeneous measures (*i.e.* the label voluntary input constraints is applied also for other policy measures, *e.g.* animal welfare policies). This should allow in future for attention to be drawn to the fact that a significant share of support has input constraints attached relating to environment, animal welfare, or other issues, where this is the case.

Box 2.2. **How agri-environmental payments are classified in the PSE** *(cont.)*

Under the classification used in this *Monitoring and Evaluation* report, agri-environmental payments are classified in the following categories:

1. Payments based on input use – with input constraints: this category includes mostly payments to investments to reduce or improve environmental impacts of farming. The label input constraints also distinguishes whether the input constraints are applied on a voluntary basis or whether they are compulsory (enforced by regulation);

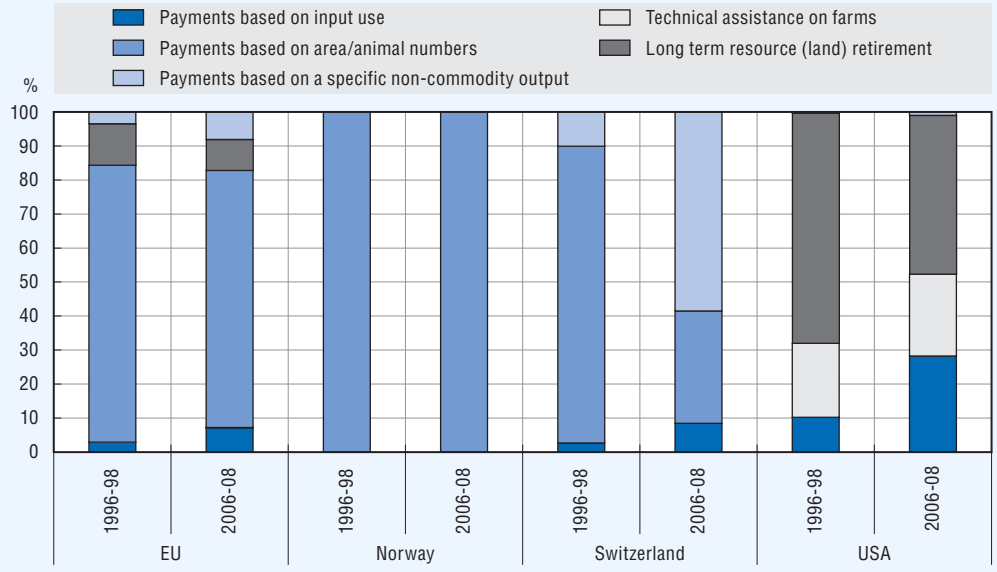
2. Payments based on current area/animal numbers – with input constraints: this category includes payments for specific voluntary farming practices where payments are based on current area or animal numbers.

3. Technical assistance/extension on farm: payments provided for services on farms such as technical assistance and extension related to the implementation of agri-environmental programmes.

4. Payments based on long-term resource retirement: Payments for long term retirement of resources (mostly agricultural land) from production for environmental and resource conservation purposes.

5. Payments based on a specific non-commodity output: Payments based on specific environmental achievements (*e.g.* reduction of pollution, biodiversity results…) or specific landscape amenities not related to production (*e.g.* stonewalls, hedges, individual landscape elements).

Figure 2.1. **Structure of agri-environmental payments in selected OECD countries in 1996-98 and 2006-08**



EU 15 for 1996-1998 and EU 27 for 2006-08

Source: OECD, PSE CSE database, 2009.

StatLink http://dx.doi.org/10.1787/653080707673

Table 2.1 shows the trends of indexed nominal agri-environmental payments in the ***European Union***, ***Norway***, ***Switzerland*** and the ***United States***. It should be stressed that these data only include those agri-environmental measures that provide payments to farms. As the mix of policy instruments to address environmental issues in agriculture varies from one country to another, the analysis of the level and structure of agri-environmental payments should be considered in this wider perspective.

