

A well-maintained land resource is essential to a sustainable living environment. Recent developments have led to a renewed emphasis on the importance of breaking the link between economic growth and environmental degradation.

The predominant land cover class is pasture, followed by wetlands, water and forests. Renewable energy resources, such as forestry and biomass, are important in an age of peak oil production and growing concerns about the effects of global warming.

The rate and nature of land use changes indicate where future environmental pressures are likely to arise. By European standards, Ireland has experienced a relatively high rate of land use change since the early 1990s. The growth of commuting catchment areas around major cities, together with the development of suburbs and dormitory towns, has increased environmental pressures. More compact urban forms are required, together with increased investment in public transport.

Nationally the quality of the coastal environment has been impacted by increased urban development resulting in habitat loss and impacts on the landscape. An Integrated Coastal Zone Management strategy should be adopted and implemented so that pressures on the coastal zone can be balanced in an environmentally sustainable way.

## LAND USE

11

## Introduction

Land is subject to many competing demands. We rely on our land resource for food, energy (increasingly), agriculture and forestry, recreational opportunities and cultural amenities and, overall, for a good living environment. Current land use is the result of a sequence of past human interventions on the natural landscape; decisions made today will shape the environment of the future, whether in cities, towns, suburbs, rural villages, or on the land.

The rate and nature of land use changes indicate where future environmental pressures are likely to arise. By European standards, Ireland has experienced a relatively high rate of land use change since the early 1990s. While agriculture remains the predominant land use (EPA, 2003a), improved economic conditions and population growth (due mainly to

immigration) have led to a dramatic increase in the extent of built-up areas, with growth rates surpassing those of all of our European neighbours.

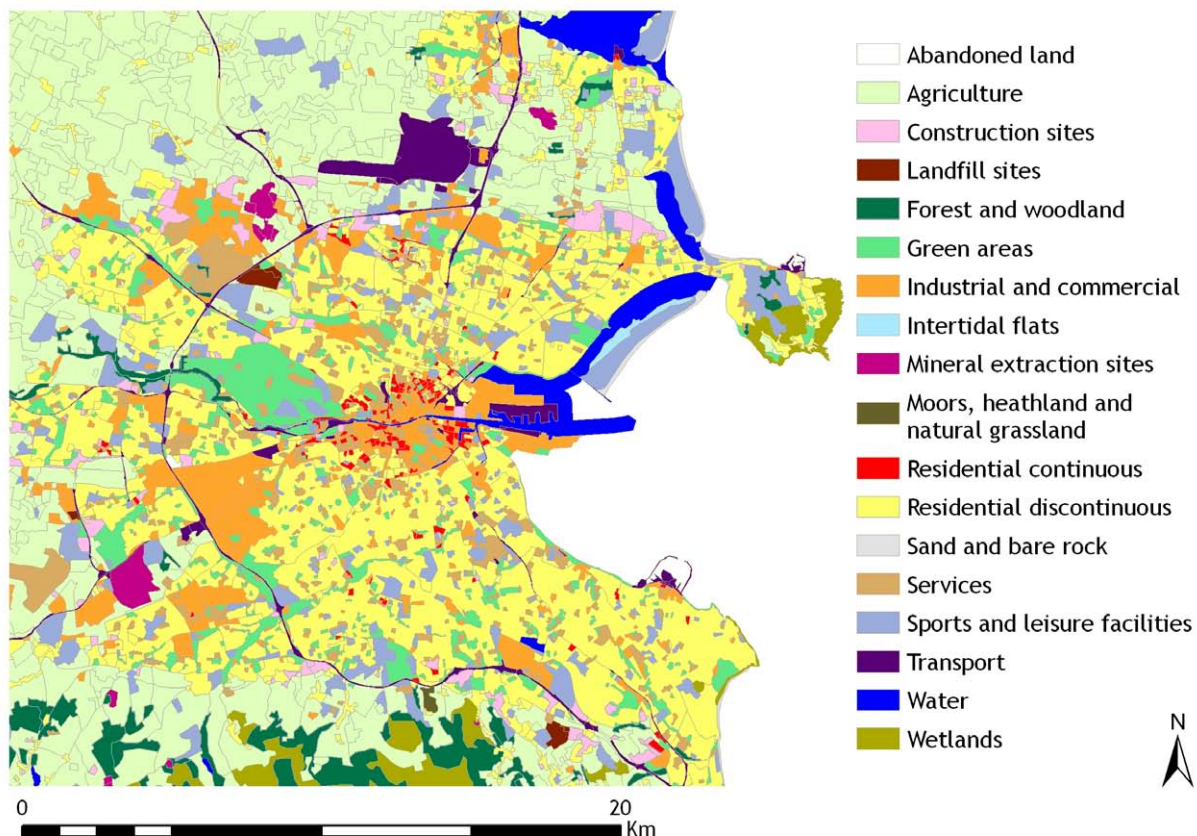
## Land Use and Land Cover

The terrestrial environment may be described by its land cover (a biological and a physical description of the earth's surface) and, from the social perspective, by its land use. 'Land cover' refers to the physical ground cover – vegetation, built environment, etc. – whereas 'land use' describes the land surface from the human viewpoint; in the latter case land is characterised by some identifiable purpose, such as transport infrastructure or arable land. Land use and land cover are interdependent: changes in land use impact directly on land cover.

There is a scarcity of high-resolution data on land use and land cover at national level in Ireland. Information on land cover is mainly derived from a series of spatial datasets provided as part of EU initiatives and national research projects.

- Corine (Coordination of Information on the Environment) Land Cover, with 44 hierarchical classes, which provides information for the entire country for 1990 and 2000. An update to Corine Land Cover for 2006 is currently under way and the results will be available only in 2009.
- MOLAND - The MOLAND dataset, a land cover dataset with a more detailed urban classification scheme, is available for the border counties and the Greater Dublin Area (Counties Dublin, Meath, Kildare and Wicklow) for 2000 (Lavalle C. *et al.*, 2004). An

**Map 11.1** MOLAND Land Use in the Greater Dublin Area, 2006 (Source: JRC/UII)

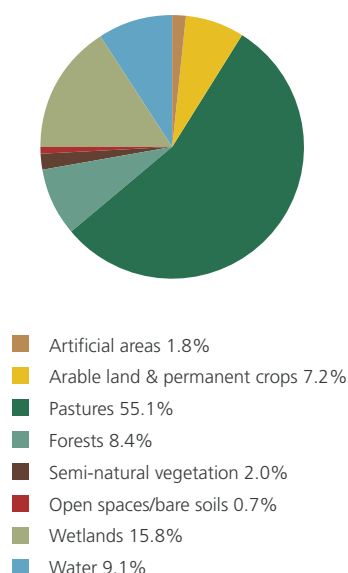


update, covering County Louth and the Greater Dublin Area, was commissioned for 2006 as part of the Urban Environment Project (UEP, 2006). An extract from the 2006 UEP update to the MOLAND land use map for Dublin and environs is shown as Map 11.1.

