UPDATE OF INDICATORS AND MAPS (2011-2014): HARMONISED DATASETS ON LOCAL UNITS (LAU 2)

DESCRIPTION OF THE GEODATABASE

The geodatabase includes data on population gathered from the LAU2 Historical Database – DG Regio and compiled from the period 1961-2011. Generally, data refers to National Census (from national statistical institutes) with some exceptions like Denmark, Malta and Poland, where data are estimated. For most countries, data refers to LAU2 level and only for a few countries are data available at LAU 1 level (Greece, Lithuania, Portugal and Slovenia). As aforementioned, spatial data of local administrative units and their codes were drawn from Eurogeographics – EuroBoundaryMap version 5.0 (2010) and were provided by ESPON CU. Exceptions are made for Greece, where administrative units were drawn from other sources. All measures were taken to create a database completely harmonized and consistent; nevertheless, there are cases in which it is still possible to find missing values or in which it was not possible to harmonize the dataset completely (see below).

The geodatabases contain the following information:

- OBJECT ID: A unique identifier for each LAU2 unit automatically generated by the GIS software
- ICC Code: This field expresses the country code, which is two letter designation (e.g. HR – Croatia). This is a part of the original EBM feature class.
- SHN code: The European-wide harmonized and unique code for all administrative units. This code is a strictly hierarchical built identifier. It is corresponding to the national administrative code, in most cases nearly identical. This field is not a part of the original EBM feature class. It was created in GIS and calculated by joining the feature class to the NUTS table (e.g. AT_NUTS) that is a part of each country's EBM geodatabase. Caveat: In LAU2 units that are the result of multiple units being merged into a new one (e.g. the municipal name did not exist before merger), there was no corresponding SHN code in the NUTS table in the EBM geodatabase. Therefore, these were left blank.
- LAU_CODE: Generally, this is the NATCODE provided by the corresponding National Statistical Office (NSO). The NSO generates code numbers, generally with either three or four digits, which are sequentially assigned in accordance with the official order of the administrative units.
- LAU_LABEL: The name of the municipality. This field is a part of the original EBM feature class.

- POPULATION_2001; POPULATION_2010: These fields contain the population totals for 2001 and 2010 (generally speaking) for each LAU2 unit. This information is provided by the LAU2 Historical Database. This field is not a part of the original EBM feature class, as it was a product of a join within GIS.

- POPULATION_CHANGE: This indicator contains the change in population between 2001 and 2010. The field was not a part of the original EBM feature class. It was created in GIS and calculated using a simple formula (POPULATION_2010 - POPULATION_2001 / POPULATION_2001).

LIST OF COUNTRIES WITH RELATED INFORMATION ON MISSING VALUES, MERGERS AND ISSUES WITH THE DATA HARMONIZATION PROCESS.

Austria

- Added a join field in the EBM feature class (calculated as LAU_Code & "00") due to discrepancy in the data type (numerical vs. text) in the LAU_CODE fields between the population table and feature class. The join field in the feature class was set as a double type, transferred values from the LAU_CODE field and thus, joined to the population table.

- There are 38 missing values in the feature class after the join. This is due to the merger of two former districts (bezirk) – Judenburg and Knittelfeld – into a new one (Murtal) after the production data of the feature class. Consequently, the LAU codes for these units were effected and caused a discrepancy between the feature class and population data. The population table was then joined to the feature class based on the LAU_LABEL field, which provided the correct LAU codes and population totals.

Belgium

- Only missing value was for Forest (21007) 2011 population, the missing value was obtained from Statistics Belgium

Switzerland

- Since there is no LAU2 feature class contained in the Swiss EBM geodatabase, the AdministrativeUnit_4 feature class was used instead. This feature class did not contain a LAU_CODE field, so one was manually created in GIS and calculated to the last four digits of the corresponding value in the SHN field. After joining the population data using the LAU_CODE

fields, there were still 153 missing values. These were the result of mergers after the production date of the feature class (01.01.2010). Appropriate documentation from the Swiss NSO was utilized in determining and processing these mergers.

