

Sustainable Development Data Availability on the Internet

Pietro Caratti, Ludovico Ferraguto
and Chiara Riboldi

NOTA DI LAVORO 125.2006

OCTOBER 2006

SIEV – Sustainability Indicators and Environmental
Valuation

Pietro Caratti, *Regione Lombardia and Fondazione Eni Enrico Mattei*
Ludovico Ferraguto and Chiara Riboldi, *Fondazione Eni Enrico Mattei*

This paper can be downloaded without charge at:

The Fondazione Eni Enrico Mattei Note di Lavoro Series Index:
<http://www.feem.it/Feem/Pub/Publications/WPapers/default.htm>

Social Science Research Network Electronic Paper Collection:
<http://ssrn.com/abstract=936927>

Sustainable Development Data Availability on Internet

Summary

Defining what Sustainability and Sustainable Development mean is a critical task, as they are global objectives, which cover different aspects of life often difficult to quantify and describe. Talking about sustainable development means dealing with the development and implementation of SD strategies at international as well as at local level. With this regard, SD information plays a key role in monitoring SD performances at different administration levels. The aim of this paper is to give an overview of sustainable data availability on the internet at international, European, national and regional level. The paper is novel in the fact that the attention of the whole analysis focused on internet, considered as the principal mean for accessing data. In fact, the web has become through the years a fundamental tool for exchanging information amongst people, organisations, institutes, governments, thanks to its easy accessibility for a wide knowledge exchange. Sustainable development data collected at different administrative levels are classified and processed according to different methods and procedures; they are gathered at different scales, in different periods and they have a different frequency of updating. Data accuracy and meta-information on available data considerably vary, too. Few organisations at the international and at the European level such as, for example, World Bank, United Nations, OECD, FAO, Eurostat, EEA committed themselves to process information belonging to different sources aiming at standardising and producing comparable data sets for several nations and regions. Following the above considerations, various international, European and national organisations' databases were investigated in order to check the availability of data at different administrative levels, mostly focusing on those sectors considered as pillars for the definition and monitoring of the implementation of the EU Sustainable Development Strategy, as pointed out in the Communication of the EC SEC(2005) 161 final.

Keywords: Sustainability, Indicators, Regional Development, Internet, Database

JEL Classification: Q5, Q56, Y10, Q58

Address for correspondence:

Pietro Caratti
Fondazione Eni Enrico Mattei
Corso Magenta 63
20123 Milano
Italy
E-mail: pietro.caratti@feem.it

| | |
|--|-----------|
| 1. INTRODUCTION | 5 |
| 2. METHODOLOGICAL APPROACHES TO DATA SEARCH: CRITERIA AND METHODS USED FOR INVESTIGATION | 6 |
| 3. DATA ANALYSIS: INVESTIGATING DATA AVAILABILITY ON LINE | 9 |
| 3.1 International sources of data | 9 |
| 3.1.1 GTAP - Centre for Global Trade Analysis | 9 |
| 3.1.2 UN - United Nations | 9 |
| 3.1.2.1 UN Economic and Social Affairs Division for SD | 9 |
| 3.1.2.2 UNEP - United Nations Environment Programme | 10 |
| 3.1.2.3 UNECE - United Nations Economic Commission for Europe | 10 |
| 3.1.3 OECD - Organisation for Economic Cooperation and Development | 10 |
| 3.1.4 IAIA - International Association for Impact Assessment | 10 |
| 3.1.5 ISTS - Initiative on Science and Technology for Sustainability | 11 |
| 3.1.6 WB - World Bank | 11 |
| 3.1.7 FAO - Food and Agriculture Organization of the United Nations | 14 |
| 3.2 European sources of data | 15 |
| 3.2.1 European organisations, institutions and networks | 15 |
| 3.2.1.1 Eurostat | 15 |
| Eurostat Data at a glance | 17 |
| National level | 18 |
| Regional level | 19 |
| Depicting sustainability performances of EU regions applying Eurostat database | 20 |
| 3.2.1.2 EEA - European Environmental Agency and EIONET - European Environmental Information and Observation Network | 22 |
| 3.2.1.3 EPER - European Pollutant Emission Register | 23 |
| 3.2.1.4 CORINE Land Cover - Co-ordination of information on the environment | 23 |
| 3.2.1.5 AER - Assembly of European Regions | 24 |
| 3.2.1.6 UN - United Nations:UNECE - United Nations Economic Commission for Europe | 25 |
| 3.2.1.7 ESPON 2006- European Spatial Planning Observatory Network | 26 |
| Data Navigator | 27 |
| Other projects | 27 |
| 3.2.1.8 TIAS - The Integrated Assessment Society | 28 |
| 3.2.2 EC Projects | 28 |
| 3.2.2.1 IASON - Integrated Assessment of Spatial Economic and Network Effects of Transport Investments and Policies | 28 |
| 3.2.2.2 SENSOR - Sustainability Impact Assessment: Tools for Environmental, Social and Economic Effects of Multifunctional Land Use in European Region | 28 |
| 3.2.2.3 ECODEV - Sustainable development at local and regional levels: methods and techniques to support Ecosites and monitor urban sustainability | 29 |
| 3.2.2.4 MATISSE - Methods and Tools for Integrated Sustainability Assessment | 29 |
| 3.2.2.5 I.Q. Tools Indicators and Qualitative Tools for Improving the Impact Assessment Process for Sustainability | 30 |
| 3.2.2.6 Sustainability A-TEST - Advanced-Techniques for Evaluation of Sustainability Assessment Tools | 30 |
| 3.2.2.7 EFIEA - European Forum on Integrated Environmental Assessment | 31 |
| 3.3 National sources of data | 31 |
| National Statistical offices data | 31 |
| 4 CONCLUSIONS | 33 |

| | |
|------------------|-----------|
| ANNEX I | 38 |
| ANNEX II | 39 |
| ANNEX III | 42 |

1. Introduction

Data availability plays an important role to measure sustainability performances of a country/region, as it enables to describe a nation/region through quantitative tools. Encouraged by the achievement of the goals foreseen in a project funded by the EC, INSURE¹, which aims at measuring the sustainability performances of European regions through the integration of a quantitative model and of a qualitative one, the paper presents a survey of online available information, by analysing different international, European and national data-sources.

Internet is considered as the mean for accessing information, because it represents a powerful research engine, widely accessible and greatly user-friendly and because various institutes and organisations that collect data have their own databases available from Internet (often free of any charge).

The paper aims to provide a general view of which kind of data can be retrieved, and at which administrative level (nations, regions, provinces) they are available for the countries belonging to the EU-25, for the Candidates Countries to EU access (Romania, Bulgaria, Turkey) and for the other EFTA countries (Norway, Iceland, Liechtenstein and Switzerland), only through the use of the web. Exploring the data sources for a regional context, in addition, represents a quite innovative task, investigating a sector often not covered by existing literature on data.

Data research, however, often proves to be more difficult than what it could be expected. Sometimes databases present lack of information and gaps, data can be really expensive and their quality is not always easy to assess. For our research purposes, we should consider the main disparities in data availability among the sources we investigate. Then, we decided to assume as research hypothesis that data availability may depend on the covered sector and on the level of administrative disaggregation they are available at (international, national, and regional). Moreover, it can be assumed that databases will differ by the time coverage each of them provides, and with respect to the completeness of the data series there contained. These represent the three main issues our work aims to tackle.

More in details:

- 1) The first issue concerns the richness or poorness of information for each aspect of sustainability (society, economy and environment) we investigate. In this respect, it will be assessed if some sectors may be more populous than others in terms of sustainability data.
- 2) The second one, instead, regards the minimum level of disaggregation data are available at.
- 3) Thirdly, we will report on the time coverage of the investigated databases, trying to assess how it can influence data availability and usefulness for research purposes.

The paper firstly presents a description of the most important international organisations, including their tasks and structure, and their capability of providing data at different administrative level.

¹ INSURE (A Flexible Framework for Indicators for Sustainability in Regions using Systems Dynamics Modelling) is a European research project funded by the EC under the 6th Framework Programme and aims to develop a framework for combining sustainability indicators with a Systems Dynamics modelling approach, for both quantitative and qualitative factors, in order to develop a common EU methodology for sustainability indicators at the regional scale.

Then, for each of them and also for national sources their data availability will be presented and assessed, starting from the international and ending by the national ones.

The general overview of data availability is further on completed by a comparative exercise which can be useful to depict the real availability of quantitative indicators suggested by the European Commission² at regional level.

Finally, the conclusions of the work aim to answer to our starting research hypothesis, providing a general assessment of the completeness of the investigated data sources, and highlighting the constraints linked to the sustainable data search on internet databases.

2. Methodological approaches to data search: criteria and methods used for investigation

Mapping sustainable development information availability at any level of disaggregation is of extreme importance to measure and describe SD for regions and in order to enable a comparison of their sustainability positions.

In fact, it is clear that one of the main difficulties of many quantitative analysis and researches is the need of having standardised and harmonised data that can be processed in the models they develop. Therefore, great interest is generally addressed to checking data availability provided by international, European and national organisations such as World Bank, UNECE , OECD, EUROSTAT and many other databases and data sources, trying to cover the broadest quantity of databases that provide data at any administrative level (NUTS³ 0, 1, 2, 3 and more detailed ones).

Before describing in detail the analysis and the obtained results, the criteria and methods used for the classification of databases and of the concerning data need to be defined. The methodology is defined to pursue the different research purposes: databases will be ordered following their disaggregation levels; then, their capacity to cover the relevant aspects of sustainability will be assessed. Moreover, for each database the temporal coverage provided will be reported, split by each sector.

The research is carried out at two levels: the level the organisations work at (International, European, or National) and the level of data disaggregation they provide (international, national, regional and provincial).

In Table 1, the information that the analysis provides is reported.

The table is organised according to the aforementioned criteria: data sources are listed in rows, starting from the international to the European and the national ones, while the minimum level of disaggregation of data provided by each organisation is

² SEC(2005) 161 final.

³ The Nomenclature of Territorial Units for Statistics (NUTS) is a geocode standard for referencing the administrative division of countries for statistical purposes. The standard was developed by the European Union, and thus only covers the member states of the EU in detail. Eurostat also devised a hierarchy for the 10 countries which joined the EU in 2004, but these are subject to minor changes. The NUTS divisions do not necessarily correspond to administrative divisions within the country.

reported in columns. European sources are, additionally, divided into European organisations working at SD and European projects: this operation is necessary when considering that there are many projects funded by the European Commission which deal with Sustainability, and it might be interesting to investigate also their potential as data sources.

Table 1: Scheme for the analysis of data sources.

| | | SOURCE | LEVEL OF DATA | | | |
|--------------------------------|------------------|--------|---------------|----------|----------|------------|
| | | | International | National | Regional | Provincial |
| International (non EU) sources | | ... | ✓ | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| EU sources | EU organisations | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | EU projects | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| | | ... | ... | ... | ... | ... |
| National sources | | | ... | ... | ... | ... |

Databases are further on investigated considering their sector coverage: data are splitted into the three categories representing the three pillars of Sustainability with economy, ecology and socio-cultural institutions at each apex:

- ✓ Population -socio-cultural
- ✓ Economy
- ✓ Environment

In this sense, the obtained data in the investigated databases were classified according to the following classes:

- ✓ Population class: this class includes any information describing population by age cohort, by household type (so that issues that are more household specific than person specific such as car-ownership, living space can be covered in a proper way), by income group to cover issues that are significantly influenced by income and by employment status and by social conditions and health statistics. Also the data concerning migratory movements (immigration and emigration statistics) were classified into this category.
- ✓ Economic class: this category represents the second driver relevant for socio-economic attractiveness of a region/nation and the corresponding environmental pressure of its development. In this category, data about agriculture (crop yields, economic accounts for agriculture, animal feed, agricultural products, prices, etc), trade (external or internal, exports and imports of goods, etc), construction (housing and construction), tourism (tourism demand, tourism movements, tourism statistics, etc), transport (railway, roads, inland waterways, maritime and other way of transport), energy (energy quantity and prices, besides energy

sources, consumption, production, etc) and other economic elements (GDP, finances, taxes, , financial accounts, prices, financial and monetary statistics, balance of payments, etc grouped in a category called “other economic elements”) were grouped together.

- √ Environmental class: this last class covers information about natural environment and resources, water (water usage, water balance, waste water treatment, etc), waste (waste collection, waste generation, waste disposal, municipal waste, etc), air emission (emissions of greenhouse gases, pollutants in air, air quality, state of the ozone layer, etc), biodiversity (protected areas and protection of natural resources), forestry (forestry statistics, economic accounts for forestry), environmental expenditure and environmental protection.

All the other data that cannot be included in any of the previous categories (e.g. communication and technology, patents, etc) are classified as “Other”.

Particular attention is pointed on the assignment of data to the correct category, as classifying the indicators and putting them into the predefined classes above from time to time may imply a certain degree of subjectivity.

As a matter of fact, when thinking about an indicator such as employment, it is clear that it should be put into Population class, while, when thinking about an indicator such as environmental expenditure, then, deciding whether to put it into Economic class or into Environmental class gets more difficult, as it acts both as an economic indicator and as an environmental one.

Finally, we will provide an indication of the time coverage provided by databases for each sector and macro-areas they deal with. The indication includes both considerations over the completeness of the time series and over the time-lapse data are available for. This represents another considerable point of view by which we can assess the completeness of the relevant information provided by SD Databases.

The same classification is being followed during the whole analysis. Using the same classification for the whole analysis is important as it enables to:

- keep the same analytical structure for all the investigated scopes
- investigate the scopes in a way that is as objective as possible (though taking into account a certain degree of subjectivity in classifying some indicators)
- obtain results that might have a certain degree of comparability
- reduce complexity (as all classifications do)

Classifying all the available indicators into the afore-mentioned categories constitutes an easy-to-understand methodology, as the above classes are generally simply defined, even if it might bear the risk to loose meaningfulness if the classification is too aggregated.

3. Data analysis: investigating data availability on line

3.1 International sources of data

The first section of the paper is devoted to the description of international data sources.

The importance of having such data sources is clear, as they are able to provide information which cover most of the countries worldwide.

In addition, these international organisations have also the merit for providing homogenised data, which might guarantee a certain degree of comparability.

The following paragraphs will survey the most important international organisations such as World Bank, UNECE, OECD, FAO and their databases. They are meant to show and highlight the points of strength and weakness of these organisations with regard to SD data, and which are the most important sectors (Economic, Society, Environment) they are able to cover, the level of disaggregation and the time coverage of the data they provide.

3.1.1 GTAP - Centre for Global Trade Analysis

GTAP's goal is to improve the quality of quantitative analysis of global economic issues within an economy-wide framework. GTAP is a global network of researchers and policy makers conducting quantitative analysis on international policy issues. The centrepiece of the GTAP project is a global database describing bilateral trade patterns, production, consumption and intermediate use of commodities and services, mainly covering, therefore, the economic issues.

The database provided by GTAP may be purchased by anyone interested in using it. It's not downloadable free of charge; it is updated on a bi-annual cycle, is fully documented and supplies data at national level for more than 80 countries all around the world. While the GTAP database is constructed by the Centre for Global Trade Analysis, the data are supplied by the GTAP Network - consisting of individuals, agencies and institutions from around the world.

3.1.2 UN - United Nations

3.1.2.1 UN Economic and Social Affairs Division for SD

The Division for Sustainable Development provides leadership within the UN system on Sustainable Development. The context for the Division's work is the implementation of Agenda 21, the Johannesburg Plan of Implementation and the Barbados Programme of Action for Sustainable Development of Small Island Developing States.

The UN Economic and Social Affairs Division for SD developed a set of indicators for monitoring progress towards SD in order to assist decision-makers and policy-makers

at all levels. It tries to achieve the goal of promoting SD through technical cooperation and capacity building at international, regional⁴ and national level.

The set of indicators developed within UN is composed of indicators belonging to the Economic class, the Population class and the Environmental class to get a broader and more complete picture of societal development and they cover national level. However, an indication of time coverage is not provided.

3.1.2.2 UNEP - United Nations Environment Programme

The mission of UNEP is "to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations⁵".

Data at regional level are not available on line in UNEP databases.

3.1.2.3 UNECE - United Nations Economic Commission for Europe

The database provided by *UNECE (United Nations Economic Commission for Europe)* is described in detail in paragraph 3.2.1.6.

3.1.3 OECD - Organisation for Economic Cooperation and Development

OECD collects data mainly at international and national level, covering information about 30 countries belonging to the Organisation. A Secretariat (which collects data, monitors trends and analyses and forecasts economic developments, social changes or evolving patterns in trade, environment, agriculture, taxation and more) in Paris is the body which provides information and analysis flowing from OECD governments.

OECD has been one of the world's largest and richest sources of comparable statistical, economic and social data for more than 40 years. Its databases cover areas such as national accounts, economic indicators, the labour force, trade, employment, migration, education, energy, health, industry, taxation, tourism and the environment. Most of the research and analysis is published, but not all the data from OECD are available free of charge. There are several reports about statistics that contain data on the sectors described above, but they are available by payment only. An assessment of time coverage, instead, is not possible because it may radically vary depending on the covered sector. In addition, free available statistics date back only to few years ago.

The countries that signed the Convention on OECD are not representative of a single Continent (such as Europe or America), but are from all over the world and, thus, they do not include all the European nations.

