eurostat

TechnicalDocuments

LUCAS GRID

LUCAS

(Land Use / Cover Area Frame Survey)

Technical reference document
LUCAS GRID RECORD DESCRIPTOR

Table of Contents

DOCUMENT CHANGE RECORD			
ISSUE	DATE	CHANGE AUTHORITY / AUTHOR	REASON FOR CHANGE AND AFFECTED SECTIONS
V0.1	2016/06/30	Eurostat / E4.LUCAS	
V0.2	2017/11/13	Eurostat / E4.LUCAS	Grid used in survey 2018

1 Scope and Introduction

This document is part of a series of reference documents defining the framework of the Land Use / Cover Area frame statistical Survey (LUCAS). The LUCAS reference documents are periodically improved and adapted taking into account the experience from the implemented surveys and the requirements of the LUCAS data & information users.

LUCAS is co-ordinated by The Statistical Office of the European Commission (Eurostat).

The Commission uses the micro data collected in the LUCAS survey to produce land cover and land use aggregated statistical tables and to calculate Sustainable Development Indicators and Land take (these indicators are used in monitoring the implementation of the Europe 2020 strategy). Landscape indicators are also derived from the data collected in the survey.

LUCAS micro data is also used for Agro Environmental Indicators (AEI), LULUCF (land use, land use change and forestry) indicators, for Europe Resource Efficiency indicators.

Moreover in the context of the Copernicus programme CORINE Land Cover (CLC) and other Pan-EU land cover mapping initiatives, such as the Copernicus HRL (High Resolution Layers), LUCAS micro data and photos[1] are used for production, verification and validation processes.

More information on land cover/use statistics and on LUCAS in general can be found on the Eurostat website: http://epp.eurostat.ec.europa.eu/portal/page/portal/lucas/introduction.

The LUCAS sampling is based on two-phase sampling with stratification of the master sample of points.

i) First Phase (Master grid): The LUCAS master is obtained using a 4 Km² grid (2x2 km) which includes around 1.100.000 points covering the EU-28 territory. Each of these points is classified into k land cover categories (the strata) on the basis of photointerpretation of aerial photos or satellite images. In 2005 these points in the master were stratified into 7 aggregated strata.

ii) Second Phase (Sample): The final field sample is a sub-selection of the master. Samples of n points, out of N, is selected by strata and by NUTS2 and the n points are visited in order to determine the land cover and land use at a more detailed level. The final aim of this strategy is to estimate the coverage of the full list of categories included in the LUCAS land cover and land use classification over the whole study area. In this way, it is possible to combine the information resulting from the photointerpretation with the information collected during the ground inspection of a portion of the N points selected in the first phase.

The final statistical estimates are based on the weights derived both from the master and the field observations collected on the field.

This document provides record descriptor of the Master Grid.

---

[1] *Point and landscape photos in the four cardinal directions collected during the LUCAS in-situ survey*

2 Record descriptor

Field name	Type	Length	Description
POINT_ID	Integer	8	Identifier
X_WGS84	Double	9 decimals	Geo-Longitude
Y_WGS84	Double	9 decimals	Geo-Latitude
ELEV	Number	6 decimals	Elevation in meters
STR05	Number	1	Stratification 1st strata (2005)
STR205	Number	1	Stratification 2nd strata (2005)
STR18	Number	1	Stratification 1st strata (2018)
STR218	Number	1	Stratification 2nd strata (2018)
ICTRY13	Text	2	Imputed country
NUTS0_13	Text	2	Nuts level 0 (2013)
NUTS1_13	Text	3	Nuts level 1 (2013)
NUTS2_13	Text	4	Nuts level 2 (2013)
TW_EU_CD	Text		Transitional Water code
CLC00	Integer	3	Corine Land cover 2000 code
CLC06	Integer	3	Corine Land cover 2006 code
CLC12	Integer	3	Corine Land cover 2012 code

2.1 Strata definition (2005)

LUCAS surveys follow a harmonized classification in order to obtain comparable data across Europe. Each class is given a definition that is consistent with the LUCAS nomenclature for field survey, with cases of inclusion and exclusion and with photointerpretation criteria.

Stratum	Description	Correspondence to LUCAS Land Cover classification[2]
1	Arable land	(B1X..B5X) Cereals, root crops, non-permanent industrial crops, dried pulses, vegetables and flowers, fodder crops
2	Permanent crops	(B7X..B8X) Fruit trees and fruit bushes, other permanent crops (vineyards, olive trees)
3	Grass	(EXX) Grassland, with or without sparse tree/shrub cover
4	Wooded and shrub areas	(CXX) Areas where at least 10% is covered by tree canopy and (DXX) Shrub land with or without sparse tree cover
5	Bare land, low or rare vegetation	(FXX) Bare land: areas with no vegetation (rocks, sand, and lichens) or areas covered less than 10% by dominant species of vegetation.
6	Artificial land	(AXX) Built-up and artificial non built-up areas
7	Water	(GXX) Surfaces covered by water or ice, either permanently or for most of the year

