

2.3 LAND



Changes in land cover between 2000 and 2006 are due in part to Spain's economic and social development over that period. Data supplied by the Corine Land Cover (CLC) survey in 2006 clearly show how in Spain — and, by extension, in Spain's autonomous communities and cities — there was a significant increase in artificial surfaces. This increase in relation to data from the CLC 2000 survey is particularly pronounced in coastal areas, where there was an 11% rise in artificial surfaces within 10 kilometres of the coast and an 8% rise within 1 kilometre of the coast.

Soil is one of the environmental media most sensitive and vulnerable to pollution. In relation to the declaration of land as contaminated, Royal Decree 9/2005 of 14th January establishes a list of potentially soil-polluting activities and the criteria for classifying land as contaminated, as well as a series of obligations to be fulfilled by those engaging in potentially soil-polluting activities. To this end, and following the guidelines established in the legislation, Spain's regional governments continue to receive Preliminary Situation Reports from companies as a first step in the process.

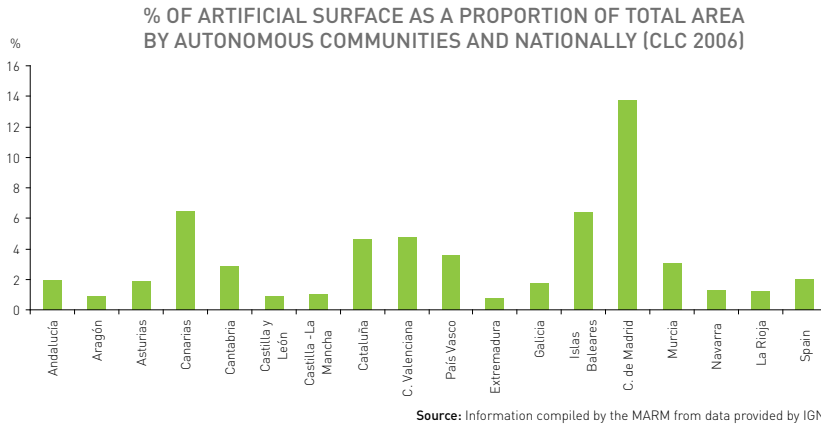


The National Soil Erosion Inventory was again updated in 2010. This year's survey has added data on areas at risk from erosion in the provinces of Leon, Valladolid and Zamora.

INDICATOR	GOAL	TREND
Land cover: artificial surfaces	Achieve sustainable land use	In 2006, artificial surfaces did not exceed 2% of Spain's land area
Artificial surfaces along the coast	Ease pressure on coastal ecosystems	Artificial surfaces accounted for 22% of total land area within 1 km of the coast
Contaminated land	Eliminate pollution that represents an unacceptable hazard to human health and ecosystems	Companies continue to submit Preliminary Situation Reports to regional governments
Area affected by erosion	Achieve hydrological and forest restoration	Work continues on the National Soil Erosion Inventory

Land cover: artificial surfaces

Between the CLC 2000 and the CLC 2006 surveys, the area covered by artificial surfaces increased in all of Spain's autonomous communities, as well as in its two autonomous cities



According to the Corine Land Cover 2006 survey, artificial surfaces covered 2% of Spain's total land area, while in Europe they accounted for 4% of the total. As the graph above shows, this percentage varies greatly according to autonomous community. Due to their particular characteristics, the autonomous cities of Ceuta and Melilla had the greatest proportion of artificial surfaces — in Melilla, 54% of the land area (739 ha) was covered by artificial surfaces. In Ceuta, artificial surfaced accounted for 37% (766 ha) of the city's total land area.

Of the other autonomous communities, Madrid had the highest proportion of artificial surfaces (13.7%; 110,249 ha), followed by the Canary Islands (6.5%; 49,887 ha) and the Balearic Islands (6.4%; 32,258 ha).