3.1.4 IAIA - International Association for Impact Assessment

IAIA is the International Association for Impact Assessment, organised to bring together researchers, practitioners, and users of various types of impact assessment instruments from all parts of the world. IAIA provides an international forum for advancing innovation and communication of best practices in all forms of impact

⁴ The word region should be intended, in this context, as macro-areas (South East Asia, etc).

⁵ See also <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=43>.

assessment to further the development of local, regional, and global capacity in impact assessment.

IAIA believes the assessment of the environmental, social, economic, cultural and health implications for proposals is a critical contribution to sound decision-making processes, and to equitable and sustainable development. IAIA represents more than 100 countries all over the world but at the moment no internal database is available.

3.1.5 ISTS - Initiative on Science and Technology for Sustainability

The *International Initiative on Science and Technology for Sustainability (ISTS)* aims to enhance the contribution of knowledge to environmentally sustainable human development around the world. The goals it tries to achieve are:

- √ Expanding and deepening the research and development agenda of science and technology for sustainability;
- √ Strengthening the infrastructure and capacity for conducting and applying science and technology for sustainability;
- √ Connecting science and policy more effectively in pursuit of a transition toward sustainability.

One of the main initiative of ISTS is a web-based Forum (Forum on Science and Technology for Sustainability- FSTS -), which aims at facilitating information and knowledge exchange with the community involved with Science and Technology for Sustainability. However, at present, structured databases for external consultation have not been developed.

3.1.6 WB - World Bank

The aim of the *World Bank* (as declared in the mission statement) is to help people help themselves and their environment by providing resources, sharing knowledge, building capacity, and forging partnerships in the public and private sectors⁶.

Almost all the data reported in its web site are derived, directly or indirectly, from official statistical systems organised and financed by national governments. The World Bank, in collaboration with many other agencies is actively involved in improving both the coverage and effectiveness of these systems.

The *World Development Indicators 2004 (WDI)* –the main database provided by the World Bank - is the World Bank's premier annual compilation of data about development. WDI 2004 includes approximately 800 indicators at national level, organised in six sections: *World View, People, Environment, Economy, States and Markets* and *Global Links*, thus covering the Population class, the Economic class and the Environmental one according to the adopted Sustainability classes.

⁶ See <http://www.worldbank.org/>

BOX: Indicators contained within the WDI2004 database

The indicators contained in the WDI2004 database are the fruits of decades of work at various levels, from workers who administer censuses surveys, to committees of national and international statistical agencies, from non-governmental organisations to private sector and academic research institutes.

The WDI2004 is worth going deeper with the analysis and deserves a more detailed description.

Following the criterion which considers all the data relapsing in the main categories of Population class, Economic class and Environmental class, the information obtained by the databases was catalogued.

The percentage of data belonging to each class over the total (considered as 100%) was computed.

As an example, Formula 1 reports the calculation of the percentage of data in the Population class:

$$\begin{aligned}
 N^{\circ}data_{total} &= 895 \\
 N^{\circ}data_{population} &= 208 \\
 \%data_{population} &= \frac{208 \cdot 100}{895} = 23,24\%
 \end{aligned}
 \tag{1}$$

where

$N^{\circ}data_{total}$ Number of total data found in the database

$N^{\circ}data_{population}$ Number of data about Population

$\%data_{population}$ Corresponding percentage of data about population

Figure 1 and 2 show the distribution of data into the databases of World Bank. From these charts it is evident that data mostly gather in the Population class and in the Economic class. These can be considered as the two key drivers for defining the sustainable development of a nation/region according to the viewpoint of the World Bank, whose fields of research mostly concern Economy and Population.

Concerning time coverage, quite homogeneously all covered sectors present availability from 1960, except for the category "Other Environmental Issues", whose data collection started on 1980.

Figure 1: Percentage of data distribution in each sector: WDI 2004.

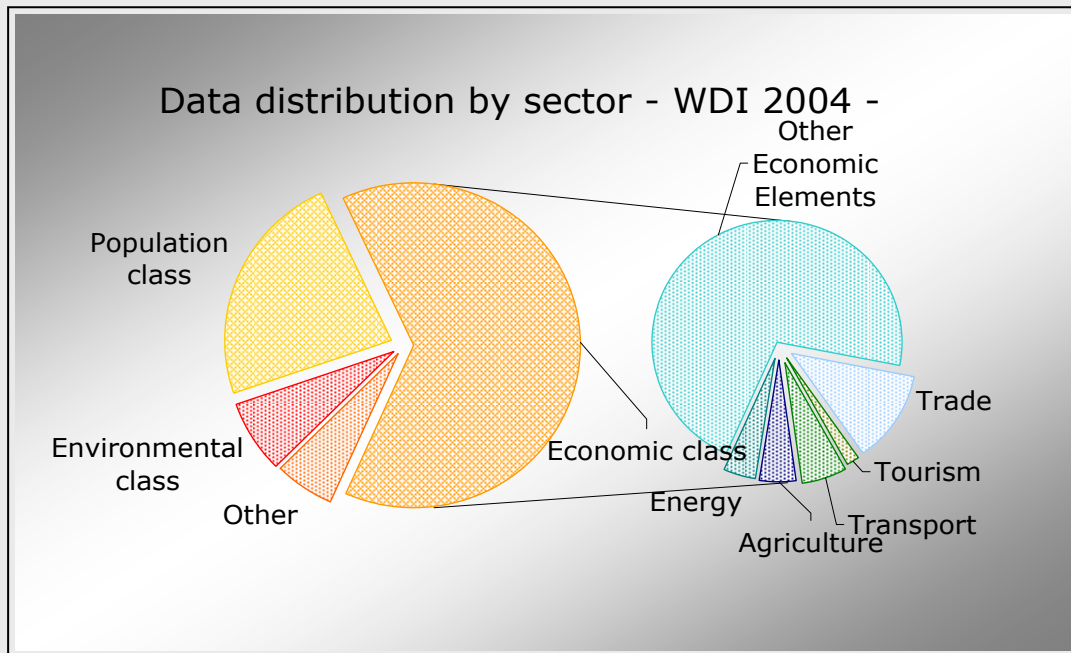
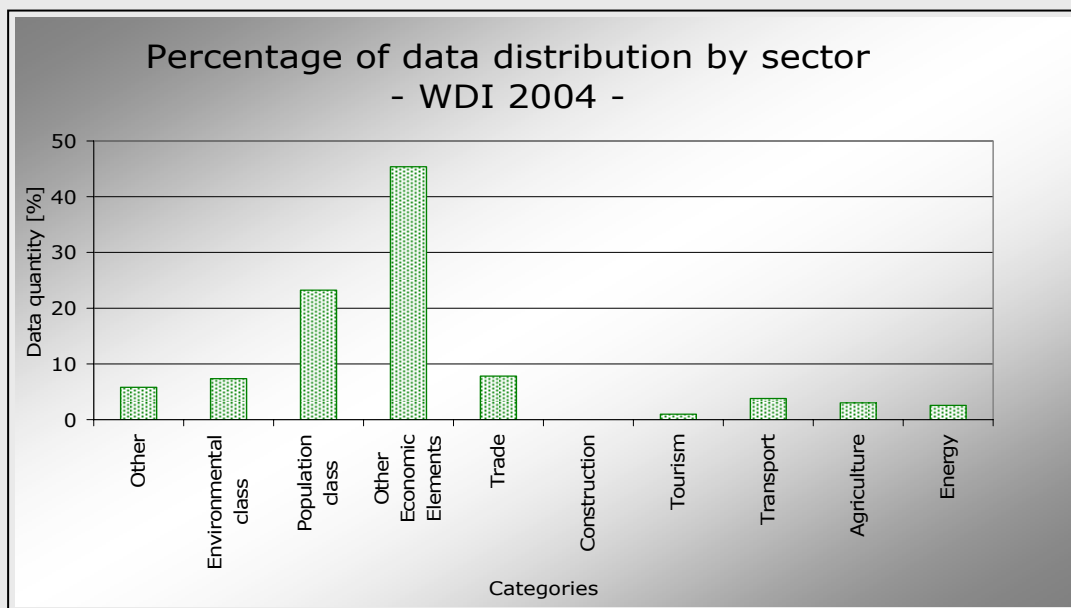


Figure 2: Data distribution in each sector: WDI 2004.



From a more in depth observation of the results presented in the charts, it is clear that the most critical sectors are the Environmental one (with an average percentage of data equal to 7,37%), the Tourism sector, the Transport Sector and Energy Sector for the categories belonging to the Economic class.

3.1.7 FAO - Food and Agriculture Organization of the United Nations

The *Food and Agriculture Organization of the United Nations (FAO)* leads international efforts to defeat hunger. Serving both developed and developing countries, FAO acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policies. FAO is also a source of knowledge and information. They help developing countries and countries in transition modernizing, improving agriculture, forestry and fisheries practices and ensuring good nutrition for all⁷.

FAO also provides databases at two different levels which are summarised in Table 2 and whose data are mainly available at national and international level.

Table 2: Summary of databases and information provided by FAO.

| Database | Information available from the database |
|------------------------|--|
| AQUASTAT | This database provides information on water and agriculture |
| FAOSTAT | Main database providing statistics on agriculture, nutrition, fisheries, forestry, food aid, land use and population |
| FAOSTAT - ProdSTAT | The production domain provides information over production and values for agricultural, fisheries and forestry commodities |
| FAOSTAT - Consumption | The agricultural consumption domain covers food commodities converted back into primary equivalents |
| FAOSTAT -TradeSTAT | Primary equivalent food and agriculture exports and imports. The Domain also covers trade in forestry commodities. |
| FAOSTAT - PriceSTAT | Statistics on Agricultural and Food Commodities Prices |
| FAOSTAT - SUA/FBS | Statistics about food balances and supply utilisation accounts |
| FAOSTAT - Resources | Statistics on resources distribution and labour in agriculture |
| FAOSTAT - FoodSecurity | Statistics related to food security |
| FIGIS | Network providing integrated fisheries information on production and trade of fisheries commodities |
| CountrySTAT | Experimental version for pilot countries: intended to offer a two-way bridge between national and international statistics on food and agriculture |

The FAOSTAT System constitutes the main database provided by the Organisation, and it is structured among an integrated “core” Database, and a variety of “satellite” databases, feeding and integrating it. The FAOSTAT database provides 3 mln. time series for approximately 200 commodities and 200 countries, covering a 15 year – time lapse.

Outside the FAOSTAT System we find other FAO-related Databases (implemented autonomously or in partnership with other International Organisations and research institutes) covering sectors like food quality, land, environmental impact. Among the most important, the following must be mentioned:

| | |
|----------|---|
| FISHERS | Statistics on people engaged in fishing |
| FISHSTAT | Fishery Statistics of various sorts |
| FORIS | Statistics on forest and forestry issues on a country by country basis including forest cover, plantations, volume and biomass and fire |

⁷ See also http://www.fao.org/UNFAO/about/index_en.html

| | |
|--|--|
| GLIPHA | Overview of spatial and temporal variation of quantitative information related to animal production and health |
| TERRASTAT | Land resource potential and constraints statistics at country and level |
| Codex Alimentarius Food Quality Control Database | Data on Pesticide residues in Food and Veterinary Drug Residue. |

3.2 European sources of data

The overview on European sources of sustainable development data for EU regions centres upon those institutes, organisations, networks and projects which are known for dealing with sustainability data and SD in general.

The first part of this section about European sources of data is devoted to European organisations and existing networks dealing with sustainable development.

Then, projects funded by EC are described synthetically, as many of them deal with sustainable development and might constitute a potential for creating databases/networks on SD indicators at many levels.

Afterwards, an exercise to highlight the real availability of information at NUTS 2 classification was assessed through the investigation of Eurostat Database REGIO. This exercise was carried out with the intent of analysing sustainability performances of EU regions by using European-level sources of information.

3.2.1 European organisations, institutions and networks

Many European organisations and institutes work at sustainable development. They usually aim at supporting SD and helping to achieve significant and measurable improvements of EU towards a more Sustainable Development path by providing timely, relevant and reliable information to policy making processes and to the public. Beside the supporting activities, these organisations generally own databases developed throughout the years which might be of interest for the present survey.

The first organisation here listed is Eurostat, as it plays an important role in providing data and statistics of many different sectors (Society, Economy and Environment) about European countries at different levels (national, regional, provincial).

The attention then turns to other important European organisations such as EEA, EIONET, EPER and UNECE, which, in a slight different way from Eurostat, might provide data about specific issues (either Society or Economy or Environment).

In the following paragraphs, the role each organisation covers in providing sustainability information is described in detail.

3.2.1.1 Eurostat

Since the early days of the European Community it was clear that all decisions on planning and development of Community policies should be based on reliable and comparable statistics. Hence, the European Statistical System (ESS) was gradually created, with the task of providing comparable statistics at European level. The

European Statistical System comprises Eurostat and the statistical offices, ministries, agencies and central banks that collect official statistics for EU Member States, Iceland, Norway and Liechtenstein. Eurostat doesn't collect data. This operation is done by the national statistical offices. Target of Eurostat and ESS is to lead the way in the harmonisation of statistics in co-operation with the national statistical authorities.

The ESS also co-ordinates its work with international organisations such as OECD, the UN, the International Monetary Fund and the World Bank. Eurostat also works with countries outside the EU. One of the objectives of Eurostat is also to improve the statistical systems in candidate and developing countries.

Data at national level are generally available for most of the EU-25 countries, for Candidate Countries and for many other countries which belong to Central and Eastern Europe, to the Mediterranean and African Area, to the group of the New Independent States of the former Soviet Union and, in some cases, to United States and Japan.

Eurostat provides furnished databases which are completely available free of charge from Internet.

These databases contain information at different administrative levels and cover many different sectors.

The full list of the sectors covered by Eurostat databases is reported below with a small explanation of their content:

- √ Key indicators on EU policy: this section contains information at national level about the indicators contained in the Communication by the EC (SEC(2005) 161 final);
- √ Structural indicators: "The Structural Indicators" database covers the six domains of General Economic Background, Employment, Innovation and Research, Economic Reform, Social Cohesion and Environment at national level;
- √ Sustainable development: according to the EU Sustainable Development Strategy, adopted by the European Council in Gothenburg in June 2001, which tries to achieve the goal of reconciling economic development, social cohesion and protection of the environment, the database aims to present a set of indicators to monitor, assess and review the EU Sustainable Development Strategy. These indicators are organised within 10 themes reflecting the political priorities of the Strategy, and the related political commitments. The themes are further divided into sub-themes and 'areas to be addressed'. The sub-themes usually monitor the progress towards the headline objectives while the 'areas to be addressed' facilitate a more detailed and diversified analysis of background factors in each theme;
- √ General and regional statistics: this database, better known as "REGIO", supplies data for most of the EU-25 countries and all these data are harmonised. The REGIO DB covers the main aspects of economic and social life in the European Union, classified at the first three levels of the NUTS Nomenclature;
- √ Eurostat also provides a database at national level for Europe (EU25 plus Candidate Countries) and the main sectors covered are economy and finance, population and social conditions, industry, trade and services, agriculture, forestry and fisheries, external trade, transport, environment and energy, science and technology.

The following paragraphs present a more detailed view of Eurostat databases. In the first paragraph the total data availability is analysed: databases are considered jointly and no distinction is made amongst them. This paragraph, in fact, aims to show the entire Eurostat database potential.

The second paragraph describes data availability at national level, while, at the end, regional data availability is presented. This research becomes necessary when trying to understand how much and which kind of information is made available at different administrative levels.

Eurostat Data at a glance

In this paragraph the potential of the whole Eurostat database is described. The analysis aims at giving an overview of the total quantity of data the organisation is able to provide.

In order to compute the percentage of data referred to different sectors (Society, Economy and Environment), it is necessary to consider the total quantity of information (both at national and at regional) as 100% and then to calculate the percentage of data belonging to each sector.

Figures 3 and 4 show the distribution amongst the considered sectors

Figure 3: Pie chart representing data quantity-national level- available for each sector.

