Contribution to Working Paper

Statistical data availability

Focus on agriculture themes

Prepared by:
Tomas Soukup

14th August 2006

European Topic Centre
Terrestrial Environment

Universitat Antònoma de Barcelona
Edifici C – Torre C5
4ª planta
08193 Bellaterrra (Barcelona)
Spain

Contact: etcte@uab.es

European Environment Agency

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EXECUTIVE SUMMARY

Land use accounting requires progressing in bridging spatial datasets and conventional statistics. In order to capture real interactions and liase further on with ecosystem accounts, the most detailed geographical level statistics are required.

While it sounds as a simple demand, there is a real difficulty to access such detailed statistics. Eurostat official statistics are in most cases restricted to NUTS2 level only, with limited number of themes to NUTS 3 or finer. These statistics are of good quality but mostly not sufficient for land use accounting purposes. Also, the results from European area frame survey (LUCAS) are not, at least at its current shape, suitable for this purpose. At the same time, local statistics are collected and disseminated by national statistical offices or by ministries (Agriculture & Forests, Tourism…), but under different accessibility and availability modes.

The priority of work was to collect some of these statistics, starting with country data availability overview. Information collection was concentrated on free of charge data accessible via web and acquisition channels were investigated in cooperation with national statistical offices contact points. It contains information on availability, on access to data as well as (downloadable) datasets themselves. Thematically, the work has focused on agriculture statistics, inventories and censuses. Priority agriculture statistics themes have been selected in discussion with EEA.

1 TASK DESCRIPTION

1.1 CONTEXT

Accelerated with CLC2000 update, the EEA continuously works for several years on the implementation of a programme of land use and ecosystem accounts, methodologically following the System of Environmental and Economic Accounts (SEEA) guidelines of the United Nations. The purpose is to integrate information across the various ecosystem components as a supporting base for the Agency challenge of integrated environmental assessment – evaluation of public and private benefits and costs for well-balanced use of environmental resources in Europe considering long-term perspective and future options.

The framework of Land & Ecosystem Accounting consists from "*core" land cover accounts* and two sets of interrelated accounts addressing the *use of land* and the *ecosystem* aspect of the territory. *Ecosystem accounts* target the supply of ecosystem goods and services, assessing the ecosystem potentials and their integrity, health and viability. Ecosystem accounts are sourced with geographical information as well as with monitoring data on atmosphere, climate, water systems, fauna, flora and soils. *Land use accounts* target economic and social functions and assess the services used as well as artificiality of land and intensity of its use. Land use accounts are sourced with geographical information as well as with **socio-economic statistics for production, consumption, natural assets, infrastructures, technologies and population**.

The construction of land use accounts is now feasible due to continuous improvements in monitoring, collecting and processing data and progress with the development of statistical methods allowing data fusion and data integration (see e.g. Joint Topic Report: Towards agri-environmental indicators - Integrating statistical and administrative data with land cover information. Main source of statistical data - Eurostat, the statistical office of the European Community - coordinates national statistical institutes for the collection of basic economic and social statistics, in particular for updating the European system of national accounts, but is also active the collection of environmental statistics. The Joint Research Centre (JRC) runs data collection in areas where its network of research institutes request them for developing novel methodologies of observation and modelling for the needs of the European Commission. Research programmes and initiatives (e.g. ESPON) funded by the European Commission are also part of statistical data inputs to be considered.

Nevertheless, available European-wide conventional socio-economic statistics have still their space patterns rather limited, on the contrary to the assessment support needs. Spatial distribution of risks and conflicts is essential, so the aggregated statistics is mostly not sufficient and NUTS3+ spatial distribution of socio-economic statistics is desirable. Eurostat official statistics are in most cases restricted to NUTS2 level only, with limited number of themes to NUTS 3 or finer. At the same time, local statistics are collected and disseminated by national statistical offices or by national ministries themselves. Besides, the recent improvement due to open content dissemination policies and standardization, the problem is that it still represents rather fragmented multi-source data acquisition option under different accessibility and availability modes with serious integration consequences of both technical and semantical matter.

1.2 SCOPE

In this context, the following work aimed to create, for selected statistical themes, an overview covering the European trans-national level (with scope to the Eurostat, JRC or ESPON), but focusing on regional and national sources of statistical data (with scope to national statistical offices, their regional branches and relevant ministries). It provides information on the principal data sources, availability and access modes, as well as live links to source locations where details on dataset content and definition can be obtained. When downloadable, it also provides datasets themselves for selected themes and detail of potential relevance to support the tasks of Land and Ecosystem Accounting (LEAC) development.

Geographically, the scope of the work included the 25 Member States of the European Union + the accession candidates (Bulgaria and Romania). The institutional references to statistical data producing offices or agencies are provided below.

EUROSTAT

NUTS Reference	http://europa.eu/comm/eurostat/ramon/nuts/overview_maps_en.cfm?list=nuts	Overview maps of the NUTS and Statistical Regions of Europe
NUTS Reference	http://europa.eu/comm/eurostat/ramon/nuts/lau_en.html	Local Administrative Units (LAU) definition
NUTS Reference	http://europa.eu/comm/eurostat/ramon/nuts/introannex_regions_en.html	Correspondence table between the NUTS levels and the national administrative units (2003)
Agriculture themes semi-national	http://epp.eurostat.cec.eu.int/portal/page?_pageid=0,1136206,0_45570467&_dad=portal&_schema=PORTAL	Free of charge Eurostat data available for agriculture, forestry and fisheries on NUTS0 mainly (some topics up to NUTS3).
Agriculture themes regional	http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996,45323734&_dad=portal&_schema=PORTAL&screen=welcomeref&open=/general/regio&language=en&product=EU_general_statistics&root=EU_general_statistics	Regio Online database - harmonised regional statistical database covers the main aspects of economic and social life in the European Union including agriculture. On NUTS2 mainly (some topics up to NUTS3).

National statistics in EU25+ countries

Austria	http://www.statistik.at http://www.statistik.at/index_englisch.shtml	Österreichischen Statistischen Zentralamt
	http://www.statistik.at/isis/current/isis_gui.shtml	ISIS (Integriertes Statistisches Informationssystem)
Belgium	http://statbel.fgov.be/	National Institute of Statistics
	http://ecodata.mineco.fgov.be/	ECODATA
	http://www.nbb.be	National Bank of Belgium
	http://aps.vlaanderen.be	Flemish Region Statistic
	http://www.lokalestatistieken.be	Flemish Region Statistic - Local Statistic
	http://statistiques.wallonie.be	Walloon Region Statistic
Cyprus	http://www.mof.gov.cy/mof/cystat/	Statistical Service of the

	statistics.nsf/index_en/index_en?OpenDocument	Republic of Cyprus
Czech Republic	http://www.czso.cz	Czech Statistical Office
	http://www.mze.cz/	Ministry of Agriculture
	http://www.env.cz/	Ministry of Environment
	http://www2.czso.cz/csu/redakce.nsf/i/kraje_new	Czech Republic -Regional data
Denmark	http://www.dst.dk/	StatOffice Denmark
	http://www.statbank.dk/	StatBank Denmark
Estonia	http://www.stat.ee/	State Statistical Office
	http://pub.stat.ee/px-web.2001/dialog/statfileri.asp	State Statistical Office – regional development DB
Finland	http://www.stat.fi	Statistics Finland
	http://www.mmmtike.fi	Information Centre of the Ministry of Agriculture and Forestry, TIKE
	http://matilda.mmm.fi	Information Service of Agricultural Statistics in Finland
Germany	http://www.destatis.de/	Federal Statistical Office
	http://www.statistik-portal.de/Statistik-Portal/en/	Federal Statistical Office - Statistics Portal
	https://www.regionalstatistik.de	GENESIS Online Regional Statistic
	http://www.statistik.baden-wuerttemberg.de/	Regional statistical office of Baden-Wurttemberg
	http://www.statistik.bayern.de/	Regional statistical office of Bavaria
	http://www.statistik-berlin.de/	Regional statistical office of Berlin
	http://www.lds-bb.de/sixcms/list.php/lds	Regional statistical office of Brandenburg
	http://www.bremen.de/info/statistik/	Regional statistical office of Bremen
	http://www.statistik-hamburg.de/	Regional statistical office of Hamburg
	http://www.hsl.de/	Regional statistical office of Hesse
	http://www.nls.niedersachsen.de/	Regional statistical office of Lower Saxony
	http://www.statistik-mv.de/	Regional statistical office of Mecklenburg-Western Pomerania
	http://www.lds.nrw.de/	Regional statistical office of North Rine-Westfalen
	http://www.statistik.sachsen.de/	Regional statistical office of Saxony
	http://www.stala.sachsen-anhalt.de/	Regional statistical office of Saxony-Anhalt
	http://www.statistik-sh.de/	Regional statistical office of Schleswig-Holstein
	http://www.tls.thueringen.de/seite.asp	Regional statistical office of Thuringia
Greece	http://www.statistics.gr	National Statistical Service of Greece
Hungary	http://portal.ksh.hu/portal/page?_pageid=38,119919&_dad=portal&_schema=PORTAL	Hungarian Central Statistical Office
Ireland	http://www.cso.ie	Central Statistics Office Ireland
	http://www.agriculture.gov.ie	Department of Agriculture & Food
	http://www.environ.ie	Department of the Environment, Heritage & Local Government
Italy	http://www.istat.it	National Institute of Statistics of Italy (ISTAT)
Latvia	http://www.csb.lv/	Central Statistical Bureau of