Table 2.1. **Total agri-environmental payments[1] in selected OECD countries, 1996-2008**

		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
EU[2]	EUR million	3 004	3 817	3 931	4 390	5 623	5 828	5 250	5 133	5 527	6 118	6 525	5 620	6 809
	1996=100	100	127	131	146	187	194	175	171	184	204	217	187	227
Norway	NOK million	923	922	994	1 043	1 071	1 001	1 198	683	695	712	874	966	998
	1996=100	100	100	108	113	116	108	130	74	75	77	95	105	108
Switzerland[3]	CHF million	605	721	689	177	184	193	203	213	224	231	233	239	245
	1996=100	100	119	114	29	30	32	34	35	37	38	39	40	40
United States	USD million	2 690	2 731	3 030	2 676	2 751	2 964	3 501	4 093	4 550	4 911	4 946	4 524	4 876
	1996=100	100	102	113	99	102	110	130	152	169	183	184	168	181

1. Agri-environmental payments used in this table provide support to farmers for undertaking farming practices designed to achieve specific environmental objectives that go beyond what environmental regulation require. Farm support related to respecting regulations (environmental cross-compliance) and payments to less favoured areas are not included here as agri-environmental payments. Discussion on which payments to less favoured areas can be considered as agri-environmental payments is ongoing in the OECD in the context of the Inventory project).
2. EU15 in 1996-2003; EU25 in 2004-06; EU27 from 2007.
3. In Switzerland, most agri-environmental payments up to 1998 were for integrated production. Since 1999, these payments were abolished and the regulatory requirements for integrated production are compulsory for all direct payments (environmental cross-compliance). However, these payments are not included as part of "agri-environmental payments". This change in policy is reflected by the sharp drop in agri-environmental payments in 1999.

Source: OECD, *PSE/CSE database*, 2009.

StatLink http://dx.doi.org/10.1787/655476241618

Summary and conclusions

OECD countries use different mixes of policy instruments to achieve their various environmental objectives where markets for externalities and public goods are missing. The policy instruments applied are the reflection of the overall policy approach to the sector; the specific environmental issues and their perceived linkage to agriculture activities; the nature of property rights related to the use of natural resources (land, water); and societal concerns related to environmental issues. Although less visible in policy analysis and policy debate, environmental regulations (regulatory requirements) are the core of the policies addressing environmental issues in agriculture. All OECD countries impose a complex set of regulations to prevent the negative impact of agriculture on the environment. Most of these regulations are applied generally. However, in areas with higher environmental values (natural reserves), drinking water catchment areas, environmentally sensitive areas, or close to population dense areas, stricter regulations are applied. Over time, these regulatory requirements have generally broadened in scope and become more stringent. Some OECD countries (***Australia***, ***New Zealand***) rely mostly on regulations to address environmental issues in agriculture.

Many other OECD countries (***EU*** countries, ***Norway***, ***Switzerland*** and ***United States***) have also developed a wide range of voluntary programmes providing payments to farmers to adopt specific farming practices on producing land, with positive environmental effects and/or providing public goods (such as landscape, biodiversity, etc). Although, these programmes offer a large variety of measures, most of the payments are related to the

support of extensive forms of farming (mostly on grassland — extensive management of grassland, extensive pastures). For most of those payments targets are defined in the form of a specific farming practice rather than a specific (measurable) environmental outcome. Programmes providing payments for retirement of agricultural land from production for environmental and resource conservation purposes are also implemented in a range of countries, but, with the exception of the ***United States***, they are of minor importance in terms of area covered.

The agri-environmental payment is a generic title and includes a wide range of policies which may differ in many ways, in term of their characteristics:

- Spatial targeting (*i.e.* applied to a specifically defined area – mostly using environmental criteria; within an administrative region, whole country);
- Time duration (*i.e.* one-off/transitional; medium term; long term);
- Basis of the payment/implementation criteria (*i.e.* based on input use; payment per area/head, resource retirement, non-commodity outputs);
- Definition of the level of payment (*i.e.* valuation of a specific project, using an auction system, using fixed (flat) rates — specific region/whole country, share on investment costs).

