

Letting

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Many OECD countries, as part of their agricultural policy, have provided financial incentives for farmers to keep agricultural land out of production or to shift it to alternative uses. These land-diversion schemes often pursue two different objectives: to control the supply of agricultural commodities and to improve the environmental quality of farmland.¹

Land-diversion schemes in OECD countries have taken substantial areas of agricultural land out of production or shifted them from crop production to other uses, such as grazing, farm forestry, or the production of renewable-energy materials. In the United States, for example, 14.6 million hectares of land were enrolled in a long-term 'set-aside scheme', and 5.6 million hectares were left idle under annual programmes in 1995, together constituting around 11% of US arable land. In the European Union, some 7.2 million hectares of land were diverted under short-term set-aside schemes in 1995, and over 0.9 million hectares have been signed up under a forestry scheme, totalling again nearly 11% of arable land. In Canada, around 0.5 million hectares, or around 1% of arable land, have been placed under long-term vegetative cover since the late 1980s. Japanese farmers diverted nearly 0.7 million

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Without accurate evaluation of water balances, it is difficult to tell whether the use of water in irrigation is efficient.

approach involves drawing on the specific interest and expertise which some countries have already established for specific issues, such as on soil quality or greenhouse gases.

The AEI work developed by OECD is also of potential value to many non-member countries, as interest in addressing agri-environmental issues is of growing importance to many non-OECD countries. There are domestic pressures to improve environmental quality – which combine with requirements under international agreements that governments monitor environmental progress.



Future work on agri-environmental indicators will have to be reviewed regularly to reflect the emergence of any changing priorities and new

concerns, such as considerations of food safety and climate change. The OECD will continue to inform governments and the public of how agriculture is affecting the environment, to assist policy-makers in understanding the links between the two so that they can improve the design of policies and the quality of their decision-making and, lastly, to monitor and evaluate the effectiveness of policies in promoting sustainable agriculture as part of the continuing process of policy reform. ■

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hectares of paddy fields from rice production in 1995, around 16% of the Japanese arable total. And Swiss farmers placed 57,000 hectares of land into diversion schemes in 1994, which is 14% of Swiss arable land.

In most cases, the length of the 'set-aside' period is a good indication of whether land diversion is primarily intended to control the supply of a particular commodity or to conserve the environment. As a rule, land-diversion of up to five years is mainly aimed at controlling the supply of a particular commodity, whereas land diversion of ten years or more is usually for environmental objectives.

Short-term Set-aside

Short-term set-aside can nevertheless also pursue some environmental goals simultaneously. It can be implemented in a rotational or a non-rotational way. Rotational set-aside diverts a plot of agricultural land for one growing season, and then returns it to production. In the following year, another land parcel is 'idled'. A large part of the land base of a farm is successively taken out of production regardless of whether or not individual parcels require environmental improvement. If the fallowed land is not managed, a risk of environmental degradation can be created, including erosion by wind and water, leaching of nutrients, and invasion by weeds and pests.

As a result, some governments have attached environmental conditions to the budgetary provisions they make for rotational set-aside. For instance, several European Union countries require farmers to establish plant cover during the idling period, and impose restrictions on the use of fertilisers and pesticides and the spreading of animal manure and grass cuttings. In Japan, farmers are obliged to maintain the ridges of diverted rice paddies to preserve their flood-preventing functions. Experience with one-year set-asides in the EU, Japan and Switzerland shows

that harmful impacts on the environment can normally be prevented if appropriate land-management rules are observed.

In recent years, some countries have gone a step further and have attempted to achieve environmental improvements on one-year set-aside. Efforts have included use of carefully composed seed mixtures for the plant cover to enrich the soil with nutrients and organic matter, improve the soil structure and reintegrate local species of plant into the rotation. The judicious selection of grass cover has also benefited birds by generating nesting habitat and feed supply.

These beneficial practices are more effective, and less costly, when the same plots are left idle for several years in a row. On multi-year set-asides, soil improvements can accumulate and ecosystems develop through their initial stages to support a wider diversity of wildlife. Adverse effects on the landscape, which are sometimes seen with rotational set-aside, can be reduced. And where adjacent land parcels are taken out of production to create larger areas of idled land, the potential for wildlife improvement is further increased.

