

5 Farmland conversion: Country/region examples

This chapter provides information on a range of programmes in five OECD member countries that have been designed to influence farmland preservation. Whilst the details of programmes vary from country to country, their common aim is to alter land management decisions by farmers in ways that will increase the flow of socially desirable outputs from farmland. Some programmes operate at the national level, while others are specific to a particular region. The five countries under consideration are Australia, Belgium, Canada, Finland and the Netherlands.

As Table 7 shows, these five countries represent a diverse set of agricultural conditions. Three have a relatively small share of arable land – but, of the three, both Australia and Canada are major food exporters. These two countries have both a large amount of arable land in terms of total area and a large amount of arable land per person, which allows them to produce far more than can be consumed domestically. Finland differs from Canada and Australia in that it has a much smaller arable land base and also a much smaller urban share of the population. In Belgium and the Netherlands, arable land represents more than one-quarter of the total land area, but, because both countries are small with relatively large populations, there are well over 1 000 persons per square hectare of arable land. Nevertheless, the Netherlands is a major agricultural exporter.

Notwithstanding these differences, there exists a strong interest in preserving farmland in all five countries. In the case of Belgium and the Netherlands, this reflects an acute scarcity of farmland and the fact that the majority of farmland is located in close proximity to urban areas. As a result, there is a strong interest in maintaining both commodity and environmental services from farmland. In Australia and Canada, a very high share of the population is to be found in urban areas and, consequently, the existence of adjoining areas of open space is an important issue there. Most of the farmland in these two countries is not subject to urban pressure, by virtue of its location at vast distances from the towns and suburbs. In Finland, a much smaller share of the urban population leads to a more uniform population distribution across the landscape, but adverse climatic conditions make agriculture more marginal. Access to green space is less of an issue than in Australia and Canada, but there is an interest in preserving open spaces and maintaining some domestic commodity production.

Table 7. Background Information on case study countries

	Arable land		Population	Population per sq ²	Urban population
	Share	Km ²	(per km ²)	(per km ² of arable land)	Share
Australia	6%	460 938	2.6	43.8	88.2%
Belgium	28%	8 546	340.8	1 216.9	92.7%
Canada	5%	498 530	3.2	64.8	80.1%
Finland	7%	23 670	15.4	219.7	61.1%
The Netherlands	27%	11 139	392.5	1 463.3	80.2%

5.1. Australia: The Environmental Stewardship Programme

Australia is a major agricultural exporter despite the fact that only 6% of its land mass is arable. It is also a highly urbanised country with 88% of the population living in urban areas. Moreover, the majority of arable land is found in close proximity to urban centres. As a result, while Australia has a large land base, both urbanization pressures on prime arable land and a high percentage of pasture-land being on the margin of profitability are issues that need to be addressed. Despite harsh environmental conditions, agriculture is the most extensive form of land use (OECD, 2008c). Farming operations in Australia consistently experience problems with drought and salinity – and the effects of climate change are predicted to exacerbate these problems (Cocklin, Dibden and Mautner, 2006). The need to address issues of land and water management, and biodiversity conservation has been recognised and a range of policies have been implemented to address agri-environmental concerns (Hajkovicz, 2008; OECD, 2008c).

In 2007, the Australian Government introduced the Environmental Stewardship Programme as a market-based complement to statutory and regulatory mechanisms to govern the management of land with high-value environmental and amenity characteristics (see www.nrm.gov.au/stewardship). This reflected a recognition that, while it is possible to achieve a significant amount of protection through the imposition of regulations, there is also a role for payments to private landowners to create incentive to go beyond the land manager legal requirements.

The objective of the Programme is to maintain and improve the quality and extent of targeted high public value environmental assets on private land. The Programme engages private land managers in long-term (up to 15 years) contracts to manage these assets, using a range of market-based approaches. Selected farmers and other private land managers will be paid to undertake agreed actions beyond their regulated responsibilities to achieve public benefit environmental outcomes that contribute to the long-term protection, rehabilitation and improvement of targeted environmental assets on private land. Relevant actions could include changing property management in relation to aspects such as: stocking and grazing intensity; implementation of a different fertiliser regime; and weed management. Land managers will be selected through auction, tender and other market-based mechanisms. Payments to landholders will be treated as income and will be taxable.

