SCENES

Deliverable D6

An Information System for Regional Socio-Economic and Transport Demand-Influencing Factors:

The SCENES Internet Database

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List of Abbreviations

CEC	Central European Countries
CEEC	Central Eastern European Countries
CGI	Common Gateway Interface
DBI	Database Interface
DMS	Database Management System
ECU	European Currency Unit
EFTA	European Free Trade Association
GDP	Gross Domestic Product
GVA	Gross Value Added
ISCED	International Standard Classification of Education
ILO	International Labour Organisation
NACE	Nomenclature générale des Activités économiques dans les Communautés Européennes
NUTS	Nomenclature des Unités Territoriales Statistiques
PERL	Practical Extraction and Report Language
PPP	Purchasing Power Parities
PPS	Purchasing Power Standard
R&D	Research and Development
SQL	Structured Query Language

EXECUTIVE SUMMARY

The SCENES Internet Database has been established for the SCENES project in order to provide a common platform for regional data. The access to the database system is password-protected. Access to the SCENES Internet Database is given to the European Commission and the partners involved in the SCENES project.

The data sets available in the SCENES Internet Database are organised by a Database Management System, which allows a dynamic generation of the tables. A dynamic generation of the data is a precondition for the implementation of functions, which enable the user to specify the way of data delivery.

The SCENES Internet Database is a large assortment of regional data for nearly all countries in Europe. The database contains presently more than 1600 regions of 34 countries. Data for presently 31 indicators are available in the Internet information system. The SCENES Internet Database is an information pool for socio-economic, technology, transport and tourism indicators at regional level. As the databank contains many indicators, which affect the generation and the distribution of trips, it is a profound basis for modelling transport in Europe. The data sets presented in the SCENES Internet Database are also valuable for regional studies.

Concerning data availability in the SCENES Internet Database a rather good level has already been attained. As expected the situation of data availability in the EU and EFTA countries is better than in CE and CEE countries. By incorporating new tables and updating tables the contents of the SCENES Internet Database are improved and supplemented continuously.

The functions implemented in the SCENES Internet Database allow a comfortable handling of the data: The system allows the user two modes of data extraction, by countries and by indicators. Furthermore, the user is able to determine the way of data delivery by selecting a NUTS level and by formulating select conditions. All tables available in the SCENES Internet Database can be downloaded. Detailed information necessary for interpreting the data is provided by the information system. Since some of the data sets are calculated figures, the user is able to request online information on the equations applied. Moreover the user is informed about changes in the content of the database system.
The implementation of these features contributes to meet the philosophy of the SCENES Internet Database that is to provide high-quality data while ensuring a high level of user-friendliness and transparency.

1 INTRODUCTION

The present document describes the contents and the architecture of the SCENES Internet Database. Furthermore, the functions implemented in the information system are illustrated and the aspect of data availability is dealt with.

Chapter 2 is devoted to an illustration of the architecture of the SCENES Internet Database from a technical point of view. The most important elements the information system consists of are explained briefly. Chapter 3 specifies the scope and dimensions of the information system by describing, which regions and which indicators are considered. Chapter 4 pictures the functions implemented in the information system and hints at how transparency has been realised. Chapter 5 deals with the issue of data availability in the SCENES Internet Database. Graphics illustrate the data availability by countries and by indicators. Some of the data sets in the SCENES Internet Database do not stem from a certain data source, but have been calculated. In Chapter 6 the methodology applied for calculating data is described. Chapter 7 contains an outlook.

The annex contains detailed information about how to use the SCENES Internet Database. Moreover, the annex contains tables, which give an overview of data availability by countries and by indicators.

2 SYSTEM ARCHITECTURE

The SCENES Internet Database consists of two main components: A Database Management System (DMS) and those components, which serve as interface between the DMS and the Internet browser.

2.1 The SQL Database

The most important component of the SCENES Internet Database is the Database Management System (DMS), which is a precondition for a dynamic organisation of the data sets. Dynamic organisation of the data again is a precondition for enabling the user to specify the way of data delivery (in terms of allowing the user to select a NUTS level and to formulate select conditions). For the administration of the data sets the Database Management System "MySQL" is used. MySQL, which is a special kind of SQL (Structured Query Language) database, is a relational database, which allows a flexible handling of the data sets implemented. The Database Management System is compatible to the server's UNIX platform.

2.2 Interfaces between the SQL Database and the Internet Browser

There are two kinds of interfaces between the SQL Database and the Internet browser: the Common Gateway Interface (CGI) and the Database Interface (DBI).

The task of the Common Gateway Interface (CGI) is to intermediate between the user of the SCENES Internet Database and the MySQL database. Thus it interprets the inputs of the user (e.g. selection of a country or an indicator) and establishes via the Database Interface a connection to the MySQL database server. The CGI is also responsible for rejecting invalid inputs of the user and to build up new html pages.

The second interface is embedded in the Common Gateway Interface. The Database Interface is called by the CGI and translates CGI instructions into instructions supported by the MySQL server. Doing so

the DBI serves as interface between the Common Gateway Interface and the Database Management System.
The interfaces between the Database Management System and the Internet browser are written in PERL (Practical Extraction and Report Language).

3 CONTENTS OF THE SCENES INTERNET DATABASE

3.1 Countries

In the SCENES Internet Database most of the European countries -both Western and Eastern European countries- are considered. Presently the information system contains 34 countries, which can be subdivided into four groups:

- *EU Countries*: Austria, Belgium, Denmark, Finland, France, Greece, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, United Kingdom
- *EFTA Countries*: Norway, Switzerland
- *CE Countries*: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia
- *Other Central Eastern European Countries*: Albania, Belarus, Croatia, Macedonia, Ukraine, Russia, Yugoslavia

3.2 Regions

The SCENES Internet Database provides data for more than 1,600 European regions. The regions implemented in the information system are in most cases in line with the regions defined by EUROSTAT. The lowest NUTS level[1] available in the SCENES Internet Database is NUTS 3. Table 1 gives an overview of the regions considered in the SCENES Internet Database.

[1] In connection with the level of the regional structure NUTS 3 level is to be understood as "low" level and NUTS 0 level as "high" level.

Regions in the SCENES Internet Database								
	Code	Country	NUTS 1	#	NUTS 2	#	NUTS 3	#
EU Countries	AT	Austria	Gruppen von Bundesländern	3	Bundesländer	9	Gruppen von politischen Bezirken	35
	BE	Belgium	Régions	3	Provinces	11	Arrondissements	43
	DK	Denmark	Danmark	1	Danmark	1	Amter	15
	DE	Germany	Länder	16	Regierungsbezirke	40	Kreise	441
	GR	Greece	Groups of development regions	4	Development regions	13	Nomoi	51
	ES	Spain	Agrupacion de comunidades autonomas	7	Comunidades autonomas +Ceuta y Melilla	17 +1	Provincias +Ceuta y Melilla	50 +2
	FR	France	Z.E.A.T. +DOM	8 1	Régions +DOM	22 +4	Départements +DOM	96 +4
	IE	Ireland	Ireland	1	Regions	2	Regional Authority Regions	8
	IT	Italy	Gruppi di regioni	11	Regioni	20	Provincie	103
	LU	Luxembourg	Luxembourg	1	Luxembourg	1	Luxembourg	1
	NL	The Netherlands	Landsdelen	4	Provincies	12	COROP regions	40
	PT	Portugal	Continente +Regioes autonomas	1 2	Comissaoes de coordenaçao regional +Regioes autonomas	5 +2	Grupos de Concelhos +Regioes autonomas	30 +2
	FI	Finland	Manner-Suomi/ Ahvenanmaa	2	Suuralueet	6	Maakunal	20
	SE	Sweden	Sverige	1	Riksområden	8	Län	21
	UK	United Kingdom	Government Office Regions; Countries	12	Counties, Inner and Outer London; Groups of unitary authorities; Country	37	Upper tier authorities or groups of lower tier authorities; Groups of unitary authorities; Groups of districts	133
EFTA	CH	Switzerland	Schweiz/ Suisse/ Svizzera	1	Grossregionen/ Grandes Régions/ Grandi Regioni	7	Kantone/ Cantons/ Cantoni	26
	NO	Norway	Norge	1	Landsdeler	7	Fylker	19
CE Countries	BL	Bulgaria*)	-	1	Regions	3	Regions	9
	CZ	Czech Republic*)	-	1	Administrative regions	8		
	EE	Estonia	Eesti	1	Eesti	1	Groups of Maakond	5
	HU	Hungary	Magyarorszag	1	Tervezesi-Statisztikai Regio	7	Megyek + Budapest	19 +1
	LV	Latvia	Latvija	1	Latvija	1	Regions	5
	LT	Lithuania	Lietuva	1	Lietuva	1	Apskritis	10
	PL	Poland	-	1	-	1	Wojewodztwa*)	49
	RO	Romania	Romania	1	Regions	7	Judet +Bucuresti	41 +1
	SK	Slovak Republic	Slovenska Republika	1	Zoskupenia Krajov	4	Kraje	8
	SI	Slovenia	Slovenija	1	Slovenija	1	Statisticne Regije	12
Others	AL	Albania**)	-	-	Regions	7	-	-
	CR	Croatia**)	-	1	-	1	Administrative regions	20
	RU	Russia**)	-	1	Groups of regions	12	-	-
	YU	Yugoslavia**)	-	1	-	1	Greater administrative regions	4
	BL	Belarus**) n)	-	-	-	-	-	-
	MC	Macedonia**) n)	-	-	-	-	-	-
	UR	Ukraine**) n)						
	*) NUTS classifications used are different from the present official classification by EUROSTAT **) NUTS classifications used have no official status and illustrate only the classification used within the SCENES project n) Data are available at national level							

