13

Focus on land cover and land use

Introduction

This chapter provides information in relation to Eurostat's land use/cover area frame survey (LUCAS), which provides harmonised and comparable statistics on land cover and land use across the whole of the European Union's (EU's) territory (other than Croatia). Statistics from LUCAS can be used to monitor a range of socio-environmental challenges, among others, the degree of landscape fragmentation, soil degradation or the environmental impact of agriculture.

Most changes to landscapes are not visible on a day-to-day basis and the natural features that form landscapes (for example, valleys, plateaus and plains) are, by and large, the result of geographical processes that have taken place over a very long period of time. Alongside these natural processes, human intervention has increasingly left an imprint on environments where people live and work. Indeed, land has become a natural and economic resource that is used for multiple purposes: agriculture and forestry; mining, manufacturing and construction; distributive trades, transport and other services, as well as for residential and leisure use.

The onset of the industrial revolution led to a lengthy period during which forested areas across Europe were cleared (deforestation). Nevertheless, this pattern has been reversed during the last couple of decades, in part as a result of international climate change commitments made by the EU and its Member States — and as a result the EU is currently one of only a few regions in the world where forest cover is currently on the increase.

WHAT IS LAND COVER?

Land cover is the bio-physical coverage of land (for example, crops, forests, buildings or lakes). Land cover in LUCAS is specified according to a classification with as many as 76 subclasses — at its most basic level the main types of land cover are: artificial land; cropland; woodland; shrubland; grassland; bare land and lichens / moss; water areas; wetlands.

Examples of land cover (top left to bottom right):

H11: inland marshes;
E20: grassland without tree / shrub cover;
C10: broadleaved woodland;
A11: buildings with one to three floors;
F10: rocks and stones;
G10: inland water bodies.

WHAT IS LAND USE?

Land use is the socioeconomic use made of land (for example, agriculture, business, residential use or recreation); at any one place, there may be multiple and alternate land uses. Land use in LUCAS is specified according to 33 distinct classes that cover the primary sector (for example, agriculture and forestry); the secondary sector (industry); the tertiary sector (services); and other uses (for example, residential use and abandoned areas).

Examples of land use (top left to bottom right):

U111: agriculture (excluding fallow land and kitchen gardens);
U120: forestry;
U140: mining and quarrying;
U340: commerce, finance, business;
U370: residential;
U362: sport.

Historically, there have been a range of different developments that have impacted upon local ecosystems and biodiversity in the EU, including: a decline in agriculture's share of land use; an increase in soil erosion and soil degradation; an increase in (sub)urban sprawl arising from demographic and economic growth; and the continued development of infrastructure (such as new roads, railways and other manifestations of economic development). When combined, these developments have often resulted in increasingly fragmented habitats, potentially impacting upon biodiversity.

Statistics from LUCAS can be used to help analyse and contribute to the development of various EU policy areas, for example: to protect soil, as detailed in the soil thematic strategy; to integrate environmental concerns into the Common Agricultural Policy (CAP) post-2013; to promote biodiversity and conservation, through the EU's biodiversity strategy; to encourage the efficient use of resources for sustainable growth, as in the resource-efficient Europe initiative; to tackle climate change, through monitoring conducted by the European Environment Agency, as well as actions under the European climate change programme; or for land monitoring, spatial planning and resource management, as carried out by the Copernicus earth observation programme.

Main statistical findings

The total area of the EU-28 was just over 4.3 million square kilometres (km^2) in 2012. One of the underlying characteristics of European landscapes is the rapid changes that occur when moving within relatively small areas, for example, from sub-Arctic tundra environments to semi-arid surroundings or from lowlands and plains to relatively high mountain chains such as the Alps, Pyrenees or Carpathians. As such, the EU is home to a diverse range of habitats, flora and fauna. Land cover and land use play an integral role in these varied ecosystems which are indispensable for biodiversity within the EU.

Landscape diversity

Landscape refers to an area of land whose character and functions are defined by the complex and regionally-specific interaction of natural processes (relief, soil type, water availability, climate, biological diversity) and cultural features (human intervention through agriculture, forestry, rural policies, construction and economic pressures).

While some countries have large continuous areas of the same land cover, others have a mosaic of small areas of different land covers. The presence of grass verges, hedges, dry stone walls, ditches and other semi-natural linear elements is considered to be of fundamental importance to help promote biodiversity, providing ecosystem services such as pollination or pest control. On the other hand, the gradual moulding of landscapes by human activity has modified landscapes, for example, through urbanisation, changes in agricultural practices, or the increased use of transport. The density of man-made linear elements, which have a dissecting nature (such as roads, railways and aerial cables) is closely linked to population and infrastructure developments, and these elements may impede biodiversity — for example, a motorway that cuts through a natural area may restrict the free movement of wild animals.