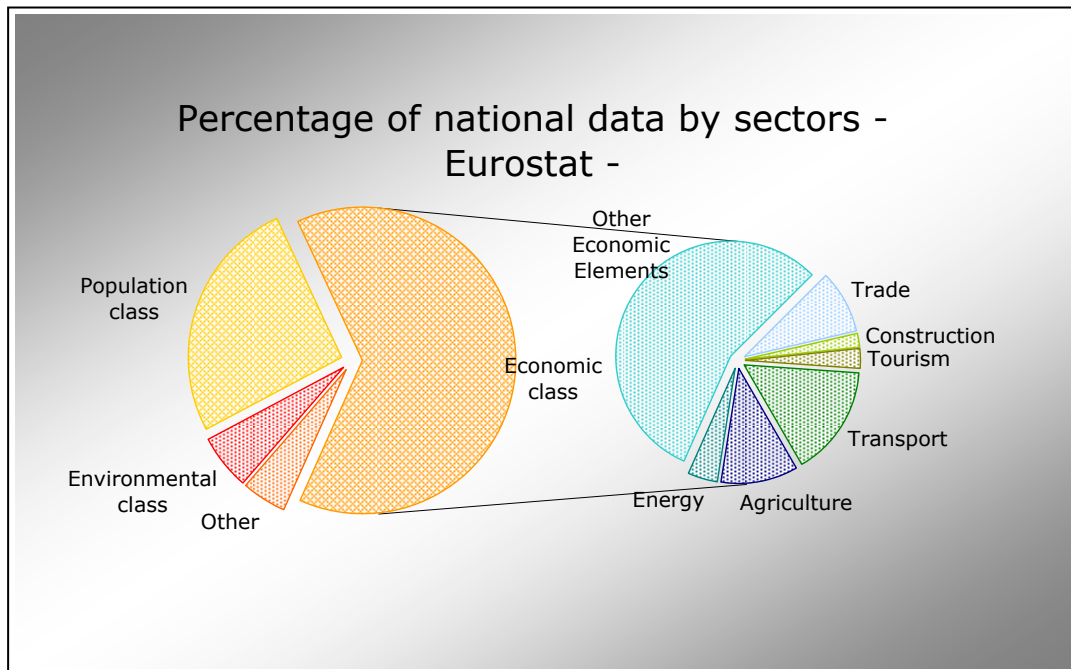
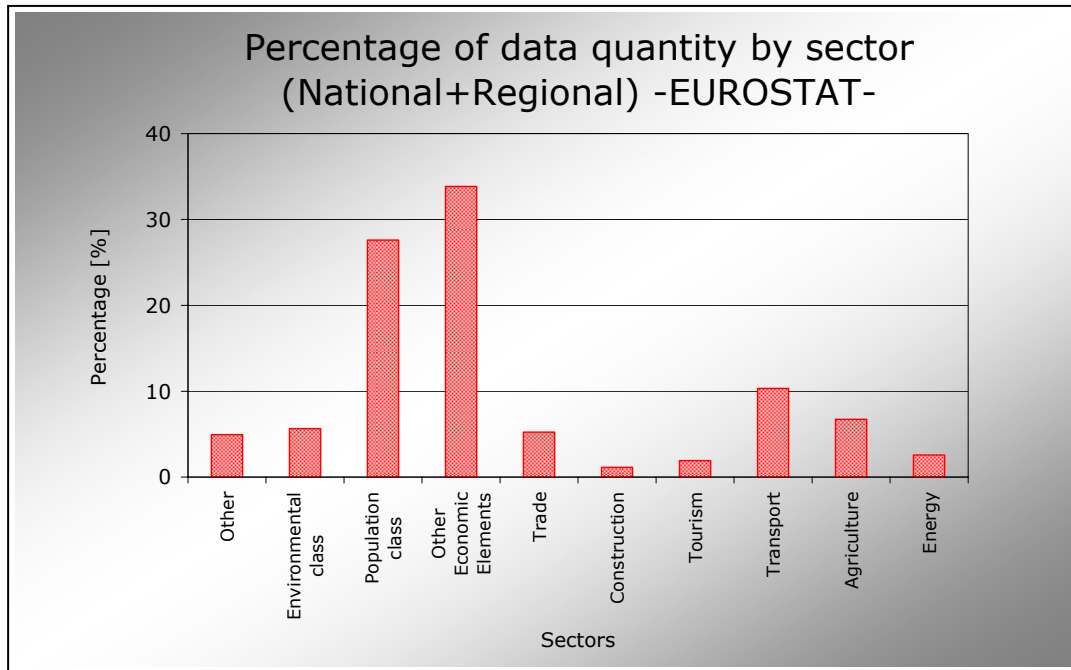


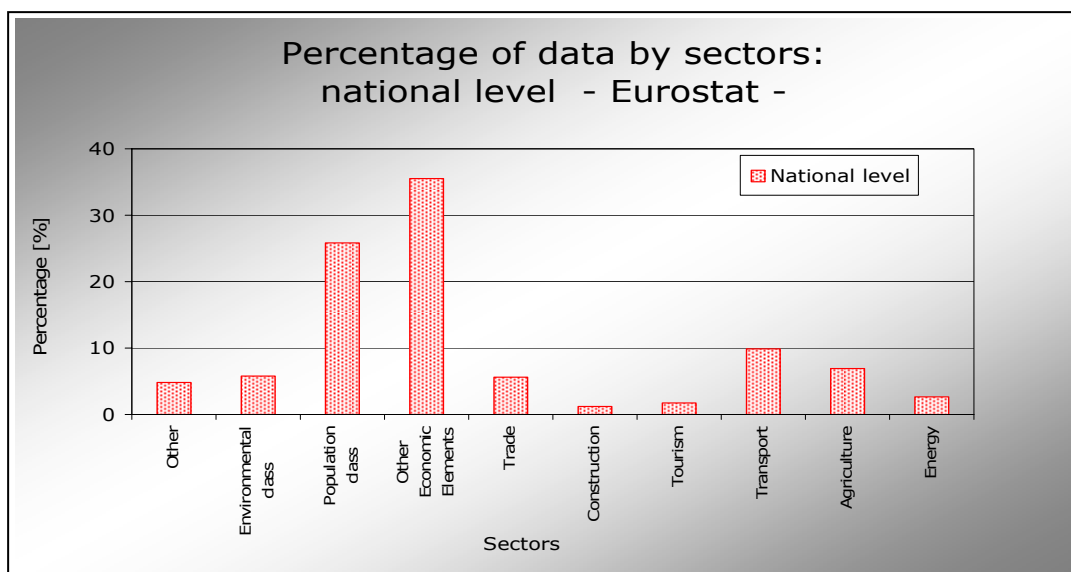
Figure 4: Data -national and regional- available for each sector.



Also in the case of data from Eurostat, the most populous sector is the Economic class, which covers almost the 63% of available data. Amongst economic data, Other Economic Elements (including data about GDP, taxes, finances) represent more than 30% of all data; Transport sector reaches the 10%, data on Agriculture and Trade represent the 5-6% of the total, while for the other economic sectors - Construction, Tourism and Energy - the share is about 2-3%. Data about Population class are numerous ($\approx 27\%$ over the total), while the Environmental class remains a critical sector, with a percentage of data quantity equal to 5,7%.

National level

Figure 5: Data quantity at national level available for each sector.

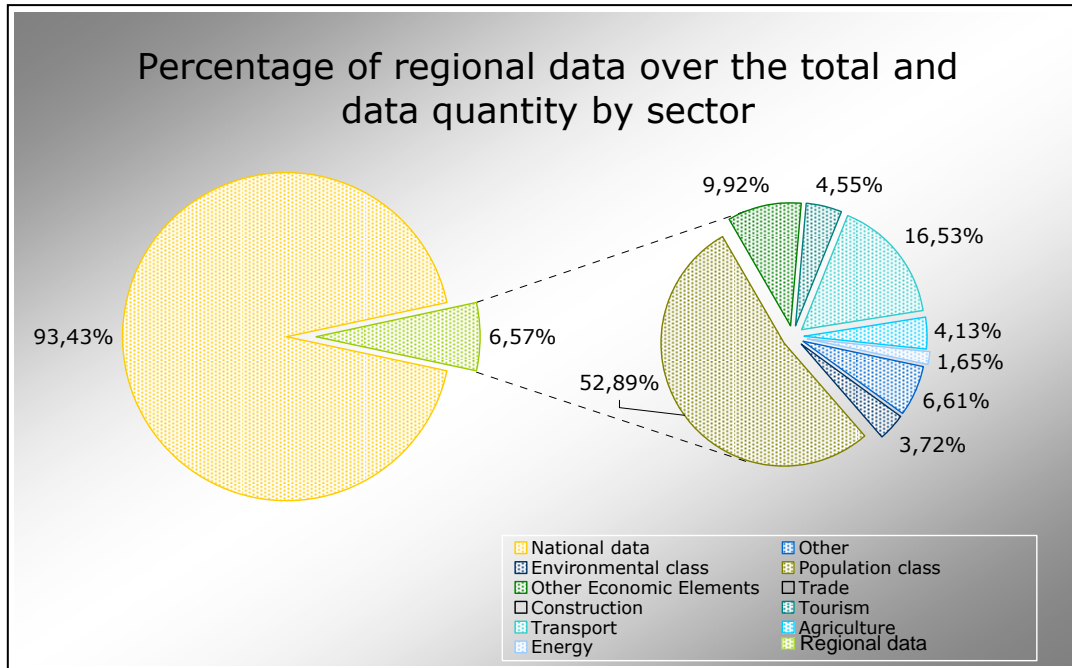


The national level generally reflects the data distribution observed at the aggregated level: the Economic class is the most populous one ($\approx 63\%$), with a great share on

Other Economic Elements (National accounts, GDP, taxes, finances, etc). Population class covers about the 26% over the all data, while Environmental class still remains critical as it counts a percentage of data equal to 5,7% over the total.

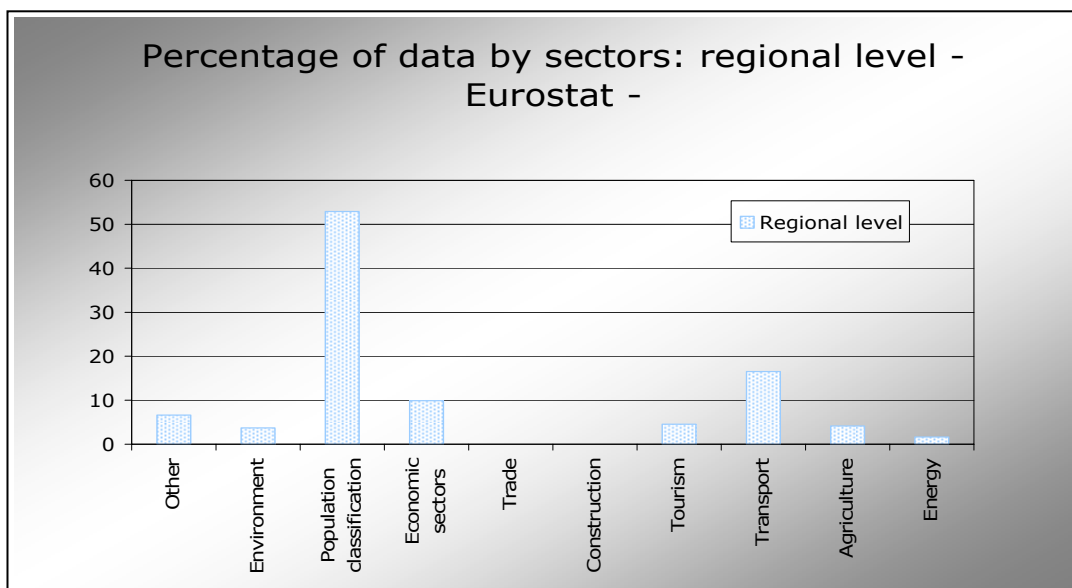
Regional level

Figure 6 Data quantity – regional level – compared with the total available data quantity: Eurostat database.



The percentage of data available at regional level is pretty low ($\approx 6,5\%$ over the total), showing a general lack of harmonised and homogenised regional information, useful for comparing regional performances towards Sustainable Development. The following Figure shows the distribution of data available at regional level by sector.

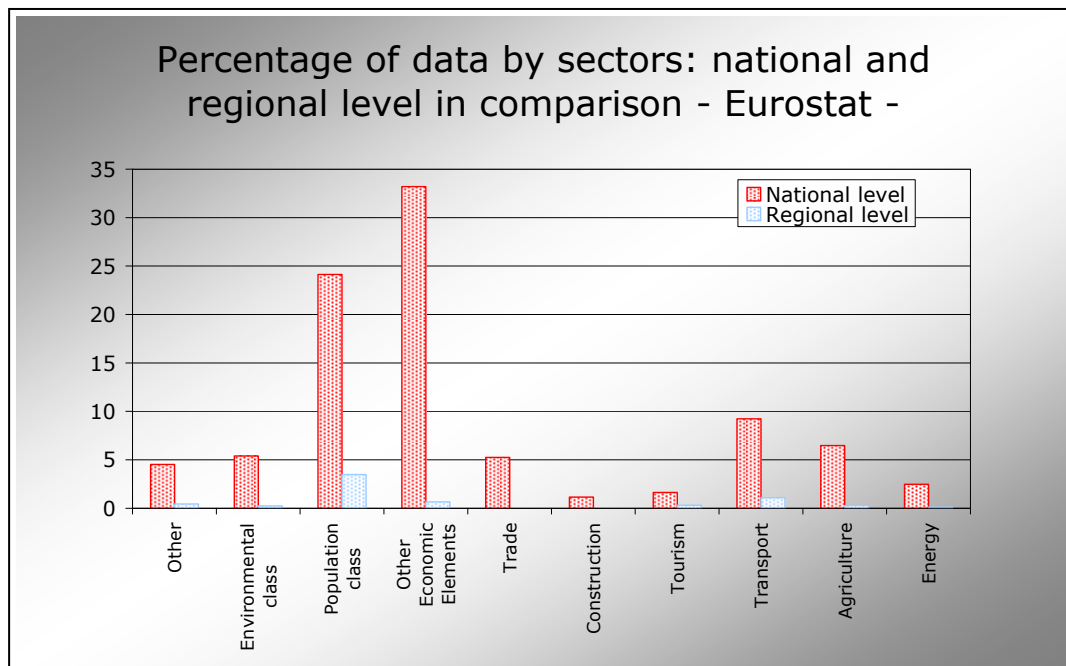
Figure 7: Percentage distribution of regional data by sector: Eurostat database.



It can be noticed how the broadest data quantity is available for the Population class. This sector is immediately followed by Economic class, even if at regional level no data about Trade and Construction are listed. Population data are present in most databases in a disaggregated way. Remarkably, nearly all European databases present a lack of environmental data for regional level.

Data at national and regional level are compared in Figure 8. The total quantity of data (national + regional) is here considered as 100% and, then, data belonging to each category are computed as a percentage over the total.

Figure 8: National and regional data in comparison: Eurostat database.



When comparing data available at national and at regional level (considering the total –national + regional – as 100%), it is clear how meagre regional data share is. Data quantity at regional level for each sector never exceeds 5% of the total.

Eurostat database presents a high variability in the time coverage of data collection. In fact, we can find indicators belonging to Population class tracking back to the beginning of the 20th Century, while for Economic class, the oldest data are available since 1929. Data availability of the Environmental class is instead oscillating, generally starting by 1970's: however for some areas the collection is more recent.

The reason behind this great variability is due to the particular nature of the Eurostat DB, which doesn't collect data autonomously, but provides an harmonization of data coming from national statistical offices. In this sense, Eurostat time coverage reflects national and regional statistical systems data availability.

Depicting sustainability performances of EU regions applying Eurostat database

As a concluding remark concerning Eurostat data usability to depict the sustainability performances of EU regions, the Sustainable Development Indicators, SDI, - as defined by the EU Communication "Monitoring the implementation of the EU Sustainable Development Strategy" SEC(2005) 161 - were assessed against the

availability of the data required for their calculation at NUTS 2 classification applying the Eurostat REGIO databases. The aim of this exercise is to highlight the real availability of information at NUTS2 classification to obtain a picture of the sustainability performances of EU regions using European-level sources of information.

Table 3 shows for how many EU regions these indicators (or their proxy) are available.

Table 3: Results of data analysis according to indicators given in SEC(2005) 161.

| | SD Indicator (1st level) | n° EU Regions with data | % of EU Regions over the total |
|-------|--|-------------------------|--------------------------------|
| 1 | Growth rate of GDP per capita | 289 | 97,6 |
| 2 | At-risk-of-poverty rate after social transfers | National level | - |
| 3 | Current and projected old age dependency ratio | National level | - |
| 4 | Healthy life years at birth by gender | National level | - |
| 5a | Total greenhouse gas emissions | National level | - |
| 5bis | Gross inland energy consumption by fuel | 277 | 93,6 |
| 6 | Total material consumption | Not available | - |
| 6bis | GDP at constant prices | 289 | 97,6 |
| 6tris | Domestic material Consumption and GDP at constant prices | National level | - |
| 7 | Biodiversity index | Not available | - |
| 7bis | Population trends of farmland birds | National level | - |
| 7tris | Fish catches from stocks outside of 'safe biological limits' | National level | - |
| 8 | Energy consumption by transport and GDP at constant prices | National level | - |
| 9 | Level of citizen's confidence in EU institutions | National level | - |
| 10 | Official development assistance (ODA) as % of GNI | National level | - |
| | Total number of regions (NUTS2 classification) in EU | 296 | 100 |

The table shows that only 3 out of the 12 indicators are available at regional level. Furthermore, the 3 indicators are not available for all the regions, but in general for about 90-95% of them. Moreover, from Table 4 it can be seen that the SD indicators that are available at regional level are the simplest to calculate and to collect data for (Growth rate of GDP per capita, Gross inland energy consumption by fuel and GDP at constant prices). The other indicators, harder to define, are only supplied at national level.

Afterwards, a sample of 10 regions among EU and Candidate Countries to EU access was chosen to test the availability of the indicators given in SEC(2005) 161: Province of Limburg (Netherlands), Lombardia Region (Italy), Region of Antalya (Turkey), Province of Pardubice (Czech Republic), Denmark, Île de France Region, Region of Murcia (Spain), Oberbayern (Germany), Severovýchod (which is the region where Pardubice is located), and another region from Northern Italy (Valle d'Aosta). These regions were chosen to have a sample that could cover different socio-economic aspects of EU regions from North to South.