- There are a few dozen features that are completely contained by lakes and other unpopulated areas, such as forests. Even though there is no corresponding record in the population table, these were maintained in the feature class with a population total of 0.

Czech Republic

- There is one additional LAU2 unit in population table (500046 – Libhoüt), not able to find if this is legitimate separation.

Germany

- Since population data from the LAU2 Historical Database is organized at NUTS 1 (States/Bundesland) level and EBM at NUTS 0 (Countrywide), joined data was exported at NUTS 1 level (after EBM feature class was exported to 16 feature classes at NUTS 1 level).

- For the states of **Baden-Württemberg** and **Bavaria**, all missing values were attributed to uninhabited, unincorporated areas. There is a record for each in the EBM feature classes but no corresponding one in the population tables. Since these are uninhabited areas and are included in other states' population tables (e.g. Schleswing-Holstein) with a population of zero, the population totals here were also given a value of zero for consistency.

- For the states of **Lower Saxony**, **Saxony-Anhalt**, **Saxony** and **Thuringia**; the missing values are due to mergers that occurred after production date of EBM feature classes (01.01.2010).

- For the state of **Mecklenburg-Vorpommern**, all but two of the LAU2 units were missing (812 out of 814) after the join was performed using the LAU codes. There was a change in these codes between 2010 (.shp) and 2011/12 (population censuses) due to an administrative reform at the State level (NUTS 1). Thus, the LAU_LABEL field in both population table and EBM shapefile was used for the join. The 32 remaining missing values after this are due to mergers that occurred after production date of EBM feature classes (01.01.2010).

Denmark

- There are two missing values for 2011 population, unable to locate these values.

- In Denmark, the LAU2-level was redefined after the 2007 municipal reform, which reduced the number of municipalities from 276 to 99. Since this reform, the LAU2-level corresponds to parishes in Denmark, while municipalities are identified as LAU1-units. This implies that the number of LAU2-units increased from 276 to 2116 between 2001 and 2011. Historical population figures for parishes were supplied by the Danish statistical office. As these figures had not been recalculated for current LAU2 units, the figures for each year were geopositioned using GIS-maps provided by the "Digdag-project" of the SAXO Institute (University of Copenhagen). Figures for individual parishes were then produced on the basis of spatial overlay techniques.

Spain

- One additional value in population table (43907 – La Canonja) due to separation from Tarragona on 15.04.2010. Due to uncertainty about the boundary extents, the feature class was not modified.

- Also, there is one new municipality in the EBM feature class which was missing a value in the LAU_LABEL field and was corrected. The correct name for this is Villanueva de la Concepción (SHN="ES6129902"). Spanish NMCA has confirmed that this unit is really valid for 1st January 2010.

Finland

- Seven municipalities were consolidated on 01.01.2011 (Artjärvi with Orimattila, Kylmäkoski with Akaa, Kuhmalahti with Kangasala, Vöyri-Maksamaa and Oravais to form Vöyri, Karttula with Kuopio, Varpaisjärvi with Lapinlahti) and is reflected in the feature class.

France

- There are four missing values in the feature class after the join is performed due to mergers. LAU2 units in the feature class were consolidated as such: Saint-Pol-sur-Mer and Fort-Mardyck with Dunkerque, Bihorel with Bois-Guillaume to form Bois-Guillaume-Bihorel, Bleury with Saint-Symphorien-le-Château to form Bleury-Saint-Symphorien.

- Included those LAU2 units in Saint-Barthélemy and Saint-Martin as they are overseas collectivities outside the French administrative hierarchy. Nevertheless, those territories are

part of the European Union. That is why it has been asked by Eurostat to keep those units for EBM v5.0.

- There is a discrepancy between the LAU Codes for the EBM feature class and population table (e.g. Les Abymes is 9A101 in feature class, 97101 in population table). A quick check of INSEE (French National Statistical Office) reveals that the population table (e.g. 97101) is the correct code. Thus, the feature class LAU Codes were modified to reflect this and to be able to perform the join.