		Latvia
Lithunia	http://www.stat.gov.lt	Statistics Lithuania
	http://db.stat.gov.lt/sips/dialog/statfile2.asp	Statistical Database
Luxembourg	http://www.statec.public.lu	Service Central de la Statistique et des Etudes Economiques (STATEC)
Malta	http://www.nso.gov.mt/	National Statistical Office
The Netherlands	http://www.cbs.nl/	Statistics Netherlands
	http://statline.cbs.nl/StatWeb/Start.asp?lp=Search/Search&LA=EN&DM=SLEN	Online database
Poland	http://www.stat.gov.pl/	Central Statistical Office
	http://www.stat.gov.pl/bdren/bdrap.strona.indeks	Regional Statistics DB
Portugal	http://www.ine.pt	National Statistical Institute (INE)
	http://srea.ine.pt/	Azores Islands Regional Statistical Service
	http://www.dre.srpc.pt/	Madeira Regional Statistical Directorate
Romania	http://www.insse.ro/	National Institute of Statistics
Slovakia	http://www.statistics.sk/	Statistical Office of the Slovak Republic
	http://www.infostat.sk	Infostat DBs
	http://www.mpsr.sk	Ministry of Agriculture
Slovenia	http://www.stat.si/	Statistical Office of the Republic of Slovenia
	http://bsp1h.gov.si/D2300.kom/komstart.html	BSP Online - Statistics Online DB
Spain	http://www.ine.es	National Statistical Institute (INE)
	http://portal.aragob.es/servlet/page?_pageid=4705&_dad=portal30&_schema=PORTAL30&_type=site&_fsiteid=1227&_fid=1473458&_fnavbarid=1474620&_fnavbarsiteid=1227&_fedit=0&_fmode=2&_fdisplaymode=1&_fcalledfrom=1&_fdisplayurl=	Instituto Aragones de Estadistica (IAE)
	http://www.juntadeandalucia.es/iea/	Institute de Estadistica de Andalucia (IEA)
	http://www.caib.es/govern/organigrama/area.en.jsp?coduo=994	Institut Balear d'Estadistica
	http://www.eustat.es/	Basque Statistical Office (EUSTAT)
	http://www.gobiernodecanarias.org/istac/	Instituto Canario de Estadistica (ISTAC)
	http://www.idescat.net/en/	Institut d'Estadistica de Catalunya
	http://www.ige.eu/ga/index.htm	Instituto Galego de Estatistica
	http://ive.infocentre.gva.es/	Institut Valiencia d'Estadistica
Sweden	http://www.scb.se/	Statistics Sweden
United Kingdom	http://www.statistics.gov.uk/	Office for National Statistics
	http://www.statistics.gov.uk/onlineproducts/default.asp	OFS – Online products
	http://www.uktradeinfo.com/	UK Trade Info
	http://www.dardni.gov.uk/	Department of Agriculture and Rural Development
	http://statistics.defra.gov.uk/esg/	DEFRA Economics and Statistics
	http://www.countryside.gov.uk/	The Countryside Agency
	http://www.scrol.gov.uk	Scotland Census Online
	http://www.gro-scotland.gov.uk	General Register Office Scotland
	http://www.scotland.gov.uk/Topics/Statistics	Scotland Statistics
	http://www.nisra.gov.uk	Northern Ireland Statistics & Research Agency (NISRA)
	http://www.statswales.wales.gov.uk	STATWALES
	http://new.wales.gov.uk/topics/statistics/wales-figs/?lang=en	Wales in Figures

Note: France has been excluded from investigation as detailed data are already available in EEA.

Other sources

ESPON	http://datanavigator.espon.lu/search/index.htm	ESPON Data navigator
ESPON	http://www.espon.eu/mmp/online/website/content/tools/832/850/index_EN.html	ESPON Basic Indicators
ESPON	http://www.espon.eu/mmp/online/website/content/tools/832/873/index_EN.html	ESPON Project Indicators
ESPON	http://www.espon.eu/mmp/online/website/content/tools/912/index_EN.html	ESPON HyperAtlas
ESPON	http://www.espon.eu/mmp/online/website/content/tools/913/index_EN.html	ESPON Web-GIS
JRC	http://agrifish.jrc.it/marsstat/Crop_Yield_Forecasting/MOCA/INDEX.HTM	MOCA
JRC	http://agrifish.jrc.it/marsstat/Crop_Yield_Forecasting/cgms.htm	CGMS
JRC	http://agrifish.jrc.it/marsstat/Pasture%5Fmonitoring/PASK/	PASK
Bonn Universiity /JRC	http://www.agp.uni-bonn.de/agpo/rsrch/capri/capri_e.htm	Capri
FP	http://www.etis-eu.org/index.html	ETIS Roads database
FP	http://www.sensor-ip.org/	SENSON
FP	http://www.seamless-ip.org/index.htm	SEAMLESS

1.3 THEMATIC CONTENTS

Thematically, the work has focused on agriculture statistics, inventories and censuses. Priority agriculture statistics themes have been selected in discussion with EEA including following data themes:

- General census statistics (e.g. Population, Households, Land use)
- Agricultural statistics
  - Crop acreages & yields
  - Livestock census
  - Agriculture products (e.g. milk, meat…)
  - Agricultural holdings statistics
  - Employment in agriculture sector
  - Prices in agricultural sector (prices, incomes, gross value added...)
  - Main equipments
  - Pesticides and fertilizers (sales, consumption)
- Tourism (focus on agro-tourism)
- Other relevant statistics (e.g. Protected Areas, Sewage plants and Waste Water Volume, Quality of Drinking Water, Nitrate & Pesticide content…)

Note: During the work duration, investigation has been extended upon request to EU level data sources on additional themes (e.g. transport, LUCAS survey etc.) as documented in workshop presentation in Annex 1.

2 RESULTS

2.1 CONTENT AND STRUCTURE

The results of the work performed to get overview on agro-related data on European trans-national level are provided in form of 'Eurostat Datalist' - hypertext Excel based sheet with separate lists for Eurostat semi-national and Eurostat Regio data. Datalist is accompanied with directory structure according dataset theme names with downloaded data including each theme metadata. Data are based mainly on 'Agricultural accounts' according to EAA 89/92 & EAA 97 Rev 1.1 (monetary accounts) and 'Structure of agricultural holdings (EUROFARM)' based on 'Farm Structure Survey (FSS)'. See more details on surveys in Annex 1.

Eurostat semi-national list include following themes:

- Agricultural Labour Input Statistics
- Agricultural prices and price indices
- Agricultural products
- Agriculture main indicators
- Animal feed
- Economic Accounts for Agriculture
- European orchard surveys
- Input into agriculture
- Organic farming
- Structure of agricultural holdings
- Unit value statistics for agricultural products
- Viticulture

Eurostat Regio list include following themes:

- Agriculture
- Economic accounts - ESA95
- Environment statistics
- Regional labour market
- Tourism

Data list includes following information for each dataset:

source	…. Principal source used (name and hyperlink)
name	…. theme, sub-theme and dataset name (relate to downloaded data in directory)
export	…. in which form dataset can be retrieved: datafile (XLS, CVS), html, picture, PDF file
from	…. temporal coverage - from
to	…. temporal coverage - to

language …. dataset language

detail …. spatial detail (in NUTS level nomenclature)

availability …. availability mode (free/paid)

comment …. comments, remarks

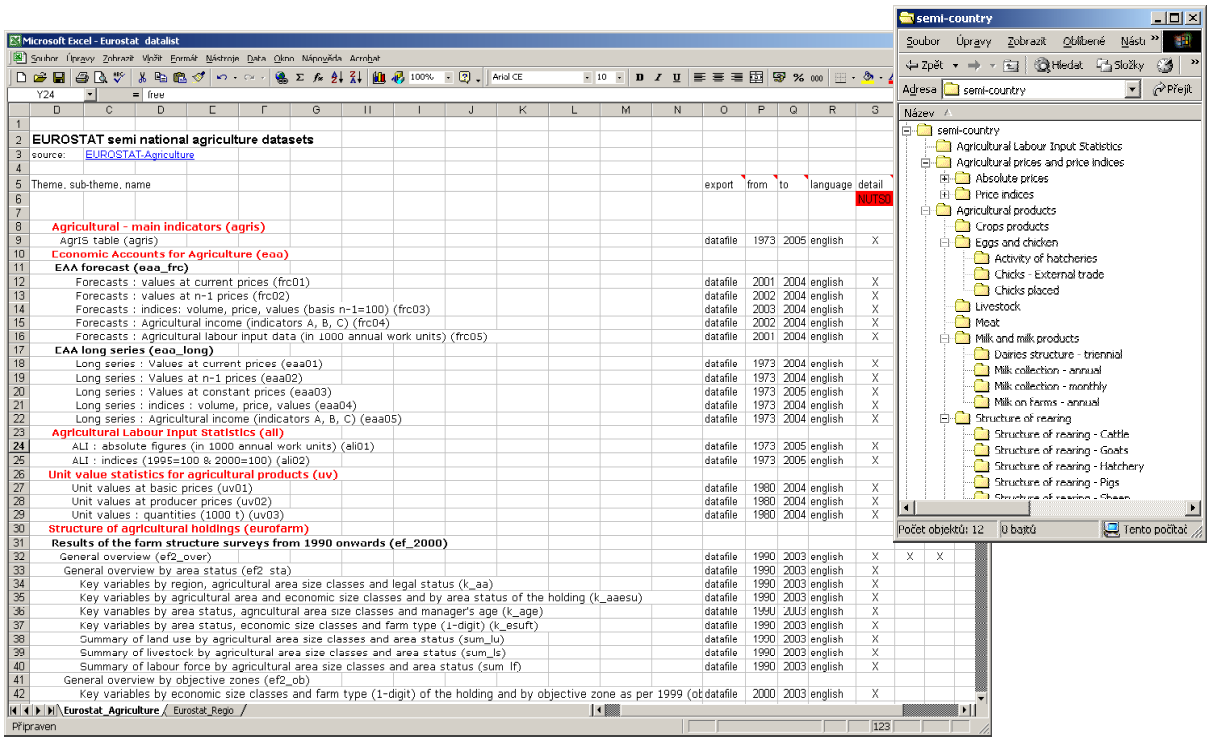

Figure 1. Eurostat Datalist example – semi-national data

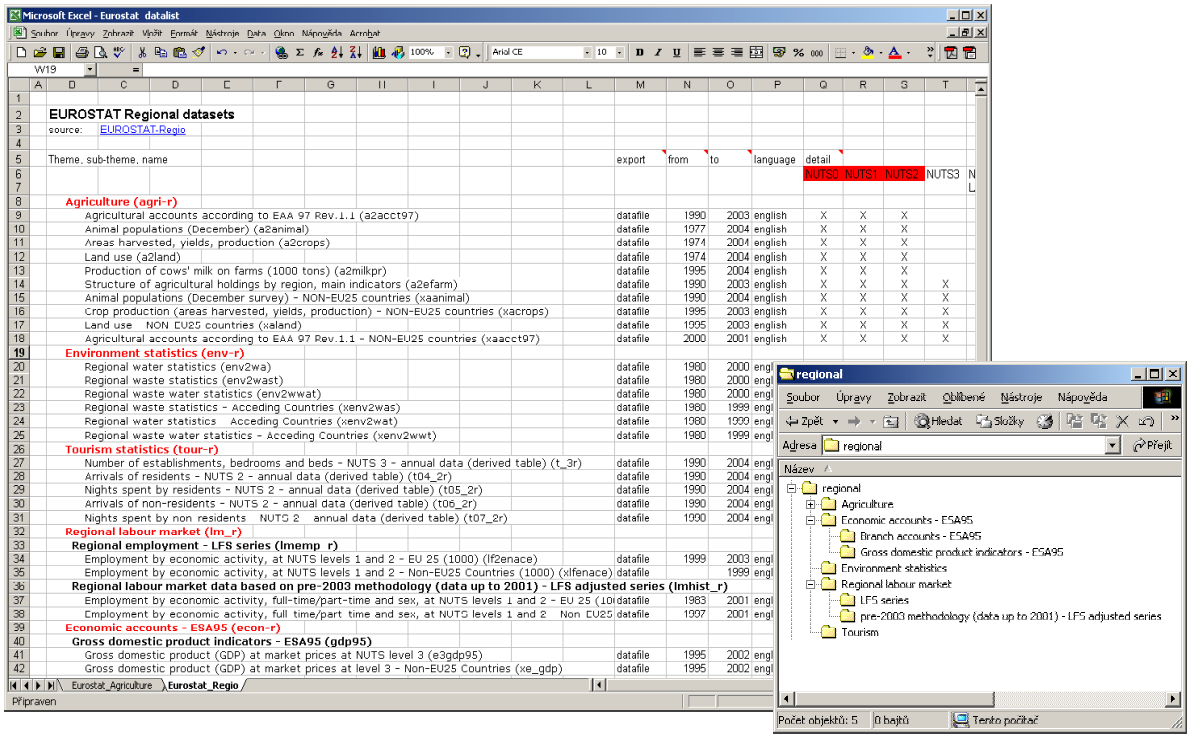

Figure 2. Eurostat Datalist example – Regio data

The results of the work performed to get overview on national and regional datasets are provided in form of 'Country Datalist' - hypertext Excel based sheet for each country (EU25+) accompanied with standardized directory structure with downloaded datasets.