Table 1: European regions available in the SCENES Internet Database

3.2.1 European Union and European Free Trade Association Countries

The NUTS classifications for most the EU 15 countries are official classifications published by EUROSTAT. In case of EU countries the classification used was published by EUROSTAT in 1995[2], in case of EFTA countries in 1999[3].

[2] See EUROSTAT: Régions, NUTS. Luxembourg, 1995.

[3] See EUROSTAT: Statistical regions in the EFTA countries and the Central European Countries (CEC). Luxembourg, 1999.

In 1998 however, the regional structure has changed in some EU countries: A complete change in the regional structure was carried out in the United Kingdom. Some slight changes were performed in the Eastern part of Germany (within the NUTS 1 regions Saxony and Thuringia), Ireland, Sweden and Finland. An official publication with a documentation of these changes has not been available yet. Nevertheless, in reliance of a preliminary document from EUROSTAT, the new classification has been considered within most of the tables.

3.2.2 Central European Countries

The presentation of data sets for Central European Countries depends on the way of data acquisition applied in the SCENES project (See: University of Gdansk, Niezalezny Osrodek Badan Ekonomicznych (NOBE), Institute for Transport Sciences (KTI): CEEC data and method. Deliverable D1 of the SCENES project. Revised version. 1999.). In most cases the classification of regions in the SCENES document is in line with the official segmentation published by EUROSTAT.[4] However, the regional data for Bulgaria and the Czech Republic, which were raised within SCENES refer to a regional structure, which differs from the official EUROSTAT structure. The data sets for Poland are available for the former 49 voivodships.

Thus the Polish, Czech and Bulgarian regions, which are available in the SCENES Internet Database are based on a former, unofficial regional segmentation.

3.2.3 Other Central Eastern European Countries

For the other CEE Countries an official NUTS classification is not available. Thus the segmentation applied within the SCENES Internet Database refers to an unofficial classification, which has been used in the SCENES project.[5]

3.3 Indicators

The SCENES Internet Database presently contains 31 indicators, which belong to the domains population and area, employment, economy, technology, trade, transport and tourism:

- *Population and area*: Area, Population by age and sex, Population by profession, Population by level of education, Pupils and students, Population by car availability (motorization), Households by size, Disposable income of households, Household expenditures
- *Employment:* Employment by sectors, Unemployment
- *Economy:* Gross Domestic Product, Gross Value Added by sectors, Gross capital formation by sectors, Gross Domestic Product in Purchasing Power Standard
- *Technology:* Research & Development expenditures, Patent applications, Research & Development personnel
- *Trade:* Import/ export (tons), Import/ export (values)
- *Transport:* Vehicle stock, Infrastructure road, Infrastructure rail, Infrastructure inland waterways, Infrastructure pipelines, Transport volume, Transport performance

[4] EUROSTAT: Statistical regions in the EFTA countries and the Central European Countries (CEC). Luxembourg, 1999.

[5] University of Gdansk, Niezalezny Osrodek Badan Ekonomicznych (NOBE), Institute for Transport Sciences (KTI): CEEC data and method. Deliverable D1 of the SCENES project, 1999.

- *Tourism:* Accommodations, Beds, Rooms, Stays overnight

This paragraph describes those indicators in a more detailed way, which have not been collected for the SCENARIOS project.[6] The other indicators are just briefly mentioned.
The explanations made in this paragraph refer to the EU- and EFTA-countries. A description of the methodology applied for data collection in CE and CEE countries is dealt with in another publication (see University of Gdansk, Niezalezny Osrodek Badan Ekonomicznych (NOBE), Institute for Transport Sciences (KTI): CEEC data and method. Deliverable D1 of the SCENES project. Revised version. 1999.).

Population and Area

Area

The spatial extension of regions measured in square-kilometres (skm) is a basic information and precondition for calculating the population density and other area-related indicators.

Population by age and sex

This indicator contains the number of inhabitants by age classes and by gender. In most cases the age classes used for Western European countries are 5-years cohorts.

Population by profession

This indicator contains information about the occupational status of the inhabitants of a country or a region respectively.

Population by level of education

The level of education refers to the educational attainment level of the adult persons. In order to subdivide the persons in different education levels, a differentiation due to the International Standard Classification of Education (ISCED) is used:[7]

ISCED 0 (Pre-primary education):	Education proceeding primary education.
ISCED 1 (Primary education):	Compulsory education, which begins between the ages of four and seven and usually lasts for five or six years.
ISCED 2 (Lower secondary education):	Compulsory schooling in all EU countries. The end of this level coincidences with the end of full-time compulsory schooling.
ISCED 3 (Upper secondary education):	Begins around the age of 14 or 15 and refers to general, vocational or technical education. It can lead to the standard required for admission to tertiary sector.
ISCED 5,6,7 (Tertiary sector):	Contains programmes, whose admission requires usually the successful completion of the upper secondary level (ISCED 5), or which lead to a university degree or

[6] See Institut für Wirtschaftspolitik und Wirtschaftsforschung (IWW): External Developments and Relationship to the Transport Sphere. Deliverable D2 of the SCENARIOS project, 1997.
[7] See EUROSTAT: Education across the European Union, 1998.

equivalent (ISCED 6), or which result in a second, post graduate university degree (ISCED 7).

The data for EU countries and Switzerland are available in the SCENES Internet Database at following three levels: Low (ISCED < 3), Medium (ISCED 3), High (ISCED 5,6,7).

Pupils and students

The numbers of students and pupils by different educational establishments are listed in the indicator "Pupils and students". The categorisation corresponds with that of the previous indicator.

Population by car availability

This indicator contains the number of passenger cars per 1,000 inhabitants, which is also known as rate of motorization. Either the values were calculated with formula (1), or the data are original figures from statistical sources.

$$CA(i) = \frac{PC(i)}{\sum_g \sum_c Pop(i,g,c)} \cdot 1000 \qquad (1)$$

where

CA (i) is the car availability in region i,

Pop(i,g,c) the number of inhabitants in region i belonging to age class c and with gender g,

and *PC (i)* the number of passenger cars in region i.

Households by size

"Households by size" contains the number of household by the number of persons living together within the same household.

Disposable income of households

The "Disposable income of households" is the average amount of money, which is available for saving and for consumption. The value refers to the period of one year.

Expenditures of households

This indicator contains the amount of average annual household expenditures. Moreover, the shares of the expenditures by commodity groups are given.