Eurostat produces a range of indicators that may be used to evaluate the links between landscape patterns and biodiversity. Landscapes can be evaluated as LUCAS surveyors walk along a 250m transect recording land cover transitions and the presence of linear features. The structure of EU landscapes is analysed by taking into account the following elements: richness (the number of different types of land cover), diversity (the relative abundance of land cover types — in other words, whether they recur within the transect) and fragmentation (the presence of structural and dissection elements), to provide information on the spatial organisation, presence and arrangement of landscape features.

From the data collected on the transect, the Shannon evenness index can be calculated, it provides one measure of landscape diversity. For the EU-27 as a whole this index was 0.70 in 2012. The majority of the EU Member States recorded Shannon evenness indices that were distributed around the EU-27 average, within the interval of 0.65–0.75.

SHANNON EVENNESS INDEX

When the LUCAS surveyors walk a 250m transect, they are requested to register all the land cover changes they observe. The degree of homogeneity or heterogeneity of land cover can be analysed by measuring the number of different land cover types in each transect and their relative abundance (in other words, whether the same type of land cover reoccurs in the transect).

The Shannon evenness index (SEI) can be used to evaluate landscape diversity and takes into consideration both the number of different land cover types observed and their relative abundance; the index is based on values within the range of 0–1, with zero representing a landscape with no diversity (only one land cover type) and a value of one representing the maximum diversity (in other words, featuring all types of land cover in equal amounts). If a landscape is characterised by all different types of land cover being found in equal abundance then the Shannon evenness index will tend towards the value of one; conversely, if there is only one dominant type of land cover then the index will tend towards zero.

$$\text{Shannon evenness index} = -\frac{\sum_{i=1}^{m} P_i \ln(P_i)}{\ln(m)}$$

where the relative abundance of land cover types is denoted by P_i and the different types of land cover are denoted by m.

Portugal, Slovenia, Austria and Luxembourg had the greatest landscape diversity

The highest landscape diversity was recorded in those EU Member States which featured mountainous or hilly areas: for example, Portugal, Slovenia, Austria and Luxembourg; each of these had a relatively high degree of variation in their land cover, with a Shannon evenness index of more than 0.75 in 2012. There followed a group of Member States whose landscape diversity was close to the EU-27 average (for example, Germany, France or Poland). Another group of countries were rich in forests: these had relatively homogeneous landscapes and lower degrees of diversity (for example, Estonia or Finland). The final group of countries also recorded low levels of landscape diversity, their landscape was homogeneous (indices of less than 0.65) and one land cover type tended to predominate, often this was grassland, cropland or abandoned farmland (for example, Ireland, Hungary, Romania or the United Kingdom).

The Shannon evenness indices for NUTS 2 regions, as opposed to national averages, are shown in **Map 13.1** covering 261 different regions across the EU-27 Member States. There were 12 regions where the Shannon evenness index was at least 0.80 in 2012 (as shown by the darkest shade in the map). They were spread across eight different EU Member States: the following section focuses on two of these — Portugal and Austria — providing an indication of the changing landscapes that may be encountered within particular regions.

The most diverse landscapes were in the Norte and Algarve regions of Portugal

The highest landscape diversity was recorded in the Norte region of Portugal. The inland areas of this region moving towards the Spanish border are characterised as relatively mountainous (for example, the Parque Nacional Peneda-Gerês and the Parque Natural do Douro) and are relatively dry, even arid in the summer months. These areas are often characterised as being scrubland or forested areas, and when used for agricultural purposes they tend to have permanent crops (such as vineyards). This northerly region of Portugal also has a lengthy Atlantic coastline where population density and economic activity tends to be much more concentrated; this area also has higher levels of rainfall and is characterised by a wider variety of farming practices.

The second highest Shannon evenness index was recorded for a region at the other end of mainland Portugal, namely, the Algarve. Some of the characteristics of this region were similar to those of the Norte, insofar as the Algarve is characterised by built-up (tourist) developments along its southern coast, where there are also some areas of agricultural activity benefitting from the sheltered climatic conditions, before the landscape transforms quite rapidly into a rural, sparsely populated and relatively hilly inland area (for example, the Serra do Caldeirão).