As short-term set-aside has evolved from a device purely to control supply to one that includes environmental goals, farmers and policy-administrators have learned how to manage the fallowed land in ways that are most beneficial for the environment. The 'greening' of set-aside through the attachment of environmental conditions has nonetheless been limited. Most importantly, the degree of targeting has been fairly low: existing programmes have so far provided few incentives for farmers to concentrate idled land in areas where the largest environmental benefits can be obtained. Rather, the least profitable land from an agricultural point view has often been placed into short-term set-aside. Furthermore, the possibilities for achieving enduring environmental improvements have been limited by the short period of diversion.

Land-diversion programmes in the EU, Japan and Switzerland allow farmers to produce alternative crops on set-aside rather than obliging them to leave the land idle. Where they choose this option, the impact on the environment can be adverse or beneficial, depending on which crops are planted and which production



To harvest or not? Short-term set-aside often simply rotates land between activity and idleness, without concern for environmental goals.

1. *The Environmental Effects on Agricultural Land Diversion Schemes*, OECD Publications, Paris, forthcoming 1997.

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methods used. The situation differs among countries: the EU applies less stringent environmental conditions to the production of non-food crops than to other set-aside land, whereas Japan and Switzerland have recently made efforts to shift towards soil-improving crops and encourage the use of conservation practices.

Long-term Land-diversion

Long-term land-diversion can generate considerably larger environmental benefits than short-term set-aside. Since its goals are usually environmental, long-term land-diversion can be restricted to land that requires conservation, or is particularly rich in natural resources.

For example, the United State's Conservation Reserve Program (CRP) started out in 1985 as a measure to control soil loss and was initially targeted at land at high risk of erosion. With time, other environmental objectives were added, reflecting a shift away from 'on-farm' environmental concerns towards the wide impact of agriculture on the natural resources valued by voters and taxpayers in rural areas and cities. Agricultural land located in the proximity of urban water supplies or suitable for the creation of wildlife habitat, not least by tree plantings, received priority. In recent years, smaller parcels which have a high ecological value have been targeted, such as those containing wind-breaks, agricultural wetlands supporting valuable wildlife habitat, and buffer strips alongside waterways that protect the water against pollution.

Canada's Permanent Cover Program (PCP) was introduced in 1988 with the objective of

2. Gérard Bonniss, 'Farmers, Forestry and the Environment', *The OECD Observer*, No. 196, October/November 1995.

3. Leo Maier and Ron Steenblik, 'Towards Sustainable Agriculture', *The OECD Observer*, No. 196, October/November 1995.

4. *Agricultural Policies, Markets and Trade in OECD Countries. Monitoring and Evaluation 1996*, OECD Publications, Paris, 1996.

5. See pp. 16-18.

6. See pp. 10-12.

reducing soil deterioration on high-risk land and improving wildlife habitat. Farmers were encouraged to take farmland out of annual cultivation and plant a perennial cover, such as grass or forests, for periods of either ten or 21 years.

The EU's long-term set-aside programmes were introduced in 1992 as part of the agri-environmental and the forestry schemes accompanying the reforms of the Common Agricultural Policy. They address a wide range of environmental concerns and are currently implemented according to national or sub-national programmes. The agri-environmental regulation is a policy package for the promotion of agricultural production methods compatible with the protection of the environment and the maintenance of the countryside. Farmers are encouraged to divert land from production for a period of at least 20 years. Similarly, the forestry scheme is aimed at the development of farm forestry as an alternative to agricultural use.²

Experience with long-term set-aside indicates that the environment can be substantially improved during the contract period. The CRP in the United States and the PCP in Canada have reduced soil erosion, improved water quality and created wildlife habitat. For the EU programmes, it is still too early to draw conclusions. There are few guarantees that the benefits obtained will persist beyond the duration of the contracts. If the land is eventually returned to production, many of the improvements achieved during the idling period could again be lost. This is becoming increasingly a concern as more and more long-term set-aside contracts are nearing maturity.

Achieving Sustainability

In principle, the permanency of environmental improvements will be ensured only if the changes induced by set-aside are both environmentally and financially sustainable.³ There are several ways in which policy can contribute to this goal.

One is to favour alternative uses for the land during the set-aside period that allow farmers to



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integrate the diverted areas into their farming enterprises, thereby reducing the incentive to revert to previous practices after the end of the contract period. This approach is exemplified by the Canadian PCP, which encourages the development of livestock grazing and other grass-based uses on former arable land. In this case, paid diversion aids the transition from one type of use to another one that is environmentally more desirable.

A second way is to encourage the conversion of arable land to woodland, which provides income in the long run and raises the cost of bringing the land back into cropping after the end of the set-aside period. Experience with the CRP shows that farmers will often choose to reforest areas that were cleared of trees in the not-too-distant past. Abandoned marginal farmlands are also candidates for afforestation.