The indicators were taken as defined in the first level of the Communication of the EC and their availability at regional level was checked. When the exact indicator was not available, a proxy one was chosen or calculated if possible.

The results highlighted by this exercise have then been summarised into Table 4.

Table 4: Results of data analysis according to indicators given in SEC(2005) 161.

| Indicators | | Sample of regions | | | | | | | | | |
|------------|--|-------------------|-------|----|------|------|------|------|------|-----|------|
| | | Cz05 | Cz053 | Dk | De21 | Es62 | Fr10 | Itc2 | Itc4 | N42 | Tr61 |
| 1 | Growth rate of GDP per capita | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 2 | At-risk-of-poverty rate after social transfers | | | | | | | | | | |
| 3 | Current and projected old age dependency ratio | | | | | | | | | | |
| 4 | Healthy life years at birth by gender | | | | | | | | | | |
| 5a | Total greenhouse gas emissions | | | | | | | | | | |
| 5bis | Gross inland energy consumption by fuel | | | ✓ | | ✓ | ✓ | ✓ | ✓ | | |
| 6 | Total material consumption | | | | | | | | | | |
| 6bis | GDP at constant prices | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 6tris | Domestic material Consumption and GDP at constant prices | | | | | | | | | | |
| 7 | Biodiversity index | | | | | | | | | | |
| 7bis | Population trends of farmland birds | | | | | | | | | | |
| 7tris | Fish catches from stocks outside of 'safe biological limits' | | | | | | | | | | |
| 8 | Energy consumption by transport and GDP at constant prices | | | | | | | | | | |
| 9 | Level of citizen's confidence in EU institutions | | | | | | | | | | |
| 10 | Official development assistance (ODA) as % of GNI | | | | | | | | | | |

Cz05 = Severovýchod (Nuts 2)

Cz053 = Pardubický (Nuts 3)

Dk = Denmark (Nuts 2)

De21 = Oberbayern (Nuts 2)

Es62 = Región de Murcia (Nuts 2)

Fr 10 = Île de France (Nuts 2)

Itc2 = Valle d'Aosta (Nuts 2)

Itc4 = Lombardia (Nuts 2)

N42 = Limburg (Nuts 2)

Tr61 = Antalya (Nuts 3)

Again, from Table 4, the situation of regional data availability really looks close to the one presented above: the indicators which are available at regional level are the simplest to define and are generally available for most of the chosen regions (except for Antalya, which isn't covered by any of the indicators). The indicator "gross inland energy consumption" (which is, exactly, the "electrical inland energy consumption") is available even for less regions (Italy, France, Spain and Denmark).

3.2.1.2 EEA - European Environmental Agency and EIONET - European Environmental Information and Observation Network

The *EEA* is the EU agency responsible for producing environmental information on the state and trends of the environment in Europe. This aim is accomplished through the collection of environmental data from the Member Countries, other EU institutions and international organisations. Based on the compiled information, the EEA produces analysis and assessments on various environmental issues.

To achieve its goals, the EEA collects information through *EIONET* (which stands for *European Environmental Information and Observation Network*). EIONET is a network of environmental bodies and institutions active in the EEA member countries. It is made up of *national focal points (NFPs)*, *national reference centres (NRCs)* and *European topic centres (ETCs)*. Data EIONET provides generally belong to the Environmental class, are collected by institutes of European countries and are available at national level mainly, while very few data are available at regional level.

The EEA produces reports on the state of the environment in order to assist the European Commission in its attempt to move towards sustainability. However it must be kept in mind that it has an environmental and not an economical approach with regard to its work and, therefore, it is not able to provide data concerning all the aforementioned areas of interest.

The EEA website provides several theme sections relevant at national level. The web pages offer access to all available reports and indicators related to the corresponding theme.

EEA supplies indicators regarding *infrastructure (transport⁸, housing⁹)*, *energy¹⁰* and *emissions¹¹*, *land-use¹²* and *waste¹³*.

3.2.1.3 EPER - European Pollutant Emission Register

EPER is the *European Pollutant Emission Register* - the first European-wide register of industrial emissions into air and water, established by the EC (2000). The main objective of EPER is to fulfil the public's right to know about the releases of pollutants in their neighbourhood, but it also provides emissions data on a national or European scale. It specially enables the public to view data on emissions of key pollutants from large industrial point sources in the European Union at a national level. It is hosted by the European Environmental Agency..

Data about emissions are generally submitted by individual facilities to the relevant national authorities which check data quality from all facilities in their country. The results are then forwarded to the EC and the EEA which, then, compile and disseminate them through the EPER web site.

Data from EPER are organised by country, by industrial activity (approximately 9,400 large and medium-sized industrial facilities in the EU 15 pre-2004 Member States, as well as in Norway and Hungary) and type of pollutant. Most of data availability starts from the database creation, i.e. 2001

3.2.1.4 CORINE Land Cover - Co-ordination of information on the environment

The *CORINE Land Cover database* (2000 -EU) which stands for *Co-ordination of information on the environment* provides a pan-European inventory of biophysical

⁸ See <http://dataservice.eea.eu.int/dataservice/available2.asp?type=findkeyword&theme=transport>

⁹ See http://themes.eea.eu.int/Sectors_and_activities/households

¹⁰ See http://themes.eea.eu.int/Sectors_and_activities/energy

¹¹ See http://themes.eea.eu.int/Specific_media/air, http://themes.eea.eu.int/Environmental_issues/air_quality, http://themes.eea.eu.int/Environmental_issues/climate,

<http://dataservice.eea.eu.int/dataservice/available2.asp?type=findkeyword&theme=air>

¹² See http://themes.eea.eu.int/Specific_areas/urban, http://themes.eea.eu.int/Sectors_and_activities/agriculture, <http://dataservice.eea.eu.int/dataservice/available2.asp?type=findtheme&theme=agriculture>

¹³ See http://themes.eea.eu.int/Environmental_issues/waste

land cover, using a 44 class nomenclature. The initiative aims to provide the European policy-makers with data on land cover which are consistent and comparable across EU, and to prepare a land cover database for the 25 members of EU and other European countries, at a scale 1:250 000, using 44 classes of the 3-level CORINE nomenclature ¹⁴.

The new version of CORINE, updated in May 2005, differs from the previous one, as new countries have been added (the previous version provided land cover data of 20 countries), the geometry of dataset has been improved by using ArcGIS9 and it has been harmonised with standard EEA reference grids. The resolution of the raster data is 250 x 250 metres, compatible with standard EEA reference grids (as released on 08 April 2005).

The geographical coverage of CORINE Land Cover includes the EU 25 Member States with the exception of UK and Cyprus and the Candidate Countries with the exception of Turkey.

3.2.1.5 AER - Assembly of European Regions

The *Assembly of European Regions (AER)* was created in 1985 and has now become the political voice of the regions and the key partner for the European and international institutions on every issue of regional competence. The AER promotes subsidiarity and regional democracy and enables the regions to form the essential link between the European Union and the citizens¹⁵. It supports the diversity of the regions and translates this diversity into a strength. The AER currently has 250 member regions from 30 European countries and 12 interregional organisations.

The AER provides a database of all the European regions belonging to the organisation and this database is composed of three sections:

1. Visiting cards of European Regions: this section provides maps and lists of regions by country, synoptic tables on regionalisation in Europe (giving key information -surface area, population, active population, GDP, etc- on the country and presenting the current political system in various European countries) and The Directory of European Regions (that gives information on nearly 300 European regions - key figures, sectors of activity, main assets, interregional cooperation agreements, contacts).
2. Interregional Partnership Pool: it aims to help the leaders of interregional projects in their search for partners, in particular at European level.
3. European, Interregional & Regional Links: this AER database of useful links aims at giving regional actors, particularly from Member Regions, quick access to information at European level in their field of competence or, in general, on European institutions, programmes, grants and loans, directories, data bases, etc; stimulating the development of interregional cooperation; making research on the Web in regional or interregional matters easier for the public.

¹⁴The nomenclature distinguishes 44 classes, which are grouped in a 3-level hierarchy reflecting both physical and physiognomic characteristics. The main level categories are: artificial surfaces (cities, etc.), agricultural areas, forests and semi-natural areas, wetland and water bodies. Three level nomenclature is identical for all countries.

¹⁵ See <http://www.a-e-r.org>

3.2.1.6 UN - United Nations:UNECE - United Nations Economic Commission for Europe

The organisation was set up in 1947 by ECOSOC (Economic and Social Council). It is one of five regional commissions of the United Nations. Its primary goal is to encourage greater economic co-operation among its Member States.

UNECE has a database covering 55 ECE (*Economic Commission for Europe*) member countries belonging to Europe, but also to Asia or North America. It focuses on economic analysis, environment and human settlements, sustainable energy, trade, industry and enterprise development, timber and transport and provides data and statistics at national level only.

Available data from UNECE are grouped into seven different databases which are listed in Table 5.

Table 5: Databases provided by UNECE and their main characteristics.

| Database | Information provided by the database | Characteristics of the database |
|------------------------------------|---|--|
| Statistical Division's database | Set of economic indicators for countries of the UNECE region | Data ready for international comparison and immediate analytical use, easy to find, updated on a daily basis and the content will progressively be increased to cover more domains |
| Trends in Europe and North America | Statistical information on the 55 member countries of the United Nations Economic Commission for Europe | Data provided by this yearbook (mainly covering the year 2001) cover Population class, Economic class and Environmental class |
| Human Settlements Database | Data on housing and buildings | Data comes from national and international sources |
| Demographic Database | Basic demographic data and indicators on the countries of Central and Eastern Europe, including all the members of the Commonwealth of Independent States | - |
| Gender Statistics Database | Central database for sex-disaggregated social data | This database provides the Common Gender Indicators for the ECE region and the detailed data series which are used to calculate these indicators. |
| Robotics | Index orders for industrial robots | - |
| Gas Centre Database | Information on most aspects of interest for the actors of market-oriented gas industries and economies in transition | - |

As for the World Bank, the UNECE database is investigated more in detail because it provides a complete view on most of the subjects of interest for the survey.

Figure 9 shows the results obtained for data distribution among different sectors: still, the most populous classes are the Population class and the Economy class, where data are mostly relapsing into the category of Construction, immediately followed by Other Economic Elements. These results clearly reflect the fact that UNECE focuses its research objectives on population and human settlements (Population class) and on economic analysis (Economic class), thus supplying data mostly relapsing in these categories.

Time coverage provided by UNECE databases depends on their establishment date: the "Trends in Europe and North America" database, in fact, has been established in the mid 90's, and covers the time lapse from 1995 on; all the others, instead, provide coverage starting from 1980.

Figure 9: Percentage of data distribution in each sector: UNECE.

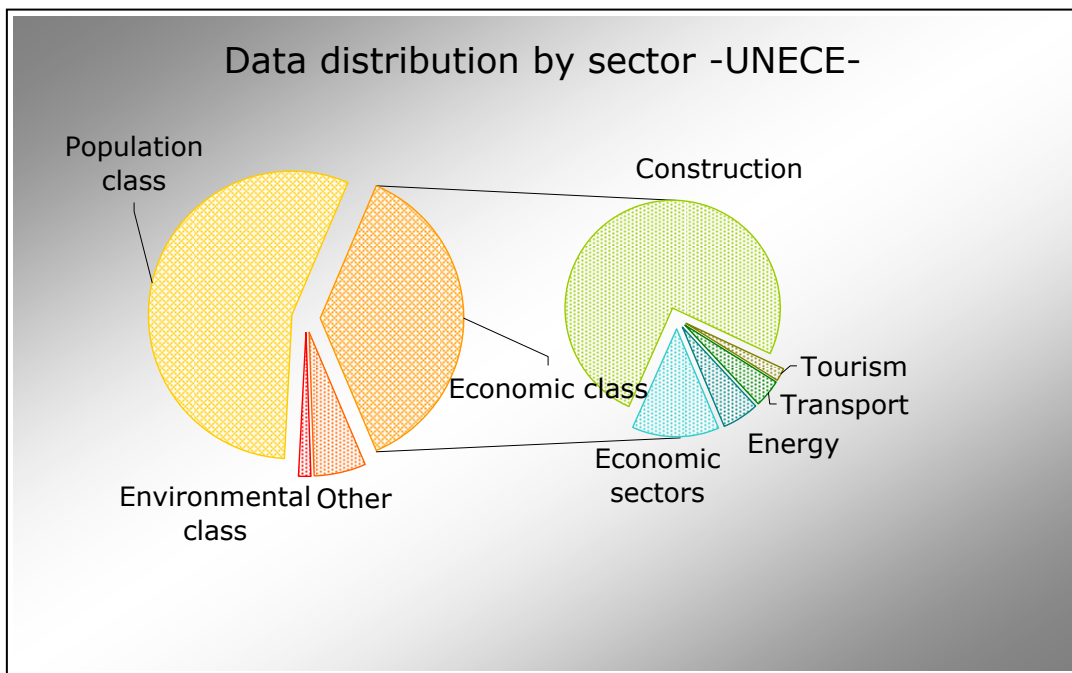
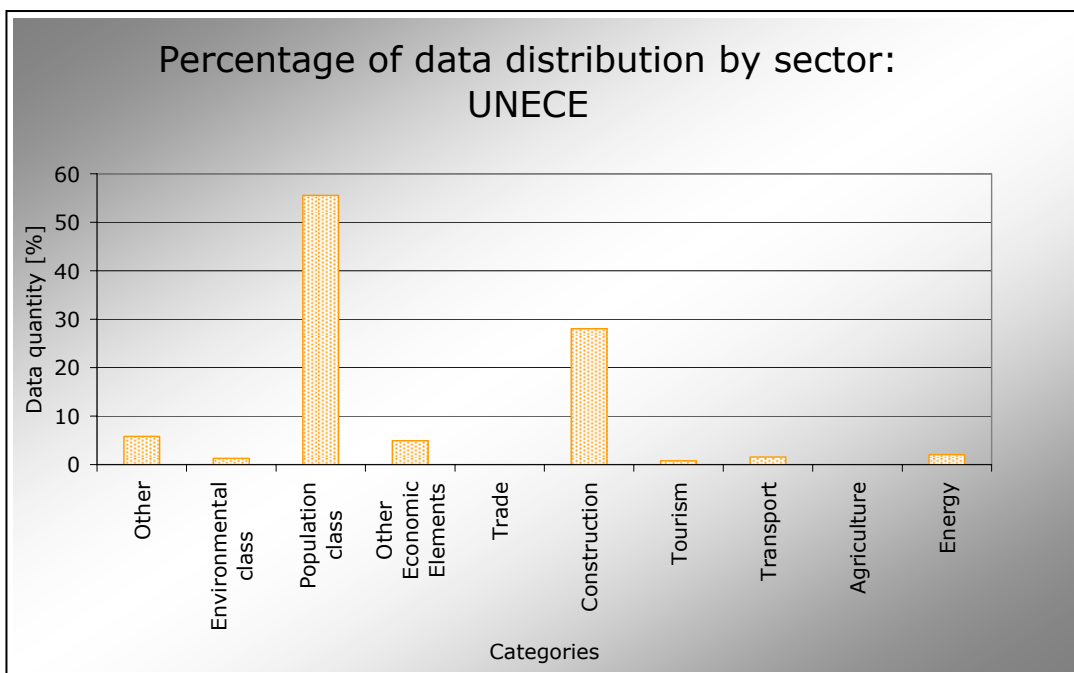


Figure 10: Data distribution in each sector: UNECE.



3.2.1.7 ESPON 2006- European Spatial Planning Observatory Network

ESPON 2006 Programme aims to provide the EC and the Member States with:

- √ A diagnosis of the main territorial trends at EU scale as well as the difficulties and potentialities within the European territory as a whole.
- √ A cartographic picture of the major territorial disparities and of their respective intensity.

- √ A number of territorial indicators and typologies assisting a setting of European priorities for a balanced, polycentric and enlarged European territory.
- √ Some integrated tools and appropriate instruments (databases, indicators, methodologies for territorial impact analysis and systematic spatial analysis) to improve the spatial co-ordination of sector policies.

Even if researches and studies on spatial development and planning at national, regional and local level are already existing, they cover only smaller parts of EU territory; ESPON 2006 Programme aims at strengthening, enlarging and clarifying the EU territorial dimension. The projects launched under the ESPON programme follow an integrated approach, covering a wide range of issues and are (therefore) of different nature, stretching from scientific methods and databases via strategic projects to institutional and instrumental questions¹⁶.

ESPON shall use already available methods and results with a focus on the European dimension, but also innovative common methods and approaches shall be elaborated and implemented when necessary, for example for the measurement of spatial integration or parity of access. Gaps on models and methods should be filled by common efforts.

Data Navigator

Among ESPON projects, the project Data Navigator is of great interest as it provides a powerful research engine of the principle sources and contact points, structures and links. These sources offer potential support to the tasks of the ESPON covering national and regional as well as European and trans-national levels. The principal product of this project is an overview which helps the search for relevant territorial data and maps across EU. It is a compilation of 21 inventories, one from each of the 15 Member States as well as from Switzerland and Norway, 1 covering the European and trans-national level and three inputs dealing with relevant data in accession and neighbouring countries, covering the Baltic Area, the Cadses (Central, Adriatic, Danubian and Southern Europe) Space and the Mediterranean Basin.