The Austrian regions of Burgenland and Oberösterreich also had diverse landscapes …

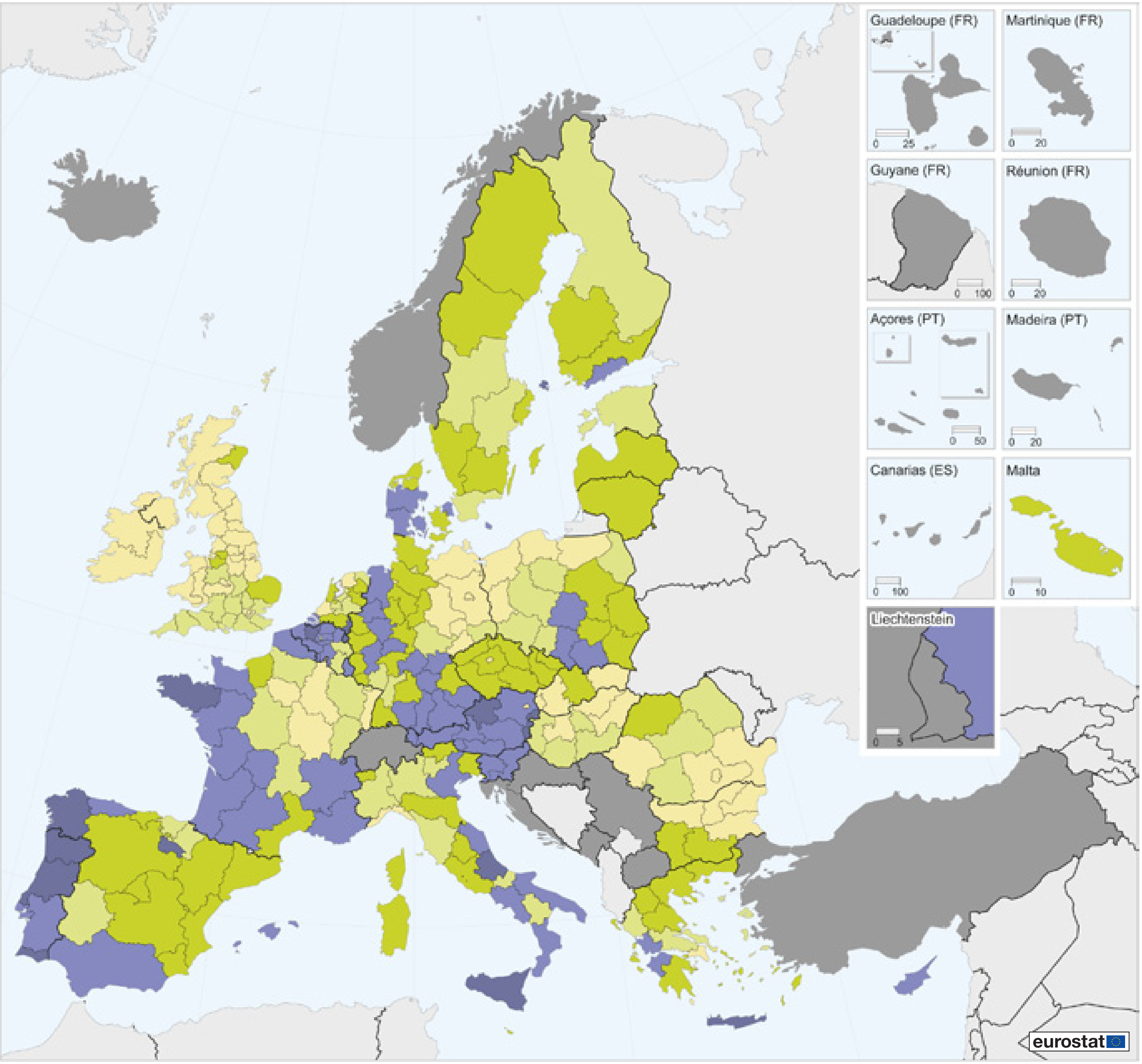
The next highest region in terms of landscape diversity was Burgenland, which is the easternmost and least populous region of Austria. It is a largely lowland region which in the north features plains that run towards Vienna and the Neusiedler See (Austria's largest lake), while the south of the region has more hills, a relatively high proportion of forested areas, and a lower level of population density. Agriculture — including permanent crops (vineyards and orchards), fruit and sunflowers — and tourism are important in Burgenland.

There was another region from Austria that featured among those regions with the highest diversity, namely, Oberösterreich (6th place in the ranking). It is located in northern Austria and borders onto Germany and the Czech Republic. This region is also characterised by a varied number of different landscapes: stretching from the Bohemian forest down to relatively flat meadowland and areas of intensive agriculture that are located around Linz — Austria's third largest city and an industrial centre — before climbing through forested foothills to the higher elevations of the Alps.

