4.1 Land Cover

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Land cover – the physical ground cover, such as grassland, forest, built environment, etc. – plays a key role in providing living space, food, water, energy and recreational opportunities. Land cover is the result of the complex interactions between climate and socio-economic factors. It affects and modifies climate in terms of water exchange from the ground to the atmosphere as well as contributing to the capture and release of greenhouse gases and aerosols. Information on land cover change is important in order to quantify these effects.

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Measurements

Land cover is derived from analysis of a variety of data sources. At the local-scale ground surveys are the most effective tool whereas on regional and national scales aerial and satellite images are used. Aerial imagery from Ordnance Survey Ireland dates back to the 1970s, but it is only since 1990 that regular, systematic land-cover mapping of Ireland, using satellite imagery, has taken place as part of the European Commission's CORINE programme.[20] A range of land-cover maps has been created for other purposes, such as the Teagasc Land Cover 1995, as part of a soils and sub-soils project and MOLAND which focuses on urban areas. LUCAS (Land Use and Cover Area frame Survey) is a European-scale collection of statistics on land-use change, where land-use observations are collected at points across the continent. Ireland was surveyed in 2009, with more than 4000 observations made.

Figure 4.1 shows the CORINE 2006 land-cover map for Ireland. Land cover is dominated by pastures, with complex and fragmented field patterns. Most arable land is found to the south and east and there is a small, fragmented forest area and a high proportion of wetland (peatland) cover types.

20 CORINE produces a land-cover map of the European environmental landscape based on interpretation of satellite images.

'In terms of land use there has been a significant net removal of carbon, in recent years, primarily due to an increase in forest area.'

Time-series and Trends

Figure 4.2 shows emissions (+) and removals (-) of carbon associated with the management and use of land from 1990 to 2010. In recent years, with an increase in forest, there has been a large increase in net removal of carbon.

The coloured polygons in Figure 4.3 represent areas that have changed from one land cover type to another around Dublin between 2000 and 2006. The colours represent the land cover in 2006. There has been an increase in urban development and infrastructure mainly on the periphery of the city, and a number of newly forested areas have been established in the Wicklow mountains area to the south. One of the major land-use changes across Ireland since 1990 has been the conversion of grassland and peatland to forest.

'A consolidated land assessment capability needs to be put in place with a view to developing a coherent and consistent set of land cover and land-use products.'