Each Country data list includes following information:

country	…. country investigated
source	…. Principal source used (name and hyperlink)
file_id	…. dataset ID (points to downloaded datasets in directory structure)
name	…. dataset name (can include hyperlink), see 'link'
link to	…. where hyperlink actually points to: querytool, download, html form
export	…. in which form dataset can be retrieved: datafile (XLS, CVS), html, picture, PDF file
from	…. temporal coverage - from
to	…. temporal coverage - to
link	…. hypertext itself (if not present in dataset name)
language	…. dataset language
detail	…. spatial detail (in NUTS level nomenclature)
availability	…. availability mode (free/paid) - mostly free data investigated
fee	…. price/fee (relevant to paid data)
procedure	…. data acquisition procedure
comment	…. comments, remarks

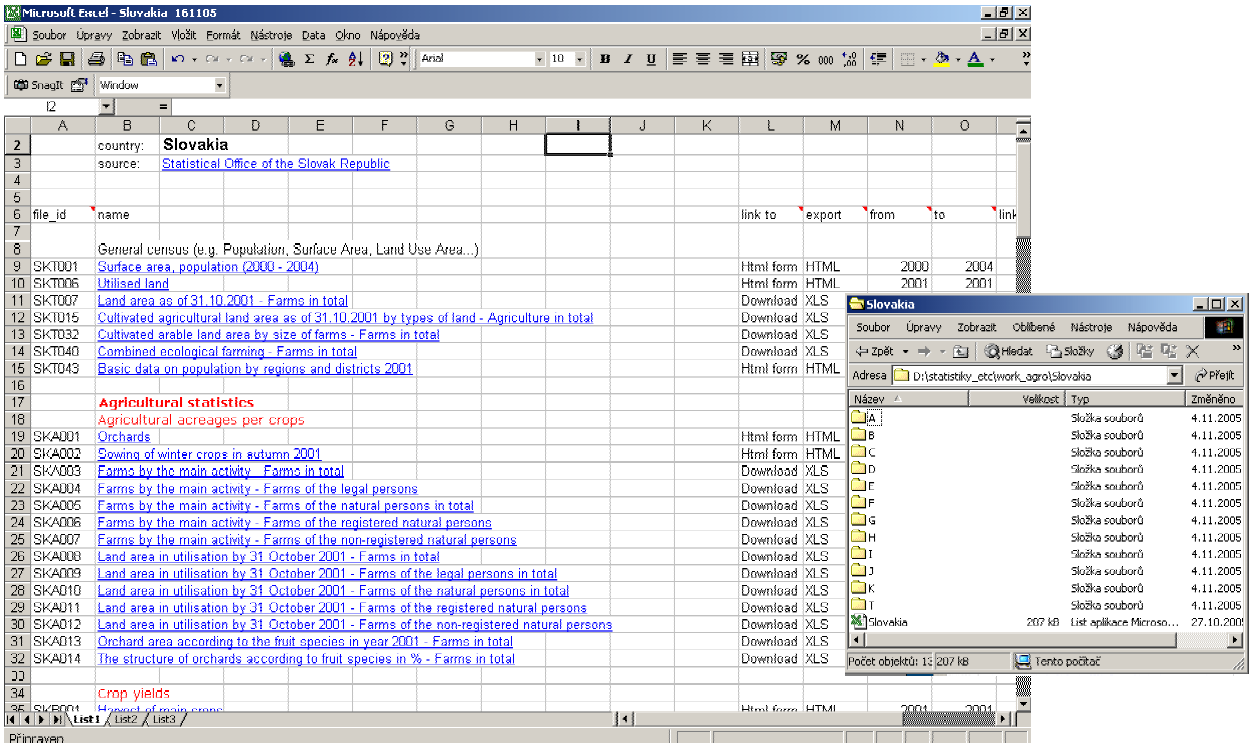

Figure 3. Country Datalist example - Slovakia

2.2 THEMATIC OVERVIEWS

Data availability is quite variable not only country by country but in some cases also inside single country. It is often the case that collection and administration of regional statistical data, NUTS3 (or higher) regions, are not the responsibility of central statistical office (or similar institution) but this activity is regionally distributed. Therefore available coverage, both spatial and temporal, is also quite various. Figures below show availability overviews for selected themes.

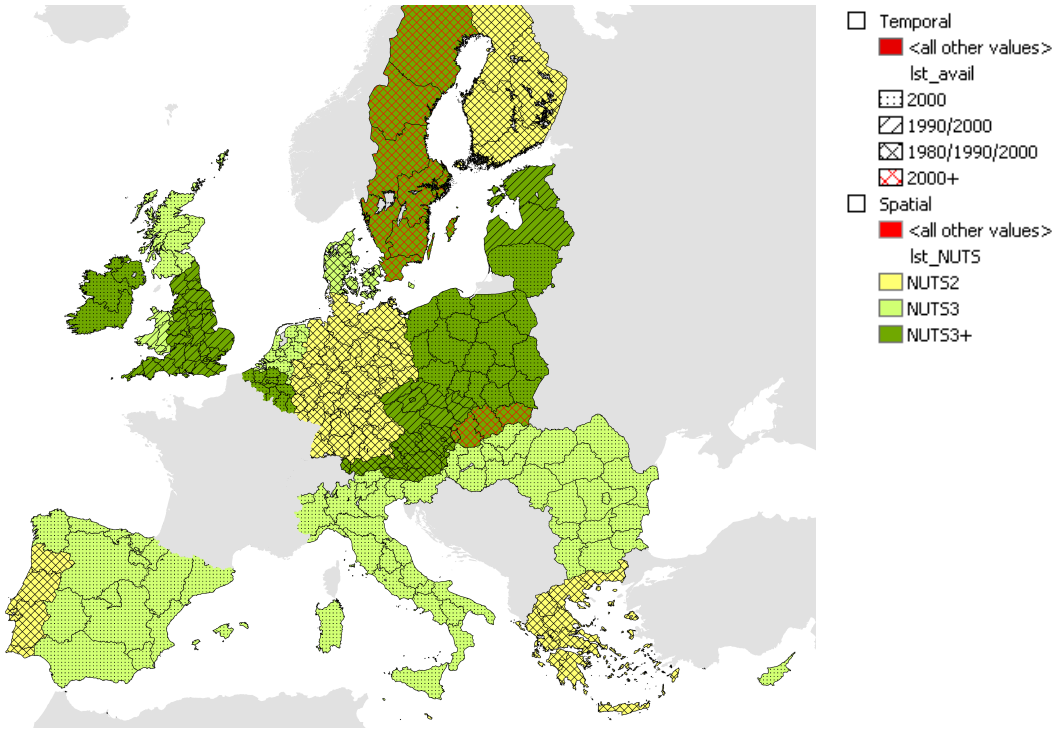

Figure 4: National statistics (free data) – crops acreages, crop yields (NUTS3+)

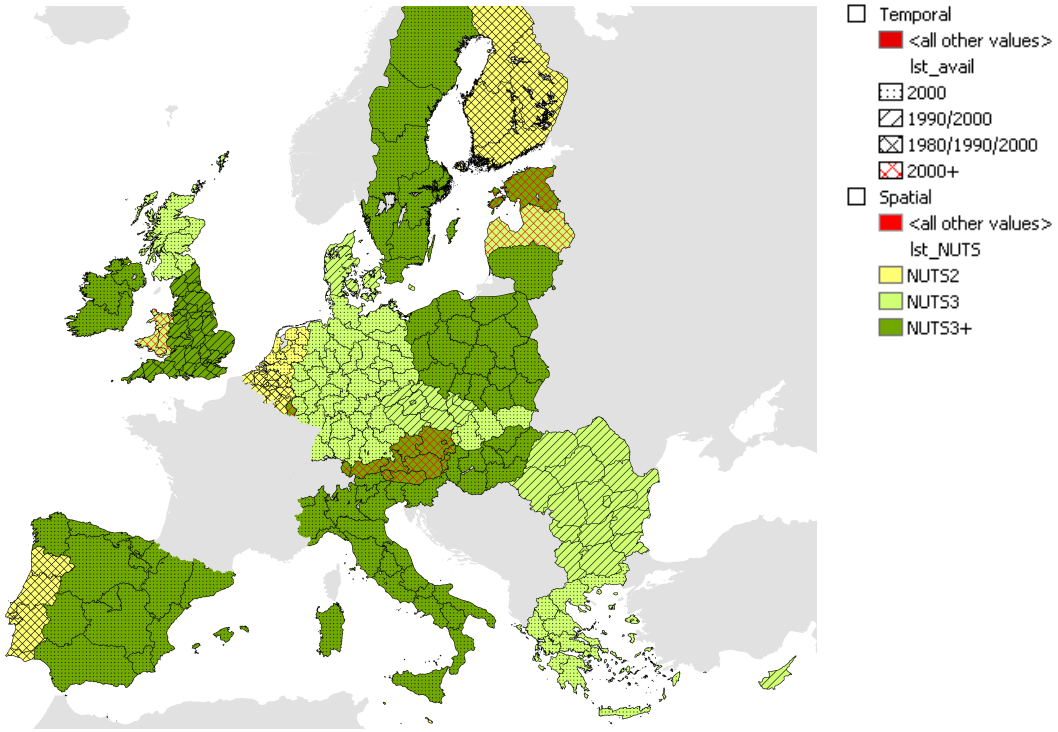

Figure 5: National statistics (free data) – livestock (NUTS3+)