… as did eight other regions — these were located in southern Italy, northern Spain, France, Belgium, the Netherlands and Finland

The remaining eight regions where the Shannon evenness index was at least 0.80 included: two regions from southern Italy (the island of Sicilia and the region of Abruzzo which is split between mountainous terrain and lowland coastal regions on the Adriatic Sea); two regions with varied landscapes in northern Spain (Galicia and La Rioja); as well as the largely lowland areas of Bretagne (France), the Prov. Oost-Vlaanderen (Belgium), Limburg (the Netherlands) and the island of Åland (Finland). These final four regions are not characterised by major changes in landscape, rather they have relatively monotonous stretches of flat land. Their high Shannon evenness indices may be attributed, at least in part, to more diverse land use, for example, relatively small patches of land which result in the land cover being fragmented or alternated.

Map 13.1: Landscape diversity expressed by the Shannon evenness index, by NUTS 2 regions, 2012
(index, range = 0–1; with a value of zero representing a landscape with no diversity (only one land cover type) and a value of one representing the maximum diversity (in other words, all types of land cover in equal amounts))



(index, range = 0–1)

EU-27 = 0.70

- < 0.65
- 0.65 – < 0.70
- 0.70 – < 0.75
- 0.75 – < 0.80
- >= 0.80
- Data not available

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2014

0 200 400 600 800 km

Source: Eurostat, LUCAS 2012

Low levels of landscape diversity across many regions of the United Kingdom

At the other end of the range, there were 64 NUTS 2 regions where the Shannon evenness index was lower than 0.65 in 2012 (as shown by the lightest shade in **Map 13.1**). More than one third of these were in the United Kingdom (which may in part be explained by the relatively small size of some NUTS 2 regions in this Member State), while there were seven regions from Germany, five each from France and Hungary, and four each from Bulgaria, Poland and Romania; the remaining regions were divided between Slovakia (three regions), Ireland and the Netherlands (two regions each), Belgium, the Czech Republic, Italy and Austria (a single region each).

The relatively low level of landscape diversity across many regions of the United Kingdom may, at least in part, be linked to densely populated urbanised areas and a tendency to find large swathes of cropland (in the east) or grassland/ scrubland areas (in the west and the north). A total of 23 out of the 37 regions in the United Kingdom recorded a Shannon evenness index that was below 0.65.

A high proportion of the Irish countryside is also composed of grassland and this may explain why both NUTS 2 regions in Ireland also registered indices that were below 0.65. Indeed, grassland accounted for 67.1 % of the total area of Ireland in 2012 and for 40.1 % of the total in the United Kingdom; these were the two highest shares across all of the EU Member States and considerably higher than the EU-27 average of 19.5 %.

Some regions in eastern Europe also recorded relatively uniform landscapes …

Five out of the seven Hungarian regions reported a Shannon evenness index of less than 0.65. These regions were often characterised by their relatively high proportion of cropland (for example, across the Great plain), as land used for crops accounted for 46.9 % of the total area of Hungary in 2012, almost twice as high as the EU-27 average of 24.7 %. In Bulgaria, four out of the six NUTS 2 regions recorded indices that were below 0.65: these regions could also be characterised as lowland plains and could be contrasted with the results for the south-western regions of Yugozapaden and Yuzhen tsentralen, where landscape diversity was above the EU-27 average and where the topography was much more varied.

… as did many capital regions and densely populated urban regions

Perhaps unsurprisingly, there was a relatively low level of landscape diversity for many of the capital regions. This was most noticeable for Inner London, which recorded the lowest Shannon evenness index (0.39 in 2012) among any of the NUTS 2 regions for which data are available. The next lowest index was for the neighbouring region of Outer London, while six more regions from the United Kingdom — North Yorkshire, Northern Ireland, East Wales, West Midlands, East Yorkshire and Northern Lincolnshire, and Lancashire — recorded indices that were lower than for any other region in the EU-27.

Aside from London, the other capital regions which recorded landscape diversity of less than 0.65 included the Belgian capital region of Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (0.55), the Irish capital region of Southern and Eastern (0.57), Attiki in Greece (0.58), Wien in Austria (0.59), Bucureşti - Ilfov in Romania (0.60), Berlin in Germany (0.60), Praha in the Czech Republic (0.61), Bratislavský kraj in Slovakia (0.61) and the French capital region of Île de France (0.64).

Figure 13.1 provides an alternative analysis of these landscape diversity results by NUTS 2 region; it shows the variation between regions within the same EU Member State. The general pattern of relatively low levels of landscape diversity for capital regions is evident, although there were some contradictions to this rule. For example, the capital regions of Bulgaria, Hungary and Finland each recorded landscape diversity ratios that were higher than their respective national averages; indeed, the Shannon evenness indices for Yugozapaden and Közép-Magyarország were the highest recorded among any of the NUTS 2 regions in Bulgaria and Hungary.