Meanwhile, the autonomous communities with the lowest percentage of artificial surfaces were Extremadura (0.7%; 29,764 ha); Aragon (0.8%; 40,260 ha); and Castile-Leon (0.9%; 80,294 ha).

The CLC 2000 and CLC 2006 data reveal that there was a 15% increase (138,290 ha) in artificial surfaces in Spain between the two surveys. During that period, the amount of artificial surface increased in all of Spain's autonomous communities, including the two autonomous cities.

NOTES

The CLC surveys identify linear elements with a minimum width of 100 m. The minimum mappable unit in the CLC surveys is 25 ha. Updates included in the CLC 2006 survey have enabled creation of the CLC 2000–2006 changes database as an independent product (minimum images unit: 5 ha). In Spain, the base year for most of the data is 2005. However, in the particular case of Navarre, maps from 2006 have been used.

In CLC 2006, artificial surfaces comprise the following categories:

- 1.1 Urban fabric
 - Continuous urban fabric
 - Discontinuous urban fabric
- 1.2. Industrial, commercial and transport units
 - Industrial or commercial units
 - Road and rail network and associated land
 - Port areas
 - Airports
- 1.3. Mine, dump and construction sites
 - Mineral extraction sites
 - Dump sites
 - Construction sites
- 1.4. Artificial non-agricultural vegetated areas
 - Green urban areas
 - Sports and leisure facilities

SOURCES

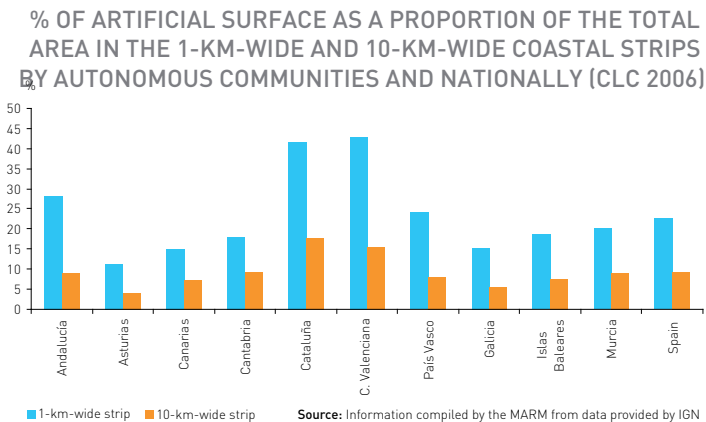
- IGN, MF. Corine Land Cover 1990, 2000 and 2006.
- EEA.

FURTHER INFORMATION

- <http://www.fomento.es>
- <http://www.marm.es>
- <http://www.eea.europa.eu/data-and-maps/figures/share-of-land-cover-types>

Artificial surfaces along the coast

The proportion of artificial surfaces on the coastal strip varies considerably from one autonomous community to another



On a national level, artificial surfaces accounted for 22.6% of the total area within one kilometre of the coast. This strip includes the autonomous cities of Ceuta and Melilla, in which artificial surfaces, because of the small size of the territory they occupy, cover a high proportion of their land area.

In Spain's coastal autonomous communities, artificial surfaces accounted for a higher percentage of the first kilometre from the shore than they did in the 10-km-wide strip. This figure reflects higher population concentration and, therefore, a higher percentage of artificial surfaces within one kilometre of the coast. The autonomous communities with the highest percentages of artificial surface on the coastal strip were Valencia, with 42.9% (18,566 ha) within the 1-km-wide strip and 15.2% (60,966 ha) within the 10-km-wide strip; Catalonia, with 41.7% (20,813 ha) and 17.9% (69,730 ha), respectively; and Andalusia, with 28.2% (28,871 ha) and 9.1% (65,288 ha), respectively.

Data on artificial surface area from the CLC 2000 and CLC 2006 surveys show how artificial surfaces in Spain as a whole increased at a higher rate within the 10-km-wide coastal strip (11.2%) than within the 1-km-wide strip (7.9%).