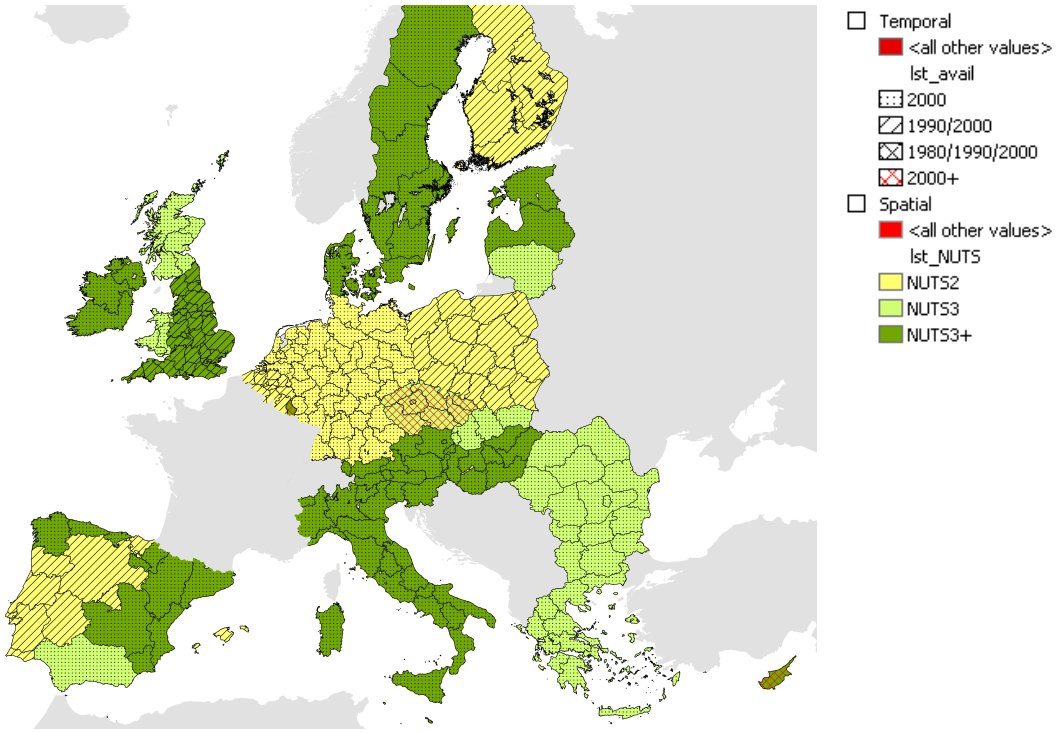

Figure 6: National statistics (free data) – land use (NUTS3+)

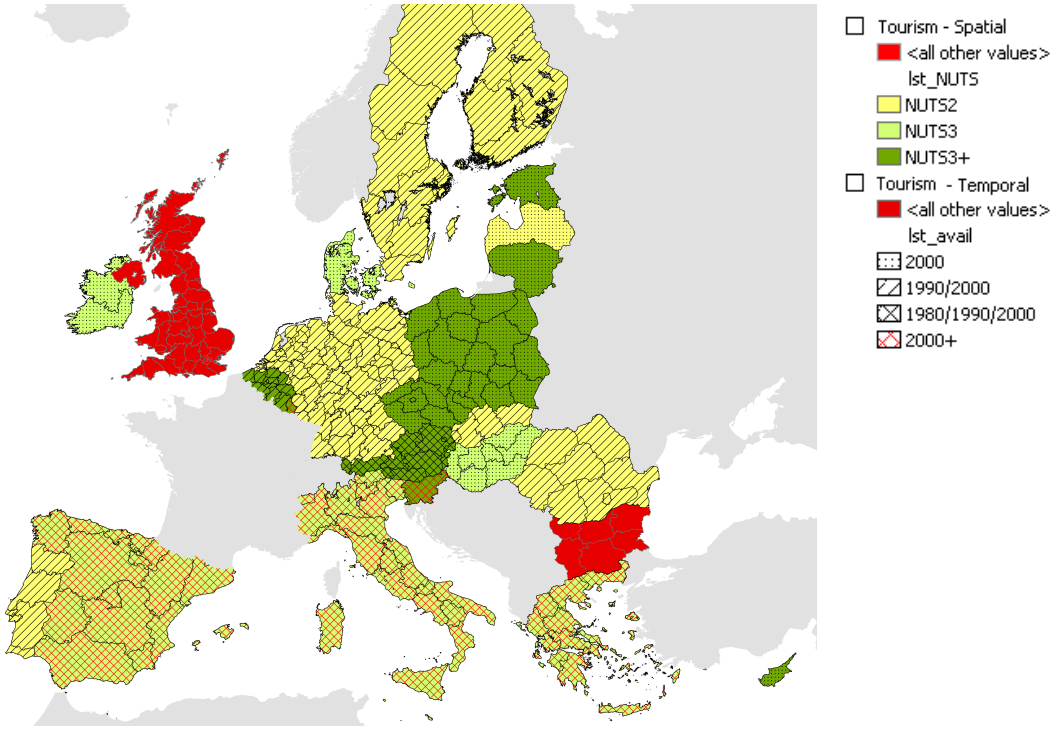

Figure 7: National statistics (free data) – tourism (NUTS3+)

2.3 ALTERNATIVE DATA SOURCES

Beside the Eurostat and national statistical offices sources, also alternative resources of agri-related information have been investigated (e.g. in JRC, ESPON). Some examples are discussed in this section. More can be found in Annex 1.

MOCA Crop Knowledge Base

MOCA Crop Knowledge Base represent a valuable source of information on agro practices. It has been prepared under activities on the Crop Growth Monitoring System of the MARS STAT Action, JRC. It is focused on the Central and Eastern European countries and it is organized by agro-regions or CGMS grid. There are covered the agro-regions for 11 countries including Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, Turkey.

Crop Knowledge Base includes information on **description and statistical analysis of the crops distribution in the country, crop physiology and agro-meteorology, agronomic practices and crops and farming calendar.**

Crops covered include:

- cereals (soft wheat, durum wheat, spring barley, maize, oats, rye)
- oil-seed (rape seed, sunflower, soy beans)
- protein crops (field peas, beans)
- potato and sugar beet

AGRI-REGION

COLUMNS	DATATYPE	DESCRIPTION
Region_no	Text	Unique agri region identifier
Region_name	Text	Name of the agri region

Number of tables: 1

ROOT STRUCTURE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
CGMS_RDI	Number	initial rooting depth [cm] as in CGMS
CGMS_RRI	Number	maximum daily increase in rooting depth [cm d-1] as in CGMS
CGMS_RDMCR	Number	maximum rooting depth [cm] as in CGMS
Comment	Text	

Number of tables: 11

CANOPY STRUCTURE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
LAIEM	Number	leaf area index at emergence [ha ha-1] as in CGMS
RGLAI	Number	maximum relative increase in LAI [ha ha-1 d-1] as in CGMS
Comment	Text	

Number of tables: 11

CLIMATIC CONDITION

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
PHS_ID	Text	Listed ID in table CGMS_PHENOLOGICAL_STAGE
Unacceptable_temp	Text	Unacceptable range for temperature
Acceptable_temp	Text	Acceptable range for temperature
Optimal_temp	Text	Optimal range for temperature
Unacceptable_rain	Text	Unacceptable range for rain
Acceptable_rain	Text	Acceptable range for rain
Optimal_rain	Text	Optimal range for rain
Comment	Text	

Number of tables: 11

PHENOLOGICAL STAGES

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Region_no	Text	Listed Region_no in table AGRI_REGION
PHS_ID	Text	Listed ID in table CGMS_PHENOLOGICAL_STAGE
JDAY_MIN	Number	Minimum Julian Day [1-366]
JDAY_MAX	Number	Maximum Julian Day [1-366]
JDAY_MEDIAN	Number	Median Julian Day [1-366]
Comment	Text	range for rain

Number of tables: 1

CROP PARAMETER VALUES

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Region_no	Text	Listed Region_no in table AGRI_REGION
TBASEEM	Number	lower threshold temp. for emergence [cel]
TEFFMX	Number	max. effective temp for emergence [cel]
TBASE	Number	lower threshold temp. for ageing of leaves [cel]
CFET	Number	correction factor transpiration rate [-]
Comment	Text	

Number of tables: 1

AGRI PRACTICE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Region_no	Text	Listed Region_no in table AGRI_REGION
PRACTICE	Text	Agricultural Practice
JDAY_MIN	Number	Minimum Julian Day [1-366]
JDAY_MAX	Number	Maximum Julian Day [1-366]
JDAY_MEDIAN	Number	Median Julian Day [1-366]
Comment	Text	

Number of tables: 1

IRRIGATION PRACTICE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Region_no	Text	Listed Region_no in table AGRI_REGION
IRRIGATION	Number	Irrigation practices [yes=1 No=0]
Comment	Text	

Number of tables: 1

PEST OR DISEASE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Parameter	Text	Pest or Disease
PHS_ID	Text	Listed ID in table CGMS_PHENOLOGICAL_STAGE
Frequency	Number	Number of occurrences in 10 years
Damage	Number	[Slight=1 Medium=2 Strong=3]
Comment	Text	

Number of tables: 11

Figure 8: Summary of contents of MOCA DB themes

CAPRI Crop Acreage Shares

There has been developed a procedure to estimate cropping patterns within CAPRI-DynaSpat project (Liep et al., 2006). Estimation of the crop shares in Regional Land Cover Units (RLCUs) is based on the CORINE Land Cover Map and the Land Use/Cover Area Frame Statistical Survey (LUCAS). The main motivation of the development of the methodology is to have reliable independent estimates to feed process-based models, which can be used to assess agricultural practices and their effects on the environment. There is a need of spatial link between agricultural land/agricultural activities and the different ecosystem compartments as soil, topography, water cycle as well as the spatial relation to other land use/land cover types.

The idea is that homogeneous spatial mapping units (HSMU) are areas where similar conditions for crop growing from a natural as well as a technical point of view can be assumed. Three major data sources are used: the European Soil Database V2.0 with about 900 Soil Mapping Units, the CORINE Land Cover map, and a Digital Elevation Model. One HSMU is defined as the intersection of a soil mapping unit, one of 11 agricultural or mixed agricultural CORINE land cover classes and 7 non-agricultural classes where some agricultural activities are occurring, administrative boundaries at the NUTS 3 level, and the slope according to the classification (0 degree, 1 degree, 2-3 degrees, 4-7 degrees and 8 or more degrees). The statistical data are obtained at NUTS 2 level compiling different sources (EUROSTAT, DG AGRI, etc.).

LUCAS surveys (2001/2002 and 2003) were used to regress the available environmental information against the crop share in a region. The regression is done separately for each region and CORINE land use class. The analysis is done individually for each of the 30 crops (crop classes) considered on the basis of a "Locally Weighted Binomial Logit Estimation". If the available area in the LC class is larger than the area required from the statistics, the coefficient is set to unity and the remaining area in the specific class is available for other activities. Otherwise, "missing area" is then sought for in surrogate classes such as the different complex classes mapped in CORINE.

The methodology involves two steps: (1) Estimation of cropping shares depending on location factors based on a spatial maximum likelihood estimator and using observations on cropping choices at a high resolution grid-level. (2) Application of a Bayesian methodology to ensure consistency of predicted cropping shares at HSMU-level with NUTS II statistics. The procedure was applied for EU-15 countries.

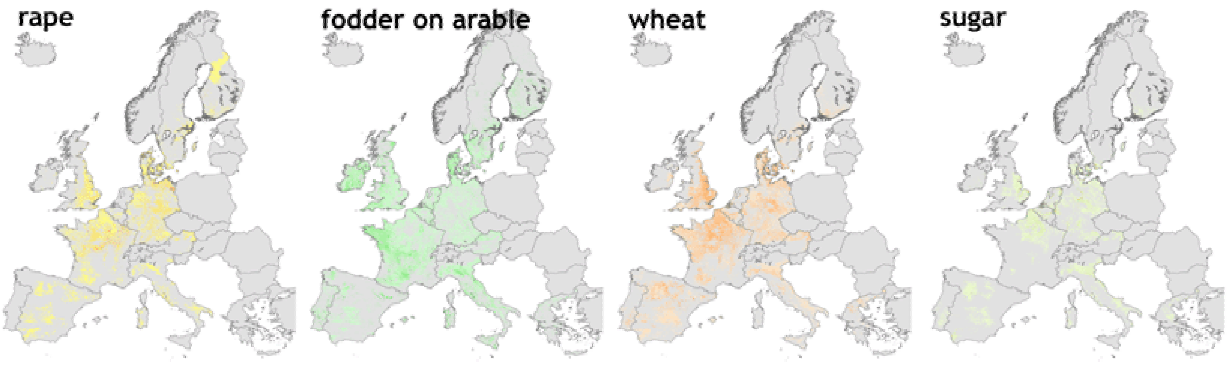

Figure 9: Example of CAPRI selected crops acreage share in percentage of grid area.