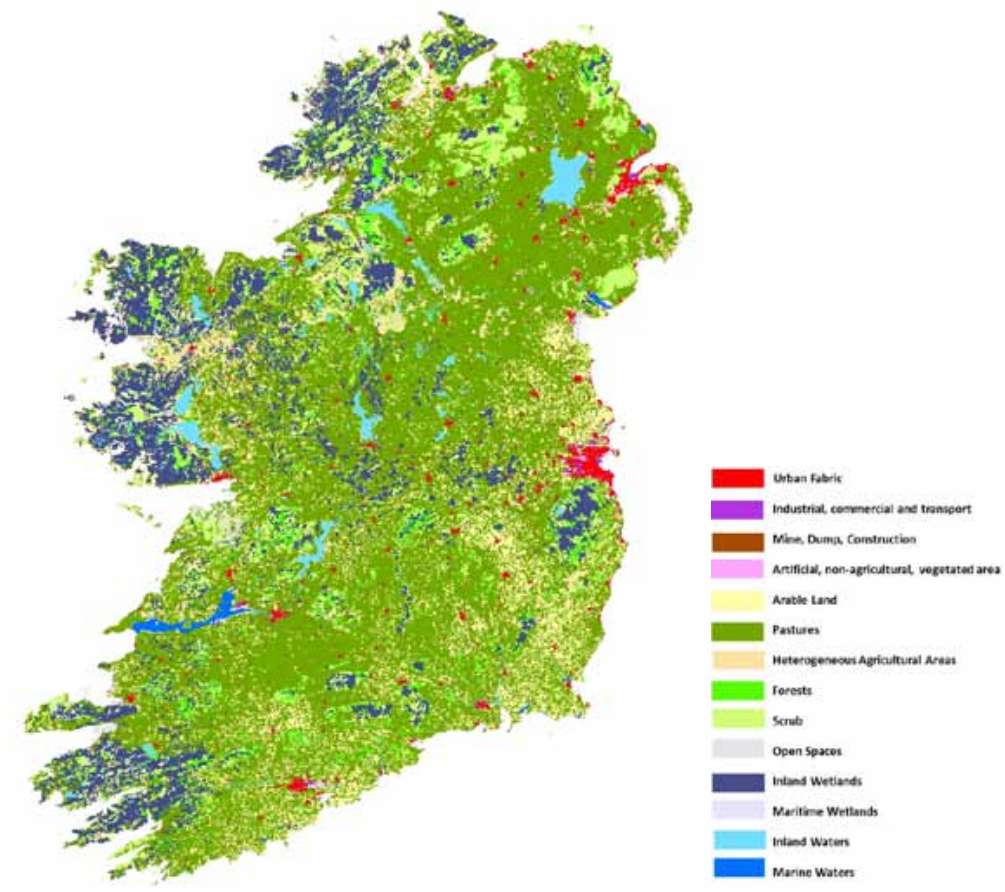

Figure 4.1. CORINE land cover map of Ireland (2006).

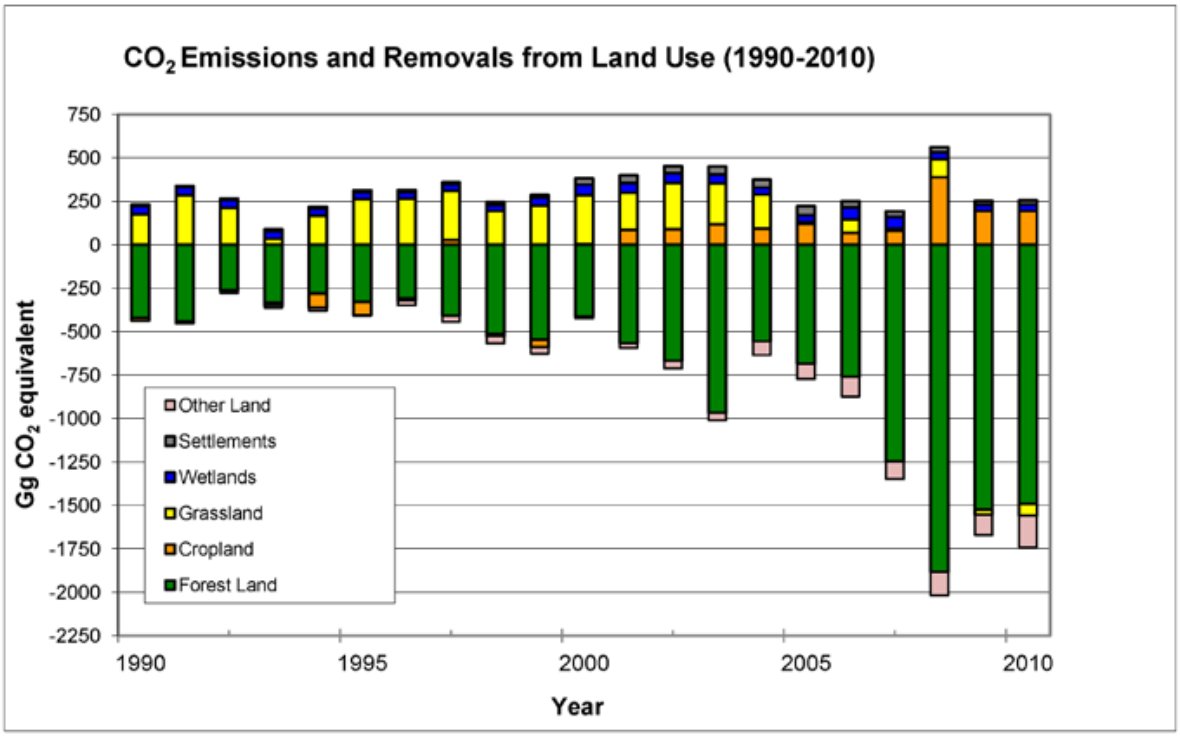

Figure 4.2. Emissions (+) and removals (-) of carbon associated with the management and use of land (1990–2010).