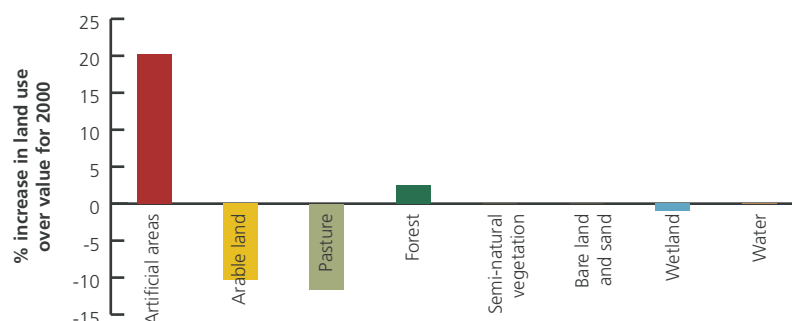
## Occurrence of Land Cover/Land Use Classes

The relative distribution of land cover/land use classes in Ireland, according to Corine Land Cover for 2000, is shown in Figure 11.1. The major land cover class in 2000 was pasture (55%), followed by wetlands (16%), water (9%) and forests (8%). Forests now occupy 10 per cent of national land cover. The Corine Land Cover update for 2006 is expected to show that the total national artificial land area increased by over 20 per cent between 2000 and 2006. ('Artificial land' includes residential land, industrial and commercial areas, transport infrastructure, urban green spaces and recreational areas, such as playing fields and golf courses, and excludes agricultural, forestry, wetlands and water.)

**Figure 11.1 Land Cover/Land Use in Ireland, 2000 (Source: EEA/EPA)**



**Figure 11.2 Percentage Land Cover Changes in the Greater Dublin Area between 2000 and 2006 (Source: Data, JRC/UII; Analysis, EPA)**



## Urban Settlements

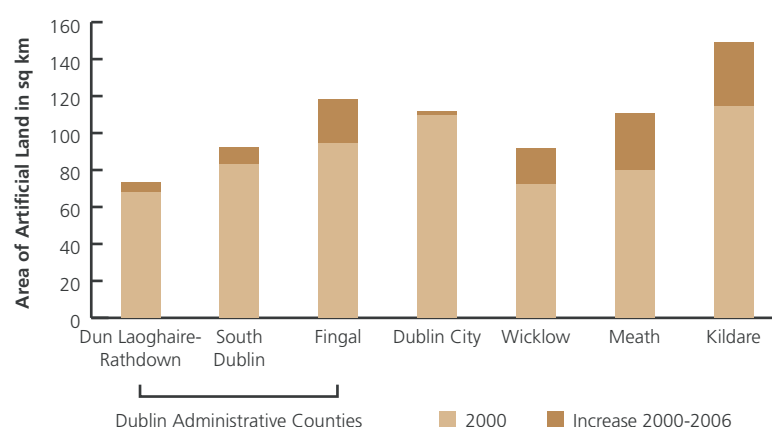
The principal causes of recent land use changes in urban areas have been the development of housing and associated commercial services built to cater for the growth in the population and the migration to suburbs, satellite towns and villages. Figure 11.2 shows the level of changes in MOLAND land cover classes in the Greater Dublin Area between 2000 and 2006, derived from a preliminary analysis of the UEP MOLAND 2006 update dataset.

In 2006 2.57 million people, or just over 60 per cent of the population, resided in 600 urban areas, i.e. cities, towns and villages with a population of 1500 or greater (CSO, 2006). While the population of the state increased by 8.2 per cent between 2002 and

2006, established inner city areas showed only a small increase. The core (legally defined) city areas of Limerick and Cork both recorded a loss of population; however, there was a net increase when the suburbs and environs were taken into account. Galway city core recorded a moderate increase. The greatest percentage increase in county population (22.2%) occurred in Fingal, on the periphery of Dublin City. These figures confirm that the urban spillover, into hitherto rural areas, identified in the 1990s is continuing.

Figure 11.3 shows the change in artificial land use in the Greater Dublin Area between 2000 and 2006 derived from a preliminary analysis of the UEP MOLAND 2006 update dataset. Increases in the extent of artificial land use in Fingal and the counties surrounding Dublin are quite marked.

**Figure 11.3 Artificial Land Use (MOLAND) by County in the Greater Dublin Area (GDA), 2000 and 2006 (Source: Data, JRC/UII; Analysis, EPA)**







Improvements in road infrastructure have facilitated the growth of the Dublin commuting catchment area and the further development of suburbia and dormitory towns. Residential development in urban areas has typically comprised low-density suburban development; this has the effect of increasing the land take required and putting systems for the delivery of public services under increasing stress. A natural consequence of peripheral development is increased traffic

volume; this often results in congestion and longer commute times on radial routes. As some villages and towns grow beyond the capability of the local infrastructure to support them, overloaded wastewater treatment plants or inadequate drinking water supplies pose a risk to health and the environment.