Employment

Employment by sectors

Employment is used according to the ILO definition of employment.[8] Therefore the employment data comprise both persons in paid employment and self-employed persons. The employment data refer to the population of working age (15-64 years).

Unemployment

According to the ILO definition those persons are "unemployed", which belong to the population of working age (15-64 years) and which meet following conditions simultaneously:[9]

[8] See EUROSTAT: Unemployment - Monthly Statistics, 12/97.
[9] Dito

- Without work
- Currently available for work
- Seeking work

Economy

GDP, GVA by sectors

The indicators “GDP” and ”GVA by Sectors” contain the data for the Gross Domestic Product values and the Gross Value Added by economic sectors.

GDP per capita in PPS

"GDP per capita in PPS" represents the GDP per capita in Purchasing Power Standard. This indicator has a high force of expression, because it eliminates different price levels in different countries. The values were derived from national GDP figures in PPS, which were assigned to regions. PPS is the artificial currency of Purchasing Power Parities (PPP). PPP calculations are based on price surveys covering a basket of goods and service, which are both comparative and representative for the referring countries.[10]

Gross capital formation

The gross capital formation consists of resident producers' acquisitions, less disposals of fixed assets during a given period plus certain additions to the value of non-produced assets realised by the productive activity of producer or institutional units. It can e.g. be distinguished between equipment and construction.

Technology

R&D expenditures

Research and development expenditures include all funds used for the performance of R&D within the reporting unit. It includes current expenditures like employment costs, expenditures on materials, and capital expenditures on e.g. buildings or equipment.

However, even the data of the countries belonging to the EU are -due to differences in interpreting the definitions, disparate survey methods and peculiarities of national R&D systems- not wholly comparable.[11]

Patent applications

The number of patent applications serves as an indicator for R&D output, especially for application-oriented types of R&D. The number of patent applications give an indication of the evolution of innovative activities in a country or a region.

R&D personnel

The data for R&D personnel in EU countries includes all persons employed directly in R&D plus persons supplying direct services to R&D, such as managers, administrative staff and office staff.

[10] See European Commission, EUROSTAT (1999)
[11] See EUROSTAT: Research and Development, 1997.

Trade

Import/Export (tons)

This indicator contains the amount of import and export by weight. If available, this indicator also contains the modal shares of import and export.

Import/Export (values)

The import and export by values is given in ECU and in the origin currency. As far as available, also the modal shares of import and export are given in the SCENES Internet Database.

Transport

Vehicle stock

The data sets provided for the indicator ”Vehicle stock” contain the numbers of different types of vehicles (e.g. passenger cars, motorcycles, lorries, tractors).

Infrastructure road

The road infrastructure data comprise the length of the whole network and -as far as available- data for the length of motorways, major, minor roads and/ or local roads.

Infrastructure rail

This indicator informs about the length of the railway network. For most of the countries the length of the total network, the length of electrified lines and the length of lines with two or more tracks are given.

Infrastructure inland waterways

The indicator “Infrastructure Inland Waterways” provides information about the length of the inland waterway system -for some countries differentiated by canals and rivers.

Infrastructure pipelines

The data given for the infrastructure pipeline contain data for the length of the pipeline infrastructure - in most cases differentiated by pipelines for oil and pipelines for natural gas.

Transport volume

"Transport volume" refers both to passenger and freight transport. Transport volume is measured in ”passengers” and ”tons carried” respectively. The figures refer to the transport volume generated on the country's networks.

Transport performance

The data provided for transport performance embrace both the passenger and the freight sector. The values are measured in ”passenger-kilometres” and ”ton-kilometres” and refer to the transport performance generated on the country's network.

Tourism

The tourism indicators are a hint for the touristic attractiveness of a region. "Tourism" comprises "the activities of persons travelling to and staying in places outside their usual environment for not more than

one consecutive year for leisure, business and other purposes".[12] However, it is only partly possible to compare the values among different countries, because the basis the data refer to may differ significantly. In some countries the data available comprise all kinds of accommodation possibilities, in other countries the values refer to hotels only. A harmonised way of collecting tourism data has been being elaborated by EUROSTAT.[13]

Accommodations, Rooms, Beds, Stays overnight

Both demand and supply indicators are available in the SCENES Internet Database: The information about the number of accommodation establishments, the number of available bedrooms and beds represent the supply, the numbers of stays overnight the demand side. As far as available, the figures distinguish between different types of accommodation establishments (e.g. hotels, guesthouses, camping sites etc.).

3.4 Basic Features of the Data

The SCENES Internet Database provides the user with all information necessary in order to make understandable the background of the figures. The year and the data origin are given for each table. In the facultative field ”Comment” further information on the data sets is given.

3.4.1 Reference Year

The base year for the data collection has been 1996. However, not all data sets have been available at regional level for 1996. Especially data, which result from a census (e.g. household expenditures), may refer to 1995 or earlier. In some cases the SCENES Internet Database provides data for a more recent point of time than 1996.

3.4.2 Currencies

Monetary values (e.g. Expenditures of households, GDP, GVA) are given in the original currency and -as far as the total value is regarded- also in ECU. In order to make the process of converting currencies comprehensible, the user is informed about which currency the original one is and about the exchange rate used for converting. The exchange rates used are -as far as available- those annual rates, which are published by the European Commission (DG II).[14]

3.4.3 Data Sources

The data sets published in the SCENES Internet Database are from various sources. Many tables are from national statistical offices or EUROSTAT. Some tables stem from government ministries or other organisations like national tourist boards.

As a reference for the origin of many of the tables for the CE Countries and the other Eastern European countries the accordant SCENES Deliverable is given, which contains further information about the origin of the data sets for these groups of countries. Some tables for CE and CEE countries are from the TINA project.

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[12] Arto Luthio in EUROSTAT et al, 1997

[13] Arto Luthio in OECD et al, 1995

As far as there is no hint in the ”Comment” all values are original values. Only in some cases figures were ”updated”, calculated or ”broken down” to a lower NUTS level. The methods applied in these cases are described in Chapter 6.

4 USAGE OF THE SCENES INTERNET DATABASE

The access to the SCENES Internet Database is password-protected. Access is given to the European Commission and the institutes involved in the SCENES project.

When building up the SCENES Internet Database special importance has been attached to create a *user-friendly* information system with a *high level of transparency*. In order to establish a user-friendly information system functions were implemented, which allow the user two alternatives for extracting data and which allow the user to determine the way of data delivery (e.g. by integrating options to select the NUTS level and to formulate select conditions). Transparency is attained by applying transparency for the SCENES Internet Database as a whole and for the data itself.

4.1 Functions Implemented in the Information System

The various functions implemented in the SCENES Internet Database are described in the present paragraph. A detailed description of how to use the information system can be found in the annex and online on the website of the SCENES Internet Database.

4.1.1 Two Modes of Data Extraction

Two alternatives of extracting data have been implemented in the SCENES Internet Database:

- Data extraction by countries
- Data extraction by "comparable indicators"

When using the first mode the user receives data for the selected country. This mode of data extraction enables the access to all data sets available in the information system. The data sets extracted by this mode are in most cases more detailed than those received when extracting data by the second mode.

The second mode of data extraction allows the user to extract data sets of an indicator for several countries simultaneously. For this mode data for following indicators are available presently: Population/inhabitants, Households, Population by car availability, Employment, Unemployment, GDP, GVA by sectors and GDP per capita in PPS. In order to attain comparability the data accessible by this mode may be less detailed (e.g. the data for the indicator "Population" do neither differentiate by age nor by sex). The data received by this mode of data extraction are not necessarily wholly comparable, since e.g. the base year may differ among the selected countries.

Generally speaking the more detailed data and the most detailed information on the data are received by extracting data by countries.

4.1.2 Downloading Files

All tables available in the SCENES Internet Database can be downloaded as txt files. Txt files can be used by all common application software.