By choosing some parameters (Country, Theme, Sub-theme, NUTS classification, etc), the Data Navigator supplies a card with essential information about available data (country, nomenclature, source, Year/periodicity, NUTS and existence of MAP) on the subject and the link to the database.

Data Navigator doesn't provide a database which could offer harmonised, homogenised and comparable data, but links to data sources and contacts to get the necessary information.

Other projects

Other projects launched under ESPON 2006 are of extreme interest and worth monitoring, as they aim at exploring regional realities in terms of SD, thus providing a basis for harmonised and homogenised databases. Still they have to face the constraint of finding the necessary data and of building ad hoc databases, as they often get data from different sources (e.g. national statistical offices, regional divisions, etc) and, therefore, data are not compatible with one another (e.g. the definition of a sector, will change from one dataset to the next). As most of these projects are still at the beginning and they are still in progress, a "real" downloadable database is not available yet.

¹⁶ See <http://www.espon.eu/>

3.2.1.8 TIAS - The Integrated Assessment Society

The Integrated Assessment Society (TIAS) is a not-for-profit-entity created to promote the community of inter-disciplinary and disciplinary scientists, analysts and practitioners who develop and use integrated assessment instruments. The goals of the society are to nurture this community, to promote the development of Impact Assessment and to encourage its wise application. A data source is not ready yet but it will be available soon.

3.2.2 EC Projects

Monitoring SD at regional level is one of the main challenges of the European Commission, which recognised that "Europe's regions need to respond to meet the changing requirements and opportunities available in a global economy without damaging the economic, environmental and social fabric of their region¹⁷".

Because of this interest, an overview of other projects funded under both the 5th Framework Programme and the 6th Framework Programme is given in order to understand how projects dealing with sustainability face data availability.

3.2.2.1 IASON - Integrated Assessment of Spatial Economic and Network Effects of Transport Investments and Policies

The project IASON (funded by European Commission under the 5th Framework Programme) aims at orientating judgments about alternative transport investment options; at developing criteria for cross-border investment and compensation schemes; and at allowing comparisons amongst policies aspiring to stimulate the development in peripheral regions, in order to alleviate congestion and traffic problems in Central Europe.

The database developed in IASON project rests upon the system of regions defined on the Level 3 of the NUTS classification for EU regions and equivalent regions.

At the regional level data are divided into two main groups: Regional economic data, which include GDP and GVA by sector, employment and unemployment, interregional commodity, passenger flows and regional transfers; and Regional attractiveness data, including data mainly about quality of life. The above data groups are disaggregated in Economic Sectors, Population Cohorts and Labour Force. The main data sources for IASON project are Eurostat databases and national statistical offices, thus revealing again that finding a unique EU data source is hardly feasible.

3.2.2.2 SENSOR - Sustainability Impact Assessment: Tools for Environmental, Social and Economic Effects of Multifunctional Land Use in European Region

SENSOR is a project funded under the 6th Framework Programme.

As one of the core concerns of policy decisions is sustainability of land use in European regions, there is an increasing need of robust tools for the assessment of different scenarios' impacts on the environmental and socio-economic sustainability. This would help implementing EU policies designed to promote and protect multifunctional land use.

¹⁷ See <http://www.sustainableregions.net/site/?category=2>

The technical objective of SENSOR is to build, validate and implement sustainability impact assessment tools (SIAT), including databases and spatial reference frameworks for the analysis of land and human resources in the context of agricultural, regional and environmental policies. SENSOR will focus on European sensitive regions, mostly those of the Acceding Countries, as accession raises significant questions for policy makers concerning the socio-economic and environmental effects of existing and proposed land use policies.

SIAT will use the statistical and spatial data collected by European and data agencies, but as its starting date was December 2004 and its end is foreseen by December 2008, there is nothing available on line yet.

3.2.2.3 ECODEV - Sustainable development at local and regional levels: methods and techniques to support Ecosites and monitor urban sustainability

The main objective of this project is to produce monitoring tools for the evaluation of sustainable development at local level, with emphasis on urban and regional processes.

ECODEV will evolve at European, national and regional/local level.

The ECODEV component on Eco-sites will support a European network of Eco-sites that are practical examples and tools to implement sustainable development at local level: associations of environmental protection, research and economic activities.

The ECODEV component on Sustainable Urban and Regional Development aims at facilitating the inclusion of criteria of sustainability in urban and regional development policies, by developing and implementing integrated approaches for the environmental protection and for the assessment of Structural Funds programmes, plans and projects. This component supports the definition and preparation of the Thematic Urban Strategy of the 6th Environmental Action Plan and complements the ESPON Programme set by Directorate General REGIO.

Among the deliverables planned to be carried out within this project (which is still in progress) of great interest for this paper's purposes are:

- √ A GIS database of land use types, transport networks, environmental indicators, and socio-economic data for about 40 European urban areas and regions
- √ Technical report with definition, detailed specifications (guidelines manual) and tables of indicators of sustainable development at urban and regional level.

3.2.2.4 MATISSE - Methods and Tools for Integrated Sustainability Assessment

MATISSE project, supported under the 6th Framework Programme, aims at assessing sustainability at European level, using the best available ISA-tools (Sustainability Impact Assessment tools) – models - in a more advanced manner, but also developing new ISA-tools in a process of co-production with stakeholders.

In order to reach this objective, the core activity of the MATISSE project is to improve the tool kit available for conducting Integrated Sustainability Assessments. A greater attention will be given to the development of ISA-modelling tools in relation to ISA participatory methods.

The improved tools portfolio will be evaluated and improved through application to a set of European case studies selected in order to deliver case-specific sustainability assessments useful to policy makers and other stakeholders.

MATISSE aims to contribute to the longer-term development of ISA as a generic, strategic, multipurpose approach to the integrated analysis and assessment of sustainability strategies and policies. Results from the case studies form the input to the further development of existing and new ISA-tools, which will be developed throughout MATISSE's life cycle.

3.2.2.5 I.Q. Tools Indicators and Qualitative Tools for Improving the Impact Assessment Process for Sustainability

The I.Q. Tools project, supported by the Sixth Research Framework Programme, aims to support the process of ex-ante policy appraisal by the European Commission, in particular the process of Impact Assessment. The project aims at developing a tool which could allow desk officers to assess the potential effects of policy initiatives on the economic, environmental and social dimensions of sustainability and the significance of these impacts. This tool will be composed of two parts: a quantitative modelling and a qualitative tool.

A model inventory reviews existing tools designed to integrate the different dimensions of sustainable development. In addition to the qualitative indicator tool, a quantitative model will be used to analyse interlinkages and indirect effects across specific impacts and separate policy areas or sectors. A list of priority impact areas will be provided. An impact inventory will also provide information about the character of these impacts, if and how they are measured, and about which data are available.

The specific decision-supporting tool will be a web-based desktop software using the impact list as described above for a practical appraisal of Community policies and constitutes the "Part I" of the I.Q. Tool (I stands for Indicators and Impacts).

3.2.2.6 Sustainability A-TEST - Advanced-Techniques for Evaluation of Sustainability Assessment Tools

This project aims to assist in improving Sustainable Development strategy definition, by high level validation of the sustainability tools, using a consistent and comprehensive evaluation framework.

Firstly, the project lists key aspects of SD, and then compiles a full list of tools, along with a preliminary evaluation of them based on literature reviews. Then, these tools will be tested on a case study and this operation should lead to a final evaluation framework indicating how the tools relate, the merits of each tool, the circumstances under which they can be used, in a word the pro's and con's and the extent to which they integrate externalities of policies. The final goal of the project is to prepare a web-based program that will assist policymakers in assessing policies and projects that have sustainable growth goals or sustainability aspects.

3.2.2.7 EFIEA - European Forum on Integrated Environmental Assessment

The European Forum on Integrated Environmental Assessment (EFIEA) aims at enabling the mutual interaction amongst different approaches to the complicated field of integrated environmental assessment (IEA). In addition, the EFIEA supports the cooperation between scientists and decision makers inside the European Union, communication and cooperation outside the EU, and training on Integrated Environmental Assessment techniques.

The EFIEA is now a network of more than a hundred scientists conducting multi-disciplinary, policy-relevant research on complex environmental issues. The network started its work focussing on climate related topics, but then it has broadened its scope to include topics like water, transport, and agriculture even if at the moment no database is available from Internet.

3.3 National sources of data

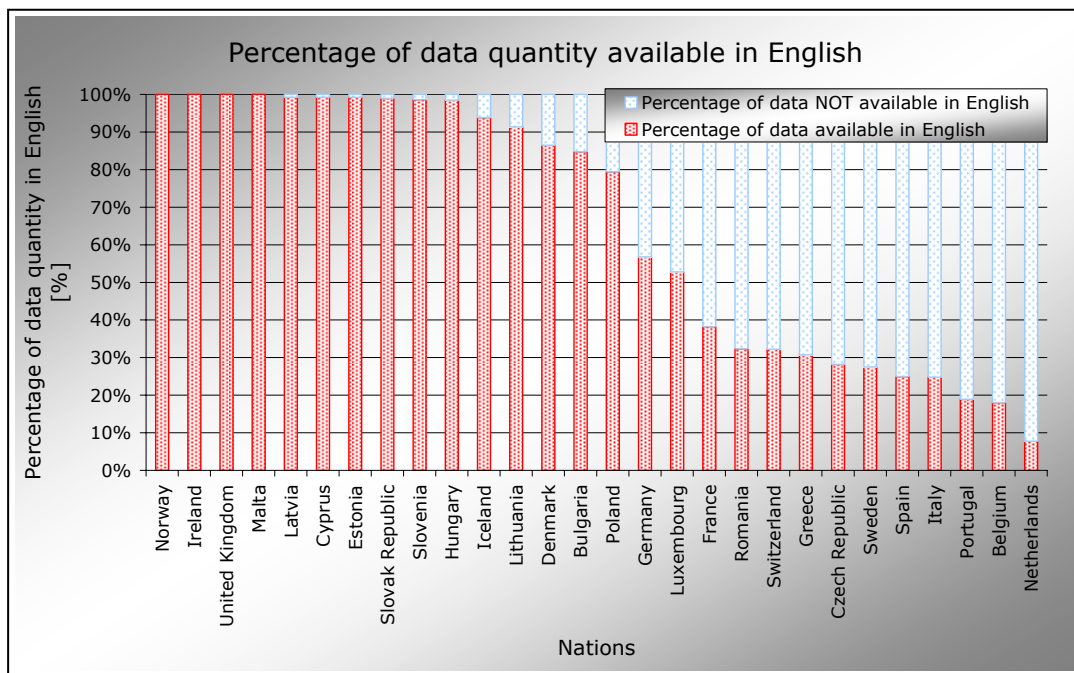
The last step of the analysis focuses on the investigation of data availability from national statistical offices. Two main difficulties can arise when browsing national statistical offices' web sites: English data availability and heterogeneity of available information. In fact, many statistical offices may offer less information when consulting the English version of their web sites. On the other side, data coming from different sources are in general heterogeneous and hardly comparable, due to different definitions and different ways of data collection.

National Statistical offices data

The main problem faced with the analysis of national statistical offices' web sites consists in the fact that their official version is in the local language. This inconvenient often makes the investigation incomplete, as only the English version (which generally results poorer of information compared to local language version) can be taken into account for the analysis.

The analysis focuses on checking the loss in richness of data availability when passing from the web site in the local language to the version in English. Each web site, firstly investigated in the local language, was then visited in English to check whether the data quantity changed or not from a version to another one. The total quantity of data (i.e. in the local language) for each web site is considered as 100% and the data available in English are considered as a percentage of the total. Figure 11 shows the difference between the web site in the original language and English version.

Figure 11: Data available in English for the national statistical offices' web sites



As it is clear from the Figure 11, except for those nations whose mother tongue is English (United Kingdom, Ireland and Malta), the general situation shows a great disparity in data data availability. Only for the North European Countries (Norway, Iceland and Denmark), for the New Member States (Latvia, Cyprus, Estonia, Slovak Republic, Lithuania and Poland) and for the Candidate ones (Hungary and Bulgaria), the percentage of data available in English is greater that 80% over the total available information, while for all the other countries (mainly those belonging to the Mediterranean Area) the percentage decreases under 40%.

National statistical offices' web sites also offer data available at regional level, even though they cover different statistical areas and might not be homogenised or comparable. A possible explanation would be the fact that National statistical systems often adopt accounting frameworks and methodologies which are very different each from the others. This would lead to a great disparity in data aggregation and sector partition. Another hindrance may be brought back to the already reported difficulty of understanding some web sites in their local language, provided that their English version were not available or not enough complete with all the statistics. However, a preliminary analysis to define the level of disaggregation of data was done, just to show which level of detail they reach.

Annex III gives a general overview of what is available for the national statistical offices' web sites.

Again the table shows a trend already noticed in the previous considerations: data about population and about economy are often available also at regional (NUTS 2) and provincial (NUTS 3) level and sometimes also at a more disaggregated level (e.g. NUTS 4 for Poland, Estonia and Luxembourg): this generally occurs when dealing with some countries (generally the smallest ones) where some levels of the NUTS classification coincide (that means that NUTS 0, 1, 2, 3 and 4 are the same). On the

contrary, data concerning environment are often uncertain or present at a less disaggregated level.

A methodological remark needs to be done about Annex III. Data related to a specific macro-area (e.g. Economy) are assigned to a specific territorial classification (NUTS) when at least the broadest quantity of indicators belonging to that category is available with that level of disaggregation (e.g. NUTS 3).

4 Conclusions

The exercise carried out with the analysis of the most important databases available online and provided by the main data sources at international, national and regional level is useful to know the current status of data availability when searching SD information through Internet.

Throughout a careful analysis of the work done by the main organisations deputed to developing databases, we can draw some conclusions in response to our initial research purposes.

One of the main purposes of the paper was giving an overview of the data disaggregation availability. The results are resumed in Table 6, which aims at describing the level many important organisations, institutes, networks and projects work at (international, national, regional) and the maximum level of disaggregation of the information they provide.

The table is organised according to the followed research lines: level of data availability is listed in columns, while the organisations are defined in rows and divided into international, European and national ones and the Europeans into projects and organisations.

Table 6: Summary of the administrative level of data provided by different data sources.

| | | LEVEL OF DATA | International | National | Regional | Provincial |
|---------------------------------------|-------------------------|--|--|----------|----------|------------|
| | | SOURCE | | | | |
| International (non EU) sources | | <i>GTAP</i> | ✓ | ✓ | | |
| | | <i>UN Economic and Social Affairs for SD</i> | ✓ | ✓ | | |
| | | <i>UNEP</i> | No database | | | |
| | | <i>UNECE</i> | ✓ | ✓ | | |
| | | <i>OECD</i> | ✓ | ✓ | | |
| | | <i>IAIA</i> | No database | | | |
| | | <i>ISTS</i> | No database | | | |
| | | <i>World Bank</i> | ✓ | ✓ | | |
| | | <i>FAO</i> | ✓ | ✓ | | |
| EU sources | EU organisations | <i>Eurostat</i> | ✓ | ✓ | | |
| | | <i>Eurostat REGIO</i> | ✓ | ✓ | ✓ | ✓ |
| | | <i>EEA</i> | ✓ | ✓ | | |
| | | <i>EPER</i> | | ✓ | | |
| | | <i>CORINE*</i> | ✓ | ✓ | ✓ | ✓ |
| | | <i>ngr4SD</i> | Database still to be developed | | | |
| | | <i>AER</i> | ✓ | ✓ | ✓ | |
| | | <i>ESPON2006</i> | | | | |
| | | <i>TIAS</i> | Database still to be developed | | | |
| | EU projects | <i>IASON</i> | Data obtained from Eurostat and national statistical offices | | | |
| | | <i>SENSOR</i> | Data obtained from Eurostat and national statistical offices | | | |
| | | <i>ECODEV</i> | Database still to be developed | | | |
| | | <i>MATISSE</i> | No database | | | |
| | | <i>SustainabilityA-TEST</i> | No database | | | |
| | | <i>I.Q. Tools</i> | No database | | | |
| National sources | | | ✓ | ✓ | ✓ | |

* Data provided by CORINE Land Cover are given according to a grid of 250x250 m and are not available at national, regional level.

As shown in the table above, many international data sources and institutions (such as World Bank, UNECE, OECD and FAO) mainly provide data at international and national level¹⁸. Therefore, the information supplied is generally homogenised for the countries it is available for, thus enabling comparison amongst them.

The situations slightly changes when the analysis moves to European organisations and national statistical offices websites. Even in the case of European institutions, data at regional level are not always available for every country and they usually represent a minor part of EU data in comparison with data available at national level (Figure 6). This entails a clear hindrance for decision-making at EU level concerning regional Sustainable Development: as depicted on Table 4, only three indicators out of 11 included in the EU SD Strategy are available also at regional level..

¹⁸ It must be considered that the word "region" for such organisations mostly refers to parts of Continents (e.g. South-East Asia) and is not intended in the meaning of NUTS 2 region.

Instead, when data come from national statistical offices websites, the possibility of obtaining also regional information increases. Indeed this implies other problems, connected to the heterogeneity of the information obtained from different sources.