The 1 km grid of CAPRI database contain these crop shares: barley, citrus fruits, durum wheat, floriculture, permanent gras and grazing, fallow land, fruit tree and berry plantations, maize, olive groves, rape and turnip rape, fibre and oleaginous crops, vineyards, nurseries, oats, other cereals, other crops, fodder other on arable land, other

non permanent industrial crops, tomatoes and other fresh vegetables, rice, potatoes, dry pulses, other root crops, rye, soya, sugar beet, sunflower, common wheat and tobacco. What is interesting from the LEAC perspective, this 1km grid is compatible with the one used for the LEAC database.

The CAPRI data were kindly provided in March 2006 by JRC (Climate Change Unit: Adrian Leip and Renate Koeble) for testing purposes within the ASEMARS project.

3 CONCLUSIONS & RECOMMENDATIONS

The results of the study shows that growing number of data is becoming available on-line and free of charge, but complete spatial, thematic and temporal coverage on regional level can be still hardly achieved. The overviews produced and datasets collected point out the variety of ways how statistics is produced and disseminated across European countries. More, the situation frequently differs not only country by country, but also inside single country. It is often the case that collection and administration of crop statistical data related to regional data (NUTS3 or higher) is not in the responsibility of central statistical office (or similar institution) but this activity is regionally distributed.

From this point of view, diversity of statistics produced across Europe includes an interesting inspiration concerning the conceptualization of various matters in the different countries. But, at the same time, this variety represents also a serious problem for European harmonization of regional statistics both spatially and thematically, when no such statistics is available at the European level (e.g. in Eurostat).

Thematic harmonization is the continuous effort within the European Statistical System (ESS), led by Eurostat in close cooperation with the national statistical authorities. Considering spatial integration, there are the issues of stability of NUTS codes and boundaries definitions. The serious problem is represented also by considerable size diversity in the division of the units even on the same NUTS level in different countries (see examples below).

	NUTS 1	NUTS 1	NUTS 1	NUTS 2	NUTS 2	NUTS 2	NUTS 3	NUTS 3	NUTS 3
	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max
EU-15	41 676	161	410 934	15 406	31	154 312	2 974	12	98 911
BE	10 173	161	16 844	2 774	161	4 440	710	101	2 016
DK	43 094	43 094	43 094	43 094	43 094	43 094	2 873	97	6 173
DE	22 295	404	70 554	8 918	404	29 480	809		
GR	32 906	3 808	56 457	10 125	2 307	18 811	2 581		
ES	72 113	7 242	215 025	28 044	31	94 193	9 708		
FR	70 361	12 012	145 645	24 356	1 128	83 934	6 333		
IE	70 273	70 273	70 273	35 137	33 276	36 997	8 784		
IT	27 392	13 595	44 430	15 066	3 264	25 707	2 925		
LU	2 586	2 586	2 586	2 586	2 586	2 586	2 586		
NL	10 382	7 291	11 871	3 461	1 434	5 741	1 038		
AT	27 953	23 554	34 384	9 318	415	19 173	2 396		
PT	30 635	779	88 797	13 129	779	26 931	3 064		
FI	152 265	1 526	304 529	50 755	1 526	128 294	15 226		
SE	410 934	410 934	410 934	51 367	6 490	154 312	19 568		
UK	20 318	1 584	78 132	6 590	320	39 777	1 833		

NUTS5	min (area in hectares)	max (area in hectares)	ave (area in hectares)
EU-15	0	1944678	3296
BE	114	21375	5182
DK	40	56364	15614
DE	0	75531	2205
GR	43	57717	2228
ES	10	175030	6271
FR	4	1836000	1726
IE	5	12333	2045
IT	10	149874	3720
LU	528	11336	2192
NL	171	46571	5049
AT	11	46688	3594
PT	5	46177	2184
FI	590	1517280	66216
UK	0	281041	2188
SE	883	1944678	144695

Figure 10: Area variability NUTS1-3 (km2) and NUTS5 (ha)

Most of the agri-related statistical data is still provided as aggregated referring to administrative zones (NUTS levels). Bearing in mind the analytical purposes, the main source of interpretation difficulty resides not only in the difference in units size, but also in the fact that, the NUTS division used for the statistical description of Europe, corresponds essentially to the administrative division zoning which often doesn't represent the functional zoning relevant to studied phenomena. This is especially valid in the environmental domain. Here alternative zoning based on drainage basins, various landscape units would be desirable. There are numerous attempts to overcome this based on aggregation / dis-aggregation approaches (e.g. CAPRI, JRC Population Grids),

often utilizing the CLC data. Extensive research how to address this problem, referred also as 'modifiable areas unit problem (MAUP)', can be found in literature including some practical solutions (e.g. ESPON 3.4.3 project, HyperCarte).

Having in mind points discussed above following further strategy is recommended as final comments.

First, overall availability coverage of detailed agro related data is still rather diverse per countries as well as per themes and time. Nevertheless, the coverage can be completed or at least improved following more formal procedure addressing individual national statistical office with commercial request. In this case standard EIONET channels (PCPs & NRCs) shall be involved (taking into account also the language problems).

Second, further coordination of agro data collection within and between relevant EU institutions as well as possibilities of exchange of results from other existing EU activities and projects using NUTS3+ agricultural statistical data shall be envisaged (e.g. ESPON 2.1.3 - the Territorial Impact of CAP and Rural Development Policy, SEAMLESS, SENSOR, …)

Third, even having complete data available, analytical users working on cross-border issues must be aware of compatibility and harmonization consequences as discussed above .

ANNEXES

A1 - Data availability – Presentation on Expert meeting

A2 – Eurostat & Country Data List Database

European Topic Centre
Terrestrial Environment

European Environment Agency

Socio-economic statistics sources overview

Tomas Soukup

GISAT

Socio-economic data sources & themes

- In the frame of support of further LEAC framework development: Europe-wide socio-economic search & collection
- sources
  - EUROSTAT
  - National statistics
  - JRC
  - ESPON
  - Other
- themes
  - roads/railways/waterways
  - population
  - agriculture
    - crops
    - livestocks
    - farming practices
  - tourism
  - other

Socio-economic data spatial basis

- administrative zoning (NUTS regions)
  - e.g. EUROSTAT REGIO data
- other functional zoning (DLT, agroregions)
  - e.g. farming practices (MOCA)
- spatial data – TELEATLAS, RRD
- sample surveys - LUCAS
- disaggregated data to zones, reference grids
  - e.g. population (JRC), crop acreages (HydroSol, CAPRI)

Socio-economic data aggregation / disaggregation

- Most of the regional statistical data collected is aggregated per **administrative zones** so there is a need for reaggregation (using CLC as vehicle) into various other relevant zones e.g.:
  - drainage basins
  - landscape units
  - employment areas
- examples on methodology to use e.g. Joint Topic Report: Towards agri-environmental indicators - Integrating statistical and administrative data with land cover information
- modifiable areas unit problem (MAUP) ESPON 3.4.3 project
- compatibility problem (unit, theme definition & time)

Socio-economic data
administrative zones unhomogenity

Number of zones (2003)

	NUTS1	NUTS2	NUTS3	NUTS4 LAU1	NUTS5 LAU2
BE	3	11	43		589
CZ	1	8	14	77	6 249
DK	1	1	15		271
DE	16	41	439	539	13 176
EE	1	1	5	15	241
GR	4	13	51	1 034	6 130
ES	7	19	52		8 108
FR	9	26	100		36 678
IE	1	2	8	34	3 440
IT	5	21	103		8 100
CY	1	1	1	6	614
LV	1	1	6	33	536
LT	1	1	10	60	515
LU	1	1	1	13	118
HU	3	7	20	168	3 145
MT	1	1	2	6	68
NL	4	12	40		489
AT	3	9	35		2 381
PL	6	16	45	379	2 478
PT	3	7	30	308	4 257
SI	1	1	12	58	193
SK	1	4	8	79	2 928
FI	2	5	20	82	446
SE	1	8	21		290
UK:	12	37	133	443	10 679
EU-15	72	213	1 091	2 453	95 152
EU-25	89	254	1214	3334	112 119

Area variability NUTS1-3 (km2)

	NUTS 1 Ave	NUTS 1 Min	NUTS 1 Max	NUTS 2 Ave	NUTS 2 Min	NUTS 2 Max	NUTS 3 Ave	NUTS 3 Min	NUTS 3 Max
EU-15	41 676	161	410 934	15 406	31	154 312	2 974	12	98 911
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DE	22							36	3 058
GR	32							356	5 461
ES	72							12	21 657
FR	70							105	83 934
IE	70							922	14 283
IT	27							212	7 520
LU	2							2 586	2 586
NL	10							128	3 429
AT	27							415	4 615
PT	30							779	8 503
FI	152							1 526	93 003
SE	410							2 941	98 911
UK	20							35	14 295

NUTS5	min (area in hectares)	max (area in hectares)	ave (area in hectares)
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PT	5	46177	2184
FI	590	1517280	66216
UK	0	281041	2188
SE	883	1944678	144695

Area variability NUTS 5 (ha)

Socio-economic data
transport data – EUROSTAT sources

EUROSTAT REGIO database (NUTS2 / NUTS3)

- themes:
  - Road, rail and navigable inland waterway networks
  - Road transport, stock of vehicles by category
  - Road transport of goods - journeys made by vehicles
  - Road safety
  - Maritime transport of passengers (old / new methodology)
  - Maritime transport of freight (old / new methodology)
  - Air transport of passengers (old / new methodology)
  - Air transport of freight (old / new methodology)
- Member States: NUTS level 2
- Candidate Countries: NUTS 3

Socio-economic data
transport data - other sources

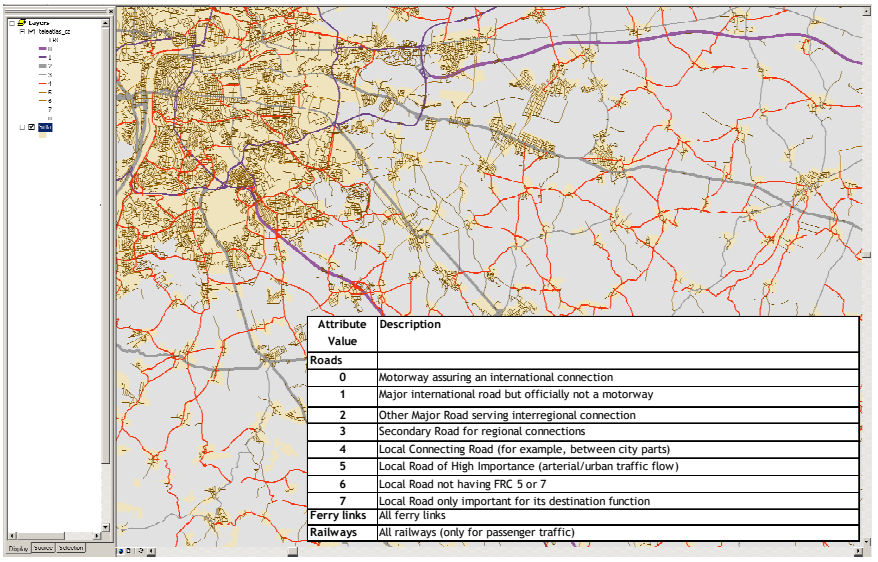
TELEATLAS database (geo-data)