[14] See http://europa.eu.int/comm/dg02/xecua.htm

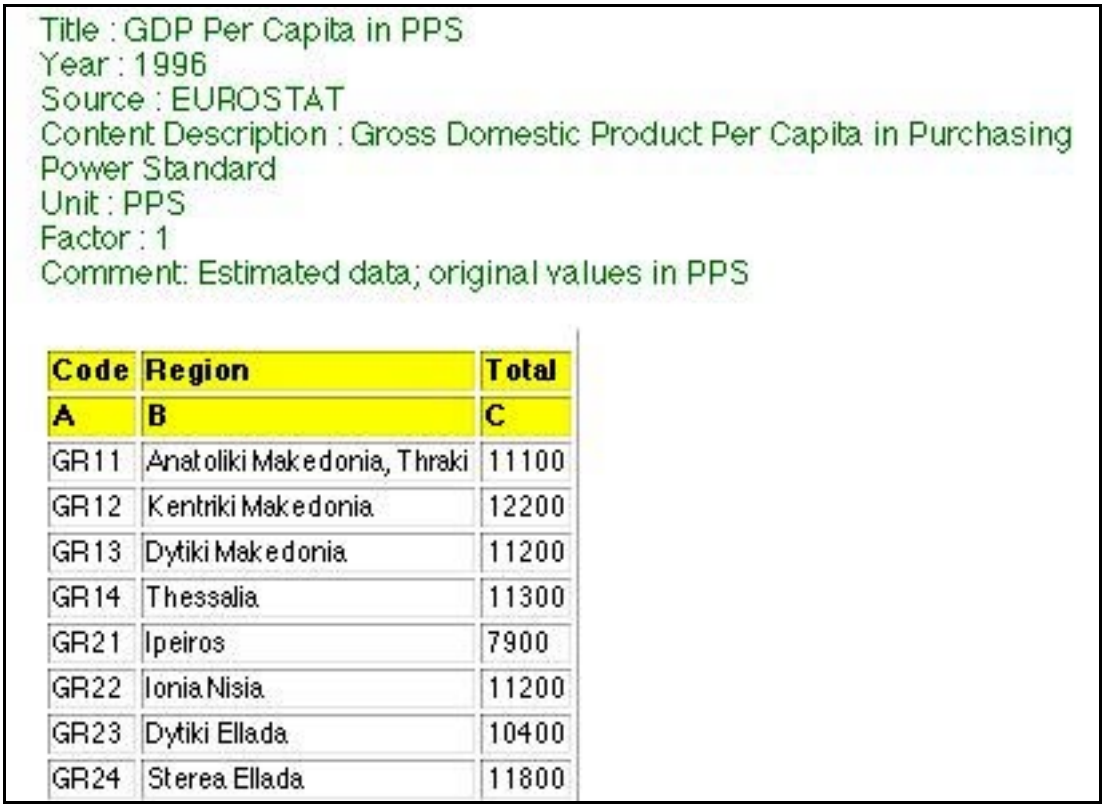
4.1.3 Selection of the NUTS Level

The user is able to select a regional level, at which the data shall be shown. The system allows the user to receive the country's regions in a hierarchical structure, which gives an overview of the regional structuring of the country (see Figure 1) or to receive the data at a certain NUTS level (Figure 2).

Title : GDP Per Capita in PPS
Year : 1996
Source : EUROSTAT
Content Description : Gross Domestic Product Per Capita in Purchasing Power Standard
Unit : PPS
Factor : 1
Comment: Estimated data; original values in PPS

Code	Region	Total
A	B	C
GR	Ellada	12200
GR1	Voreia Ellada	11700
GR11	Anatoliki Makedonia, Thraki	11100
GR12	Kentriki Makedonia	12200
GR13	Dytiki Makedonia	11200
GR14	Thessalia	11300
GR2	Kentriki Ellada	10500
GR21	Ipeiros	7900

Figure 1: Screenshot - Formation of the regions in hierarchical structure

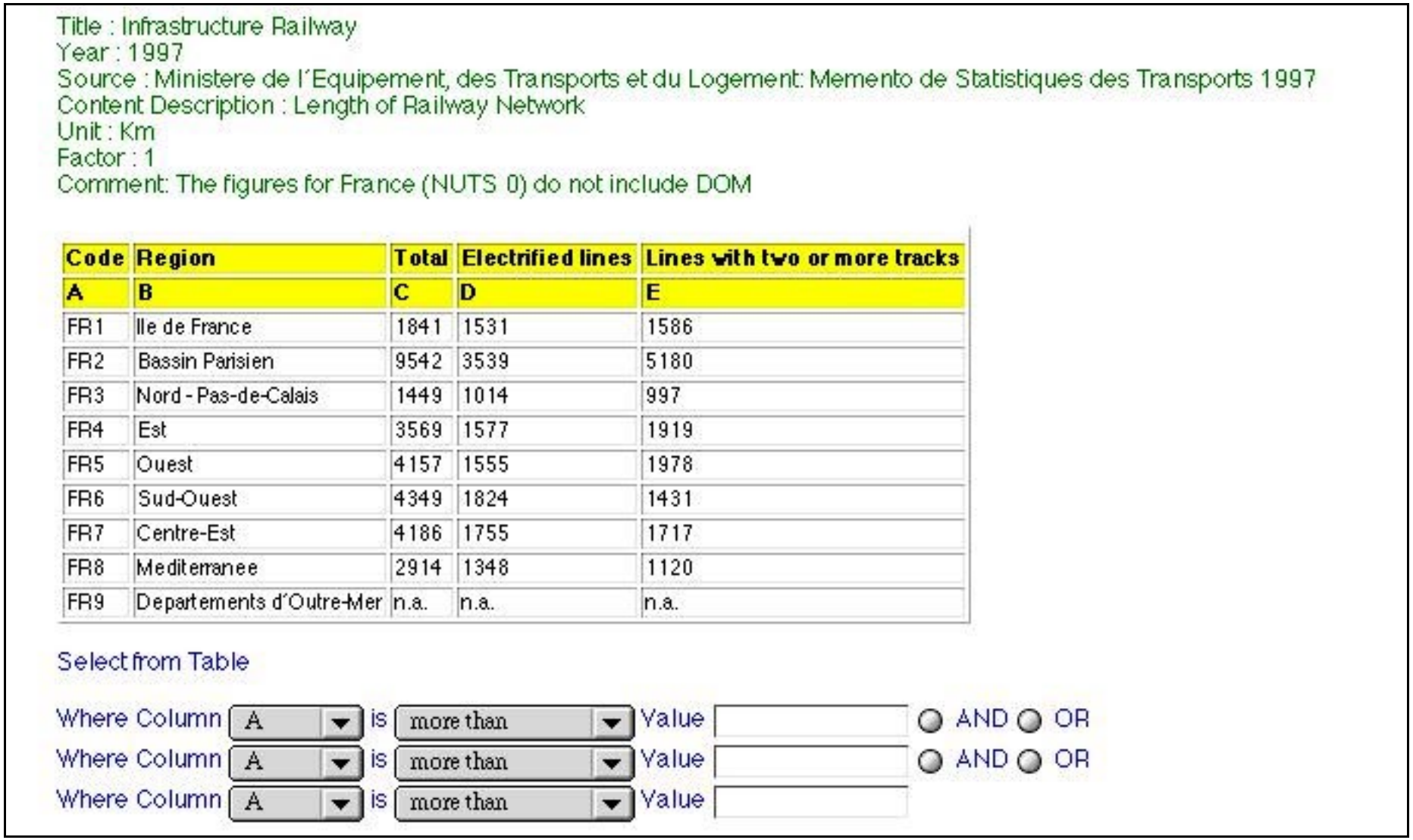

Title : GDP Per Capita in PPS
Year : 1996
Source : EUROSTAT
Content Description : Gross Domestic Product Per Capita in Purchasing Power Standard
Unit : PPS
Factor : 1
Comment: Estimated data; original values in PPS

Code	Region	Total
A	B	C
GR11	Anatoliki Makedonia, Thraki	11100
GR12	Kentriki Makedonia	12200
GR13	Dytiki Makedonia	11200
GR14	Thessalia	11300
GR21	Ipeiros	7900
GR22	Ionia Nisia	11200
GR23	Dytiki Ellada	10400
GR24	Sterea Ellada	11800

Figure 2: Screenshot - Formation of the regions at a certain NUTS level

4.1.4 Formulating Select Conditions

After having received a table, the user has the possibility to formulate a select condition. This feature enables the user to select those data sets, which correspond with the formulated condition. Maximal three conditions can be formulated and joined with "and" or "or". Figure 3 shows the mask for formulating a query, which is situated under each table.