The Programme focuses on specific species (e.g. nationally endangered or vulnerable species, migratory species, etc.) and locations but does not dictate how land is to be managed. Individual landowners voluntarily submit land-use management plans and the compensation they expect for carrying out the work. Each submission has to show how it contributes to achieving the programme goals. These submissions are evaluated on the basis of: the scope of the proposal and its relevance to contribution to the goals; the capability of the landowner to carry out the work; whether there is a critical mass of contiguous land on which the work to be carried out is large enough to produce a worthwhile result; and the proposed cost. The Programme does not purchase land, and not all submissions are accepted.

The Programme will take four years to build its set of agreements and it begins with a small number of specific ecosystem types as the initial focus. Over time, new ecosystem types are to be added. A significant part of the Programme is a monitoring and evaluation function to determine if proposed actions are being followed and if expected results are occurring. Initial funding for Programme is AUS50 million for the four-year establishment phase, with supplemental funding provided to pay for the remaining life of the contracts.

While still in its infant stage, the Programme points to the perceived advantages of coupling market-based mechanisms with regulations, as ways to alter landowners' patterns of behaviour. By providing payments for the provision of environmental benefits, the returns from farming are increased, which should have the effect of lowering the rate of farmland conversion. By contrast, simply relying on regulations that do not take into account farm management practices typically increases production costs and has a negative effect on farm viability, especially where farmland has high opportunity costs.

The Programme does not focus explicitly on farmland, but, since the majority of private land in Australia is part of farms, the expectation is that farm-owners will be major participants. In particular, the Programme may be of considerable value in peri-urban areas, where there is continuous pressure for the intensification of land-use, which can lead to the conversion of environmentally significant land.

Houston (2005) estimates that perhaps one-quarter of the value of Australian agriculture is produced in the vicinity of cities. This land represents approximately 3% of the total Australian land base, but much of it has high agricultural and amenity value because the cities were initially established in the more desirable parts of the country. According to this study the majority of high-value crops – vegetables, fruit and grapes, horticultural products – are produced in these regions. The author notes that the land has competitive uses and that there are important environmental issues associated with intensive agriculture.

5.2. Belgium: Agricultural diversification in Flanders

Flanders is one of the three regions that constitute Belgium. At 13 522 square kilometres, it comprises about 45% of the national territory. The majority of this land base is agricultural land, but according to the OECD's definition of "rural", less than 10% would be categorised as predominantly rural. Indeed, a significant share of agriculture is conducted in what would be considered the predominantly urban zone. Agriculture in Belgium is shifting to larger farms on a smaller land base, with less pasture and more arable land and permanent crops. This reflects increasing land values, both in agriculture and in nonfarm uses. As noted by Cazaux, Carels and Van Gijsegheem (2007), Flanders can be characterized as a peri-urban area where agriculture has always been, and remains, a significant economic activity.

The key forces affecting agriculture in Flanders are urban pressure and concerns with the environmental impacts of farm production. In addition, there are increasing problems associated with fragmentation of land holdings as ex-urban residential and other land-uses break up parcels of farmland (Cazaux, Carels and Van Gijsegheem, 2007). This results in adverse consequences for both agricultural production and wildlife habitat.

Because agricultural policy within Flanders largely operates within the boundaries set by the CAP there has been a significant effort to find ways to implement revisions to CAP policy in ways that suit the particular requirements of peri-urban farming. In particular, the Single Farm Payment provides a way to couple the income stream to environmentally benign agricultural land-use. In addition, the Second Pillar of the CAP provides additional opportunities to grant farm support for diversification activities.

Key concerns in Flanders are farm consolidation and farmland conversion, both of which practices alter the fundamental rural landscape in adverse ways. The former leads to either the abandonment of historic buildings or opens the way for ex-urban residential development or both. Consolidation can lead to more intensive farming practices (with adverse environmental consequences). Farmland conversion implies a reduction in the critical mass of farmers and a change in the landscape, as well as possible problems for wildlife habitat.

To address these concerns, the government of Flanders has linked agricultural policy with land-use policy. Agricultural policy, although largely derived from the CAP, is focused on maintaining farm numbers and farm viability. Land-use policy (through the 1997 Spatial Structure Plan) provides mechanisms for maintaining open space and managing the path of urban development (Cazaux, Carels and Van Gijsegheem, 2007). The plan has been in effect for almost ten years, with mixed results.