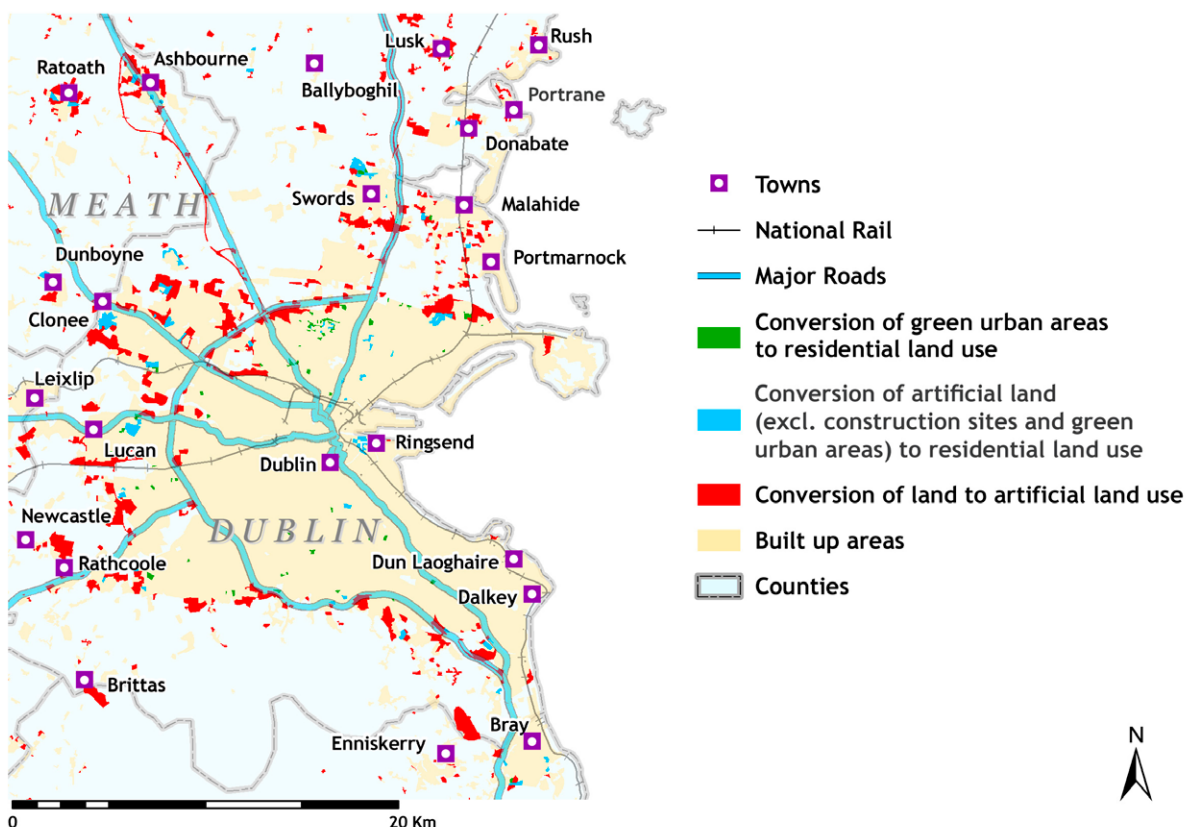
Map 11.2 shows the extent of artificial land development in the Greater Dublin Area between 2000 and 2006 derived from a comparison of MOLAND data. Most housing development occurred on the fringes of the city with most of the land resource for housing and other artificial land uses (including golf courses) coming from pasture and mixed farmland (EPA, 2003a). Within the city some medium-scale infilling of green urban space is apparent. Data from An Post (GeoDirectory) shows that there has been some

small-scale (<1 ha) residential re-development in the city centre.

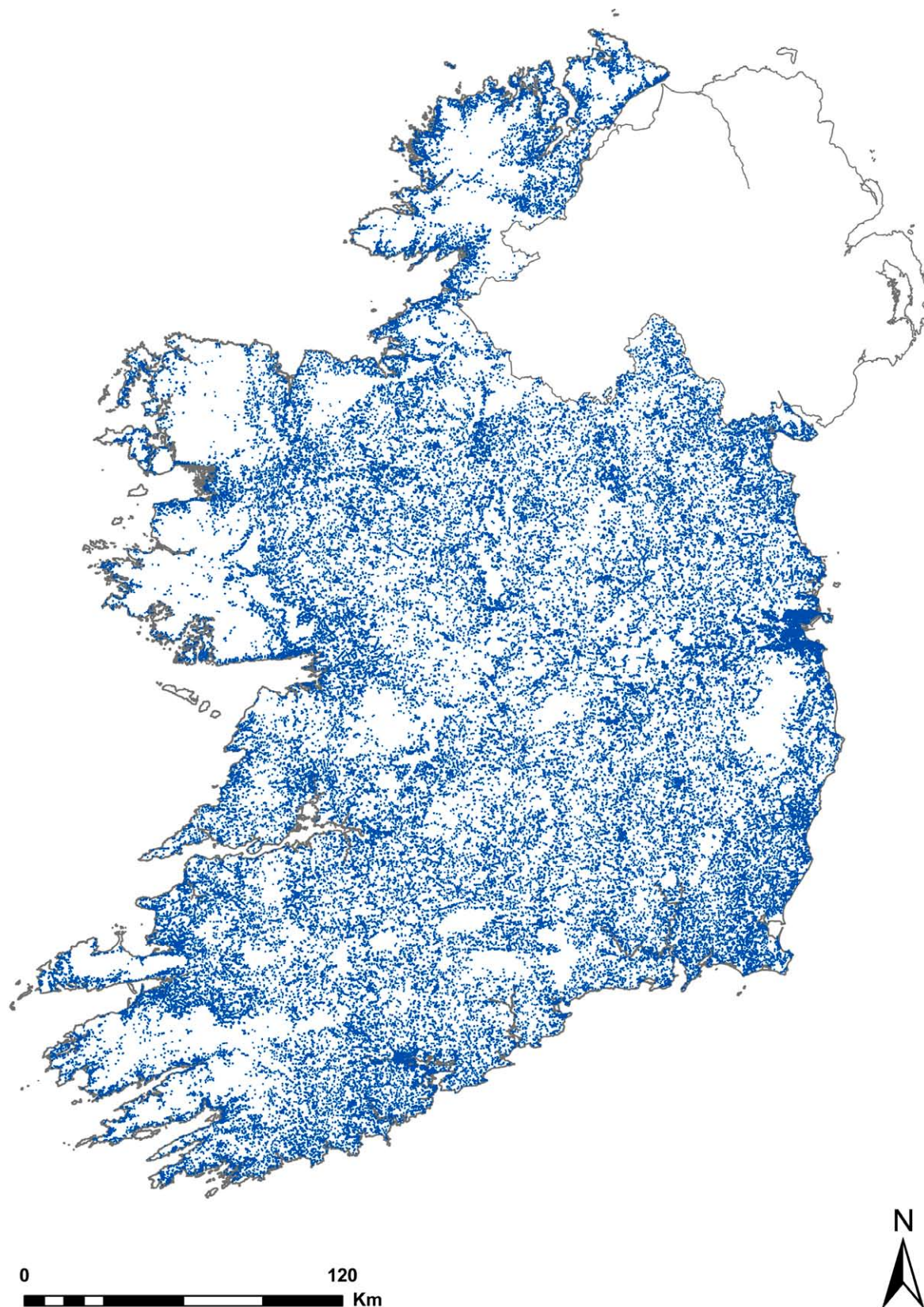
### Rural Settlements

The rural settlement pattern in Ireland is predominantly dispersed, unlike that of many other European countries, where there is a clearer distinction between urban and rural areas. The practice of locating dwellings in the open countryside (particularly adjacent to urban centres), in preference to consolidating the development of rural villages, has intensified in recent years (Keaveney, 2007), particularly in the south and southeast. Map 11.3 shows the locations of new residential addresses recorded by An Post between 2005 and 2007 inclusive. Significant housing development in rural areas can be seen, with a noticeable density of coastal development in Counties