Title : Infrastructure Railway
Year : 1997
Source : Ministere de l´Equipement, des Transports et du Logement: Memento de Statistiques des Transports 1997
Content Description : Length of Railway Network
Unit : Km
Factor : 1
Comment: The figures for France (NUTS 0) do not include DOM

Code	Region	Total	Electrified lines	Lines with two or more tracks
A	B	C	D	E
FR1	Ile de France	1841	1531	1586
FR2	Bassin Parisien	9542	3539	5180
FR3	Nord - Pas-de-Calais	1449	1014	997
FR4	Est	3569	1577	1919
FR5	Ouest	4157	1555	1978
FR6	Sud-Ouest	4349	1824	1431
FR7	Centre-Est	4186	1755	1717
FR8	Mediterranee	2914	1348	1120
FR9	Departements d´Outre-Mer	n.a.	n.a.	n.a.

Select from Table

Where Column A is more than Value AND OR
Where Column A is more than Value AND OR
Where Column A is more than Value

Figure 3: Screenshot - Mask for formulating select conditions

4.1.5 Online Information about Equations

Some of the data published in the SCENES Internet Database have been calculated by IWW. In these cases the user can request online information about the equations applied. Figure 4 shows a screenshot with online information on the methodology applied for calculating data.

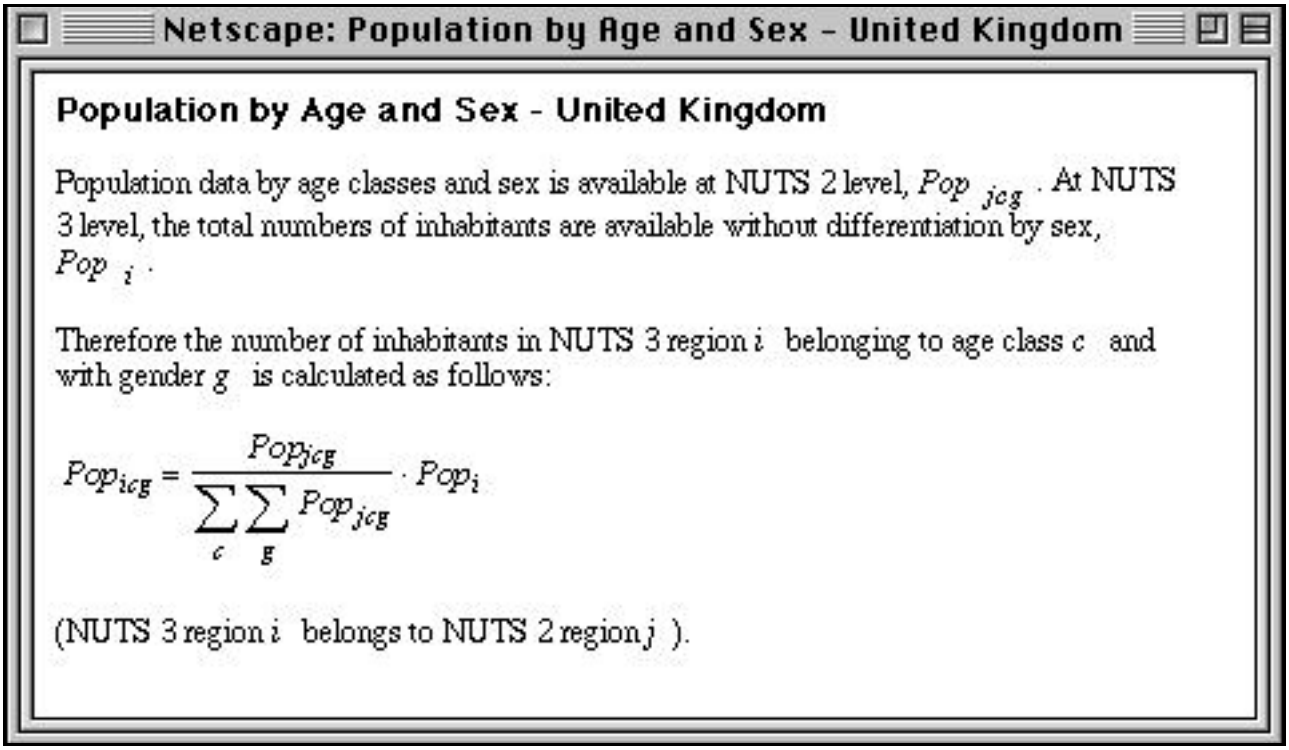


Figure 4: Screenshot - Online information on equations applied for calculating data

4.2 Realisation of Transparency

It has been a crucial aim to establish a transparent information system. Transparency refers to the information system as a whole and to the data presented by the information system.

4.2.1 Transparency of the Information System as a Whole

The Internet is a dynamic medium, whose contents can be subject to steady change. The contents of the SCENES Internet Database are also subject to change, because tables are updated or new tables implemented from time to time. In order to enable the user to get quickly an overview of occurred changes and improvements, major changes are documented online. Figure 5 shows a small part of the table with the update information, which is available online.

New/ updated tables since 27/10/1999

Date	Indicator	Country	New/Updated tables	Remark
02/11/1999	Population by Profession	Belgium	New table	-
02/11/1999	Import/Export by Weight	Netherlands	New table	-
05/11/1999	Disposable Income of Households	Spain	New table	-
05/11/1999	Households by Size	Spain	New table	-

Figure 5: Screenshot - Online information about new or updated tables

4.2.2 Transparency of the Data

The high level of transparency refers not only to the information system, but also to the data sets itself. The tables provided in the SCENES Internet Database contain all attributes necessary for interpreting the data (see Figure 6). The attributes of the data are situated above the tables. Those tables, whose data sets were calculated, provide online information on the equations used for calculating the data (see above).

Title : GVA by Sectors
Year : 1996
Source : Statistisches Landesamt Baden-Wuerttemberg, Arbeitskreis VGR der Laender
Content Description : Gross Value Added by Economic Sectors
Unit : See table
Factor : 1,000,000
Comment : At market prices; original values in DEM; 1996 : 1 ECU = 1.90954 DEM

Code	Region	Total (ECU)	Total (DEM)	Agriculture, forestry, fishing (DEM)	Industry (DEM)	Trade and transport (DEM)	Service (DEM)	Government, private households, non-profit organisations (DEM)
A	B	C	D	E	F	G	H	I
DE111	Stuttgart, Stadtkreis	26852	51275	38	15648	6511	22314	6764
DE112	Boeblingen	10461	19975	65	10706	1863	5926	1415
DE113	Esslingen	12055	23019	85	10241	3002	7691	2000
DE114	Goeppingen	5414	10339	96	4369	1349	3464	1061
DE115	Ludwigsburg	10574	20192	199	8229	2876	7050	1838
DE116	Rems-Murr-Kreis	8021	15316	145	6356	1573	5635	1607
DE117	Heilbronn, Stadtkreis	4082	7794	44	2399	1680	2708	963

Figure6: Screenshot - Detailed information about the data situated above every table

5 DATA AVAILABILITY IN THE SCENES INTERNET DATABASE

This chapter is devoted to a description of data availability in the SCENES Internet Database. A rather good level of data availability has been attained; the situation in EU and EFTA countries leaves only little to be desired. The data availability situation for the CE and CEE countries however, still shows some potential for improvements, especially if the data availability at *regional* level is considered. The situation of data availability refers to a reference date (22 December 1999) and is subject to future improvements, since the information system is updated and supplemented continuously.
The annex contains tables for the availability of data by countries and by indicators, which quickly give an overview of which data sets are available at which regional level.