It appears that the broad land control measures are largely effective, with development following the projected path (Celen, 2007). There has been difficulty in achieving mixed use of land that combines farming with rural landscape. Farmers are reluctant to enter into long-term commitments that may constrain their production decisions. On a more positive note, the range of payments available under 2003 CAP reform has encouraged farmers to adopt practices that result in additional income.

Flanders has actively encouraged farm diversification as a way of increasing the returns to farmland and at the same time, reducing the incentive for farmers to consider farmland conversion. Aspects of this programme include adjustments in the production and marketing of normal commodities, the production of non-traditional outputs (including energy and agro-tourism) and the provision of environmental services. In the case of normal commodities, there are incentives for farmers to adopt organic production methods and to use direct marketing techniques and local branding. Non-traditional activities include the production of energy (solar/wind/wood) and services provided for domestic animals owned by urban residents, as well as agro-tourism and agro-education. Finally farmers are encouraged to provide “green services” through habitat provision, storm water retention and the provision of visual amenities.

Cazaux, Carels and Van Gijsegem (2007) reviewed studies of the impact of diversification schemes in the vicinity of Brussels. They find that: the interest of farmers in diversification decreases with distance from the city; the interest decreases as diversification adversely affects agricultural performance; and that farmers’ interest increases with either a positive environmental attitude or past experience of diversification measures. They note that some of the restrictions put in place to block non-farm development can also have adverse effects on farm diversification. In a parallel study investigating the impact of on-farm diversification as a survival strategy in Flanders, Vernimmen, *et. al.* (2004) determine that on-farm diversification is ineffective in supporting farms with marginal viability, but that it can be effective in augmenting the income of farms that have some critical mass.

The approach in Flanders seems to be evolving over time and finding ways to provide more market-oriented incentives to persuade farmers to adopt either diversification or agri-environmental measures. This reflects the inherent difficulty in obliging farmers to engage in these activities. While it is possible to establish regulations that prohibit certain actions, it is clear that the incentive of price signals is a more effective way of producing the outcomes that are socially desirable.

5.3. Canada: The Greater Toronto Greenbelt

In Canada, land use is a provincial responsibility and each province has its own legislation, policies and programmes regarding land management and use (George Morris Centre, 2005). Ontario is the most populous province in Canada, and Toronto is by far the largest city, with a metropolitan population of 5.5 million in 2006. Moreover, the Greater Toronto Area (GTA) has grown to this level from 4.2 million in 1991. Prior to 1991, the GTA was not a defined administrative unit, but in 1971 the Toronto metro area had a population of 2.8 million, which suggests a GTA population of about 3 million. This means the population of the GTA has increased by roughly 50% in 25 years. The GTA is the main urban centre in a region known as the “Golden Horseshoe” that curls around the west end of Lake Ontario and has a population of about 8.1 million people, approximately one-quarter of the population of Canada.

Southern Ontario also contains just over half the Class 1 land in Canada and much of this land is within the urban shadow of the GTA. Between 1971 and 2001 the share of Class 1 land occupied by urban areas increased from 5.5 to 11.2%, with expansion of the GTA accounting for the majority of this change (Labbe, *et al.*, 2007). In addition, land in the Golden Horseshoe has specific micro-climate characteristics that make it one of only a few areas in Canada where tender fruits and vegetables can be produced.

The Greenbelt Protection Act in Ontario was created by the Ontario provincial government in 2005 to designate and limit development on a significant portion of rural land in close proximity to the Greater Toronto metropolitan region. The designated land consists of approximately 1.8 million acres with the potential for adding additional land. The Greenbelt includes lands that were designated for protection under the Niagara Escarpment Plan of 1973 and the Oak Ridges Moraine Conservation Plan of 2001. Additional land was added to that previously designated by these two acts to provide a continuous band around the largest urban concentration in Canada. Provisions of the Greenbelt Act require all other agencies to conform to its requirements for land that is protected by the Act.