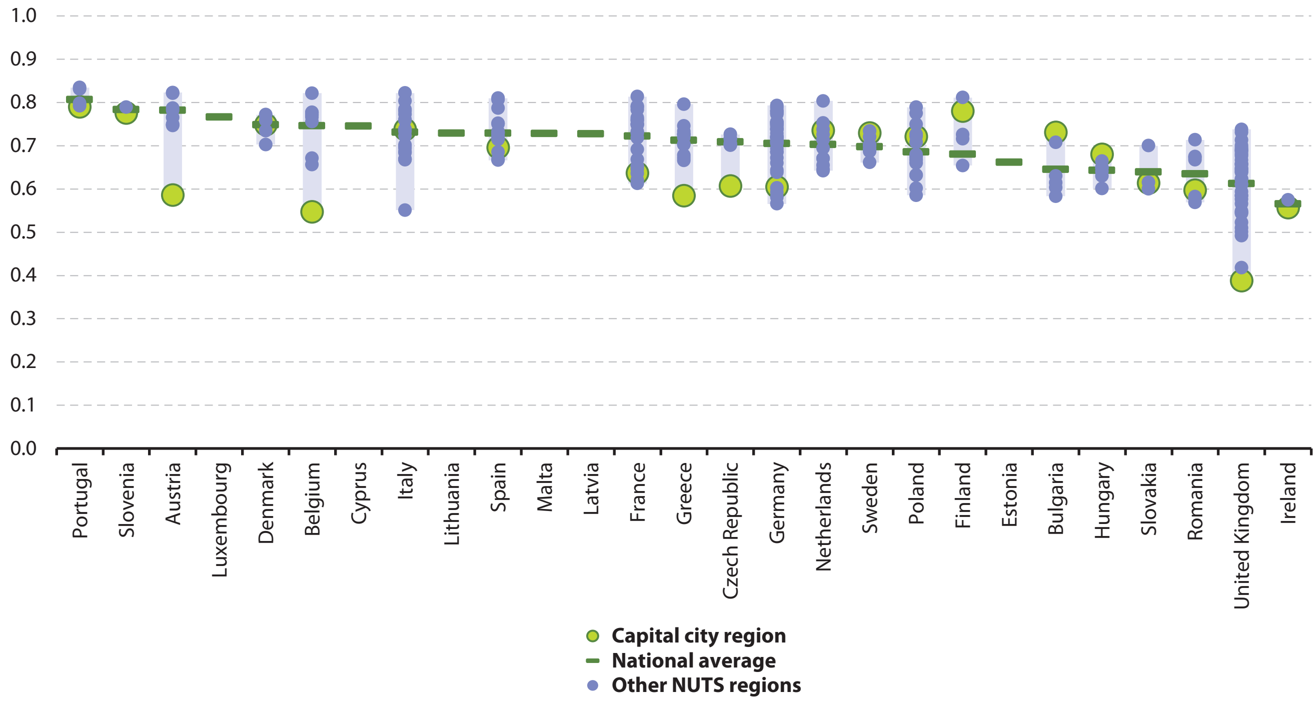
There was a relatively large variation in landscape diversity between the different regions of Belgium, Germany, Greece, France, Italy, Austria, Poland and the United Kingdom. In the case of Belgium, Greece, Austria and the United Kingdom, this range was amplified due to the low level of landscape diversity recorded for the capital region. The considerable differences in landscape diversity across Italian regions was, at least in part, due to a low level of diversity in Liguria — a densely populated, mountainous region in the north-west of the country that runs along the Mediterranean coastline from the French border to Tuscany and includes the city of Genova.

A case study for the use of LUCAS — monitoring soil across the EU

The remainder of this chapter provides some background information in relation to the possible uses that can be made of the LUCAS data set; it concentrates on one particular area, soil. A more detailed list of areas where LUCAS data are currently being used to help analyse and contribute to the development of various EU policy areas is provided in the Introduction section .

The formation of soil is an extremely slow process and soil is therefore sometimes considered as a non-renewable resource. Demand for data and information that may be used to assess the state of European soils has been covered, among others, by the 6th Environment Action Programme, which outlined the EU's soil thematic strategy (see box), the sustainable use of soil to preserve its functions, and plans to restore degraded or polluted soils. These principles were confirmed in the 7th Environment Action Programme which restates the EU's commitment to: reduce soil erosion; increase organic matter in soil; limit the effects of man-made pressures on soil; manage land in a sustainable fashion; and remedy sites with contaminated soils.