**Map 11.2 Areas Converted to Residential Use, Dublin Area, MOLAND 2000–2006 (Source: Data:JRC/UII; Analysis:EPA)**

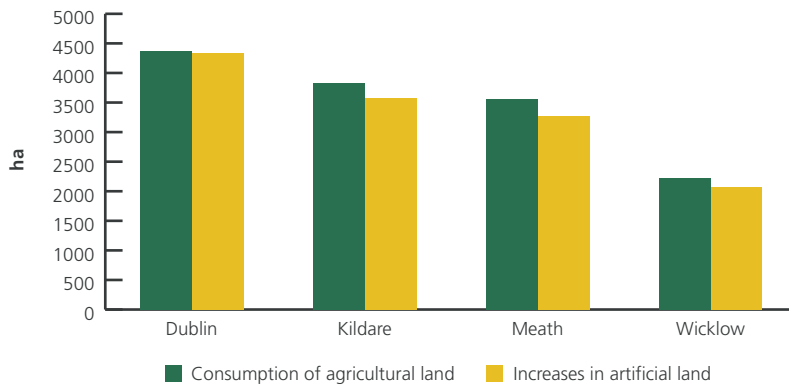


**Map 11.3** New Residential Addresses Recorded by An Post 2005–2007: Each Dot Represents at Least One New Address (Source: An Post GeoDirectory)

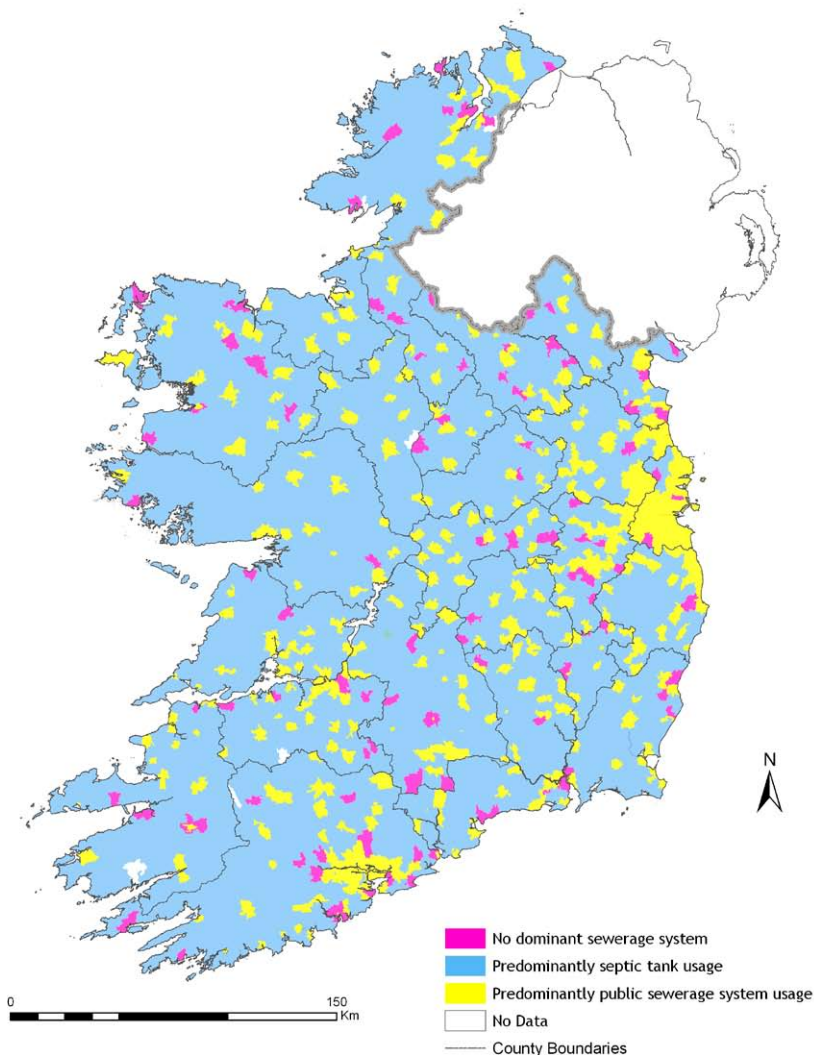




**Figure 11.4** Consumption of Agricultural Land and Increases in Artificial Land in the Greater Dublin Area, 2000–2006, MOLAND 2000–2006 (Source: Data, JRC/UII; Analysis, EPA)



**Map 11.4** Use of Sewerage Facilities (Source: CSO, 2006)



Donegal and Wexford. The rural environment in the counties bordering large cities (especially Dublin) is also coming under pressure from incremental residential development for city commuters.

The population increased from 2002 to 2006 by 21.5 per cent in Co. Meath, 13.7 per cent in Co. Kildare and 10 per cent in Co. Wicklow (CSO, 2006). Of the houses occupied at the time of the 2006 Census, 56,186 (22.5%) were reported as one-off houses in rural areas.

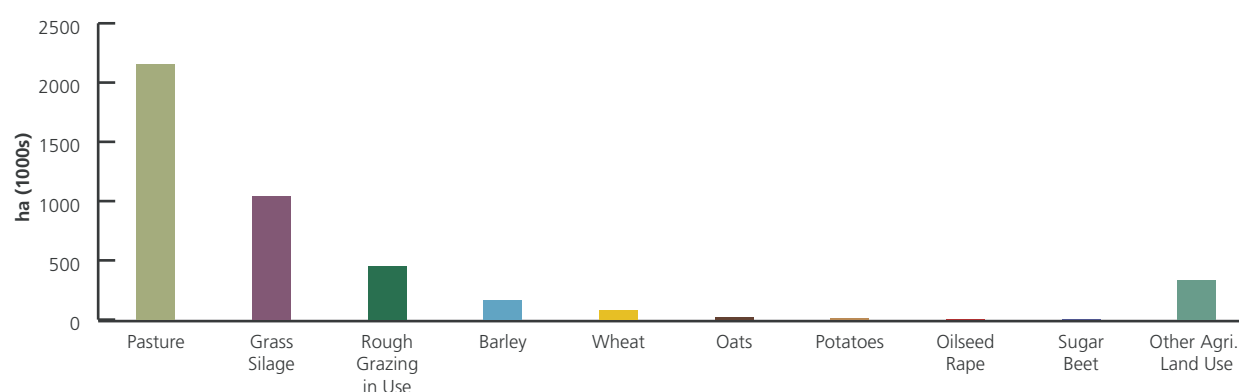
Loss of rural lands to residential development is of concern, as it tends to result in an irreversible land use change.