The lack of data for regional level might also be due to the fact that regional data collection gets hard and expensive and may require stronger efforts; moreover, organisations at supranational level (both European and international) may not consider providing data for regional level as one of their tasks, while this can be done by organisations operating at a lower administrative level (regional, provincial). The data collection provided by sub-national organisations, however, may imply the loss of homogeneity of information (due to different data definitions, different ways of collection, accounting frameworks and different collected indicators) and makes it difficult to have comparable indicators and results.

Moreover, the problems linked to national statistical offices websites mainly relate to the difficulties of dealing with the information available in the local language and to the loss in richness of data when using the English version of the websites (Figure 11).

An analysis of databases developed by the relevant European research projects is not actually viable because in many cases they are in a developing or completing phase. However, the contribution to the increase of data sources at a disaggregated level is questionable, because many of the examined projects don't have a specifically sub-national focus. Annex II also reveals that, in some cases, EU projects tend to use data of already developed databases, probably because of troubles and costs linked to data retrieval and databases creation.

Further remarks can be done about the sectors data are available for. The general trend shows how the most populous sectors are Society (Population Class) and Economy (Economic Class), while environmental data considerably vary from source to source, resulting in comparison basically poor.

This trend can be observed for each level the relevant organisations work at: international, European and national. The disproportion in sector data availability is indeed rather constant through the examined databases, oscillating between 5 and 8% over the total. In addition, the most relevant lack can be seen at regional level: environmental data represent only 5% of total data contained by the REGIO Database (Figure 6), while only few national statistical offices provide data in this field for levels of disaggregation lower than NUTS 2 (Annex III). The possible explanation is that this poorness is due to sector - specific difficulties i.e. the sampling procedures and design for environmental information, the precision in measurements and coefficients and the costs linked to environmental data retrieval.

A contribution to this respect could originate from project - specific databases. Focusing on specific issues, they could represent a possible way to overcome the present restrictions of sustainability information, thus improving the variety and the quality of indicators where there is greater lack of them, i.e. the environmental sector. However, project specific databases are quite expensive in terms of time and resources and not always reliable; as a result, many projects don't provide a database of their own, but usually make use of existing ones, thus retrieving the same problems faced by our analysis.

The third issue we aimed to tackle is the time coverage provided by single databases. With regard to this point, Population and Economy classes contain data tracking back to many past decades (the oldest ones belong to Economy class and go back to 1929), while data about Environment are generally more recent. This difference in time coverage depends, more than on the mentioned difficulty of collecting environmental data, on the fact that environmental issues were not taken into account, and consequently monitored until recent years. Another evidence provided by our analysis consists in the greater availability of indicators and data series for higher levels of aggregation (NUTS 0 and I) respect to less aggregated levels. This evidence confirms what was already noticed with regard to general data availability. Finally, concerning the completeness of temporal coverage, most of databases present complete series of data, thus enabling the proper comprehension of the depicted trends.

However, it is necessary to define the real usefulness of wide temporal coverage. In fact, even within the same class or sector we can find great differences among time availability of the various indicators. Very often, more complex indicators like the aggregated ones have been collected in recent years, while other indicators (such as geographical or demographic ones) have complete series dating back to the establishment of the database. Undoubtedly, this entails a constraint to research

Temporal data availability is moreover influenced by the level of the organisation providing data. National statistical offices usually own more ancient data than international and European databases, for the reason that the latter have been established more recently than the former. The structure of the supranational databases (composed by data collected by national offices, as for Eurostat), is also determining for their data availability. In some cases, however, National databases present problems in terms of completeness of the time series, due to more frequent changes in methodology. Concerning instead databases resulting from European projects, they often prove themselves quite limited in their time coverage and sector investigated. This means that the database may be restricted to a reduced time lapse, with limited usefulness for different research purposes.

An attempt to compile a schedule describing more in details data availability at different administrative level in Europe is presented in Annex II where, beside the name of the organizations providing the information, there are many attributes such as the maximum level of disaggregation which the data are available at, macro-area (Economy, Population, Environment, etc) covered, time coverage, references/contacts where information can be found. It can be observed on Table 6 that most of databases of international and European organisations and institutes mainly provide data at international and national level only (NUTS 0 and 1). In fact, only Eurostat and AER provide data at regional level. This result confirms the idea that collecting data at a more disaggregated level implies more difficulties and rarely may be done for the whole European territory. Annex II also shows how most data only cover Population and Economy classes.

Another remark can be done, instead, about data comparability. As already reported, our analysis faced a general lack of environmental data. A possible explanation to this could be the fact that this sector generally contains information which is hardly collectable, depending on many different interacting factors: the sampling procedure, the precision in measurements and coefficients, the inference situation and measurement errors in laboratory work may constitute some of the factors affecting data quality.

Furthermore, and generally speaking, data obtained from different sources differ not only in terms of definition of data retrieval or in terms of measurements, but also in terms of specific sectors covered, even within the same class (e.g. national statistical offices websites of sea countries are richer in data about marine environment): all these differences make it difficult to use the information that doesn't come from the same database and confirm the increasing need of having a European database as complete as possible that could provide homogenised data with more detail than national ones.

However, the difference in data availability at sub-national level is not only a consequence of difficulties in getting information, but, in some way, it also reflects different accounting frameworks and regional peculiarities and characteristics which are usually region-specific and can be homogenised only to a certain extent.

Despite the difficulties faced through the analysis of online databases, the research of information through the means of Internet has also shown many advantages, mainly related to the availability of free of charge and timely updated data. The two aspects, in addition to the fact that increasing shares of the most relevant public databases are gradually made available on Internet, lead to a progressive growth of potential users and, consequently, to a more systematic control on their reliability and updating.

Annex I

Table A: Summary table of data available in Eurostat REGIO database.

| <u>Thematic</u> | <u>Indicator</u> | | <u>Time coverage</u> | <u>Level of disaggregation</u> |
|--------------------|---|---|----------------------|--------------------------------|
| <i>Population</i> | Annual average population by sex, pop. Density, total area of the regions | | 1970-2002 | NUTS 3 |
| | Population by sex and age, births and deaths , infant mortality | | 1977-2002 | NUTS 2 |
| | Regional scenarios on population and labour force by sex and age groups | | 1995-2025 | NUTS 2 (EU15) |
| <i>Employment</i> | Economically active population by sex and age, unemployment by sex and age, long-term unemployment, unemployment rates by sex and age, dispersion of regional unemployment rates | | 1983-2003 | NUTS 3 |
| | Economically active population by sex, age and highest level of education attained, Employment by economic activity, by professional status, by full-time/part-time and sex, by sex, age and highest level of education attained, Employment and commuting among NUTS2 regions, Dispersion of regional employment rates by age, Average number of usual weekly hours of work in main job, Number of households by degree of urbanisation of residence | | 1999-2003 | NUTS 2 |
| <i>Agriculture</i> | Agricultural accounts, animal population, Areas harvested, yields, production, Land use, Structure of agricultural holdings | | 1974 - 2003 | NUTS 2 |
| <u>Thematic</u> | <u>Indicator</u> | | <u>Time coverage</u> | <u>Level of disaggregation</u> |
| <i>Energy</i> | Electricity production capacity and consumption | | 1995-2000 | NUTS 3 |
| | Electricity production capacity, electricity consumption by sector | | 1987-2000 | NUTS 2 |
| | Energy statistics, prices and main indicators | | 1985-2004 | NUTS 0 |
| | Energy Statistics (ES) - quantities - | | 1985-2002 | |
| <i>Environment</i> | Water | Basic regional water statistics (i.e. different water abstracting sectors and waste water sectors and source) | 1980-2000 | NUTS 2 |
| | | Water consumption and waste water generation statistics. National population connected to waste water treatment plants, sewage sludge production and disposal | 1970 - 2001 | NUTS 0 |
| | Waste | Municipal waste statistics, Treatment plants statistics. Hazardous waste statistics (generation and treatments) | 1980-2000 | NUTS 2 |
| | | Statistics on generation, collection, recovery and disposal of non-hazardous/hazardous industrial/municipal waste | 1980-2001 | NUTS 0 |
| | Air emissions | Air pollutants/greenhouse gases from different sources | 1990-2002 | NUTS 0 |
| <i>Transport</i> | Air transport | Freight and passengers | 1978- 2000 | NUTS 2 and 3 |
| | Maritime transport | Freight and passengers, waterway networks | | |
| | Road transport | Road networks, transport, vehicles fleet, goods & safety | | |
| | Rail transport | Rail networks | | |
| | All other detailed statistics on Freight,/ passengers, public/private transport, transport infrastructures, safety and investments. | | 1980-2003 | NUTS 0 (EU25 and EU15) |
| <i>Tourism</i> | Number of establishments, bedrooms and beds | | 1990-2004 | NUTS 3 |
| | Arrivals of residents, Nights spent by residents, Arrivals of non-residents, Nights spent by non-residents | | 1990-2004 | NUTS 2 |
| | Number of tourists, tourism trips, N° of tourism nights, expenditure on trips | | 1994-2004 | NUTS 0 (EU25) |
| <i>Trade</i> | Retail trade, Wholesale trade, Motor trade, Other services, Car registrations | | 1985 - 2003 | NUTS 0 (EU25) |
| | External trade | External trade –aggregated data (External trade long-term indicators, External trade short-term indicators – Macro-economic series-) | 1990-2004 | NUTS 0 (EU15) |

Annex II

Table B: Summarise of European databases and their main characteristics.

| <u>Responsible organisation</u> | <u>Title of Db</u> | <u>Macro-area covered</u> | <u>Sectors covered</u> | <u>Minimum level of disaggregation for data</u> | <u>Time coverage¹⁹</u> | <u>Links/ Source</u> |
|---------------------------------|--|---------------------------|-------------------------------------|---|-----------------------------------|---|
| <i>Eurostat</i> | REGIO | Population | Population/Social conditions | NUTS 2, 3 | 1970-2003 | http://epp.eurostat.cec.eu.int/portal/page?_pageid=1996,45323734&_dad=portal&_schema=PORTAL&screen=welcomeref&open=/&product=EU_MASTER_regions&depth=2 |
| | | Economy | Tourism | | 1990-2004 | |
| | | | Energy | | 1986-2003 | |
| | | | Agriculture | | 1974-2004 | |
| | | | Transport | | 1978-2003 | |
| | | | Economic Sectors | | 1991-2003 | |
| | | | Trade | Not available | - | |
| | | Environment | Construction | Not available | - | |
| | | | Waste | | 1980-2000 | |
| | | | Water | | 1980-2000 | |
| | Other | Gas Emissions | Not available | - | | |
| | Other | Other | NUTS 2, 3 | 1980-2003 | | |
| | Eurostat Databases excluding REGIO | Population | Population/Social conditions | NUTS 0, 1 | 1900-2004 | http://epp.eurostat.cec.eu.int/portal/page?_pageid=1996,45323734&_dad=portal&_schema=PORTAL&screen=welcomeref&open=/&product=EU_MAIN_TREE&depth=1 |
| | | Economy | Tourism | | 1985-2005 | |
| | | | Energy | | 1985-2005 | |
| | | | Agriculture, Forestry and fisheries | | 1950-2005 | |
| | | | Transport | | 1970-2004 | |
| | | | Economic Sectors | | 1929-2005 | |
| | | | Trade | | 1979-2003 | |
| | | Environment | Construction | | 1954-2005 | |
| Waste | | | 1980-2003 | | | |
| Water | | | 1970-2003 | | | |
| Gas Emissions | 1990-2002 | | | | | |
| Other | Other Environmental issues (biodiversity, etc) | | 1970-2003 | | | |
| | Other | Other | 1980-2003 | | | |

¹⁹ The term "time coverage" doesn't refer to the time series of available data, but only to the oldest data available and the most recent data.

| <u>Responsible organisation</u> | <u>Title of Db</u> | <u>Macro-area covered</u> | <u>Sectors covered</u> | <u>Minimum level of disaggregation for data</u> | <u>Time coverage</u> ²⁰ | <u>Links/ Source</u> |
|---------------------------------|------------------------------------|------------------------------|------------------------------|---|---|---|
| <u>UNECE</u> | Trends in Europe and North America | Population | Population/Social conditions | NUTS 0, 1 | 1985-2003 | http://www.unece.org/stats/trends2005/Welcome.html |
| | | Economy | Tourism | | 2002 | |
| | | | Energy | | 1995-2002 | |
| | | | Transport | | 1998-2002 | |
| | | | Economic Sectors | | 1994-2003 | |
| | | | Trade | | 2002-2003 | |
| | | | Construction | | 2001-2003 | |
| | | | Agriculture | | Not available | |
| | | Environment | Waste | | Not available | |
| | | | Water | | Not available | |
| | Gas Emissions | | 1995-2002 | | | |
| | Other | Other | NUTS 0, 1 | 2001-2003 | | |
| | Statistical Division's database | Economy | Economic Sectors | NUTS 0, 1 | 1980-2005 | http://w3.unece.org/pxweb/database/STAT/databasetree.asp |
| | Human and settlements database | Population | Population/Social conditions | NUTS 0, 1 | 1980-2003 | http://w3.unece.org/stat/HumanSettlements.asp |
| | | Economy | Construction | | 1980-2002 | |
| Demographic database | Population | Population/Social conditions | NUTS 0, 1 | 1980-2001 (2050) | http://w3.unece.org/stat/pau.asp | |
| Gender Statistics database | Population | Population/Social conditions | NUTS 0, 1 | 1980-2001 (2025) | http://w3.unece.org/stat/gender.asp | |
| | Economy | Economic Sectors | | 1980-2001 (2025) | | |
| | Other | Other | | 1980-2000 | | |
| Gas Centre Database | Economy | Energy | NUTS 0, 1 ²¹ | - | http://www.gascentre.unece.org/ungcpubdb/ | |

²⁰ The term "time coverage" doesn't refer to the time series of available data, but only to the oldest data available and the most recent data.

²¹ This section cannot be visited completely free of charge and it offers data not for all countries but just for a limited number of nations.

| <u>Responsible organisation</u> | <u>Title of Db</u> | <u>Macro-area covered</u> | <u>Sectors covered</u> | <u>Minimum level of disaggregation for data</u> | <u>Time coverage²²</u> | <u>Links/ Source</u> | |
|---------------------------------|--|---------------------------|--|---|-----------------------------------|--|----------|
| <i>World Bank</i> | WDI2004 | Population | Population/Social conditions | NUTS 0, 1 | 1960-2002 | CD "World Development Indicators 2004" | |
| | | Economy | Tourism | | 1990-2002 | | |
| | | | Energy | | 1960-2002 | | |
| | | | Agriculture, Forestry and fisheries | | 1960-2003 | | |
| | | | Transport | | 1960-2002 | | |
| | | | Economic Sectors | | 1960-2004 | | |
| | | | Trade | | 1960-2002 | | |
| | | | Construction | | Not available | | |
| | | Environment | Waste | Not available | - | | |
| | | | Water | NUTS 0, 1 | 1960-2002 | | |
| | | | Gas Emissions | | 1960-2002 | | |
| | | | Other Environmental issues (biodiversity, etc) | | 1980-2002 | | |
| | | | Other | | 1960-2002 | | |
| | | <i>EEA</i> | EEA indicators | Population | Population/Social conditions | | NUTS 0,1 |
| Economy | Tourism | | | 1987-2000 | | | |
| | Energy | | | 1994-1998 | | | |
| | Agriculture, Forestry and fisheries | | | 1963-2001 | | | |
| | Transport | | | 1980-2002 | | | |
| | Economic Sectors | | | Not available | - | | |
| | Trade | | | Not available | - | | |
| Construction | Not available | | | - | | | |
| Environment | Waste | | | NUTS 0,1 | 1995-1998 | | |
| | Water | | | | 1985-2002 | | |
| | Gas Emissions | | | | 1986-2001 | | |
| | Other Environmental issues (biodiversity, etc) | | | | 1975-2000 | | |
| <i>Other</i> | <i>Other</i> | | | Not available | - | | |

²² The term "time coverage" doesn't refer to the time series of available data, but only to the oldest data available and the most recent data.