5.1 Changes in the Regionalisation and Consequences for Data Availability

In 1998 changes in the structure of regions were carried out in Finland, Germany, Ireland, Sweden and the United Kingdom. The changes in the regional structuring are rather slight in case of Finland, Germany, Ireland and Sweden. In the United Kingdom however, an ample re-structuring has been carried out. Data for the "new" regions cannot be derived from data referring to the "former" regions. Thus some data sets in the SCENES Internet Database are available for the "new regions" only, others only for the former ones. Due to the complete change in the regional structure tables for the UK are often available at NUTS 1 level only.

5.2 Data Availability at Regional Level

By comparing the availability of data at *regional* level with the availability of data at *national* level, one can observe at least two main differences:

- Regional data are often less detailed than national data. It can be said as a matter of principle that the number of available features decreases with a lower level of aggregation. As an example, GVA values for Belgium are available at NUTS 3, NUTS 2, NUTS 1 and at national level. At national level GVA values are published for 60 economic sectors. At NUTS 1 level GVA is available by 44 sectors, at NUTS 2 by 17, and at NUTS by only three economic sectors. This scheme of publishing data for GVA by sectors is applied by most of the statistical offices in order to ensure confidentiality and to disable the user of the data to assign the values to a single company. Thus by collecting regional data one often has to resign on a high differentiation of the data in favour of getting data at a lower regional level.
- In some cases regional data are less up-to-date than national data. Regional data for the number of household by size, household expenditures and household income often stem from a census. Therefore data sets for these indicators may refer to 1992 or earlier.

5.3 Data Availability by Countries

When describing the data availability in the SCENES Internet Database by countries at least following two aspects can be considered: the number of indicators data are available for the referring country and the extent of *regional* availability of data.

As an indicator for the availability of data at regional level in country *C*, DA^C, can defined as follows:

$$DA^C = \frac{\sum_{j=1}^{n} f(I_j^C)}{n} \quad ,$$

where

$I_1^C, I_2^C, ..., I_j^C, ..., I_n^C$ are those indicators, for which data are available in the SCENES Internet Database for country C,

and

$$f(I_j^C) = \begin{cases} 0 & \text{, lowest available NUTS level for indicator } I_j \text{ in country } C \text{: NUTS 0} \\ 1 & \text{, lowest available NUTS level for indicator } I_j \text{ in country } C \text{: NUTS 1} \\ 2 & \text{, lowest available NUTS level for indicator } I_j \text{ in country } C \text{: NUTS 2} \\ 3 & \text{, lowest available NUTS level for indicator } I_j \text{ in country } C \text{: NUTS 3} \end{cases}$$

By interpreting the illustration of Figure 6 one should take into account that some of the considered countries are both a NUTS 0 and a NUTS 1 region (Ireland, Sweden, Switzerland, Czech Republic, Hungary, Romania, Slovakia, Albania[*)], Russia[*)] and Yugoslavia[*)]), a NUTS 0, NUTS 1 and NUTS 2 region (Denmark, Estonia, Latvia, Lithuania, Poland, Slovenia and Croatia[*)]) or, in case of Luxembourg a NUTS 0, NUTS 1, NUTS 2 and NUTS 3 region. Thus the DA^C values for the first group of countries amount at least to 1.0, for the second group at least to 2.0 and for Luxembourg to 3.0.

Regarding Figure 6 one may realise that most of the Western European countries are close together and show a positive situation of data availability.

Concerning DA^C Luxembourg, Poland, Slovenia, Estonia, Denmark, Croatia, Lithuania, Sweden, Switzerland and Latvia show a strong performance ($DA^C > 2.0$). The relatively low level of DA^C for UK seems to be a result from the complete change in the regional structure. After a short period of changeover the DA^C value for the UK is expected to improve considerably. For Ukraine, Belarus and Macedonia data were gathered at national level. This is the reason why the DA^C values for these countries amount to zero.

As far as the number of available indicators in the SCENES Internet Database is concerned, Switzerland, France, Finland, United Kingdom, Germany, the Netherlands, Portugal, Denmark, Greece, Austria and Belgium show a strong performance. The number of indicators available for Albania, Croatia, Yugoslavia and the Ukraine are still rather low (< 20).

Generally speaking, the situation of data availability for EU and EFTA countries is better than for CE countries. The situation for CE countries again is significantly better than for CEE countries. The data availability situation in CE countries is expected to improve, so that differences between EU/ EFTA and CE countries decrease. However, differences in the level of data availability between EU, EFTA and CE countries on the one hand, and CEE countries (Albania, Belarus, Croatia, Macedonia, Russia, Ukraine and Yugoslavia) on the other hand, may persist within the next few years.

[*)] The NUTS classification assumed has no official status and illustrates only the classification used within the SCENES project

5.4 Data Availability by Indicators

If data availability by indicators is regarded, one can assess data availability in at least two dimension: the first dimension is, whether data are available for an indicator or not. The second dimension considers the extent of regional availability of data for the considered indicator. In order to define an index for regional data availability by indicators, DA^I, following equation is applied:

$$DA^I = \frac{\sum_{k=1}^{m} f(C_k^I)}{m} \quad ,$$

where

$C_1^I, C_2^I, ..., C_k^I, ..., C_m^I$ are those countries, for which data are available in the SCENES Internet Database for indicator *I*,

and

$$f(C_k^I) = \begin{cases} 0 & \text{, lowest available NUTS level for indicator } I \text{ in country } C_k : \text{NUTS 0} \\ 1 & \text{, lowest available NUTS level for indicator } I \text{ in country } C_k : \text{NUTS 1} \\ 2 & \text{, lowest available NUTS level for indicator } I \text{ in country } C_k : \text{NUTS 2} \\ 3 & \text{, lowest available NUTS level for indicator } I \text{ in country } C_k : \text{NUTS 3} \end{cases}$$

The abscissa in Figure 7 represents the number of countries the referring indicator is available for. The ordinate shows the values for DA^I.

Data for the indicators Population by age and sex, Area, GDP, Unemployment, Employment, Vehicle stock, Infrastructure road, Population by car availability, Infrastructure rail and Transport performance are available for at least 33 out of the 34 countries considered in the SCENES Internet Database. Concerning DA^I the indicators Population by age and sex, Area, GDP, Accommodation, GDP per Capita in PPS, Unemployment, Stays overnight, Households by size, Vehicle stock, Beds, GVA by sectors, Employment by sectors, Population by Level of education and Population by car availability show a strong performance.

In the domain "Population and Area" data availability for Population by age and sex and Area shows the strongest performance. Data sets for Households by size are available at a rather low NUTS level, but are presently missing for some of the CE and CEE countries. Tables for Disposable income of households are presently available for 13 EU countries and Switzerland. Figures for the indicator Household expenditures are available for most of the considered countries, but for many countries the figures are available at national level or at a higher regional level (NUTS 1, NUTS 2). For Spain, Ireland, Luxembourg, Switzerland and Norway data sets for this indicator are available at NUTS 3 level.

Indicators belonging to the domain "Employment" show a remarkably strong performance. Tables for the indicators Employment and Unemployment are available for every country[15] at a rather low regional level.

Most of the indicators belonging to the domain "Economy" show a good performance (GDP, GDP per capita in PPS and GVA), whereas the data availability situation for Gross Capital Formation is not that good, since data for this indicator are for many countries available at national level only.

[15] Only exception: Unemployment data are missing for Croatia

In the section "Technology" the indicator Patent applications shows -as far, as DA^I is concerned- a very positive performance. However, data for this indicator are presently only available for the EU countries and Switzerland. Data for R&D expenditures and R&D personnel are available for many countries, but only for EU countries at regional level.

The data availability situation for Import/Export measured by values is significantly better than for Import/Export by weight. Import/Export data measured by weight are available for most of the Western European countries and a few of the CE and CEE countries.

In the domain "Transport" the indicator Vehicle stock shows the best performance. Concerning the availability of transport infrastructure data significant differences among the modes can be recognised: The best situation of data availability is attained for the mode road. Data for the railway and inland waterway infrastructure is on the average available at a higher NUTS level, whereas figures for the pipeline infrastructure are available at national level only. Data sets for Transport performance are available for all of the considered countries, for Transport volume for most of the countries. Data for these indicators are in most cases available at national level only; as expected the situation for freight transport data is significantly better than for passenger transport data. The ongoing deregulation of the rail system could make it in the future more difficult to receive data for the railway sector.