Figure 11.4 shows the amount of agricultural land consumed for other purposes in the Greater Dublin Area, together with the increase in the extent of artificial areas, in the period 2000–2006. It may be noted that these values almost match, as most development land is converted from agricultural land. Most of the differences involve afforested agricultural land.

The scattered nature of Irish rural development has made the provision of public services more expensive and less economically viable. In many rural areas the majority of the population use individual septic tanks which, if poorly sited and/or not properly maintained, can pollute groundwaters, surface waters and public water supplies. In the open countryside typically less than half of the houses are attached to public sewerage systems. Map 11.4 shows the areas where public sewerage systems or individual septic tanks predominate.

### Agriculture

Good farming practice plays an important role in maintaining and

**Figure 11.5 Agricultural Land Use** (Source: CSO Database Direct Series AQA01, 2008)

improving the quality of the Irish environment. Over 60 per cent of the land in Ireland (~4.3 million ha) is devoted to agricultural activities, with an additional 10 per cent (~0.7 million ha) currently devoted to forestry.

Irish agriculture is predominantly extensive and grass-based (see Figure 11.5). Tillage occupies some 10 per cent of utilisable agricultural area (UAA); most of the remainder is devoted to dairy cattle and sheep farming. The most noticeable recent trend in changing agricultural land use has been a continuing increase in the land devoted to silage (see Figure 11.6).

Ireland opted for full decoupling of direct payments from production with effect from 1 January 2005. It had been projected that decoupling would result in a general reduction in stocking levels, with more farmers withdrawing from full-time farming. However, this tendency may be offset by the increased attractiveness of farming due to improved market prices and future market prospects following expected increases in global demand.

### Rural Environment Protection Scheme (REPS)

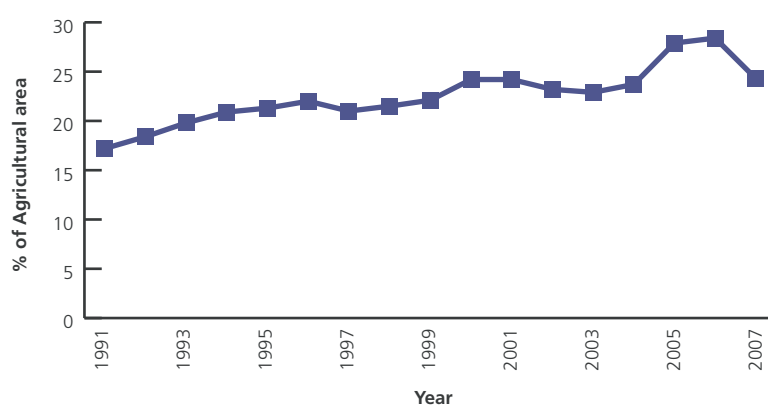
In 2007 approximately 54,200 farmers participated in REPS. The latest

phase, REPS4, was announced on 8 August 2007 and will run until 2013. It encourages farmers to enhance the environment through a range of actions including reduced use of fertilisers and pesticides, reduced greenhouse gas emissions as well as improved water quality. The scheme also assists in maintaining existing hedgerows and planting new ones, growing crops to provide food for wild birds and preserving traditional breeds of animals.

### Biofuel Crops

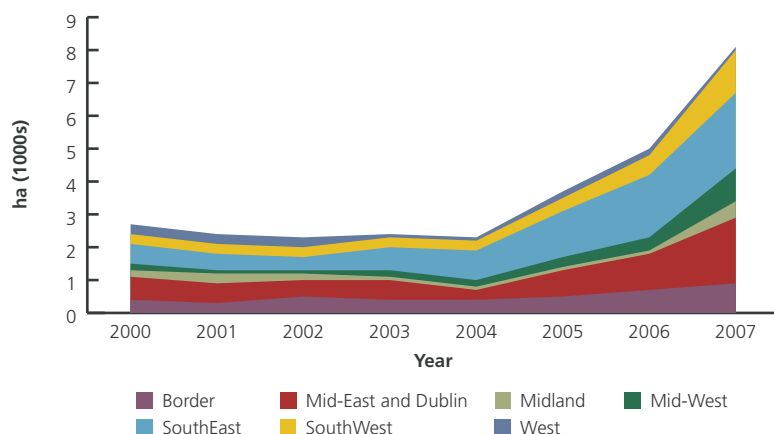
Under the reform of the Common Agriculture Policy, farmers now have an incentive to focus more clearly on exploiting market-driven farming opportunities, including the production of energy crops. The main energy crops that can be grown in Ireland include oilseed rape, cereals, hemp (annual crops) and willow, miscanthus and reed canary grass (perennial crops) (see Figure 11.7).

The EU Biofuels Directive (2003/30/EC) sets a target of replacing 5.75 per cent of all transport fossil fuels (petrol and diesel) with biofuels by 2010. According to this Directive, biofuel production will have to comply with a set of sustainability criteria. The intended effect is to disallow fuels produced on land

**Figure 11.6 Area Devoted to Grass Silage** (Source: CSO Database Direct Series AQA01, 2008)



**Figure 11.7** Area Devoted to Oilseed Rape (Source: CSO Database Direct Series AQA01, 2008)



'with recognised high biodiversity value', such as forests and nature protection areas (CEU, 2003). In March 2007 the European Commission endorsed targets for the use of biofuels and renewable energies in overall EU energy consumption by 2020. These include:

- a target of 20 per cent for the share of renewable energies, with differentiated national targets, and
- a minimum target of 10 per cent for the share of biofuels used in transport.

The Government has committed itself to achieving, and if possible exceeding, the mandatory 10 per cent target by 2020 (DCMNR, 2007). However, the Government has shelved the intermediate target of 5.75 per cent set by the Biofuels Directive as it was considered to be over-ambitious and would increase greenhouse gases through the accompanying land use changes.