Figure 13.1: Landscape diversity expressed by the Shannon evenness index, by NUTS 2 regions, 2012 (1)
(index, range = 0–1; with a value of zero representing a landscape with no diversity (only one land cover type) and a value of one representing the maximum diversity (in other words, all types of land cover in equal amounts))



(1) The light purple shaded bar shows the range of the highest to lowest region for each country. The dark green bar shows the national average. The green circle shows the capital city region. The dark purple circles show the other regions. Spanish autonomous cities, Canarias, French overseas departments, Croatia and the Portuguese autonomous islands: not available.
Source: Eurostat, LUCAS 2012

THE EU'S SOIL THEMATIC STRATEGY

In 2006, the European Commission's communication titled 'Thematic strategy for soil protection' (COM(2006) 231) laid out plans to ensure that the EU is committed to a high level of soil protection, with the objective of protecting soil functions and preventing further soil degradation. Within this framework, the EU Member States decide how best to protect the sustainable development of their own soils, while the European Commission provided an impact assessment of the economic, social and environmental impacts of different policy measures.

In February 2012, the European Commission published a policy report on the implementation of the strategy (COM(2012) 46). This provided an overview of the actions undertaken within the EU's soil thematic strategy, namely in relation to raising awareness, research, integration and legislation. It showed that the strategy has helped raise the profile of soil issues, for instance by integrating them into other policies. It also presented soil degradation trends both in Europe and globally, as well as future challenges to ensure soil protection.

For more information:

Joint Research Centre: The state of soil in Europe

Soil degradation in Europe

Within the agricultural domain, land management practices such as organic and integrated farming can maintain and enhance organic matter in soil. However, there is an on-going pattern of soil degradation in the EU, despite policies to encourage soil protection. Soil degradation processes may be exacerbated by human activity, such as, agricultural and forestry practices, industrial activities, tourism, urban and industrial sprawl or construction works. As a result, soil degradation may impact directly upon water and air quality, biodiversity and climate change, and is therefore of interest to a range of policymakers.

Some of the main factors that cause soil degradation in the EU include soil erosion (by water or by wind), and a decline in the proportion of organic matter contained within soils: almost half the soil in the EU is considered to have a low content of organic matter and this is particularly evident in the southern Member States. Other forms of soil degradation include salinisation (the accumulation of soluble salts in soils), flooding, landslides or soil contamination from industrial activities (the use and presence of dangerous substances in production processes). Fully functioning soil reduces the risk of floods and protects underground water supplies by neutralising or filtering out potential pollutants.

Another form of soil degradation is that of soil sealing, when soil is replaced by an impermeable material, for example, due to the covering of land for housing, roads or other construction work. A roadmap to a resource-efficient Europe COM(2011) 571 — one of the flagship initiatives of the Europe 2020 strategy — has called for EU policies, by 2020, to 'take into account their direct and indirect impact on land use in the EU and globally', such that the rate of land take (land taken for urban and other artificial land development) is maintained on a path which aims to achieve no net land take by 2050.

LUCAS soil database

In 2009, the European Commission extended the LUCAS exercise to include an additional module in relation to soil. This survey was the first attempt to construct a pan-European topsoil database, which could serve as a baseline for EU-wide soil monitoring.

A total of nearly 20 000 topsoil samples were collected from approximately 10 % of the LUCAS 2009 data points in 23 of the EU Member States; Bulgaria, Croatia, Cyprus, Malta and Romania were initially excluded. Subsequently, Cyprus and Malta provided soil samples even though LUCAS was not carried out on their territories in 2009, while 664 and 1 427 topsoil samples were collected in Bulgaria and Romania in 2012.

Each sample was equivalent to around 0.5 kg of topsoil (0–20 cm in depth). All samples were registered and visually checked; mineral soils were air-dried and repacked, before being sent to a central laboratory for physical and chemical analyses to measure, among others: particle size (clay, silt and sand content), pH (acidity and alkalinity), organic carbon, carbonate content, phosphorus content, total nitrogen content and extractable potassium content.

LUCAS data — its application to monitor the soil thematic strategy

LUCAS is based on a uniform methodology, has flexibility in its design to allow European Commission services to specify particular survey modules (such as the soil survey in 2009), and can provide soil monitoring data within two or three years.

LUCAS data have been used to make an initial analysis of land take, soil sealing, and more generally land cover and land use, while specific information from the soil module has been used to monitor the chemical and physical properties of soil across the EU. The latter has allowed a wide range of policy assessments to be made, for example, a better evaluation of carbon stocks in European soils, considered important within the context of climate change policy and for food production (as organic matter maintains soil fertility).

While the soil thematic strategy (COM(2006) 231) has helped raise the profile of these issues, there is still no systematic monitoring and protection of soil quality across Europe. In its progress report on the implementation of the strategy (COM(2012) 46) — published in 2012 — the European Commission noted that results from LUCAS could be a starting point for a harmonised system of monitoring. At the time of writing, the European Commission is drafting a Communication which highlights the importance of good land management and aims to raise awareness about the value of land as a resource; this Communication is likely to be adopted in 2015.