The data availability situation for the "Tourism" indicators is rather positive. Data sets for tourism accommodations are available at a remarkably low NUTS level, but are presently mainly available for EU and EFTA countries. Data for the number of rooms and beds in accommodation establishments are available for most of the countries and -as far, as the number of beds is concerned- at a noteworthy low regional level.

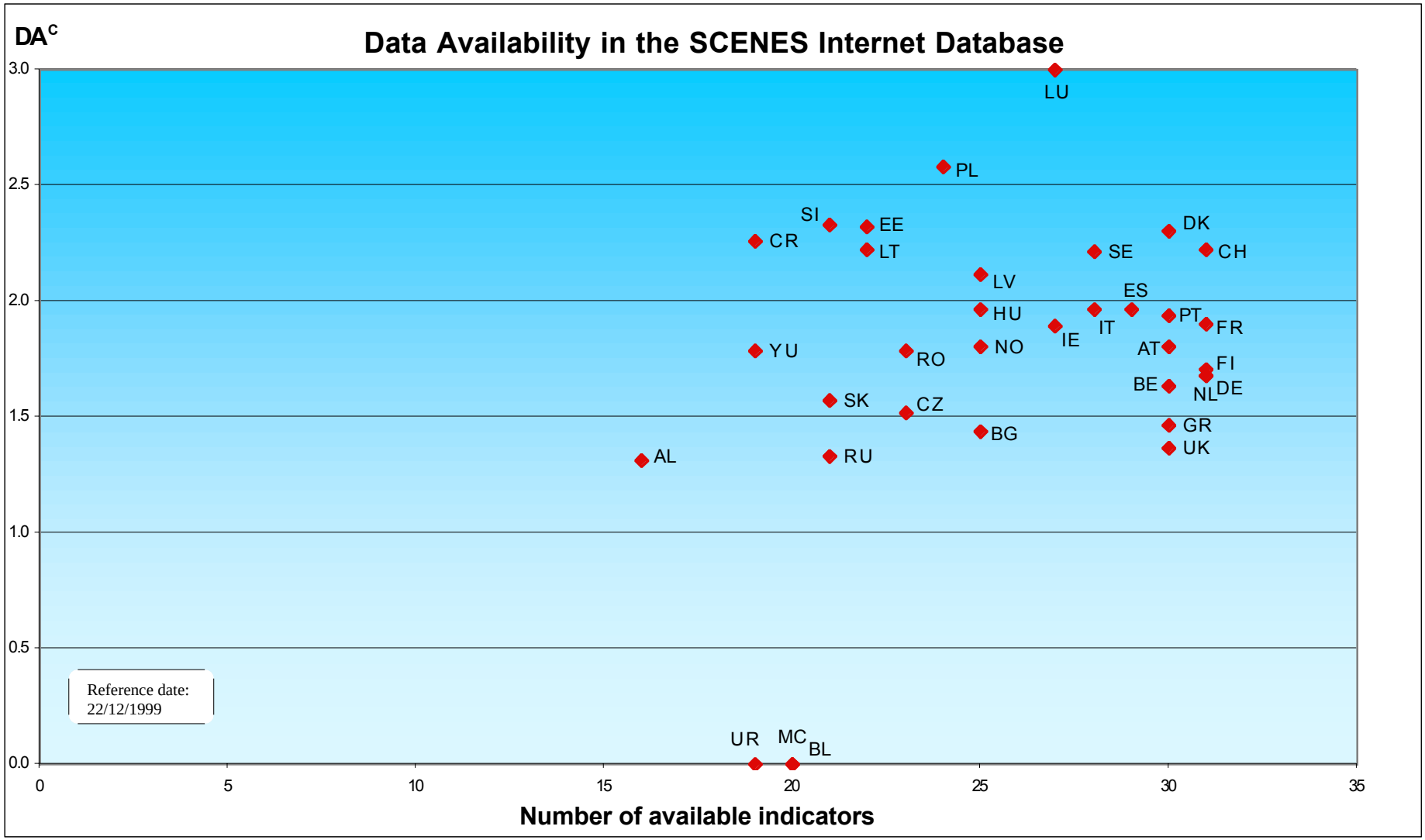


Figure 7: Data availability by countries

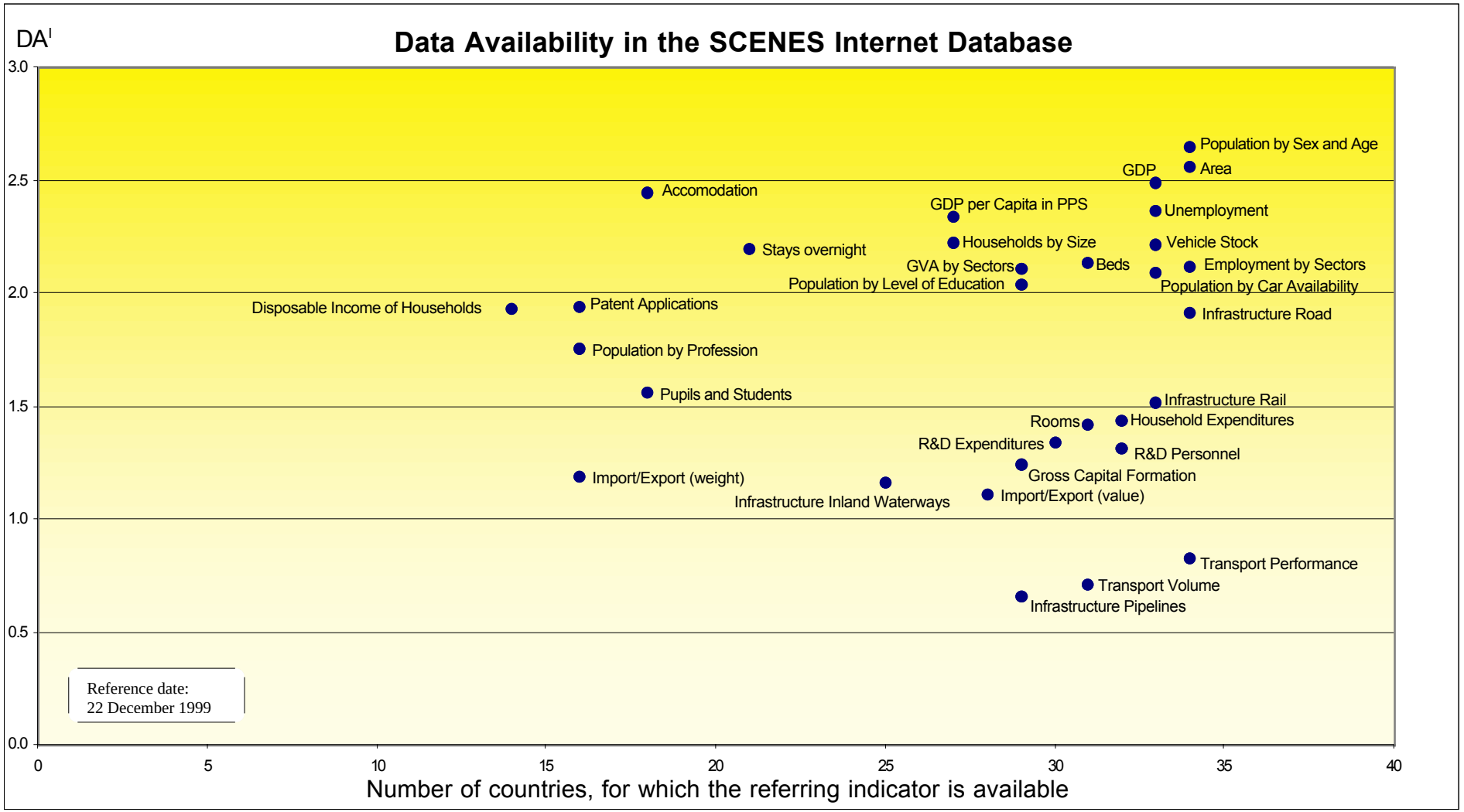


Figure 8: Data availability by indicators

6 ESTIMATION OF DATA - DESCRIPTION OF THE METHODOLOGY APPLIED

Some data sets available in the SCENES Internet Database are calculated figures. This chapter describes the methodology used for estimating data. Information on the equations applied is also available online.