But for a large part of the land currently enrolled in long-term set-aside schemes, there are no measures in place that would assure that the environmental benefits are sustainable. There is, of course, the possibility of renewing the contracts indefinitely, but that creates a permanent burden on the budget and can only be justified where there is no other way to secure the environmental improvements. In many cases, less expensive alternatives which require farmers to use appropriate practices on former set-aside, including conservation tillage and integrated pest-management, may exist. The 'conservation compliance provision' in the United States provides



The conversion of arable land to woodland can provide durable and diverse habitats for wildlife.

one example. It obliges farmers to use conserving practices on erodible land and would protect much of the CRP land if it were returned to production. To make long-term land-use planning easier for farmers, such measures should be announced by the government before the land-diversion contracts are signed.

Budgetary Costs

Current land-diversion programmes provide a financial incentive to farmers in the form of direct payments for land left idle, or by making set-aside a condition for receiving payments under related farm price- and income-support programmes. None obliges the farmers to bear the full economic cost of setting aside land.

In the United States, the average annual payment for land signed up in the CRP between 1986 and 1992 was \$125 per hectare, with an estimated total budgetary outlay of over \$1.7 billion in 1995. Under the PCP in Canada, the government made a one-off payment of between C\$50 (US\$36) and C\$163 (US\$119) per hectare, depending on the length of the contract, and a financial contribution towards the cost of seeding of C\$50 (US\$36) per hectare, with budgetary costs totalling C\$70 (US\$51) million.

For the EU's long-term set-aside schemes, total expenditure figures are not yet available, but annual per-hectare payments vary from ECU 146

(US\$191) to ECU 600 (\$784) in different countries. Under the forestry scheme, the contribution towards the cost of tree plantings can vary from ECU 2,415 (\$3,156) to ECU 4,830 (\$6,312) per hectare depending on the tree species, and payments of up to ECU 725 (\$947) per hectare can be made every year during the non-productive period of the tree plantings. EU expenditures on the scheme were around ECU 200 (\$261) million in 1995. The payment rate for short-term set-aside under the arable aid scheme is based on the 'reference yield' for cereals and was set at ECU 69 (\$90) per tonne in the 1995/96 marketing year. The total budget cost of short-term land idling amounted to ECU 2.4 (\$2.9) billion in 1994.

In Japan, the average subsidy for rice-paddy diversion was ¥108,000 (\$1,056) per hectare in 1994, with a total budget cost of ¥63.3 (\$0.62) billion. In Switzerland, payment rates range from SF300 (\$254) per year and hectare for low-intensive pasture to SF3,000 (\$2,537) per hectare for green fallow and some other measures. In 1994, some SF41 (\$35) million were spent on these measures.

Although total budgetary expenditures on land-diversion schemes amount to only a few per cent of total agricultural support in the OECD countries,⁴ they have been among the fastest growing types of direct payments. Since participation in the land-diversion programmes is voluntary, payments to farmers have to be at least as high as the income lost by taking land out of production. In countries with high price-support, this is usually reflected in high payments for idled land.

Finding the 'right' payment per hectare is an important step in making the programmes cost-efficient. A bidding process, by which farmers compete with one another for contracts and where they have to specify the minimum payment they are willing to accept in return for setting their land aside, could ensure that the costs are not excessive. At the same time, ranking of the bids based on expert assessment of the expected environmental benefits could guarantee that offers with the largest benefits are considered first for acceptance. A combination of competitive bidding and expert assessment may

go some way towards an efficient allocation both of land resources and budgetary funds. The CRP is the only programme so far that has adopted this approach and, despite some short-comings that may arise, estimates in the United States suggest that it has increased the ratio of environmental benefits to budgetary costs.



The experience with land set-aside points to a number of policy conclusions. First, the measures should be well targeted: to try to achieve supply-control and environmental objectives with a single measure can lead to no objective being fully achieved. Second, land-diversion is often costly to the public purse and should be designed in such a way that the benefits are obtained at the lowest cost to the taxpayer. There may also be other, innovative ways of addressing environmental problems on land, especially in the long run, that would require less budgetary expenditure.⁵ Third, monitoring of the environmental effects of set-aside has in general been inadequate. Effort to develop agri-environmental indicators⁶ can help improve the programmes and provide a basis for verifying that the disbursement of taxpayers' funds are directed to their most effective use. ■

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