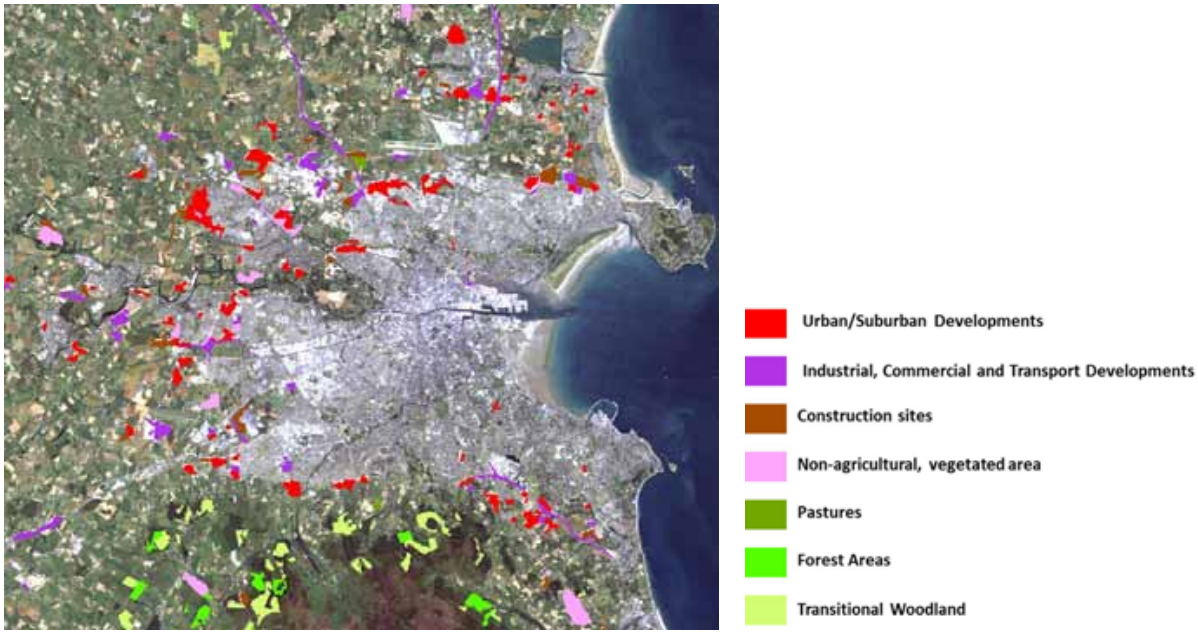

Figure 4.3. Land cover change in and around Dublin between 2000 and 2006 based on analysis of CORINE data.

Maintaining the Observations

The EPA oversees production of CORINE for the Republic of Ireland. The next CORINE land-cover map will be produced in 2013, based on 2012 data and will also encompass new high-spatial resolution maps of artificial surfaces, forest areas, agriculture areas, wetlands and water bodies. A number of other land-cover maps have been generated using differing methodologies and classification systems for individual institutional purposes or in response to European requirements. This makes integration very difficult. A consolidated land-assessment capability needs to be put in place with a view to developing a coherent and consistent set of land-cover/use products that takes the needs of the various land-cover communities into account.

Further Information and Data Sources

Duffy, P., Hanley, E., Hyde, B., O'Brien, P., Ponzi, J., Cotter, E. and Black, K. (2012) *National Inventory Report, 2012. Greenhouse Gas Emissions 1990–2010,* Reported to the UNFCCC, EPA, Johnstown Castle Estate, Co. Wexford, Ireland.

Information on Teagasc's land cover map can be found at: http://www.teagasc.ie/news/2010/201003-02.asp

Information on the MOLAND project of the Joint Research Centre of the European Commission is available at: http://moland.jrc.it/index.htm

The GEOLAND 2 project funded by the European Commission produces a range of land-mapping products: http://www.gmes-geoland.info/home.html

CORINE datasets are available from the EPA at: http://www.epa.ie/whatwedo/assessment/land/corine/datasets/

Forest Inventory data is available from the Forest Service at: http://www.agriculture.gov.ie/forestservice/forestservicegeneralinformation/abouttheforestservice/forestcoverdatasets/

Information and data for Ireland from the European Commission's LUCAS initiative may be found at: http://epp.eurostat.ec.europa.eu/portal/page/portal/lucas/data/lucas_primary_data_2009