- themes:

Attribute Value	Description
Roads	
0	Motorway assuring an international connection
1	Major international road but officially not a motorway
2	Other Major Road serving interregional connection
3	Secondary Road for regional connections
4	Local Connecting Road (for example, between city parts)
5	Local Road of High Importance (arterial/urban traffic flow)
6	Local Road not having FRC 5 or 7
7	Local Road only important for its destination function
Ferry links	All ferry links
Railways	All railways (only for passenger traffic)

- Teleatlas data generalized by EEA
- ~ scale 1:100 000, original vector

Socio-economic data
transport data - other sources



Attribute Value	Description
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Ferry links	All ferry links
Railways	All railways (only for passenger traffic)

Expert meeting on Land Use and Ecosystem accounting, 18-19 May 2006, EEA

Socio-economic data
transport data - other sources

ETIS-BASE: European Transport policy Information System (ETIS) FP project (statistics)

- **themes:**
  - socio-economic data set
  - freight transport demand data set
  - passenger transport demand data set
  - European transport network data input
  - freight transport service and cost data set
  - passenger transport service and cost data set
  - external effects data set

Socio-economic data
transport data - other sources

RRG pan-European database (geo-data)

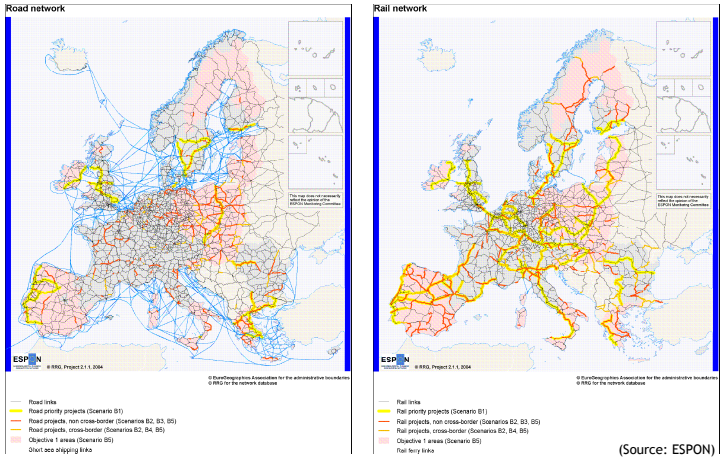
- **themes:**
  - Road network
  - Railway network
  - Railway stations in Europe
  - Inland waterways and shipping routes
  - Inland ports and seaports
  - Inland waterways and inland ports
  - Shipping routes and seaports
  - Airports
- **developed by the Institute of Spatial Planning of the University of Dortmund (IRPUD, 2003)**
- **now maintained and further developed by the Büro für Raumforschung, Raumplanung and Geoinformation - RRG (Schürmann, 2004)**

Socio-economic data
transport data - other sources

- **all RRD layers** incorporate **information on the TEN and TINA programmes** of the European Union, as laid down in various official EU documents, including the full outline plans **until 2020**
- RRD **road and railway networks** include **the development information** of the networks **since 1970**, and (based on the TEN/TINA outline plans and outline plans of the national governments) a projection of the future development **until the year 2025**
- hence **it is possible to extract** the respective **road or rail network** for any desired year **in the period 1970-2025**
- moreover, the road and railway layers already **include functional access links at NUTS-3 basis used for transport modelling purposes** (i.e. to link centroids/traffic analyses zones to the networks), and the waterway network layers include functional port access links for the same purpose

Socio-economic data
transport data - other sources

- **used e.g. for infrastructure scenarios creation in ESPON 2.1.1 project**



(Source: ESPON)

Expert meeting on Land Use and Ecosystem accounting, 18-19 May 2006, EEA

Socio-economic data
population data

EUROSTAT REGIO database (NUTS2 / NUTS3)

- **themes**

POPULATION AND AREA
Population at 1st January by age group and by sex
Population at 1st January by sex and single year of age
Annual average population by sex
Average population by sex and single year of age, from 1990
Area of the regions
Density of the average total population
Regional scenarios on population by sex and age groups
Regional scenarios on labour force by sex and age groups
POPULATION CHANGE
Births and deaths
Births by the age of mother
Deaths by sex and age group
Deaths by sex and single year of age
Infant mortality
Population change indicators*
Probability of dying before the end of the year*
Age specific fertility rates*

** From New Cronos 2004 on*

Socio-economic data
population data

EUROSTAT SIRE database (LAU1/LAU2)

- European infra-regional information system, in addition to the collections of regional statistical data, data for the local administrative units (communal level - LAU1 and LAU2)
- SIRE contains statistical data from the population and housing censuses with an update frequency of 10 years. Censuses are not held at the same date in each of the MS
- Data from the 1981, 1991 and 2001 census

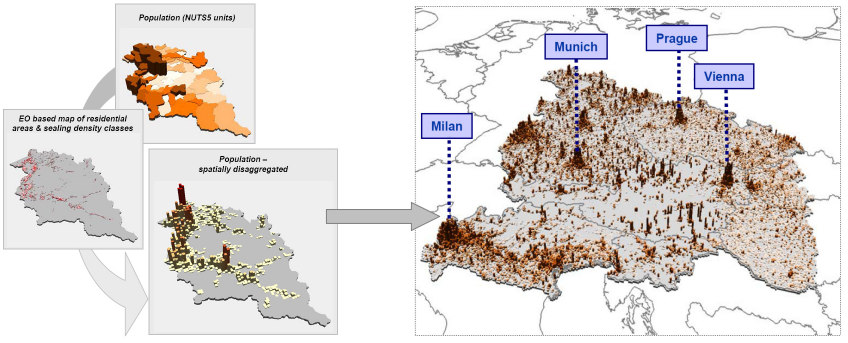
Socio-economic data
population data

EUROSTAT SIRE database (LAU1/LAU2)

- around 30 variables are collected from the population censuses. They include **total population, sex and age distribution, economic activity of the population, number of households, dwellings with tenure status, and level of education**.
- for reasons of confidentiality, data for small communes may be suppressed by some MS. The variable "total population" and surface area is available for all communes, however.
- not all variables available from all countries as there is no legal basis for the collection of data for LAU.
- not publicly available, restricted to users inside the EC

Socio-economic data
population data disaggregation

- **population data from NUTS5 disaggregated to CLC classes are provided by JRC for 1990 & 2000 (CLC time reference)**



Socio-economic data
agri statistics – EUROSTAT sources

EUROSTAT REGIO database (NUTS2 / NUTS3)

- Land use
- Crop production (areas harvested, production and yields)
- Livestock
- Production of cows' milk on farms
- Cows' milk collection
- Agricultural accounts at regional level according to EAA 89/92 & EAA 97 Rev 1.1 (monetary account)
- Structure of agricultural holdings by region - main indicators

Socio-economic data
agri statistics – EUROSTAT sources

Structure of agricultural holdings (EUROFARM)

- based on **Farm Structure Survey (FSS)**, agricultural statistical survey conducted in each country of the European Union (EU) every ten years
- less detailed surveys are held in between in three years
- available for the following years: 1990 (1989/90), 1993, 1995, 1997, 2000 (1999/2000), 2003 (2002 in Poland and Romania)
- themes: main items covered are crop areas, livestock numbers, numbers and details of the farm labour force and, since 2000, the incidence of farm diversification.
- survey unit is the agricultural holding
- available on Eurostat's Regio DB on NUTS 2/NUTS3

Socio-economic data
agri statistics – EUROSTAT sources

EUROFARM contents details

ef2_over	**General overview**	
	ef2_sta	**General overview by area status**
	k_aa	Key variables by region, agricultural area size classes and legal status
	k_aaesu	Key variables by agricultural area and economic size classes and by area status of the holding
	k_age	Key variables by area status, agricultural area size classes and manager's age
	k_esuft	Key variables by area status, economic size classes and farm type (1-digit)
	sum_lu	Summary of land use by agricultural area size classes and area status
	sum_ls	Summary of livestock by agricultural area size classes and area status
	sum_lf	Summary of labour force by agricultural area size classes and area status
	ef2_ob	**General overview by objective zones**
	ob99_ft	Key variables by economic size classes and farm type (1-digit) of the holding and by objective zone
	ob99_lu	Summary of land use by agricultural area size classes of the holding and by objective zone
	ob99_ls	Summary of livestock by agricultural area size classes of the holding and by objective zone
	ob99_lf	Summary of labour force by agricultural area size classes of the holding and by objective zone
	ef2_ft	**General overview by farmtypes**
	ft_aa	Key variables by farm type and agricultural area size classes
	ft_esu	Key variables by farm type and economic size classes
	ft_reg	Key variables by farm type and region
	ft_lu	Land use by farmtype and economic size classes
	ft_ls	Livestock by farmtype and economic size classes
	ft_lf	Labour force by farmtype and economic size classes
ef2_lu	**Land Use**	
	ef2_luov	**Land use overview**
	crop_aa	Land use by regions and agricultural area size classes
	crop_esu	Land use by regions and economic size classes
	wood	Holdings with wooded area by wooded area and by agricultural area size classes
	irrig	Irrigation by regions
	glass	Holdings with area under glass by area under glass and agricultural area size classes
	arable	Holdings with arable land by arable land and agricultural area size classes
	setaside	Set-aside areas by arable land and agricultural area size classes
	grass	Holdings with grassland by grassland and agricultural area size classes
	perm_reg	Holdings with permanent crops by region and permanent crop area size classes
	ef2_ara	**Arable land**
	cereals	Holdings with cereals by area under cereals and agricultural area size classes
	wheat	Holdings with common wheat by area under common wheat and agricultural area size classes
	barley	Holdings with barley by area under barley and agricultural area size classes
	maize	Holdings with grain maize by area under grain maize and agricultural area size classes
	potat	Holdings with potatoes by area under potatoes and agricultural area size classes
	sugbeet	Holdings with sugar-beet by area under sugar-beet and agricultural area size classes
	indplant	Holdings with industrial plants by area under industrial plants and agricultural area size classes
	veg_out	Holdings with vegetables, melons and strawberries by agricultural and vegetables etc. Outdoor
	vegglass	Holdings with vegetables, melons and strawberries by agricultural and vegetables etc. under glass
	flower	Holdings with flowers and ornamental plants by agricultural area size classes
	ef2_perm	**Permanent crops**
	permcrtry	Holdings with permanent crops by permanent crops and agricultural area size classes
	fruit	Holdings with fruit and berry plantations by fruit and berry plantations and AA size classes
	olive	Holdings with olive plantations by olive plantations and agricultural area size classes
	vineyard	Holdings with vineyards by vineyards and agricultural area size classes