Annex III

Table C: General overview of data availability and the administrative level for each EU nation (National statistical offices)

| Nation | | Statistical Macro-areas | Classification of NUTS |
|----------------|------------------|---|--|
| United Kingdom | England & Wales | Population | NUTS 1 |
| | | Social Life | NUTS 2 |
| | | Infrastructure | NUTS 3 |
| | Scotland | Population | NUTS 1 |
| | | Social Life | NUTS 2 |
| | | Infrastructure | NUTS 3 |
| | Northern Ireland | Population | NUTS 1 |
| | | Social Life | NUTS 2 |
| | | Infrastructure | |
| | | | Environment |
| | | Economy | NUTS 1 |
| Denmark | | Population | NUTS 0 |
| | | Economy | NUTS 1 |
| | | Social Life | NUTS 2 |
| | | Environment | NUTS 2 |
| | | Infrastructure | NUTS 3 |
| Spain | | Population | NUTS 0 |
| | | Social Life | NUTS 2 |
| | | Social Life (Science and Technology) | NUTS 3 |
| | | Environment | NUTS 0 |
| | | Economy (Agriculture) | NUTS 2 |
| | | Infrastructure (Housing) | NUTS 3 |
| | | Infrastructure (Transport and communications) | NUTS 0 |
| Finland | | Population | NUTS 0 NUTS 1 NUTS 2 NUTS 3 (NUTS 4/5) |
| | | Social Life | |
| | | Economy | NUTS 0 |
| | | Environment | |
| Greece | | Population (Demography) | NUTS 0 NUTS 3 |
| | | Population (Census) | NUTS 0 NUTS 2 NUTS 3 |
| | | Social Life | NUTS 0 |
| | | Economy (National and Regional Accounts) | NUTS 0 NUTS 1 NUTS 2 NUTS 3 |
| | | Economy | Uncertainty of data |
| Germany | | Population | NUTS 1 |
| | | Social Life | NUTS 2 |
| | | Economy | NUTS 3 |
| | | Environment | |
| Netherlands | | Population | |
| | | Social Life | |
| | | Infrastructure | NUTS 0 |
| | | Economy | |
| | | Environment | |
| Luxembourg | | Population | NUTS 0 |
| | | Social Life | NUTS 1 |
| | | Infrastructure | NUTS 2 |
| | | Economy | NUTS 3 |
| | | Environment | NUTS 4 |

| Nation | Statistical Macro-areas | Classification of NUTS |
|--------------------|--|----------------------------------|
| Belgium | Population | - NUTS 0 |
| | Social Life | - NUTS 1 |
| | Economy | - NUTS 1 |
| | Environment | - NUTS 1 |
| Czech Republic | Population | - NUTS 0 |
| | Social Life | - NUTS 1 |
| | Economy | - NUTS 3 |
| | Environment | - NUTS 3 |
| | Economy (Fixed Assets) | - NUTS 3 |
| Italy | Population | - NUTS 0 |
| | Social Life | - NUTS 2 |
| | Economy | - NUTS 2 |
| | Infrastructure | - NUTS 3 |
| | Environment | - NUTS 3 |
| | Social Life (Unemployment/Employment) | - NUTS 2 |
| | Infrastructure (Traffic & Transport) | - NUTS 2 |
| Portugal | Population | - NUTS 0 |
| | Social Life | - NUTS 2 |
| | Economy | - NUTS 3 |
| | Environment | - NUTS 3 |
| | Infrastructure | - NUTS 3 |
| France | Population | - NUTS 1 |
| | Social Life | - NUTS 2 |
| | Infrastructure | - NUTS 3 |
| | Economy | - NUTS 2 |
| | Environment | - Uncertainty of data |
| Austria | <i>The data collected in the English web site are a little selection among the German web site. All the data presented in the English web site (population, business, national accounts, agriculture and forestry, energy, environment, tourism, motor vehicle, health and finance) are at NUTS 0 classification</i> | |
| Sweden | <i>The web site is only in Swedish and there isn't the English version. This doesn't allow to understand which kind of data are available and at which level (NUTS 1, 2, 3)</i> | |
| Republic of Cyprus | Population | - NUTS 0 |
| | Social Life | - NUTS 1 |
| | Infrastructure | - NUTS 2 |
| | Economy | - NUTS 3 |
| | Environment | - NUTS 3 |
| Estonia | Population | - NUTS 0 |
| | Social Life | - NUTS 1 |
| | Economy | - NUTS 2 |
| | Housing | - (NUTS 4) |
| | Environment | - (NUTS 4) |
| | Infrastructure | - NUTS 0 - NUTS 1 - NUTS 2 |
| Lithuania | Population | - NUTS 0 |
| | Social Life | - NUTS 1 |
| | Infrastructure | - NUTS 1 |
| | Economy | - NUTS 2 |
| | Environment | - NUTS 2 |
| Latvia | Population | - NUTS 0 |
| | Social Life | - NUTS 1 |
| | Infrastructure | - NUTS 2 |
| | Economy | - NUTS 2 |
| Hungary | Population | - NUTS 0 |
| | Social Life | - NUTS 2 |
| | Infrastructure | - NUTS 2 |
| | Economy | - NUTS 3 |
| | Environment | - NUTS 3 |
| Malta | Population | - NUTS 0 |
| | Social Life | - NUTS 1 |
| | Economy | - NUTS 2 |
| Poland | Population | - NUTS 0 |
| | Social Life | - NUTS 2 |
| | Infrastructure | - NUTS 3 |
| | Economy | - (NUTS 4) |
| | Environment | - (NUTS 5) |

| Nation | Statistical Macro-areas | Classification of NUTS |
|---|--|-------------------------------|
| Slovenia | Population | NUTS 0 |
| | Social Life | NUTS 1 |
| | Economy | NUTS 2 |
| | Economy (External trade, Consumer price, Energy, Prices, Manufacturing and Industry) | NUTS 3 |
| | Infrastructure | NUTS 0 |
| | Environment | NUTS 1 |
| | Social Life (Research and development) | NUTS 2 |
| Slovak Republic | Population | NUTS 0 |
| | Social Life | NUTS 1 |
| | Infrastructure | NUTS 3 |
| | Economy | NUTS 3 |
| | Social Life (Science and technology) | NUTS 0 |
| | Infrastructure (Transport) | NUTS 1 |
| | Economy (business tendency survey) | NUTS 1 |
| | Environment | Uncertainty of data |
| Ireland | Population | NUTS 0 |
| | Social Life (Labour force, Employment, Unemployment) | NUTS 1 |
| | Infrastructure | NUTS 2 |
| | Economy | NUTS 3 |
| | Economy (National and regional accounts) | NUTS 0 |
| | Education and culture | NUTS 1 |
| | Justice and crime | NUTS 2 |
| | Environment | NUTS 3 |
| Norway | Population | Uncertainty of data |
| | Social Life | NUTS 0 |
| | Economy | NUTS 1 |
| | Environment | NUTS 2 |
| | Social Life (Crime) | NUTS 3 |
| | Economy (Wages, Prices indices and Economic Indicators, Financial Markets) | NUTS 0 |
| | | NUTS 1 |
| Switzerland | Population | NUTS 0 |
| | Social Life | NUTS 3 |
| | Economy | NUTS 3 |
| | Infrastructure | NUTS 3 |
| | Environment | NUTS 3 |
| | Social Life (Health, Education, Science, Social protection, Culture) | NUTS 0 |
| | Economy (Energy, Public Finance) | NUTS 1 |
| Environment (Environment and Sustainable Development) | NUTS 1 | |
| Turkey | Population | NUTS 0 |
| | Social Life | NUTS 3 |
| | Infrastructure | NUTS 3 |
| | Economy | NUTS 3 |
| | Environment | NUTS 3 |
| Romania | Population | NUTS 0 |
| | Social Life | NUTS 1 |
| | Infrastructure | NUTS 2 |
| | Economy | NUTS 3 |
| | Economy (Enterprises, Agriculture, Construction, Industry) | NUTS 0 |
| | Environment | NUTS 1 |
| | Social Life (Crime and Justice) | NUTS 2 |
| | NUTS 0 | |
| | NUTS 1 | |

| <u>Nation</u> | <u>Statistical Macro-areas</u> | <u>Classification of NUTS</u> |
|----------------------|---------------------------------------|--------------------------------------|
| Bulgaria | <i>Infrastructure</i> | NUTS 0 NUTS 1 |
| | <i>Social Life</i> | |
| | <i>Economy</i> | |
| | <i>Environment</i> | |
| Iceland | <i>Population</i> | NUTS 0 |
| | <i>Social Life</i> | NUTS 1 |
| | <i>Economy</i> | NUTS 2 |
| | <i>Infrastructure</i> | NUTS 3 |
| | <i>Environment</i> | Uncertainty of data |
| Liechtenstein | <i>Social Life</i> | NUTS 0 |
| | <i>Economy</i> | NUTS 1 |
| | <i>Environment</i> | NUTS 2 NUTS 3 |

NOTE DI LAVORO DELLA FONDAZIONE ENI ENRICO MATTEI

Fondazione Eni Enrico Mattei Working Paper Series

Our Note di Lavoro are available on the Internet at the following addresses:

<http://www.feem.it/Feem/Pub/Publications/WPapers/default.html>

<http://www.ssrn.com/link/feem.html>

<http://www.repec.org>

<http://agecon.lib.umn.edu>

NOTE DI LAVORO PUBLISHED IN 2006

| | | |
|------|---------|--|
| SIEV | 1.2006 | <i>Anna ALBERINI</i> : <u>Determinants and Effects on Property Values of Participation in Voluntary Cleanup Programs: The Case of Colorado</u> |
| CCMP | 2.2006 | <i>Valentina BOSETTI, Carlo CARRARO and Marzio GALEOTTI</i> : <u>Stabilisation Targets, Technical Change and the Macroeconomic Costs of Climate Change Control</u> |
| CCMP | 3.2006 | <i>Roberto ROSON</i> : <u>Introducing Imperfect Competition in CGE Models: Technical Aspects and Implications</u> |
| KTHC | 4.2006 | <i>Sergio VERGALLI</i> : <u>The Role of Community in Migration Dynamics</u> |
| SIEV | 5.2006 | <i>Fabio GRAZI, Jeroen C.J.M. van den BERGH and Piet RIETVELD</i> : <u>Modeling Spatial Sustainability: Spatial Welfare Economics versus Ecological Footprint</u> |
| CCMP | 6.2006 | <i>Olivier DESCHENES and Michael GREENSTONE</i> : <u>The Economic Impacts of Climate Change: Evidence from Agricultural Profits and Random Fluctuations in Weather</u> |
| PRCG | 7.2006 | <i>Michele MORETTO and Paola VALBONESE</i> : <u>Firm Regulation and Profit-Sharing: A Real Option Approach</u> |
| SIEV | 8.2006 | <i>Anna ALBERINI and Aline CHIABAI</i> : <u>Discount Rates in Risk v. Money and Money v. Money Tradeoffs</u> |
| CTN | 9.2006 | <i>Jon X. EGUIA</i> : <u>United We Vote</u> |
| CTN | 10.2006 | <i>Shao CHIN SUNG and Dinko DIMITRO</i> : <u>A Taxonomy of Myopic Stability Concepts for Hedonic Games</u> |
| NRM | 11.2006 | <i>Fabio CERINA</i> (lxxviii): <u>Tourism Specialization and Sustainability: A Long-Run Policy Analysis</u> |
| NRM | 12.2006 | <i>Valentina BOSETTI, Mariaester CASSINELLI and Alessandro LANZA</i> (lxxviii): <u>Benchmarking in Tourism Destination, Keeping in Mind the Sustainable Paradigm</u> |
| CCMP | 13.2006 | <i>Jens HORBACH</i> : <u>Determinants of Environmental Innovation – New Evidence from German Panel Data Sources</u> |
| KTHC | 14.2006 | <i>Fabio SABATINI</i> : <u>Social Capital, Public Spending and the Quality of Economic Development: The Case of Italy</u> |
| KTHC | 15.2006 | <i>Fabio SABATINI</i> : <u>The Empirics of Social Capital and Economic Development: A Critical Perspective</u> |
| CSRM | 16.2006 | <i>Giuseppe DI VITA</i> : <u>Corruption, Exogenous Changes in Incentives and Deterrence</u> |
| CCMP | 17.2006 | <i>Rob B. DELLINK and Marjan W. HOFKES</i> : <u>The Timing of National Greenhouse Gas Emission Reductions in the Presence of Other Environmental Policies</u> |
| IEM | 18.2006 | <i>Philippe QUIRION</i> : <u>Distributional Impacts of Energy-Efficiency Certificates Vs. Taxes and Standards</u> |
| CTN | 19.2006 | <i>Somdeb LAHIRI</i> : <u>A Weak Bargaining Set for Contract Choice Problems</u> |
| CCMP | 20.2006 | <i>Massimiliano MAZZANTI and Roberto ZOBOLI</i> : <u>Examining the Factors Influencing Environmental Innovations</u> |
| SIEV | 21.2006 | <i>Y. Hossein FARZIN and Ken-ICHI AKAO</i> : <u>Non-pecuniary Work Incentive and Labor Supply</u> |
| CCMP | 22.2006 | <i>Marzio GALEOTTI, Matteo MANERA and Alessandro LANZA</i> : <u>On the Robustness of Robustness Checks of the Environmental Kuznets Curve</u> |
| NRM | 23.2006 | <i>Y. Hossein FARZIN and Ken-ICHI AKAO</i> : <u>When is it Optimal to Exhaust a Resource in a Finite Time?</u> |
| NRM | 24.2006 | <i>Y. Hossein FARZIN and Ken-ICHI AKAO</i> : <u>Non-pecuniary Value of Employment and Natural Resource Extinction</u> |
| SIEV | 25.2006 | <i>Lucia VERGANO and Paulo A.L.D. NUNES</i> : <u>Analysis and Evaluation of Ecosystem Resilience: An Economic Perspective</u> |
| SIEV | 26.2006 | <i>Danny CAMPBELL, W. George HUTCHINSON and Riccardo SCARPA</i> : <u>Using Discrete Choice Experiments to Derive Individual-Specific WTP Estimates for Landscape Improvements under Agri-Environmental Schemes: Evidence from the Rural Environment Protection Scheme in Ireland</u> |
| KTHC | 27.2006 | <i>Vincent M. OTTO, Timo KUOSMANEN and Ekko C. van IERLAND</i> : <u>Estimating Feedback Effect in Technical Change: A Frontier Approach</u> |
| CCMP | 28.2006 | <i>Giovanni BELLA</i> : <u>Uniqueness and Indeterminacy of Equilibria in a Model with Polluting Emissions</u> |
| IEM | 29.2006 | <i>Alessandro COLOGNI and Matteo MANERA</i> : <u>The Asymmetric Effects of Oil Shocks on Output Growth: A Markov-Switching Analysis for the G-7 Countries</u> |
| KTHC | 30.2006 | <i>Fabio SABATINI</i> : <u>Social Capital and Labour Productivity in Italy</u> |
| ETA | 31.2006 | <i>Andrea GALLICE</i> (lxxix): <u>Predicting one Shot Play in 2x2 Games Using Beliefs Based on Minimax Regret</u> |
| IEM | 32.2006 | <i>Andrea BIGANO and Paul SHEEHAN</i> : <u>Assessing the Risk of Oil Spills in the Mediterranean: the Case of the Route from the Black Sea to Italy</u> |
| NRM | 33.2006 | <i>Rinaldo BRAU and Davide CAO</i> (lxxviii): <u>Uncovering the Macrostructure of Tourists' Preferences. A Choice Experiment Analysis of Tourism Demand to Sardinia</u> |
| CTN | 34.2006 | <i>Parkash CHANDER and Henry TULKENS</i> : <u>Cooperation, Stability and Self-Enforcement in International Environmental Agreements: A Conceptual Discussion</u> |
| IEM | 35.2006 | <i>Valeria COSTANTINI and Salvatore MONNI</i> : <u>Environment, Human Development and Economic Growth</u> |
| ETA | 36.2006 | <i>Ariel RUBINSTEIN</i> (lxxix): <u>Instinctive and Cognitive Reasoning: A Study of Response Times</u> |