The Greenbelt Plan, which was established under the Greenbelt Protection Act, initiated to address the following issues:

- Urban sprawl: to keep development within specific urban boundaries and support infrastructure within those boundaries;
- Preserving agricultural land: prevent further encroachment of the urban shadow; and
- Environmental protection: protection of wetlands, natural environment and natural resources.

The key objective of the Greenbelt Plan is to enhance the rural areas and the overall quality of life through: agricultural protection; environmental protection; culture, recreation and tourism opportunities; support and sustain a vibrant rural community; support infrastructure and recognise the benefits of protecting renewable and non-renewable resources.

Participation is mandatory and the legislation is scheduled for review every ten years. The target audience of the Greenbelt Plan are the municipalities (to help deal with and better manage urban sprawl); environmentalists and rural owners for the protection of green space; developers for an understanding of where they can and cannot develop in the future); and farmers to identify where in the province agricultural land will be protected for production.

The land in both the Niagara escarpment and in the Oakridge Moraine contains some of the most fertile farmland in Canada, but these areas also contain significant amounts of undeveloped land that provides important environmental services. The intent is to manage the development of the entire designated zone in such a way that agricultural and other natural land uses are preserved. A major factor in the development of the Greenbelt Plan was the growing concern that the expansion of Toronto and other neighbouring cities was making it increasingly difficult for urban residents to have access to open spaces.

Potential impact on agricultural land use

The Greenbelt Plan postulates to achieve agricultural protection, which is one of its core objectives, in the following manner:

- Protect the Specialty Crop Area land base, while still allowing for infrastructure and value-added uses that are necessary for sustainable agricultural uses and activities, normal farm practices and an evolving agricultural economy;
- Support the Niagara Peninsula Specialty Crop Area as a destination and centre of agriculture focused on value-added uses for the agri-food sector and agri-tourism related to grape and tender fruit production;
- Protecting prime agricultural land by preventing further fragmentation and loss of agricultural land caused by lot creation and the re-designation of prime agricultural areas; and
- Creating certainty for the agricultural sector to foster long-term investment in improving the management of land.

While preserving farmland is a major objective of the Greenbelt Plan, many of its provisions are fairly broad in description and their interpretation might not be unambiguous (George Morris Centre, 2005). Nevertheless, considerable concern within the Ontario farm population has been expressed (Bunce and Maurer, 2005). One concern is the decrease in land values of farmland within the protected area, because the option for development has been removed (Amborski, 2005). This has had a significant effect on the net worth of those farmers affected. A second concern is the “leapfrog” effect on farmland outside the protected area, especially in those regions that are already within the urban influence of Toronto.

Farmers are also concerned because in many parts of the protected area there are restrictions on management practices and, in addition, a large share of the land has already been converted to nonfarm uses. These two factors make it difficult for the remaining farmers to remain economically viable. In this case,

the land is kept undeveloped, but the objective of a viable agriculture is not met. To a considerable extent, the focus of the Act was to preserve high-quality farmland, but without taking into account consideration whether farming would be a viable economic activity.

While the grape industry in the Niagara Region has prospered, it benefits from being part of a tourism complex. Other fruit producers are not as fortunate, because their costs are relatively high, compared to US competitors. Similarly, commodity producers, such as corn and soybean growers, can face significant constraints as a result of the environmental protection aspects of Greenbelt Act and other regulations in the province. Bunce and Maurer (2005) note the problem of low returns and a “cost-price squeeze” facing farmers in the Greenbelt region. This suggests that land-use regulation can prevent farmland from being converted, but it cannot assure farmers of a profitable enterprise.

5.4. Finland: Farmland conversion in Åboland

Agriculture in Finland is a marginal activity, primarily due to climatic conditions. Nevertheless, Finnish farmers occupy a significant portion of the land where farming is possible. With a large territory and a small population, the average population density in Finland is relatively low, but population per hectare of arable land is moderate, because the area of arable land is limited (Tomsik and Rosochatecka, 2007). Of the five case study countries, Finland has by far the lowest share of urban population, at 61% and is one of the most “rural” countries within the OECD (OECD, 2008*d*; Vihinen, 2005). Finland also has relatively weak land-use controls, reflecting its low population density and limited experience with large-scale changes in land use.