ef2_ls	**Livestock**	
	ef2_lsov	**Livestock overview**
	ls_aareg	Livestock by regions and agricultural area size classes
	lslsureg	Livestock by region and livestock units size classes
	ls_esu	Livestock by region and economic size classes
	forage	Holdings with fodder areas by fodder area and agricultural area size classes
	ef2_graz	**Cattle, sheep and goats**
	cattle	Holdings with cattle by number of cattle and agricultural area size classes
	cattlels	Holdings with cattle by agricultural area and livestock units size classes
	dairycow	Holdings with dairy cows by number of dairy cows and agricultural area size classes
	othercow	Holdings with other cows by number of other cows and agricultural area size classes
	sheep	Holdings with sheep by number of sheep and agricultural area size classes
	goat	Holdings with goats by number of goats and agricultural area size classes
	ef2_pigp	**Pigs and poultry**
	sows	Holdings with breeding sows by number of breeding sows and agricultural area size classes
	otherpig	Holdings with other pigs by number of other pigs and agricultural area size classes
	broiler	Holdings with broilers by number of broilers and agricultural area size classes
	layhen	Holdings with laying hens by number of laying hens and agricultural area size classes
ef2_soc	**Management and work on the holding**	
	ef2_lf	**Labour force**
	lf_aa	Labour force by regions, agricultural area size classes and legal type of the holding
	lf_esu	Labour force by region, economic size classes and legal type of the holding
	lf_age	Labour force by age and agricultural area size classes of the holding
	lf_wtime	Labour force by worktime and agricultural area size classes of the holding
	lfsexage	Family labour force by age and sex and agricultural area size classes of the holding
	ef2_man	**Management and practices**
	legpers	Variables for holdings broken down by the holder-manager relationship and AA size classes
	tenure	Type of tenure by region and agricultural area size classes
	ef_train	Holdings by manager's agricultural training and economic size classes
	organic	Organic farming by agricultural area size classes an by regions
	machine	Tractors, cultivators, machinery and equipment by agricultural area size classes
ef2_oga	**Other gainful activity and rural development**	
	lf_oga	Other gainful activity in sole holder holdings by agricultural area size classes
	rur_aa	Rural development by legal type of holdings and agricultural area size classes
	rur_ft	Rural development by legal type of holdings, farm type and economic size classes
	rur_oga	Rural development by legal type of holdings and other gainful activity of holders
	rursexag	Rural development on individual holdings by age and gender of the holders
ef_sgm	**Standard gross margins – Coefficients**	
	t_sgm	Standard gross margins - Coefficients

Socio-economic data
agri statistics – other project results

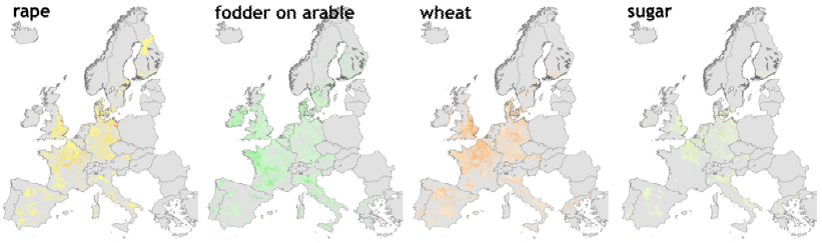
CAPRI databases The CAPRI modelling system is designed as a projection and simulation tool for the EU's (primary) agricultural sector

ESPON database e.g. 2.1.3 - the Territorial Impact of CAP and Rural Development Policy

e.g. CAPRI origined crop acreages statistics disaggregation based on LUCAS/CLC data + soil, climate disaggregated by CLC classes (CLC2000 time reference) to standard 1km grid

Socio-economic data
agri statistics – crops disaggregated

crop acreage share in percentage of grid area

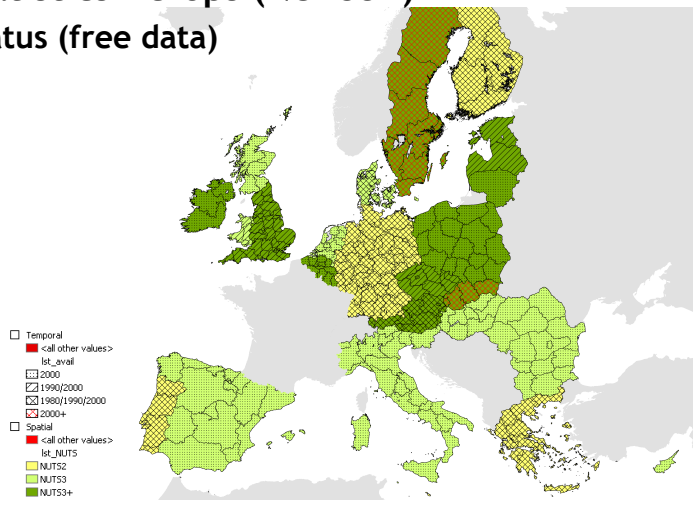


- available for ~ 30 crops but for EU15 only
- can be used for other dissagregated estimation e.g. pesticides & fertiliser application rates, nutrient load, livestock densities, crop yields...

Socio-economic data
agri statistics – other sources

National statistics – crops (NUTS3+)

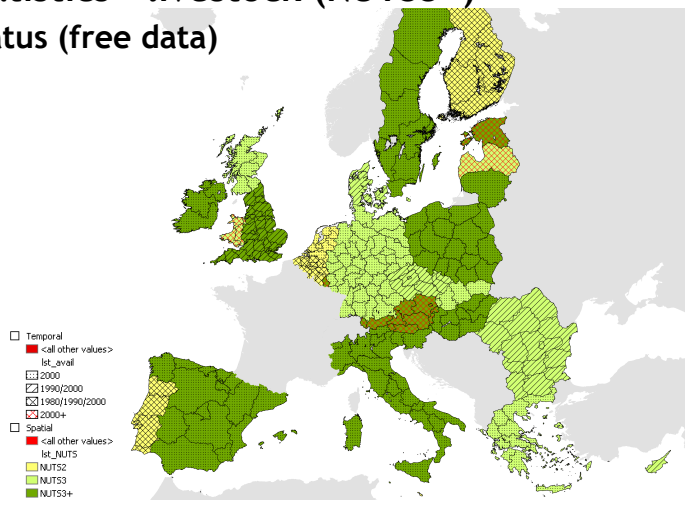
- **current status (free data)**



Socio-economic data
agri statistics – other sources

National statistics – livestock (NUTS3+)

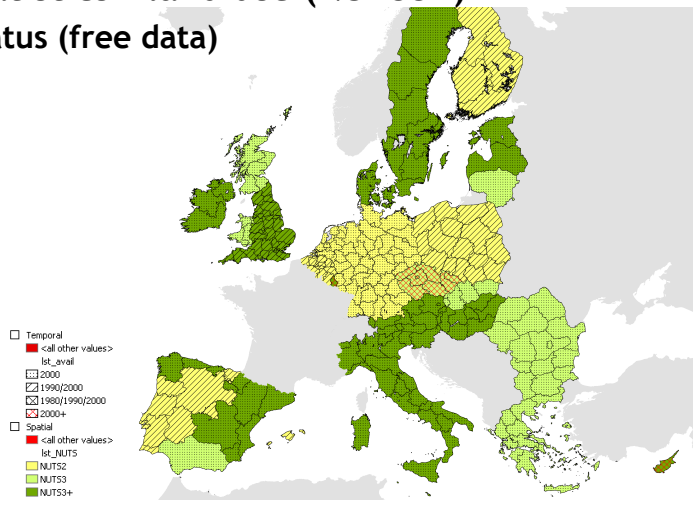
- current status (free data)



Socio-economic data
agri statistics – other sources

National statistics – land use (NUTS3+)

- current status (free data)



Socio-economic data
farmer practices – agroregions

MOCA Crop knowledge base by agroregions or CGMS grid

- prepared under Crop Growth Monitoring System activities of the MARS STAT Action, JRC
- focused on the Central and Eastern European countries
- crop knowledge base: crop calendars, crop practices, crop parameters
- 11 countries covered: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, Turkey.
- **crops covered:**
  - **cereals (soft wheat, durum wheat, spring barley, maize, oats, rye)**
  - **oil-seed (rape seed, sunflower, soy beans)**
  - **protein crops (field peas, beans)**
  - **potato and sugar beet**

Socio-economic data
farmer practices – agroregions

AGRI-REGION

COLUMNS	DATATYPE	DESCRIPTION
Region_no	Text	Unique agri region identifier
Region_name	Text	Name of the agri region

Number of tables: 1

ROOT STRUCTURE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
CGMS_RDI	Number	initial rooting depth [cm] as in CGMS
CGMS_RRI	Number	maximum daily increase in rooting depth [cm d-1] as in CGMS
CGMS_RDMCR	Number	maximum rooting depth [cm] as in CGMS
Comment	Text	

Number of tables: 11

CANOPY STRUCTURE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
LAIEM	Number	leaf area index at emergence [ha ha-1] as in CGMS
RGLAI	Number	maximum relative increase in LAI [ha ha-1 d-1] as in CGMS
Comment	Text	

Number of tables: 11

CLIMATIC CONDITION

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
PHS_ID	Text	Listed ID in table CGMS_PHENOLOGICAL_STAGE
Unacceptable_temp	Text	Unacceptable range for temperature
Acceptable_temp	Text	Acceptable range for temperature
Optimal_temp	Text	Optimal range for temperature
Unacceptable_rain	Text	Unacceptable range for rain
Acceptable_rain	Text	Acceptable range for rain
Optimal_rain	Text	Optimal range for rain
Comment	Text	

Number of tables: 11

PHENOLOGICAL STAGES

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Region_no	Text	Listed Region_no in table AGRI_REGION
PHS_ID	Text	Listed ID in table CGMS_PHENOLOGICAL_STAGE
JDAY_MIN	Number	Minimum Julian Day [1-366]
JDAY_MAX	Number	Maximum Julian Day [1-366]
JDAY_MEDIAN	Number	Median Julian Day [1-366]
Comment	Text	range for rain

Number of tables: 1

CROP PARAMETER VALUES

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Region_no	Text	Listed Region_no in table AGRI_REGION
TBASEEM	Number	lower threshold temp. for emergence [cel]
TEFFMX	Number	max. effective temp for emergence [cel]
TBASE	Number	lower threshold temp. for ageing of leaves [cel]
CFET	Number	correction factor transpiration rate [-]
Comment	Text	

Number of tables: 1

AGRI PRACTICE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Region_no	Text	Listed Region_no in table AGRI_REGION
PRACTICE	Text	Agricultural Practice
JDAY_MIN	Number	Minimum Julian Day [1-366]
JDAY_MAX	Number	Maximum Julian Day [1-366]
JDAY_MEDIAN	Number	Median Julian Day [1-366]
Comment	Text	