6.1 Number of Employees by Sectors

For Ireland the total numbers of employees are available for the NUTS 3 regions *i*, $\sum_s Empl_{is} = Empl_i$.

The number of employees by economic sectors *s* (NACE CLIO 3) is available at national level, $\sum_i Empl_{is} = Empl_s$. Furthermore, GVA values by sectors *s* are available for all NUTS 3 regions *i*, GVA_{is}.

The numbers of employees by NUTS 3 regions *i* and sectors *s*, $Empl_{ij}$ are estimated by applying following procedure:

In the first step following average values are calculated:

GVA per employee by regions: $X_i = \frac{\sum_s GVA_{is}}{Empl_i}$ (2)

GVA per employee by sectors: $Y_s = \frac{\sum_i GVA_{is}}{Empl_s}$ (3)

Average GVA per employee: $\overline{X} = \frac{\sum_i \sum_s GVA_{is}}{\sum_s Empl_s}$ (4)

In the next step the figures for GVA per employee are calculated for each combination *(i,s)* by taking into account the average values of GVA per employee, which differ by NUTS 3 regions *i* and economic sectors *s*:

$$Z_{is} = \frac{X_i}{\overline{X}} \cdot Y_s \quad (5)$$

Then the number of employees for each combination *(i,s)* is calculated considering the region- and sector-specific values for GVA per employee:

$$(Empl_{is})^0 = \frac{GVA_{is}}{Z_{is}} \quad (6)$$

In the next stage the number of employees by regions and sectors are calculated by following iterative procedure starting with $(Empl_{is})^0$. Formula (7) calibrates the values $(Empl_{is})^t$ for the number of employees by sectors; Formula (8) calibrates the values for the number of employees by regions (t is an index for the enumeration of the iterations):

$$(Empl_{is})^t = (Empl_{is})^{t-1} \cdot \frac{\sum_s (Empl_{is})^{t-1}}{\sum_s Empl_{is}} \quad (7)$$

$$(Empl_{is})^t = (Empl_{is})^{t-1} \cdot \frac{\sum_i (Empl_{is})^{t-1}}{\sum_i Empl_{is}} \quad (8)$$

The iterations are carried out as often until following conditions are fulfilled:

$$\frac{\sum_s (Empl_{is})^t}{Empl_i} \leq 1 \pm \varepsilon \quad \text{and} \quad \frac{\sum_i (Empl_{is})^t}{Empl_s} \leq 1 \pm \varepsilon \quad (9)$$

By estimating these figures, following condition was fulfilled: $|\varepsilon| < 0.0015$

6.2 Population by Age and Sex

For *Greece, Italy, the Netherlands, Portugal and Spain* the number of inhabitants by age classes *c* and gender *g* is available for NUTS 2 regions *j*, Pop_{jcg}. For NUTS 3 regions *i* the number of inhabitants is available by gender, Pop_{ig}.

In order to estimate the number of inhabitants in NUTS 3 region *i* belonging to age class *c* and with gender *g*, following scheme is applied:

Under the condition, that NUTS 3 region *i* belongs to NUTS 2 region *j* following assumption is made:

$$\frac{Pop_{jcg}}{Pop_{jg}} = \frac{Pop_{icg}}{Pop_{ig}} \quad (10)$$

With this assumption the number of inhabitants in NUTS 3 region *i* with gender *g* and appendant to age class *c* can be calculated with formula (11):

$$Pop_{icg} = \frac{Pop_{jcg}}{\sum_c Pop_{jcg}} \cdot Pop_{ig} \quad \text{(NUTS 3 region } i \text{ belongs to NUTS 2 region } j\text{)} \quad (11)$$

In case of *Austria, France, Germany and the United Kingdom* population data by age classes and sex is available at NUTS 2 level, Pop_{jcg}. At NUTS 3 level the total numbers of inhabitants are available without differentiation by sex, Pop_i.

Therefore the number of inhabitants in NUTS 3 region *i* belonging to age class *c* and with gender *g* is calculated as follows:

$$Pop_{icg} = \frac{Pop_{jcg}}{\sum_c \sum_g Pop_{jcg}} \cdot Pop_i \quad \text{(NUTS 3 region } i \text{ belongs to NUTS 2 region } j\text{)}, \quad (12)$$

For *Latvia and Lithuania* population data with differentiation by age and sex are available at national level, Pop_{ncg}. The population figures available for NUTS 3 regions *i* are available without differentiation by sex and age, Pop_i. For estimating the population by age and sex at regional level, Pop_{icg}, following equation is applied:

$$Pop_{icg} = \frac{Pop_{ncg}}{\sum_g \sum_c Pop_{ncg}} \cdot Pop_i \quad (13)$$

6.3 Gross Domestic Product

For *Belgium* GDP is available at national level, GDP_{nat}, but not at regional level. However, GVA values are available for all NUTS 3 regions *i*, GVA_i. In order to estimate the GDP for region i, we apply following formula, which assigns the relation of $\frac{GDP_{nat}}{GVA_{nat}}$ to the Belgian NUTS 3 regions:

$$GDP_i = \frac{GDP_{nat}}{GVA_{nat}} \cdot GDP_i \qquad \text{with } GVA_{nat} = \sum_i GVA_i \qquad (14)$$

In case of *Germany* GVA data are available for all NUTS 3 regions *i*, GVA_i, and therefore also for all NUTS 1 region *k*, GVA_k. GDP data are available for the German NUTS 1 regions *k* only, GDP_k. Following formula was applied to calculate the GDP values at NUTS 3:

$$GDP_i = \frac{GDP_k}{GVA_k} \cdot GVA_i \qquad \forall\, k \quad \text{(NUTS 3 region } i \text{ belongs to NUTS 1 region } k\text{)} \qquad (15)$$

For *Norway* GDP figures for NUTS 3 regions *i* are available for the year 1993, GDP_i^{1993}. At national level the GDP is available for 1996, GDP_{nat}^{1996}.

In order to estimate the regional GDP values for 1996, following equation has been applied, which "updates" the figures of the year 1993:

$$GDP_i^{1996} = \frac{GDP_{nat}^{1996}}{\sum_i GDP_i^{1993}} \cdot GDP_i^{1993} \qquad (16)$$

7 OUTLOOK

With the SCENES Internet Database a new information system with main focus on socio-economic and transport demand-influencing indicators for European regions has been established. It has become a user-friendly and transparent data platform for the SCENES project and is easily accessible by Internet.

For the duration of the SCENES project the information system is updated in terms of including new tables or implementing data sets, which are closer to the base year 1996. Since the data sets are organised by a Database Management System, new tables can be implemented easily.

Although the SCENES Internet Database is already a mighty information system, which allows the user several functions, it could be improved in at least following dimensions:

- Implementation of time series data and of data being more up-to-date. Implementation of forecast year data.
- Allowing additional functions, which enable the user to formulate select conditions like "Select those French and Swedish NUTS 3 regions, where the rate of motorization is higher than 500 and the GDP per capita in PPS is lower than 20,000" or which allow online arithmetic operations on the data sets.
- Improving the data availability at regional level by applying estimation approaches.
- Online visualisation of the data.

Since many of the research projects funded by the European Commission depend on data for the same socio-economic indicators it would be very helpful to have a *common* data platform. The establishment of a common data platform would not only harmonise the input data for the models applied (and therefore the output of the models as well), but might also be useful in terms of saving resources. By providing a common data platform for research projects it could be avoided, that data mining (which is a time-consuming process) is done several times. The contents of such a data platform may also be of interest for decision-makers. Seen in this aspect, the SCENES Internet Database may serve as a first, but decisive step on the way to a platform of regional socio-economic and transport demand-influencing data, whose contents might be used by all institutes carrying out research work for the European Commission.

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