2.2 Strata definition 2018

Stratum	Description	Correspondence to LUCAS Land Cover classification
1	Arable land	(B1X..B5X) Cereals, root crops, non-permanent industrial crops, dried pulses, vegetables and flowers, fodder crops
2	Permanent crops	(B7X..B8X) Fruit trees and fruit bushes, other permanent crops (vineyards, olive trees)
3	Grass	(EXX) Grassland, with or without sparse tree/shrub cover
4	Wooded areas	(CXX) Areas where at least 10% is covered by tree

---

[2] *For more detailed data on LUCAS Classification, Technical Document C3 can be found at http://ec.europa.eu/eurostat/documents/205002/6786255/LUCAS2015-C3-Classification-20150227.pdf/969ca853-e325-48b3-9d59-7e86023b2b27*

		canopy
5	Shrubs	(DXX) Shrub land with or without sparse tree cover
6	Bare surface, rare or low vegetation	(FXX) Bare land: areas with no vegetation (rocks, sand, and lichens) or areas covered less than 10% by dominant species of vegetation.
7	Artificial, construction and sealed areas	(AXX) Built-up and artificial non built-up areas
8	Inland water	(GXX, except G30) Surfaces covered by water or ice, either permanently or for most of year
9	Transitional and coastal waters	Point that are not part of "land" nor "inland water" areas (includes G30)

2.3 ICTRY13

Some points fall in Transitional Water (TW) area (Directive 2000/60/EC) and don't have any NUTS value assigned. For those points the value ICTRY13 has been attributed from TW_EU_CD field.

2.4 CORINE Land Cover

CORINE is a programme started as a prototype project working on many different environmental issues. One important product is an inventory of land use and land cover in 44 classes in 3 hierarchical levels.

CLC	LABEL1	LABEL2	LABEL3
111	Artificial surfaces	Urban fabric	Continuous urban fabric
112	Artificial surfaces	Urban fabric	Discontinuous urban fabric
121	Artificial surfaces	Industrial, commercial and transport units	Industrial or commercial units
122	Artificial surfaces	Industrial, commercial and transport units	Road and rail networks and associated land
123	Artificial surfaces	Industrial, commercial and transport units	Port areas
124	Artificial surfaces	Industrial, commercial and transport units	Airports
131	Artificial surfaces	Mine, dump and construction sites	Mineral extraction sites
132	Artificial surfaces	Mine, dump and construction sites	Dump sites
133	Artificial surfaces	Mine, dump and construction sites	Construction sites
141	Artificial surfaces	Artificial, non-agricultural vegetated areas	Green urban areas
142	Artificial surfaces	Artificial, non-agricultural vegetated areas	Sport and leisure facilities
211	Agricultural areas	Arable land	Non-irrigated arable land
212	Agricultural areas	Arable land	Permanently irrigated land
213	Agricultural areas	Arable land	Rice fields
221	Agricultural areas	Permanent crops	Vineyards
222	Agricultural areas	Permanent crops	Fruit trees and berry plantations
223	Agricultural areas	Permanent crops	Olive groves
231	Agricultural areas	Pastures	Pastures
241	Agricultural areas	Heterogeneous agricultural areas	Annual crops associated with permanent crops
242	Agricultural areas	Heterogeneous agricultural areas	Complex cultivation patterns
243	Agricultural areas	Heterogeneous agricultural areas	Land principally occupied by agriculture, with significant areas of natural vegetation
244	Agricultural areas	Heterogeneous agricultural areas	Agro-forestry areas

311	Forest and semi natural areas	Forests	Broad-leaved forest
312	Forest and semi natural areas	Forests	Coniferous forest
313	Forest and semi natural areas	Forests	Mixed forest
321	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Natural grasslands
322	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Moors and heathland
323	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Sclerophyllous vegetation
324	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Transitional woodland-shrub
331	Forest and semi natural areas	Open spaces with little or no vegetation	Beaches, dunes, sands
332	Forest and semi natural areas	Open spaces with little or no vegetation	Bare rocks
333	Forest and semi natural areas	Open spaces with little or no vegetation	Sparsely vegetated areas
334	Forest and semi natural areas	Open spaces with little or no vegetation	Burnt areas
335	Forest and semi natural areas	Open spaces with little or no vegetation	Glaciers and perpetual snow
411	Wetlands	Inland wetlands	Inland marshes
412	Wetlands	Inland wetlands	Peat bogs
421	Wetlands	Maritime wetlands	Salt marshes
422	Wetlands	Maritime wetlands	Salines
423	Wetlands	Maritime wetlands	Intertidal flats
511	Water bodies	Inland waters	Water courses
512	Water bodies	Inland waters	Water bodies
521	Water bodies	Marine waters	Coastal lagoons
522	Water bodies	Marine waters	Estuaries
523	Water bodies	Marine waters	Sea and ocean