Number of tables: 1

IRRIGATION PRACTICE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Region_no	Text	Listed Region_no in table AGRI_REGION
IRRIGATION	Number	Irrigation practices [yes=1 No=0]
Comment	Text	

Number of tables: 1

PEST OR DISEASE

COLUMNS	DATATYPE	DESCRIPTION
Crop_no	Number	Listed Crop Numbers in table CGMS_CROP
Parameter	Text	Pest or Disease
PHS_ID	Text	Listed ID in table CGMS_PHENOLOGICAL_STAGE
Frequency	Number	Number of occurrences in 10 years
Damage	Number	[Slight=1 Medium=2 Strong=3]
Comment	Text	

Number of tables: 11

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Socio-economic data
tourism data - EUROSTAT sources

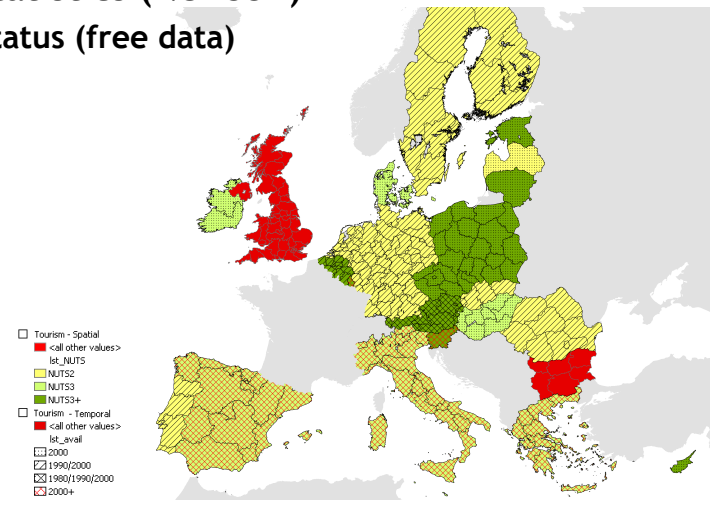
EUROSTAT REGIO database (NUTS2 / NUTS3)

- **themes**
- - Number of establishments, bedrooms and beds
  NUTS level 3 – annual data from 1994
- - Arrivals of residents
  NUTS level 2 - annual data from 1994
- - Nights spent by residents
  NUTS level 2 - annual data from 1994
- - Arrivals of non-residents
  NUTS level 2 - annual data from 1994
- - Nights spent by non-residents
  NUTS level 2 - annual data from 1994

Socio-economic data
tourism data - other sources

National statistics (NUTS3+)

- **current status (free data)**



Socio-economic data
LC/LU & agri statistics – LUCAS

Objectives of the LUCAS sample survey:

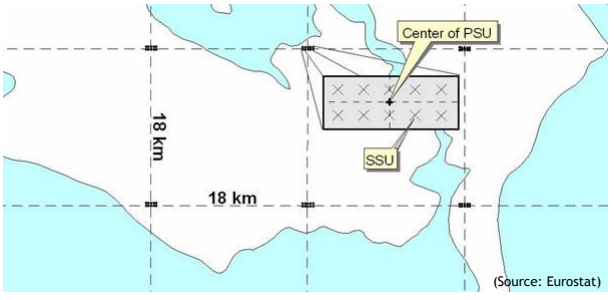
- to obtain harmonised point based information on LC/LU and additional environmental data at EU15 (EU23) level
- based on common nomenclature and methodology
- 2% precision for main categories (wheat, cereals, grassland, forests, urban areas, …)
- **LUCAS surveys**

  2001 - survey carried out in 13 EU member states
  2003 - survey carried out in 15 EU member states + Hungary
  2005/2006 - now in process for EU23

Socio-economic data
LC/LU & agri statistics – LUCAS

2001/2003 survey data collection on:

- 18 x 18 km regular grid for each country – Primary Sampling Units (PSU)
- 1500 x 600 m rectangle consisting of 10 points – Secondary Sampling Units (SSU)



Socio-economic data
LC/LU & agri statistics – LUCAS

2001/2003 survey data contents:

- **Phase 1 - LC/LU and additional environmental information**
  - Land cover
  - Land use
  - Environmental features
    - Noise
    - Tracks of erosion
    - Tracks of natural hazards
    - Drainage and Irrigation systems
  - Linear features and land cover transitions along the transect
  - Landscape photographs
- **Phase 2 - Interviewing of 5 000 farmers**
  - Principal farm type
  - Total arable land and area per crops (Cereals, Root crops, Non-permanent industrial crops, Total other crops, Temporary grassland, Fallow land)
  - Next-year planned crops
  - Present-year yield per crop and average moisture content
  - Presence of erosion per crops (yes/no)
  - Crop Calendar

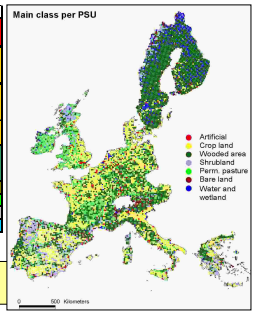
Socio-economic data
LC/LU & agri statistics – LUCAS

2001/2003 survey: Phase 1 data example

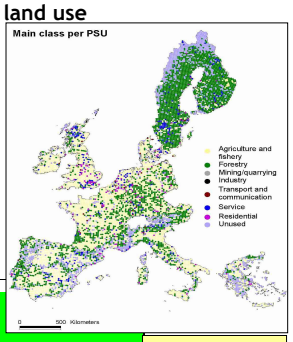
land cover

Code	Label
A1	Built-Up Areas
A2	Non Built-Up Areas
B1	Cereals
B2	Root Crops
B3	Non Permanent Industrial Crops
B4	Dry Pulses, Vegetables And Flowers
B5	Temporary, Artificial Pastures
B6	Fallow Land
B7	Fruit Trees, Berries
B8	Other Permanent Crops
C1	Forest Area
C2	Other Wooded Area
C3	Poplars, Eucalyptus
D0	Shrubland
E0	P. Grassland
F0	Bare Land
G0	Water/Wetland

57 classes



land use



Code	Label
U11	Agriculture
U12	Forestry
U13	Fishing
U14	Mining, Quarrying
U21	Energy Production
U22	Industry, Manufacturing
U31	Transport, Communication, Storage, Protective Works
U32	Water, Waste Treatment
U33	Construction
U34	Commerce, Finance, Business
U35	Community Services
U36	Recreation, Leisure, Sport
U37	Residential
U40	Unused

14 classes

(Source: Eurostat)

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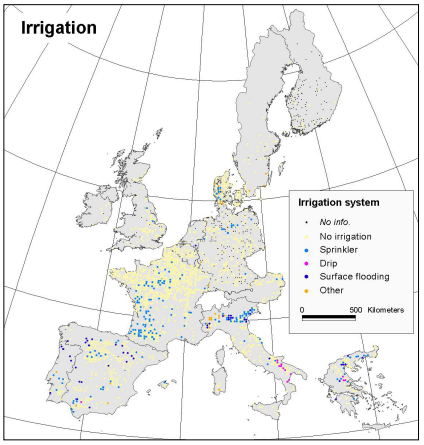
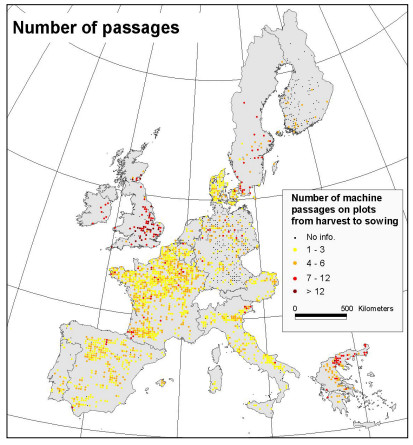
Socio-economic data
LC/LU & agri statistics - LUCAS

2001/2003 survey: Phase 2 data example



(Source: Eurostat)



(Source: Eurostat)

Socio-economic data
LC/LU & agri statistics - LUCAS

2005/2006 survey:

- stratification into 7 classes after first phase is performed, phase II cancelled
- regular 1km grid covering EU25 (around 4 000 000 points) called **base sample**
- for LUCAS purpose, subset was made by defining 2 km grid called **master sample** (around 1 000 000 points)
- each point from **master sample** is classified into one of the 7 classes:
  - arable land
  - permanent crops
  - permanent grassland
  - wooded areas
  - shrubland
  - bare land, low or rare vegetation
  - water,artificial land
- from classified master sample, **sub-sample** of points (field sample) is extracted to be used for field survey and classified according to the full nomenclature

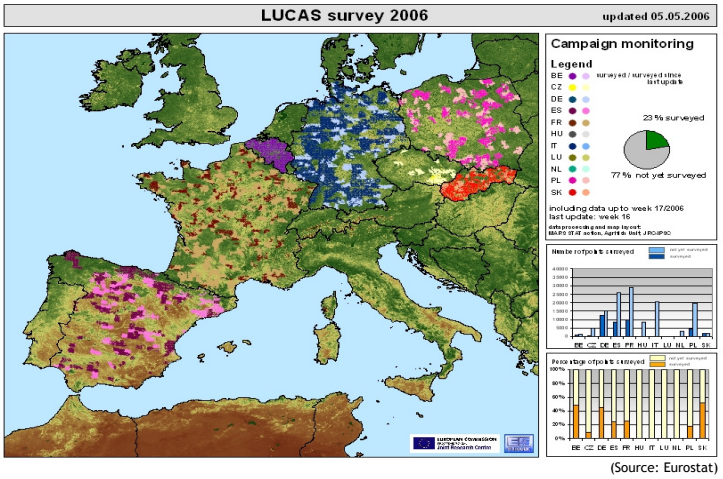
Socio-economic data
LC/LU & agri statistics - LUCAS

2005/2006 survey data collected & nomenclatures:

- **land cover**
  3 levels for LC have been defined:
  - 1. level - 7 classes
  - 2. level - 11 classes
  - 3. level - 58 classes
- **land use**
  2 levels for LU:
  - 1. level - 15 classes
  - 2. level – 23 classes
- **landscape photographs**

Socio-economic data
LC/LU & agri statistics - LUCAS

2005/2006 survey progress:



(Source: Eurostat)

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Socio-economic data
LC/LU & agri statistics – LUCAS

LUCAS notes:

- LUCAS is considered as a valuable source of statistic data on LU/LC with high level of reliability. Data collection is well organized and based on common methodology. Collected data contain additional information on environment and can help in assessment of impacts of agriculture on the environment (evaluating agri-environmental indicators).
- according to *LUCAS Data Exploitation – Summary of the key findings (Luxembourg, 2004)*, LUCAS is designed to offer reliable information for the main crops (with regard to current sample size) on **European level.** Figures for national or even regional level cannot be derived with an acceptable coefficient of variation (i.e. 2% for the main crops). Neither disaggregation of the 3rd level of the nomenclature cannot be applied because of too small area shares, which result in imprecise estimates.
- new approaches presented in LUCAS 2005/2006 surveys bring more accuracy and reduce costs. New grid based data collection approach (respecting INSPIRE recommendations) allows better comparibility and connectivity with existing grid based data sets.
- besides, LUCAS data is also valuable source of statistical data for combination with other sources, data validation and stratification