LUCAS data — its application to monitor agro-environmental indicators

The EU's agricultural policy post-2013 contains commitments to incorporate a range of environmental concerns, for example, in a Communication entitled 'Development of agri-environmental indicators for monitoring the integration of environmental concerns into the common agricultural policy' (COM(2006) 508), the European Commission proposed a set of 28 agri-environmental indicators, including indicators for soil quality and soil erosion.

Soil quality

The LUCAS soil module includes the evaluation of the organic carbon content of soils (as derived from residual plant and animal material decomposed under the influence of temperature, moisture and ambient soil conditions); this indicator is named the organic carbon concentration of soil. A high level of organic carbon content may be linked with good soil conditions from an agro-environmental point of view and is likely to promote limited soil erosion, a high filtration capacity, a rich habitat for soil organisms, and provide a sink for atmospheric carbon dioxide. The annual loss of organic matter can vary greatly in soils, depending on natural factors (for example, climate, soil material, drainage status, land cover and topography), and human-induced factors (for example, type of plant / crop cover, land use, land management practices).

At present the LUCAS data are available only for 2009: this information provides a useful baseline against which the impact of the CAP post-2013 could be measured, especially in relation to the sustainable management of natural resources and climate action. If the LUCAS soil module is repeated at a later point in time, then organic carbon loss could be evaluated, a key indicator for measuring the pace of soil degradation.

Soil erosion

Soil's vulnerability to erosion depends on a range of environmental conditions and human activities. By removing the most fertile topsoil, erosion reduces soil productivity and, where soils are shallow, may lead to an irreversible loss of farmland. Severe erosion is commonly associated with the development of temporary or permanently eroded channels or gullies that can fragment farmland.

Soil erosion is defined as the area exposed to the risk of erosion (in hectares and as a percentage of the total area). LUCAS data has been used in a modelling exercise (RUSLE) conducted by the European Commission's Joint Research Centre (JRC) which evaluated soil erosion rates. The work carried out by the JRC suggests that the following types of data will be needed, in the future, to produce reliable indicators for soil erosion:

- soil data — texture, organic carbon content, structure, permeability;
- climate data — precipitation and temperature;
- land cover;
- topography;
- management — human and agricultural practices.

Data sources and availability

LUCAS is a harmonised in situ land cover and land use survey, implying that data are gathered through direct observations made by surveyors on the ground. The use of an area frame survey reduces the statistical burden on farmers and other land owners as they do not need to respond to a questionnaire.

The latest LUCAS field work took place between March and September 2012 for the EU-27 Member States (no information was collected for Croatia as the survey was conducted before Croatian membership of the EU).

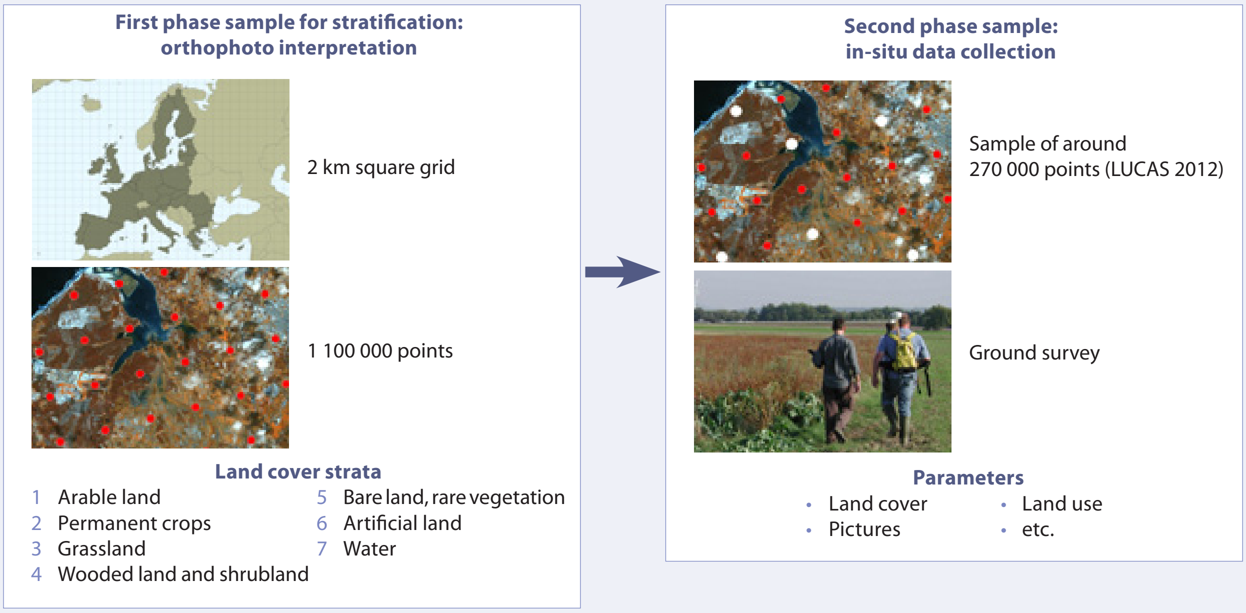
What type of information is available?