Greece

- Added a join field in the EBM feature class (calculated as LAU_Code & "00") due to discrepancy in LAU code between population table and feature class. There were 18 LAU2 units with missing values after the join is performed, 15 due to changes in the LAU codes and three due to the administrative reform of 2011 (Kallikratis). Since the date of the population census in the table (May 2011) is after the production date of the feature class (January 2010), the LAU codes in the feature class were modified in order to eliminate these missing values. The missing values due to the 2011 reform (4264 – Tsaritsani, 9261 – Vrahassi, 9361 – Zoniana) were not merged, as it was too difficult to determine their extent.

- EBM is only containing the LAU1 level. This is the lowest administrative level. The LAU2 level is referring to an outdated administrative layer of very small units, which has not existed for many years. The geometry of those units is not available, and no one will restore this geometry.

- There is a major administrative reform going on in Greece (project "Kallikratis"). This reform will reduce the number of administrative units on lowest level from 1034 to 326. This means that also the current LAU1 level will vanish. This reform will come into force on 1.1.2011. Eurostat is asked to redefine the LAU1 and LAU2 levels taking into account the described developments.

Hungary

- Since Budapest is one unit in EBM feature class and 23 (districts) in the population table, the district values were totaled for each census year and manually entered in GIS. However, there are still two LAU2 units (Mosonudvar, Tekenye) that were separated after 01.01.2010 (feature class production date) and, like all separations, is too difficult to manually edit in GIS.

Ireland

- Added a join field in the EBM feature class due to discrepancy in LAU code between population table and feature class. This was due to the fact that the LAU codes in the shapefile had leading zeros for four digit codes (e.g. 09199 in feature class vs. 9199 in population table). Therefore, 700+ LAU codes were recalculated to reflect this and to be able to perform the join.

- There were 54 LAU2 units (EDs) in the feature class with missing values after the join was performed. According to the Irish NSO, "there are 32 Election Districts (EDs) with low population, which for reasons of confidentiality have been amalgamated into neighboring EDs giving a total of 3,409 EDs". These 54 EDs represent 27 of the 32 amalgamated, low population ones. The remaining five are represented in the EBM feature class and population table.

- In order to provide values for these, a shapefile containing all 3,409 EDs with 2011 population totals was downloaded from the Irish NSO website (http://www.cso.ie/en/census/census2011boundaryfiles/). In GIS (ArcMap), all LAU2 units with missing population values were symbolized with another color from the rest. LAU2 units in the EBM feature class were then merged with a neighboring one according to the boundaries of the Census 2011 shapefile. If the neighboring ED was also missing values, then the 2011 population value from the Census 2011 shapefile was transferred. However, there is no population value for 2001 for these EDs. The missing values from the 2002 census were located and manually entered into the POPULATION_2001 field in GIS (http://www.cso.ie/en/media/csoie/census/documents/vol1_entire.pdf). If the neighboring ED has population totals (from the join with the population table), then it was preserved. The value for 2011 can be verified by identifying the corresponding ED in the Census 2011 shapefile.

Iceland

- There were four LAU2 units in the feature class with missing values after the join is performed: Arnarneshreppur and Hörgárbyggð merged to form Hörgársveit, LAU2 code for Reykjavíkurborg in feature class is incorrect (0001 instead of 0000), Bæjarhreppur was consolidated with Húnaþing vestra.

Italy

- Unable to join population table to feature class as is. The LAU code in the feature class contains leading zeros, which were removed by recalculating the field in GIS. Four digit LAU codes have

two leading zeros (calculate using "Right([LAU_CODE],4)"), while five digit LAU codes have one leading zero (calculate using "Right([LAU_CODE],5)").

- There are three LAU2 units in the feature class with missing values (Gravedona, Germasino and Consiglio di Rumo) after the join is performed, which were consolidated into a new LAU2 unit (Gravedona ed Uniti – 13249).