SOURCES

- Corine Land Cover 2000–2006. IGN, MF.

FURTHER INFORMATION

- <http://www.fomento.es>
- <http://www.marm.es>

Contaminated land

By 2009, regional governments had received a total of 67,307 Preliminary Situation Reports

PRELIMINARY SITUATION REPORTS RECEIVED BY REGIONAL GOVERNMENTS UP TO 2009

Andalusia	11,130	Rioja	1,005
Aragon	2,700	Madrid	5,824
Cantabria	1,299	Murcia	2,326
Castile-Leon	8,308	Navarre	1,125
Catalonia	7,825	Basque Country	4,400
Extremadura	2,070	Asturias	1,545
Galicia	10,850	Valencia	5,200
Balearic Islands	1,700	TOTAL	67,307

Source: MARM and regional governments

According to Royal Decree 9/2005 of 14 January, which establishes a list of potentially soil-polluting activities and the criteria for classifying land as contaminated, those engaging in potentially contaminating activities (as defined in Annex I) and/or those that meet the criteria set out in Article 3, must present a Preliminary Situation Report to the competent authority in the corresponding autonomous community. By 2009, a total of 67,307 reports had been submitted, with Andalusia and Galicia each receiving over 10,000 reports.

Submission of a Preliminary Situation Report constitutes the first step in complying with the obligations established under RD 9/2005. After receiving these reports, the competent authorities within the autonomous communities may require submitters to provide any further information deemed necessary. According to the information received, they may then classify the land as contaminated according to the particular form of use.

Once an area of land is declared contaminated, remediation of that site must take place. Remediation should be carried out by applying the best available techniques according to the characteristics of each individual case. Remediation should guarantee a permanent solution, prioritising to the extent possible the use of *in situ* treatment techniques that minimise waste generation, transport and disposal. Sites classified as contaminated are recorded as such in Spain's Property Register and a note is added describing their characteristics.

Once decontamination and remediation have been completed, and after verification of the effectiveness of the treatment, an administrative ruling is issued declassifying the site as contaminated.

Most of Spain's autonomous communities have played an active role in dealing with contaminated land and, working in accordance with the procedures set out in RD 9/2005, are developing their own legislation to regulate specific procedures, requirements, obligations and other aspects.

SOURCES

- MARM. Sub-Directorate-General for Sustainable Production and Consumption.

FURTHER INFORMATION

- http://www.mma.es/portal/secciones/calidad_contaminacion/suelos/

Area affected by erosion

The National Soil Erosion Inventory allows authorities to identify priority action areas to combat erosion

AREA AFFECTED BY EROSION (%)

AC	Moderate rate of erosion (%)	Intermediate rate of erosion (%)	High rate of erosion (%)
Cantabria	59.91	22.39	17.70
Asturias	61.92	21.67	16.42
Navarre	65.64	18.79	15.57
Murcia	66.41	18.13	15.46
Rioja	65.84	20.43	13.72
Galicia	74.34	13.06	12.61
Balearic Islands	76.62	13.69	9.70
Madrid	81.28	10.89	7.83
Catalonia	54.41	24.86	20.74
Extremadura	83.75	9.81	6.44
Canary Islands	69.25	21.86	8.89
Andalusia	57.61	19.76	22.63
Valencia	70.12	16.04	13.83
Castile-Leon*	87.93	9.35	2.72