There are two main types of information derived from LUCAS that may be presented to users: aggregated statistical data and elementary data (for individual survey points). The aggregated results show land cover and land use for the EU-27 and national averages for the EU Member States, and can also be shown at a more detailed level, for example, for more than 250 NUTS 2 regions. These statistics can be supplemented by indices relating to landscape composition, richness, structure, dissection and diversity which may be aggregated to a national or a regional level from the information collected at individual survey points.

HOW IS LUCAS CONDUCTED?

To conduct LUCAS, the EU' territory was divided up using a 2*2 km grid whose nodes constituted around 1.1 million points. From this, a sample of some 270 000 points were selected on the basis of stratification information — each of these points was visited by one of the 750 field surveyors (mostly agrarian and forestry engineers).

Sampling strategy: sampling design



Includes material © (2010) RapidEye AG, Germany; all rights reserved

At each survey point, the surveyor: observes the land cover; observes the land use; notes other environmental parameters on the ground (for example, irrigation, grazing, burned areas, fire breaks); takes a series of photographs (of the reference point, as well as pictures to the north, south, east and west); walks 250 metres in an eastward direction (a 'transect') recording the different land cover and linear elements, such as walls, hedges, roads, railway lines, irrigation channels or electricity power lines. This information collected for each transect can be used to analyse the fragmentation, richness and diversity of landscapes — for example, the Shannon evenness index.

Transect information collected by LUCAS — the transect walked by the surveyor

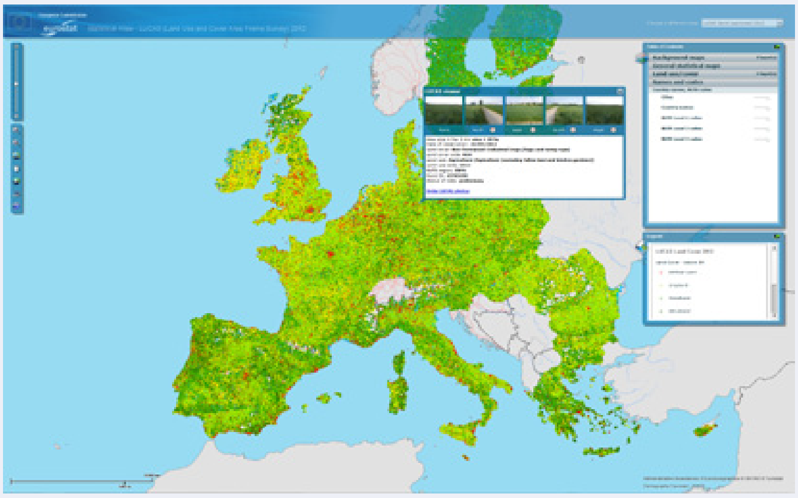
Acknowledgement: PNOA © INSTITUTO GEOGRÁFICO NACIONAL DE ESPAÑA — Xunta de Galicia

The elementary data is in situ micro-data for each of the surveyed points. It provides a rich source of information for further, detailed analyses. The data are presented in a tabular format in country-specific files, available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/lucas/data/LUCAS_primary_data/2012.

Since the 2006 reference period, Eurostat has also made available a photograph archive from LUCAS. Photographs can be requested by using the online form: http://epp.eurostat.ec.europa.eu/portal/page/portal/lucas/data/LUCAS_primary_data/form.

ACCESS LUCAS DATA — EUROSTAT'S STATISTICAL ATLAS

This application is an interactive viewer that allows users to study layers of statistical data in combination with geographical information. The statistical atlas can be used for viewing maps composed of LUCAS data and provides users with the opportunity to see all of the information collected at each of the surveyed points, including the coordinates of the location, the classification of land cover and land use and the photographs that were taken.



LUCAS online viewer (select LUCAS data from the drop-down list — top right corner of the application):

http://ec.europa.eu/eurostat/statistical-atlas/gis/viewer

Examples of photographs taken at a specific survey point:

Central photograph: the surveyed LUCAS point; remaining images taken from the surveyed point to the north, south, east and west.