Other economic instruments, such as tradable rights and quotas, are used in a limited number of countries. These include tradable rights for the development of wetlands in the ***United States***, tradable water extraction rights (implemented on a state/regional basis in the ***United States***), and improving market mechanisms to free up trade in water rights under implementation of tradable water rights in Australia. Tradable rights based on environmental quotas, permits and restrictions do not yet appear to play a significant role in agri-environmental policy, despite the growing use of such measures for environmental policy in other sectors.

Most OECD countries have also directed greater attention towards improving the knowledge-base relating to environmental issues in agriculture in the past two decades, through increased spending on agri-environmental research, often undertaken in co-operation with private sector interests. One notable trend in this area has been the development of agri-environmental indicators in a number of OECD countries to track environmental performance. Greater emphasis has also generally been placed on communicating information to farmers on environmental issues via technical assistance and extension, in order to induce voluntary changes in farming practices to improve environmental outcomes.

Coherence of agricultural, agri-environmental and environmental policies (policy coherence) has generally improved in the past two decades. Some OECD countries have taken steps to streamline agri-environmental policies measures within over-arching frameworks or action plans addressing environmental or rural development objectives. In the broader context, however, where agri-environmental policies offset the damaging environmental effects of input-linked and production-linked policies, the opportunity costs of improving the environment are higher than would be the case in the absence of production-linked support measures in so far as domestic prices are thereby kept higher than world prices. On the other hand, a number of agri-environmental measures go beyond offsetting environmental damage caused by agriculture and provide voluntary payments for additional environmental services (more or less precisely defined and targeted)

provided by agriculture. In most cases these additional environmental services are defined as specific farming practices than environmental results.

OECD countries are further developing policies to address environmental issues in agriculture. However, in term of the mixes of policies used they continue to use different approaches. Some countries, such as ***Australia*** and ***New Zealand***, continue to rely mostly on environmental regulation and economic instruments such as tradable quotas and permits rather than agri-environmental payments. However many OECD countries implement various systems of agri-environmental payments, which are intended to pay farmers for the voluntary provision of environmental services, or to contribute to the costs of reducing pollution. So far these programmes mainly focus on paying for the implementation of specific farming practices rather than for measurable environmental outcomes. The new Farm Act in the ***United States*** also gives a more prominent role to agri-environmental payments for specific practices on working lands, relative to payments for land conservation. The European Union places emphasis on payments to address environmental issues on working farms. In the ***EU***, ***US*** and ***Switzerland*** cross-compliance linking environmental and agricultural policy instruments is significant. Methods of evaluation of agri-environmental policies are being developed in many countries. This is a longer term and difficult process particularly given the site specificity of many environmental issues and the complexity of valuation and measurement of environmental outcomes.

Notes

1. For example, the comprehensive stocktaking of the environmental performance of agriculture in OECD countries since 1990 in a recently published OECD report (OECD, 2008a).
2. *Good farming practices* also address other environmental issues, such as water pollution and biodiversity.
3. The voluntary carbon market operated by the Chicago Exchange (CCX) does accept credits for carbon sequestration by agriculture, but it is quite limited in practice.
4. In 1985 under EC regulation No.797/85; in 1992 under the Agri-environment Regulation (No.2078/92); and later included under the Rural Development Regulation No.1257/99 for 2000-06 and No.1698/2005 for 2007-13.
5. The information on Agri-environmental policies included in the *Inventory* was used to identify the agri-environmental payments in the PSE database. The payments to farmers subject to environmental cross-compliance are not considered as agri-environmental payments in this concept.
6. The payments are for all EU member states, so they range from EU 15 in the beginning of the evaluated period to EU 27 at the end of the period.