### Wind Energy

In April 2007 there were 36 wind energy projects (35 onshore and 1 offshore) in operation in the Republic of Ireland with a total installed capacity of 230.8 MW

([www.sei.ie](http://www.sei.ie)). To reduce losses caused by interference between turbines, a wind farm requires roughly 10 ha of unobstructed land per megawatt of nameplate capacity. This indicates a current total land take of approximately 2300 ha. The land area used and modified by a wind farm site is rarely greater than 4 per cent of the total site area. The remainder can still be used for farming.

The Irish government supports the development of all renewable-based electricity generating plants including wind turbine generators. A new renewable energy support mechanism known as the Renewable

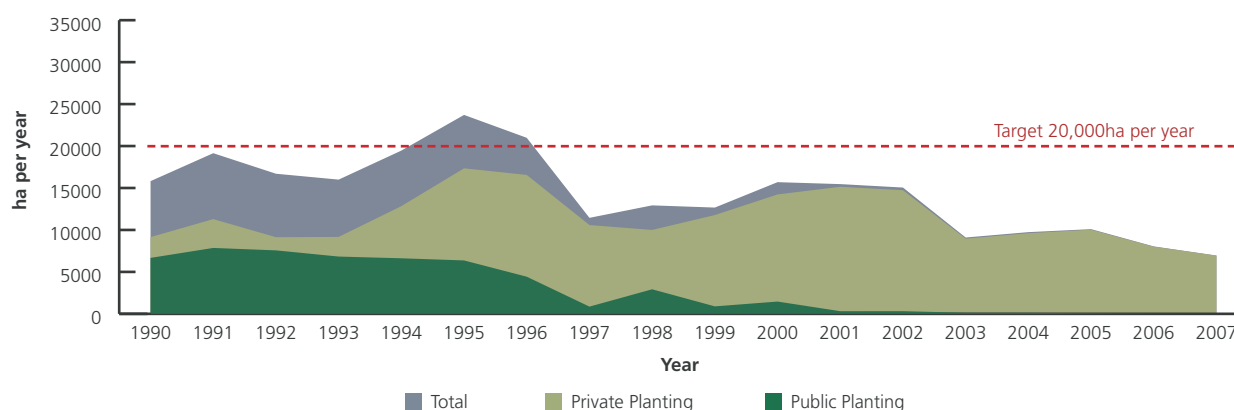
Energy Feed in Tariff (REFIT) was launched in 2006. This is a fixed 'feed in tariff' mechanism; any applicant, whether an individual or a company, may submit an application at a fixed price based on technology and, in the case of wind, the capacity of the project. REFIT was launched with the initial aim of supporting the construction of at least a further 400 MW of new renewable energy-powered electricity generating plant by 2010.

### Forestry

Following a long period of afforestation, which began in 1904, forest cover has increased from 1 per cent to approximately 10 per cent of land cover. This compares with a European average of over 30 per cent. The National Forest Inventory (NFI) shows that Ireland has still the lowest forest cover by percentage of land area of all European countries. The public forest estate accounts for 57 per cent of the total forest area, most of which is owned by Coillte Teoranta (the Irish Forestry Board). Forested land in the private (grant-aided) estate and private (other) estate comprises 30 per cent and 13 per cent of the total forest area respectively (DAFF, 2007a).



**Figure 11.8** Recent Levels of Public and Private Planting Set Against Annual Afforestation Target  
(Source: Forest Service)



Sitka spruce is the dominant species, representing 53 per cent of the national estate. Almost a quarter (24%) of the entire forest estate consists of broadleaf tree species, with conifers and mixed planting making up the remainder. Five per cent of the forest estate contains five, six or more mixed tree species growing together.

The strategic plan for the Irish forestry sector sets a national planting rate target of 20,000 ha per annum, and a target for forestry to reach 17 per cent of all land cover by the year 2030. Recent planting rates have fallen well short of this target and current indications are that the 17 per cent target may not be met (see Figure 11.8).

In the past many farmers were reluctant to move out of agriculture into forestry, as joining REPS and remaining in agriculture was more attractive than availing of afforestation premiums (Collier *et al.*, 2002; McCarthy *et al.*, 2002). However, a farmer who plants under the Forest Environment Protection Scheme (FEPS), which came into operation in January 2007, will get the equivalent of the forestry premium in addition to whatever

REPS payment would be received on the land if it were in REPS.

Forestry has traditionally been viewed as an economic resource, valued as an alternative to the importation of foreign timber and the basis of a native timber industry. The non-timber benefits, including environmental, social and biodiversity, were previously seen only as an adjunct (Bacon, 2003). However, with the introduction of sustainable forest management (DMNR, 2000) and the increasing cost of mitigating the effects of climate change, more weight is now being placed on the social and environmental benefits of

forests (DAFF 2006, DAFF 2007b). Forest biodiversity is discussed in Chapter 13 of this report.

### Coastal Zone

In 2006 approximately 60 per cent of the population were living in the coastal zone, that is, less than 10 km from the coast. The coastline of the State is mainly rural and highly scenic in nature and has proved to be an increasingly popular residential location. In recent years an increasing number of second homes and tourist amenities have been constructed in rural coastal areas, encouraged by tax incentive schemes such as the pilot



tax relief scheme for selected resort areas (Section 48) (DELG, 2001). Some locations have undergone rapid change (e.g. Bettystown, Courtown, Youghal, Clonakilty, Kilkee, Ballybunion, Bundoran); the scale of recent residential development relative to the original size of such settlements has led to a character-altering effect on the resorts. The quality of the coastal environment has been impacted by the high levels of urban development associated with the economic boom, resulting in habitat loss and impacts on the landscape. Certain coastal recreational developments, such as golf links, have resulted in ecological damage to machair and other dune systems, and conflict as a result of restrictions to foreshore access.

According to the Department of the Environment and Local Government (DELG, 2001), conflicts of this nature will continue to emerge as recreation in the coastal zone expands with the increasing availability of leisure time

in society, and in the absence of a national strategy for the provision of recreation space on the coast.

A proposed implementation plan for Integrated Coastal Zone Management (ICZM) in Europe was issued in 2000 (COM/00/545 of 8 September 2000). Council and Parliament adopted this Recommendation on 30 May 2002 (CEU, 2002). A formal strategy for ICZM has been under consideration for some time, and a national stocktaking is currently in preparation. This will collate information on current approaches to coastal management in Ireland.