Because Finland is characterised by a low population density, a relatively low urban share of population and only one major city, access to open space has never been a major concern. However, Finland does have somewhat limited amounts of true open space – land that has been cleared and that provides open vistas. In this respect, arable land, which offers good opportunities for open vistas, is of particular significance, as it accounts for only 7% of the Finnish territory (Yrjola and Kola, 2001).

This suggests that Finland, like the other Nordic countries, faces a somewhat different concern with farmland loss than is the case in other parts of Europe. Farming in Finland is largely farming at the far margin, where the economic viability of the enterprise is always at risk and abandonment is likely. Farming, by its nature, prevents trees from taking over the land (the loss of agriculture typically leads to the growth of forests). In the Nordic area there is less concern with simple access to nature, and more concern with the loss of land that is not forested. By contrast, the situation in other parts of Europe (where population densities are higher), the main concern is that if farming is discontinued, land will be converted to an urban use and green space will be permanently lost.

The case study of Åboland reflects a predominantly rural region in south-west Finland that is close sufficiently to urban centres to be experiencing a demand for recreation and tourism, as well as the construction of summer homes. About 3.4% of the territory in Åboland is used for agriculture, and agriculture accounts for 8% of local employment (Andersson, Eklund and Lehtola, 2006). Because Åboland is an archipelago, agriculture is only possible on the larger islands and even there the size of farms is limited by the topography. The region does, however, have micro-climate advantages that bring about an earlier growing season than in other parts of Finland.

Åboland has a strong second home and summer tourist industry that provides significant income for the permanent residents during the tourist season. For the farming community the negative impacts of tourism are higher land values and competition for land. On the positive side, tourism provides opportunities for off-farm income and agro tourism, and has been a source of demand for local foods (Andersson, Eklund and Lehtola, 2006).

Because Åboland has developed a strong tourism industry, farming could remain viable through diversification. The combination of EU support for rural development and the presence of tourism provide an

opportunity for farm-households to diversify their incomes. More recently, a coastal land planning system has been implemented which has reduced the pressure to convert farmland to second homes (Andersson, Eklund and Lehtola, 2006). Farmland provides an open vista that complements other natural environments in the region, which enhances tourism opportunities. Because tourism only provides seasonal employment, there is a need for other alternative employment opportunities in the remaining months of the year. In this context, farming has the potential to help maintain the local labour market.

5.5. The Netherlands: Agriculture in the Randstad

The Netherlands is a small, densely populated country that has significant and traditionally export-oriented agricultural sector. It has one of the highest populations per square kilometre of arable land in OECD countries, and a large number of small – but highly productive farms. Moreover, its relatively small size means that a city can be reached within half an hour almost everywhere in the Netherlands. Land use in the Netherlands is highly urbanised in comparison with many EU countries, and in large parts of the country the differences between urban and rural landscapes are disappearing (OECD, 2008e).

The Netherlands has known a long tradition of land use planning in which separation of urban and rural areas was a key concern. Zoning policy has been used to manage the spatial demands of diverse interests. This holds in particular for the demand for houses and business sites on the one hand, and agricultural land use on the other (Overbeek and Vader, 2006).

The Randstad is the most urbanised part of the Netherlands. It contains the major cities of Amsterdam, Rotterdam, Utrecht, The Hague and Delft, as well as a number of satellite urban areas. These peri-urban areas are often embedded between several cities and are used for work and recreation not only by urban citizens that live closest, but also by citizens of several nearby cities. However, the Randstad is a major agricultural producer, especially for green-house agriculture, and also has a significant dairy sector.

Dutch spatial policy established eight buffer zones in the region in 1958 as a way to control urban sprawl and maintain green space (van Rij, Dekkers and Koomen, 2008). While there has been continual pressure for urban expansion, these buffer zones continue to provide accessible green space to a large urban population (OECD, 2008e).

A key factor to success has been strong land-use controls accompanied by government purchase of land (Alterman, 1997). On acquiring land, the government guarantees that its use will not be changed. This, combined with a comprehensive land plan that originates at the national level and is reinforced at the provincial and local level, assures that development pressures are shifted away from land designated as green space.