| | | |
|------|---------|---|
| ETA | 37.2006 | <i>Maria SALGADO</i> (lxxix): <u>Choosing to Have Less Choice</u> |
| ETA | 38.2006 | <i>Justina A.V. FISCHER and Benno TORGLER</i> : <u>Does Envy Destroy Social Fundamentals? The Impact of Relative Income Position on Social Capital</u> |
| ETA | 39.2006 | <i>Benno TORGLER, Sascha L. SCHMIDT and Bruno S. FREY</i> : <u>Relative Income Position and Performance: An Empirical Panel Analysis</u> |
| CCMP | 40.2006 | <i>Alberto GAGO, Xavier LABANDEIRA, Fidel PICOS And Miguel RODRÍGUEZ</i> : <u>Taxing Tourism In Spain: Results and Recommendations</u> |
| IEM | 41.2006 | <i>Karl van BIERVLIET, Dirk Le ROY and Paulo A.L.D. NUNES</i> : <u>An Accidental Oil Spill Along the Belgian Coast: Results from a CV Study</u> |
| CCMP | 42.2006 | <i>Rolf GOLOMBEK and Michael HOEL</i> : <u>Endogenous Technology and Tradable Emission Quotas</u> |
| KTHC | 43.2006 | <i>Giulio CAINELLI and Donato IACOBUCCI</i> : <u>The Role of Agglomeration and Technology in Shaping Firm Strategy and Organization</u> |
| CCMP | 44.2006 | <i>Alvaro CALZADILLA, Francesco PAULI and Roberto ROSON</i> : <u>Climate Change and Extreme Events: An Assessment of Economic Implications</u> |
| SIEV | 45.2006 | <i>M.E. KRAGT, P.C. ROEBELING and A. RUIJS</i> : <u>Effects of Great Barrier Reef Degradation on Recreational Demand: A Contingent Behaviour Approach</u> |
| NRM | 46.2006 | <i>C. GIUPPONI, R. CAMERA, A. FASSIO, A. LASUT, J. MYSLIAK and A. SGOBBI</i> : <u>Network Analysis, Creative System Modelling and DecisionSupport: The NetSyMoD Approach</u> |
| KTHC | 47.2006 | <i>Walter F. LALICH</i> (lxxx): <u>Measurement and Spatial Effects of the Immigrant Created Cultural Diversity in Sydney</u> |
| KTHC | 48.2006 | <i>Elena PASPALANOVA</i> (lxxx): <u>Cultural Diversity Determining the Memory of a Controversial Social Event</u> |
| KTHC | 49.2006 | <i>Ugo GASPARINO, Barbara DEL CORPO and Dino PINELLI</i> (lxxx): <u>Perceived Diversity of Complex Environmental Systems: Multidimensional Measurement and Synthetic Indicators</u> |
| KTHC | 50.2006 | <i>Aleksandra HAUKE</i> (lxxx): <u>Impact of Cultural Differences on Knowledge Transfer in British, Hungarian and Polish Enterprises</u> |
| KTHC | 51.2006 | <i>Katherine MARQUAND FORSYTH and Vanja M. K. STENIUS</i> (lxxx): <u>The Challenges of Data Comparison and Varied European Concepts of Diversity</u> |
| KTHC | 52.2006 | <i>Gianmarco I.P. OTTAVIANO and Giovanni PERI</i> (lxxx): <u>Rethinking the Gains from Immigration: Theory and Evidence from the U.S.</u> |
| KTHC | 53.2006 | <i>Monica BARNI</i> (lxxx): <u>From Statistical to Geolinguistic Data: Mapping and Measuring Linguistic Diversity</u> |
| KTHC | 54.2006 | <i>Lucia TAJOLI and Lucia DE BENEDICTIS</i> (lxxx): <u>Economic Integration and Similarity in Trade Structures</u> |
| KTHC | 55.2006 | <i>Suzanna CHAN</i> (lxxx): <u>“God’s Little Acre” and “Belfast Chinatown”: Diversity and Ethnic Place Identity in Belfast</u> |
| KTHC | 56.2006 | <i>Diana PETKOVA</i> (lxxx): <u>Cultural Diversity in People’s Attitudes and Perceptions</u> |
| KTHC | 57.2006 | <i>John J. BETANCUR</i> (lxxx): <u>From Outsiders to On-Paper Equals to Cultural Curiosities? The Trajectory of Diversity in the USA</u> |
| KTHC | 58.2006 | <i>Kiflemariam HAMDE</i> (lxxx): <u>Cultural Diversity A Glimpse Over the Current Debate in Sweden</u> |
| KTHC | 59.2006 | <i>Emilio GREGORI</i> (lxxx): <u>Indicators of Migrants’ Socio-Professional Integration</u> |
| KTHC | 60.2006 | <i>Christa-Maria LERM HAYES</i> (lxxx): <u>Unity in Diversity Through Art? Joseph Beuys’ Models of Cultural Dialogue</u> |
| KTHC | 61.2006 | <i>Sara VERTOMMEN and Albert MARTENS</i> (lxxx): <u>Ethnic Minorities Rewarded: Ethnostratification on the Wage Market in Belgium</u> |
| KTHC | 62.2006 | <i>Nicola GENOVESE and Maria Grazia LA SPADA</i> (lxxx): <u>Diversity and Pluralism: An Economist's View</u> |
| KTHC | 63.2006 | <i>Carla BAGNA</i> (lxxx): <u>Italian Schools and New Linguistic Minorities: Nationality Vs. Plurilingualism. Which Ways and Methodologies for Mapping these Contexts?</u> |
| KTHC | 64.2006 | <i>Vedran OMANOVIĆ</i> (lxxx): <u>Understanding “Diversity in Organizations” Paradigmatically and Methodologically</u> |
| KTHC | 65.2006 | <i>Mila PASPALANOVA</i> (lxxx): <u>Identifying and Assessing the Development of Populations of Undocumented Migrants: The Case of Undocumented Poles and Bulgarians in Brussels</u> |
| KTHC | 66.2006 | <i>Roberto ALZETTA</i> (lxxx): <u>Diversities in Diversity: Exploring Moroccan Migrants’ Livelihood in Genoa</u> |
| KTHC | 67.2006 | <i>Monika SEDENKOVA and Jiri HORAK</i> (lxxx): <u>Multivariate and Multicriteria Evaluation of Labour Market Situation</u> |
| KTHC | 68.2006 | <i>Dirk JACOBS and Andrea REA</i> (lxxx): <u>Construction and Import of Ethnic Categorisations: “Allochthones” in The Netherlands and Belgium</u> |
| KTHC | 69.2006 | <i>Eric M. USLANER</i> (lxxx): <u>Does Diversity Drive Down Trust?</u> |
| KTHC | 70.2006 | <i>Paula MOTA SANTOS and João BORGES DE SOUSA</i> (lxxx): <u>Visibility & Invisibility of Communities in Urban Systems</u> |
| ETA | 71.2006 | <i>Rinaldo BRAU and Matteo LIPPI BRUNI</i> : <u>Eliciting the Demand for Long Term Care Coverage: A Discrete Choice Modelling Analysis</u> |
| CTN | 72.2006 | <i>Dinko DIMITROV and Claus-JOCHEN HAAKE</i> : <u>Coalition Formation in Simple Games: The Semistrict Core</u> |
| CTN | 73.2006 | <i>Ottorino CHILLEM, Benedetto GUI and Lorenzo ROCCO</i> : <u>On The Economic Value of Repeated Interactions Under Adverse Selection</u> |
| CTN | 74.2006 | <i>Sylvain BEAL and Nicolas QUÉROU</i> : <u>Bounded Rationality and Repeated Network Formation</u> |
| CTN | 75.2006 | <i>Sophie BADE, Guillaume HAERINGER and Ludovic RENO</i> : <u>Bilateral Commitment</u> |
| CTN | 76.2006 | <i>Andranik TANGIAN</i> : <u>Evaluation of Parties and Coalitions After Parliamentary Elections</u> |
| CTN | 77.2006 | <i>Rudolf BERGHAMMER, Agnieszka RUSINOWSKA and Harrie de SWART</i> : <u>Applications of Relations and Graphs to Coalition Formation</u> |
| CTN | 78.2006 | <i>Paolo PIN</i> : <u>Eight Degrees of Separation</u> |
| CTN | 79.2006 | <i>Roland AMANN and Thomas GALL</i> : <u>How (not) to Choose Peers in Studying Groups</u> |

| | | |
|------|----------|--|
| CTN | 80.2006 | <i>Maria MONTERO</i> : <u>Inequity Aversion May Increase Inequity</u> |
| CCMP | 81.2006 | <i>Vincent M. OTTO, Andreas LÖSCHEL and John REILLY</i> : <u>Directed Technical Change and Climate Policy</u> |
| CSRM | 82.2006 | <i>Nicoletta FERRO</i> : <u>Riding the Waves of Reforms in Corporate Law, an Overview of Recent Improvements in Italian Corporate Codes of Conduct</u> |
| CTN | 83.2006 | <i>Siddhartha BANDYOPADHYAY and Mandar OAK</i> : <u>Coalition Governments in a Model of Parliamentary Democracy</u> |
| PRCG | 84.2006 | <i>Raphaël SOUBEYRAN</i> : <u>Valence Advantages and Public Goods Consumption: Does a Disadvantaged Candidate Choose an Extremist Position?</u> |
| CCMP | 85.2006 | <i>Eduardo L. GIMÉNEZ and Miguel RODRÍGUEZ</i> : <u>Pigou's Dividend versus Ramsey's Dividend in the Double Dividend Literature</u> |
| CCMP | 86.2006 | <i>Andrea BIGANO, Jacqueline M. HAMILTON and Richard S.J. TOL</i> : <u>The Impact of Climate Change on Domestic and International Tourism: A Simulation Study</u> |
| KTHC | 87.2006 | <i>Fabio SABATINI</i> : <u>Educational Qualification, Work Status and Entrepreneurship in Italy an Exploratory Analysis</u> |
| CCMP | 88.2006 | <i>Richard S.J. TOL</i> : <u>The Polluter Pays Principle and Cost-Benefit Analysis of Climate Change: An Application of Fund</u> |
| CCMP | 89.2006 | <i>Philippe TULKENS and Henry TULKENS</i> : <u>The White House and The Kyoto Protocol: Double Standards on Uncertainties and Their Consequences</u> |
| SIEV | 90.2006 | <i>Andrea M. LEITER and Gerald J. PRUCKNER</i> : <u>Proportionality of Willingness to Pay to Small Risk Changes – The Impact of Attitudinal Factors in Scope Tests</u> |
| PRCG | 91.2006 | <i>Raphaël SOUBEYRAN</i> : <u>When Inertia Generates Political Cycles</u> |
| CCMP | 92.2006 | <i>Alireza NAGHAVI</i> : <u>Can R&D-Inducing Green Tariffs Replace International Environmental Regulations?</u> |
| CCMP | 93.2006 | <i>Xavier PAUTREL</i> : <u>Reconsidering The Impact of Environment on Long-Run Growth When Pollution Influences Health and Agents Have Finite-Lifetime</u> |
| CCMP | 94.2006 | <i>Corrado Di MARIA and Edwin van der WERF</i> : <u>Carbon Leakage Revisited: Unilateral Climate Policy with Directed Technical Change</u> |
| CCMP | 95.2006 | <i>Paulo A.L.D. NUNES and Chiara M. TRAVISI</i> : <u>Comparing Tax and Tax Reallocations Payments in Financing Rail Noise Abatement Programs: Results from a CE valuation study in Italy</u> |
| CCMP | 96.2006 | <i>Timo KUOSMANEN and Mika KORTELAINEN</i> : <u>Valuing Environmental Factors in Cost-Benefit Analysis Using Data Envelopment Analysis</u> |
| KTHC | 97.2006 | <i>Dermot LEAHY and Alireza NAGHAVI</i> : <u>Intellectual Property Rights and Entry into a Foreign Market: FDI vs. Joint Ventures</u> |
| CCMP | 98.2006 | <i>Inmaculada MARTÍNEZ-ZARZOSO, Aurelia BENGOCHEA-MORANCHO and Rafael MORALES LAGE</i> : <u>The Impact of Population on CO2 Emissions: Evidence from European Countries</u> |
| PRCG | 99.2006 | <i>Alberto CAVALIERE and Simona SCABROSETTI</i> : <u>Privatization and Efficiency: From Principals and Agents to Political Economy</u> |
| NRM | 100.2006 | <i>Khaled ABU-ZEID and Sameh AFIFI</i> : <u>Multi-Sectoral Uses of Water & Approaches to DSS in Water Management in the NOSTRUM Partner Countries of the Mediterranean</u> |
| NRM | 101.2006 | <i>Carlo GIUPPONI, Jaroslav MYSLAK and Jacopo CRIMI</i> : <u>Participatory Approach in Decision Making Processes for Water Resources Management in the Mediterranean Basin</u> |
| CCMP | 102.2006 | <i>Kerstin RONNEBERGER, Maria BERRITTELLA, Francesco BOSELLO and Richard S.J. TOL</i> : <u>Klum@Gtap: Introducing Biophysical Aspects of Land-Use Decisions Into a General Equilibrium Model A Coupling Experiment</u> |
| KTHC | 103.2006 | <i>Avner BEN-NER, Brian P. McCALL, Massoud STEPHANE, and Hua WANG</i> : <u>Identity and Self-Other Differentiation in Work and Giving Behaviors: Experimental Evidence</u> |
| SIEV | 104.2006 | <i>Aline CHIABAI and Paulo A.L.D. NUNES</i> : <u>Economic Valuation of Oceanographic Forecasting Services: A Cost-Benefit Exercise</u> |
| NRM | 105.2006 | <i>Paola MINOIA and Anna BRUSAROSCO</i> : <u>Water Infrastructures Facing Sustainable Development Challenges: Integrated Evaluation of Impacts of Dams on Regional Development in Morocco</u> |
| PRCG | 106.2006 | <i>Carmine GUERRIERO</i> : <u>Endogenous Price Mechanisms, Capture and Accountability Rules: Theory and Evidence</u> |
| CCMP | 107.2006 | <i>Richard S.J. TOL, Stephen W. PACALA and Robert SOCOLOW</i> : <u>Understanding Long-Term Energy Use and Carbon Dioxide Emissions in the Usa</u> |
| NRM | 108.2006 | <i>Carles MANERA and Jaume GARAU TABERNER</i> : <u>The Recent Evolution and Impact of Tourism in the Mediterranean: The Case of Island Regions, 1990-2002</u> |
| PRCG | 109.2006 | <i>Carmine GUERRIERO</i> : <u>Dependent Controllers and Regulation Policies: Theory and Evidence</u> |
| KTHC | 110.2006 | <i>John FOOT (lxxx)</i> : <u>Mapping Diversity in Milan. Historical Approaches to Urban Immigration</u> |
| KTHC | 111.2006 | <i>Donatella CALABI</i> : <u>Foreigners and the City: An Historiographical Exploration for the Early Modern Period</u> |
| IEM | 112.2006 | <i>Andrea BIGANO, Francesco BOSELLO and Giuseppe MARANO</i> : <u>Energy Demand and Temperature: A Dynamic Panel Analysis</u> |
| SIEV | 113.2006 | <i>Anna ALBERINI, Stefania TONIN, Margherita TURVANI and Aline CHIABAI</i> : <u>Paying for Permanence: Public Preferences for Contaminated Site Cleanup</u> |
| CCMP | 114.2006 | <i>Vivekananda MUKHERJEE and Dirk T.G. RÜBBELKE</i> : <u>Global Climate Change, Technology Transfer and Trade with Complete Specialization</u> |
| NRM | 115.2006 | <i>Clive LIPCHIN</i> : <u>A Future for the Dead Sea Basin: Water Culture among Israelis, Palestinians and Jordanians</u> |
| CCMP | 116.2006 | <i>Barbara BUCHNER, Carlo CARRARO and A. Denny ELLERMAN</i> : <u>The Allocation of European Union Allowances: Lessons, Unifying Themes and General Principles</u> |
| CCMP | 117.2006 | <i>Richard S.J. TOL</i> : <u>Carbon Dioxide Emission Scenarios for the Usa</u> |

| | | |
|------|----------|--|
| NRM | 118.2006 | <i>Isabel CORTÉS-JIMÉNEZ and Manuela PULINA: <u>A further step into the ELGH and TLGH for Spain and Italy</u></i> |
| SIEV | 119.2006 | <i>Beat HINTERMANN, Anna ALBERINI and Anil MARKANDYA: <u>Estimating the Value of Safety with Labor Market Data: Are the Results Trustworthy?</u></i> |
| SIEV | 120.2006 | <i>Elena STRUKOVA, Alexander GOLUB and Anil MARKANDYA: <u>Air Pollution Costs in Ukraine</u></i> |
| CCMP | 121.2006 | <i>Massimiliano MAZZANTI, Antonio MUSOLESI and Roberto ZOBOLI: <u>A Bayesian Approach to the Estimation of Environmental Kuznets Curves for CO₂ Emissions</u></i> |
| ETA | 122.2006 | <i>Jean-Marie GRETHER, Nicole A. MATHYS, and Jaime DE MELO: <u>Unraveling the World-Wide Pollution Haven Effect</u></i> |
| KTHC | 123.2006 | <i>Sergio VERGALLI: <u>Entry and Exit Strategies in Migration Dynamics</u></i> |
| PRIV | 124.2006 | <i>Bernardo BORTOLOTTI and Valentina MILELLA: <u>Privatization in Western Europe Stylized Facts, Outcomes and Open Issues</u></i> |
| SIEV | 125.2006 | <i>Pietro CARATTI, Ludovico FERRAGUTO and Chiara RIBOLDI: <u>Sustainable Development Data Availability on the Internet</u></i> |

(lxxviii) This paper was presented at the Second International Conference on "Tourism and Sustainable Economic Development - Macro and Micro Economic Issues" jointly organised by CRENoS (Università di Cagliari and Sassari, Italy) and Fondazione Eni Enrico Mattei, Italy, and supported by the World Bank, Chia, Italy, 16-17 September 2005.

(lxxix) This paper was presented at the International Workshop on "Economic Theory and Experimental Economics" jointly organised by SET (Center for advanced Studies in Economic Theory, University of Milano-Bicocca) and Fondazione Eni Enrico Mattei, Italy, Milan, 20-23 November 2005. The Workshop was co-sponsored by CISEPS (Center for Interdisciplinary Studies in Economics and Social Sciences, University of Milano-Bicocca).

(lxxx) This paper was presented at the First EURODIV Conference "Understanding diversity: Mapping and measuring", held in Milan on 26-27 January 2006 and supported by the Marie Curie Series of Conferences "Cultural Diversity in Europe: a Series of Conferences.

2006 SERIES

| | |
|-------------|--|
| CCMP | <i>Climate Change Modelling and Policy</i> (Editor: Marzio Galeotti) |
| SIEV | <i>Sustainability Indicators and Environmental Valuation</i> (Editor: Anna Alberini) |
| NRM | <i>Natural Resources Management</i> (Editor: Carlo Giupponi) |
| KTHC | <i>Knowledge, Technology, Human Capital</i> (Editor: Gianmarco Ottaviano) |
| IEM | <i>International Energy Markets</i> (Editor: Matteo Manera) |
| CSR | <i>Corporate Social Responsibility and Sustainable Management</i> (Editor: Giulio Sapelli) |
| PRCG | <i>Privatisation Regulation Corporate Governance</i> (Editor: Bernardo Bortolotti) |
| ETA | <i>Economic Theory and Applications</i> (Editor: Carlo Carraro) |
| CTN | <i>Coalition Theory Network</i> |