### Key Issues

Population growth rate, global warming concerns and competing demands on land for the production of food and biofuel crops have highlighted the importance of environmentally sustainable land use policies and practices.

The EPA supports the implementation of environmentally sustainable land use policies and practices, such as those listed by Comhar, Ireland's Sustainable Development Council (Comhar, 2002). These include an emphasis on the need for the use of renewable resources, the maintenance and improvement of soil and water resources, protection of heritage and the need for more balanced development. These are in line with the EU's Renewed Sustainable Strategy, published in June 2006, and should guide national planning and development policies (CEU, 2006).

### Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) is an assessment of certain plans/programmes likely to have significant effects on the environment. Its objectives are environmental protection and the promotion of sustainable development. SEA was introduced by the SEA Directive (Directive 2001/42/EC). Topics to be addressed in the SEA process include biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage (including architectural and archaeological heritage), landscape, and the relationships between these factors. SEA is mandatory for certain plans/programmes in the areas of agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning and land use. For minor modifications and for small areas at local level, SEA is mandatory only where the member state determines that there are likely to be significant environmental effects.

SEA has been a legal requirement since July 2004, and has been

## Strategic Environmental Assessment (SEA) Process

The main stages in the SEA process are as follows.

- Screening – determining the need for SEA for a particular proposed plan/programme.
- Scoping – assessing (in consultation with relevant bodies) the existing environmental problems and the likely significant environmental effects of the proposed plan/programme.
- Environmental assessment – assessing the likely significant environmental effects of the proposed plan/programme and producing an Environmental Report and a Draft Plan, both subject to public consultation.
- Information on the decision – stating the reasons for selecting the plan/programme option over alternatives, and showing how the assessment, the outcome of consultation and the submissions on the Environmental Report have been taken into account.
- Consultation/transboundary consultation – wide consultation, including adjoining member states if transboundary effects are expected.
- Monitoring/ review – monitoring the significant environmental effects of the plan/programme.





applied at national, regional, county and local levels. As of July 2008, a total of 117 SEAs were at various stages. Of the 11 sectors specified in the Directive, Land Use Planning has had the most significant take-up (see Figure 11.9). While many of the economic sectors are now beginning to address the requirements of the SEA Directive, it is notable that a number of significant sectors, in particular the forestry, tourism and transport sectors, have yet to engage meaningfully in the process. The effectiveness of SEA will be evaluated during 2008/2009 through an EPA STRIVE research project.

### Urban Settlements

In urban areas the trend is towards a continuation of market-driven, low-density residential development on the periphery of cities and the suburbanisation of satellite villages and towns. This trend is unsustainable, given increased commuting times and distances, the expected increase in fuel costs, the lack of adequate extensive public transport, the inefficiency of service provision and the pressure to reduce greenhouse gas emissions. To redress this tendency, a proactive approach to achieving more compact urban forms,

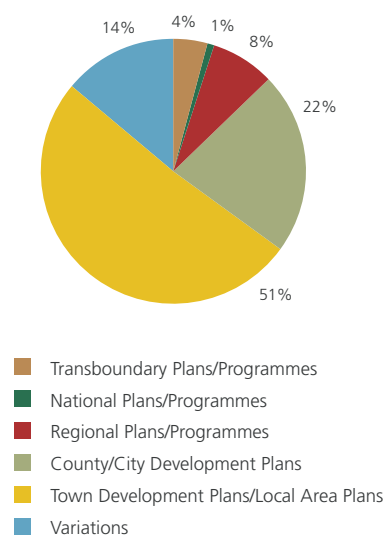
which use fewer non-renewable resources and create less pollution, is called for. This may need to include more generous investment in public transport, at both local and regional levels, so as to provide a high degree of access to work and to shops. New and more flexible working patterns may also be required.

A more compact urban form would demand an increase in the population density of urban areas. This implies a need for higher buildings, with an increase in the

number of medium-rise apartments, coupled with adequate public green spaces. There should be increased reuse of brownfield land, more intensive use of urban buildings, and sub-division and conversion of existing development. Local and regional development plans should identify brownfield sites within their area and promote the redevelopment of such sites. Local authorities should consider redevelopment of brownfield sites for civic or amenity purposes, such as recreational areas or public parks. Development of such amenities would promote the regeneration of urban centres.

In addition to requiring new infrastructure, the Greater Dublin Area needs land use guidance and appropriate zoning if it is going to achieve a more sustainable form of development in the period up to 2025. A deeper understanding of the factors that drive urban sprawl and the considerations taken into account when deciding on development of cities and regions is required. To that end it is important that research studies into the urban environment continue to form part of environmental research programmes.

**Figure 11.9** Distribution of SEA Plans/Programmes by Type (Source: EPA, 2008)



### Rural Settlements

The National Spatial Strategy is designed to facilitate the environmentally efficient delivery at regional level of water, waste management, energy and related services. The consultation draft guidelines on sustainable residential development in urban areas state that planning authorities should not consider extensive proposals for new development, including residential development, in smaller towns and villages in the absence of an adopted local area plan. This plan must fit within an overall strategic planning framework at county and regional levels.





Spatial planning is strengthened by the integration of plans at national, regional and local levels. To achieve these goals it will be necessary to confront the pressures exerted at local level and ensure that local planning decisions are in line with regional planning guidelines adopted by regional authorities.

### Agriculture

As a result of the improving market prospects, the extent to which decoupling will impact on beef farming in the short term may be more limited than previously considered (DAFF, 2007b).

Some farmers (mainly in the dairying and tillage sectors) are likely to intensify their operations in response to improved market opportunities. The environmental risks arising from intensification should be considered when lands are being identified for this purpose, and only suitable land (in terms of soil type, soil p index, slope and adjacency to watercourses, etc.) should be selected.

With the trend towards part-time farming, there may be a tendency towards more extensified land use in some areas. Although land abandonment is not yet obvious,

over time the risk of this happening may increase.

### Biofuel Crops

Domestically produced biofuels have the potential to reduce dependence on imports of fossil fuels and their contribution to global warming without otherwise harming the environment, provided that they are grown and harvested in an environmentally sustainable manner.

The competitive advantage for producing energy crops within Ireland may lie with grass rather than with other crops, such as beet, willow or oilseed rape (Curtis, 2006). One advantage of grass as an energy crop compared to coppice willow or oilseed rape is the high level of experience and competency relating to grass production. In addition, grasslands are much more widely dispersed than arable land (see Map 11.5). A mixture of grasslands, short-rotation biofuel crops and/or additional long-term afforestation on existing tillage land may be more environmentally beneficial than grassland converted to arable biofuel crops.