In general, the Dutch system has been successful in controlling farmland conversion and in maintaining agriculture. Agriculture in the Randstad falls into two broad categories (Alterman, 1997). The first is what might be called conventional open-air farming, primarily dairy. The second is highly intensive controlled environment agriculture that takes place in greenhouses. Of the two types the first has high amenity values, but low profits, while the second has low amenity values but high profits. Greenhouse, or glass-house, agriculture is carried out in high concentrations, has a physical appearance of an industrial facility and provides no visual or open space amenities. Meanwhile, the dairy industry in the Randstad faces challenges due to: its urban location, small herd sizes and problems associated with drainage and manure management.

Van Rij, Dekkers and Koomen (2008) reviewed development in the Midden-Delfland buffer zone in the Randstad between 1995 and 2004. The main objectives of management of the zone are: to preserve open space, develop recreational areas and improve farming conditions. The area consists of 6 600 hectares that were originally used for dairy farms. Dairy farms still occupy 4000 hectares in the middle of the zone, but the periphery has been converted to recreation areas, nature uses and greenhouses. These provide a buffer within the buffer for animal agriculture and allow higher-value land uses close to urban demand. Land

purchases were concentrated at the edge of the zone to most effectively limit urban encroachment. In the remainder of the zone land uses are established through a consensus-based process that incorporates local groups and property owners. It is important to note that comprehensive zoning is not used to establish land uses (Van Rij, Dekkers and Koomen, 2008).

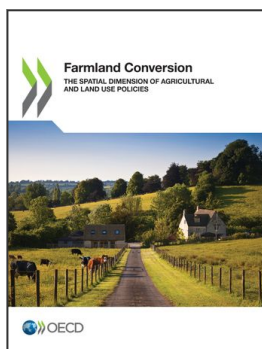
While land uses changed on 12% of the land in the study period, only 0.04% of the 6600 hectares went to built-up urban uses. Greenhouse expansion accounted for 3.5% more of the change in use, while 5.6% more land went into nature uses. From their perspective, Van Rij, Dekkers and Koomen (2008) conclude that two of the three management goals were clearly achieved. However, they note that conditions in the dairy sector are still difficult, so the third goal of improving farming conditions was only partially achieved.

Overall, future developments will increase the demand for rural land and agricultural land use is very likely to become more differentiated according to proximity to cities (OECD, 2008e). Farmland near cities might remain farmland, but farmers will increasingly have to provide services demanded for by society, ranging from landscapes, nature values to regional identity. Rural areas further away from cities might continue to be areas of export-oriented agriculture, although further CAP reform and trade liberalisation might shift the comparative advantages, leading to changes in the rural landscape. An important policy challenge is management of rural landscape management and biodiversity as both are impacted by intensive agriculture and urbanisation.

5.6. Overview

The five case studies demonstrate that different countries influence the value of farmland preservation in different ways. It appears, however, that in all OECD countries there is a concern with farmland loss, at least in some regions of each country. The case studies also suggest that it is much easier to maintain land as open space than to maintain the viability of farming, even though maintaining viable farms is a stated goal of most programmes. However, the case studies also suggest that in the peri-urban area it is not simply enough to raise farm incomes. Without some sort of land-use controls, it is unlikely that agriculture can compete for land when it faces urban development pressures.

A second and important observation is that it is more than commodity production that drives the interest in farmland preservation. In most of the examples, the main concern was to preserve access to green space for urban residents. But, in the case of Finland, the value of agriculture was considered to be the determining factor which keeps landscape open to provide a locally scarce visual amenity. In all these countries, a significant reason for maintaining farmland is that it provides an important habitat for desirable species of plants and animals. Thus, the provision of environmental services from agriculture plays an important role in the farmland conversion debate. Finally, the Randstad offers the example that it is possible for farming to be highly profitable in an urban environment, but, in the process, the commodity outputs of farming become separated from the provision of environmental services. Controlled environment agriculture in glass-houses is profitable, but produces no amenities.



From:

Farmland Conversion

The Spatial Dimension of Agricultural and Land Use Policies

Access the complete publication at:

<https://doi.org/10.1787/ae50672e-en>

Please cite this chapter as:

OECD (2020), "Farmland conversion: Country/region examples", in *Farmland Conversion: The Spatial Dimension of Agricultural and Land Use Policies*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/3a1ff3b0-en>

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. Extracts from publications may be subject to additional disclaimers, which are set out in the complete version of the publication, available at the link provided.

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at <http://www.oecd.org/termsandconditions>.