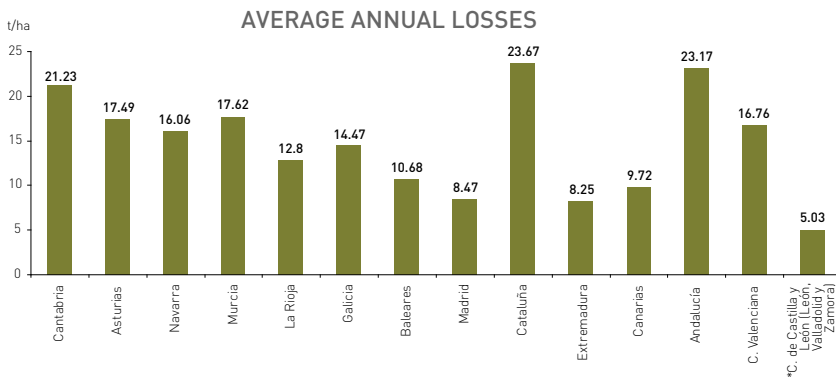
*The data for Castile-Leon refer to the provinces of Leon, Valladolid and Zamora and the percentage has been calculated in relation to the total for these three provinces.

Source: MARM

The National Soil Erosion Inventory seeks to detect, quantify and reflect cartographically the main erosion processes under way within Spain's national territory and to identify changes in these processes over time by carrying out an ongoing inventory. The project, which was launched in 2001, is expected to come to a close in 2012. One of its main objectives is to locate, quantify and analyse changes in erosive phenomena in order to delineate areas requiring priority action in the fight against erosion, as well as to define and evaluate the actions carried out.

In 2010, data for the provinces of Leon, Valladolid and Zamora in Castile-Leon were added to the inventory. The figures represent the percentage of land area affected by varying degrees of erosion in relation to the autonomous community's total land area (see notes for further details). The only exception is Castile-Leon, for which the figure represents the percentage of land area affected by varying degrees of erosion within the aforementioned three provinces (Leon, Valladolid and Zamora) in relation to their total land area. The data presented in this chapter on area affected by sheet, rill and gully erosion were collected in studies conducted between 2002 and 2010.

The National Soil Erosion Inventory, which uses a 1:50,000 scale, involves both field work that improves application of the RUSLE model and study of other types of erosion (riverbank, gully, deep and wind erosion). Thus, compared to similar projects in which sheet and rill erosion are studied in other European countries, the National Soil Erosion Inventory adopts an innovative approach and provides a highly detailed picture of the state of erosion in Spain. As such, the Inventory constitutes a methodological model for studies of this type throughout Europe.



*The data shown for Castile-Leon refer to the provinces of Leon, Valladolid and Zamora

Source: MARM

NOTES

- The erosion considered in this indicator is that known as “sheet, rill and gully erosion”. The percentages of surface area stated refer to the proportion of the total geographical area of each autonomous community affected by erosion. The area affected by erosion is that considered likely to suffer from erosion processes and is calculated by deducting artificial surfaces, surface water bodies and wetlands from the total geographical area.
- The National Soil Erosion Inventory groups the results of calculated soil loss due to sheet, rill and gully erosion into the following categories:

1: 0–5 t/ha/year	5: 50–100 t/ha/year
2: 5–10 t/ha/year	6: 100–200 t/ha/year
3: 10–25 t/ha/year	7: >200 t/ha/year
4: 25–50 t/ha/year	
- In the indicator, ‘Moderate’ soil loss is defined as 0–10 t/ha/year, ‘Intermediate’ as 10–25 t/ha/year, and ‘High’ as over 25 t/ha/year.
- The Inventory is divided into five sections according to the various types of erosion:
 - Sheet, rill and gully erosion: quantitative estimate of soil loss, performed by applying the RUSLE model.
 - Gully erosion: identification and demarcation of affected areas.
 - Deep erosion (mass movements): identification of areas potentially at risk and qualitative classification.
 - Bank erosion: qualitative classification of hydrological units according to their susceptibility to torrential phenomena in their drainage basins.
 - Wind erosion: identification and classification of areas potentially at risk.

SOURCES

- National Soil Erosion Inventory, 2002–2012. Secretariat-General for the Rural Environment. Directorate-General for the Natural Environment and Forestry Policy. MARM.

FURTHER INFORMATION

- <http://www.marm.es>