In a recent communication, the EEA's Scientific Committee was of

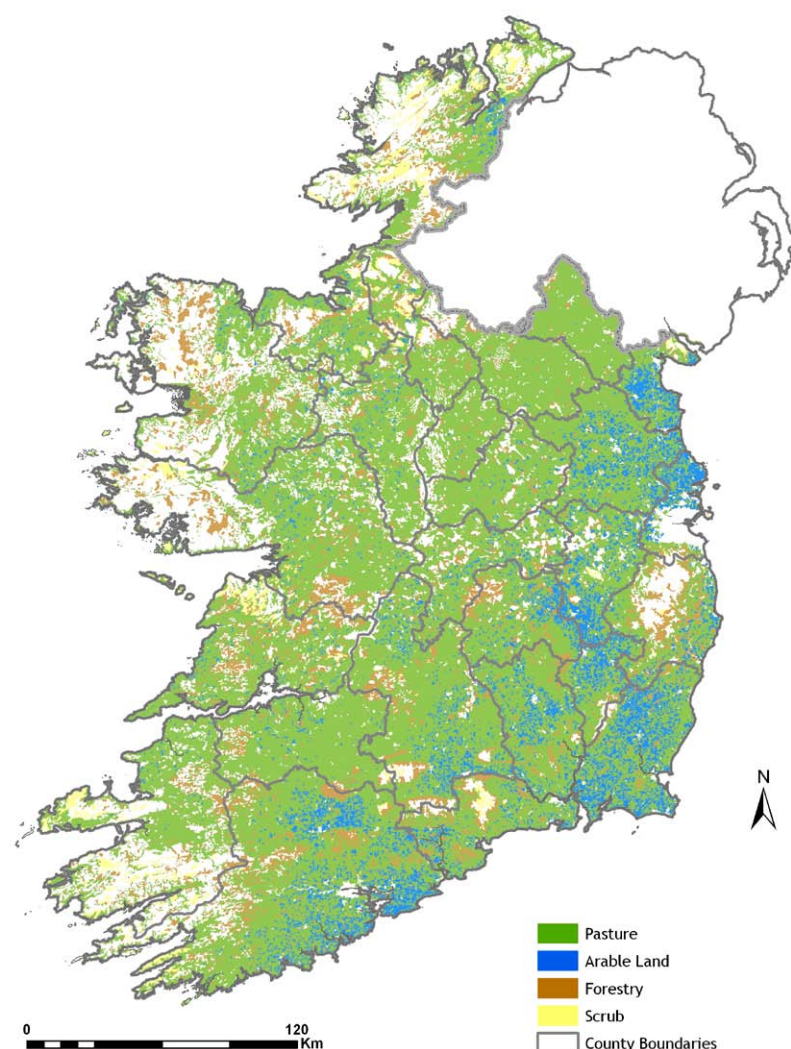
the opinion that the land required to meet the European Commission's target (of a 10 per cent biofuel share in transport by 2020) exceeds the available EU land area even if a considerable contribution of second-generation fuels is assumed (EEA, 2008). The intensification of biofuel production is expected to increase pressures on soil, water and biodiversity within the EU and result in some unintended effects, difficult to predict and control, outside the EU. The Committee recommended the suspension of the 10 per cent goal, the carrying out of a new, comprehensive scientific study on the environmental risks and benefits of biofuels and the setting of a new and more moderate long-term target, if sustainability cannot be guaranteed.

The development of bio-energy has the potential to deliver benefits for the environment and consequently the EPA would like to see the sector grow, subject to sustainability constraints. Further investigation of the overall life cycle of biofuel crops, including the possible conversion of pasture to arable land for this purpose, is needed to ensure that such crops are providing the environmental benefits claimed for them. Such an investigation would help ensure that measurable environmental benefits can be expected from an appropriate national biofuel strategy.

### Rural Environment Protection Scheme (REPS)

REPS is particularly important in areas of high nature value (HNV) farmland. HNV farms are mostly marginal: there is a low net income per hectare and per hour of labour. It is important that future REPS schemes remain attractive to the farming community, while at the same time not constituting a barrier to the best economic use of the land.

**Map 11.5** Distribution of Arable Land and Pasture, Corine Land Cover 2000 (Source: EEA/EPA)



## Forestry

Some of the barriers to extensive afforestation identified by farming bodies are the requirement (imposed on holders of felling licences by the Forestry Act 1946) to re-plant clear-felled land, the requirement for an Environmental Impact Assessment for plots in excess of 50 ha, and competition from REPS (Magner, 2007, 2008).

A report titled *Factors Affecting Afforestation in Ireland in Recent Years* (Malone, 2008) proposed that forestry legislation should be amended to remove the absolute requirement to re-plant forested land. It is important that any such proposed amendment include measures relating to the complete life-cycle of a forest, from the selection of suitable land for afforestation through to final clearfelling, as well as any subsequent treatment required before the land is put back into agricultural production.

Further characterisation of waterbodies for the Water Framework Directive includes studies, undertaken by the Western River Basin District, on possible sedimentation, acidification and eutrophication impacts of forestry. The outputs from the work under way will include an updated acid-sensitive areas map, a potential forestry eutrophication map, and a potential forestry sedimentation map, all of which will assist in the selection of suitable land. It is important for site selection to take account of all the available information on suitability so that the best result is achieved.

The Forest Service is implementing Sustainable Forest Management (SFM) with a view to ensuring that all timber produced in Ireland is derived





from sustainably managed forests. The Code of Best Forest Practice sets out best practice in all stages of the forest management cycle. The application of this code across the industry, together with the provision of a suitable level of grant aid, will ensure that the beneficial effects of afforestation are not offset by pollution.

### Coastal Zone

The coastal environment suffers from a lack of coherence between terrestrial and foreshore/marine planning; this has implications for both coastal communities and sectors of activity operating within the coastal environment (Cummins *et al.*, 2006). In addition, in recent years, some of Ireland's coastal urban centres have suffered severe impacts due to flooding.

Against a background of global warming and expected rise in sea level, it is important that an ICZM Strategy be adopted and implemented as soon as practicable so that the competing pressures on the coastal zone can be balanced in an environmentally sustainable way. In addition to considering

the marine elements, this strategy must also address and integrate regional and local land planning and should contain measures to balance development pressure with flood risk. An integrated framework for planning and managing such change, bringing together all stakeholders, would facilitate efforts to balance interests and ensure positive interactions.

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