Luxembourg

- Before join, LAU2 units were merged according to municipal history document from Luxembourg NSO for mergers that occurred after production date of EBM shapefile and before population census (http://www.statistiques.public.lu/stat/TableViewer/document.aspx?ReportId=9506&IF_Language=eng&MainTheme=1&FldrName=1). Once the data was edited, the join used the LAU_Label field instead of LAU_Code in order to work around discrepancy in that field between the data sets. Once joined, the shapefile's LAU_Code field was recalculated according to the population data table.

- There are no missing values in the shapefile after the join.

Latvia

- Unable to join population table to feature class as is. The LAU code in the feature class contains leading zeros, which were removed by recalculating the field in GIS. Five digit LAU codes have two leading zeros (calculate using "Right([LAU_CODE],5)"), while six digit LAU codes have one leading zero (calculate using "Right([LAU_CODE],6)").

- There is one LAU2 unit in the feature class with missing values after the join (888300 - Rojas novads). This is due to a separation that occurred after the production date of the feature class (01.01.2010). Rojas novads was split into two municipalities – Rojas novads (888300) and Mērsraga novads (887600).

Netherlands

- There are 17 LAU2 units in the feature class with missing values after the join is performed due to mergers after the production date of the feature class (01.01.2010) and one missing value due to the recoding and renaming of a LAU2 unit (83 – Menaldumadeel to 1908 – Menameradiel). Stichtse Vecht (1904) was formed by a merger of the municipalities of

Breukelen (311), Maarssen (333) and Loenen (329) on 1 January 2011. Abcoude (305) was consolidated with De Ronde Venen (736) in 2011. Bodegraven (497) merged with Reeuwijk (595) to form Bodegraven-Reeuwijk (1901) on 1 January 2011. Rozenburg (600) was merged into Rotterdam (599) in 2010. Lith (808) was merged into Oss (828) in 2011. Eijsden (905) merged with Margraten (936) to form Eijsden-Margraten (1903) on 1 January 2011. Andijk (364) and Wervershoof (459) were merged into Medemblik (420) on 1 January 2011. Wymbritseradiel (683), Bolsward (64), Nijefurd (104), Sneek (91) and Wûnseradiel (710) merged to form Súdwest Fryslân (1900) in 2011.

Norway

- There are two LAU2 units in the feature class with missing values after the join is performed. This is due to the merger of Mosvik (1723) into Inderøy (1729) on 1 January 2012. Also, LAU code for Inderøy has changed (1729 to 1756).

Portugal

- As to why the population data is at LAU1 level, the documentation states that it was not feasible to compile and geoposition historical LAU2 population figures because of the large number of such units (4,260 in 2011) and the extent of changes in their boundaries between 1960 and 2011. Instead, LAU1 population figures were compiled for each year.

Romania

- There is one LAU2 unit in the feature class with missing values. This is due to an error in the population table: the LAU code 135315 is assigned to Starchiojd and Poian, in the feature class 135315 is assigned to Starchiojd and 64719 to Poian.
- Also, there is one extra LAU2 unit in the population tables (both DG Regio and Eurostat SIRE 2012) due to a separation that occurred (21.05.2010) after the production date of the EBM feature class (1.1.2010). Racşa (180091) was formed from the separation with Oraşu Nou (138351) and is not represented in the feature class.

Slovenia

- According to documentation, Slovenia is subdivided into 211 LAU2 units (municipalities). These municipalities have very diverse population figures (from a few hundred to 280,000 inhabitants) and geographical extents and their number has been increasing rapidly since 1995. This implies that the recalculation of historical population figures for these units is not possible within the framework of the present project. Instead, population figures were compiled and recalculated for the current 58 Slovene LAU1-units. Except for a few differences, these LAU1-units correspond to the LAU2-units of Slovenia up to 1994, i.e. before the process of formation of new, smaller municipalities started