Defining the city area

1.   INTRODUCTION

The paper describes the methodology with which the spatial reference unit for the production of many of the urban vulnerability indicators presented in the report has been computed.

Two ways of delineating a city boundary are available, (i) the administrative "core city" used as an approximation of the city in the Urban Audit, and (ii) the morphological "Urban Morphological Zones" produced for the EEA. While the Urban Audit core city is the administrative reference unit for many socio-economic indicators considered relevant for the report (with all the known weaknesses that administrative boundaries have when it comes to European comparisons, e.g. different scales), the urban morphological zones better reflect the physical outline of the cities.

To take advantage of both reference units (accepted and coded reference for European socio-economic indicators on the one and the better representation of the real city boundary on the other hand), both data sets have been combined by applying GIS geo-processing techniques. Input data, workflow and results are presented in the paragraphs below.

2.   INPUT DATA SETS

As mentioned in the introduction the two input data sets are:

•   The core city layer from the Urban Audit

•   The Urban Morphological Zones 2006

The most important is the city level. To ensure that this level is directly relevant to policy makers and politicians, political boundaries were used to define the city level. In many countries these boundaries are clearly established and well-known. As a result, for most cities the boundary used in the Urban Audit corresponds to the general perception of that city. In most countries the core city corresponds to LAU2 level.

An Urban Morphological Zone (UMZ) can be defined as "a set of urban areas laying less than 200m apart". Those urban areas are defined from land cover classes contributing to the urban tissue and function. UMZ are derived from CORINE Land Cover (CLC) by using urban core classes (residential, industrial and commercial, green urban areas) and adding enlarged core classes in case they fulfil certain neighbourhood conditions to the core classes.
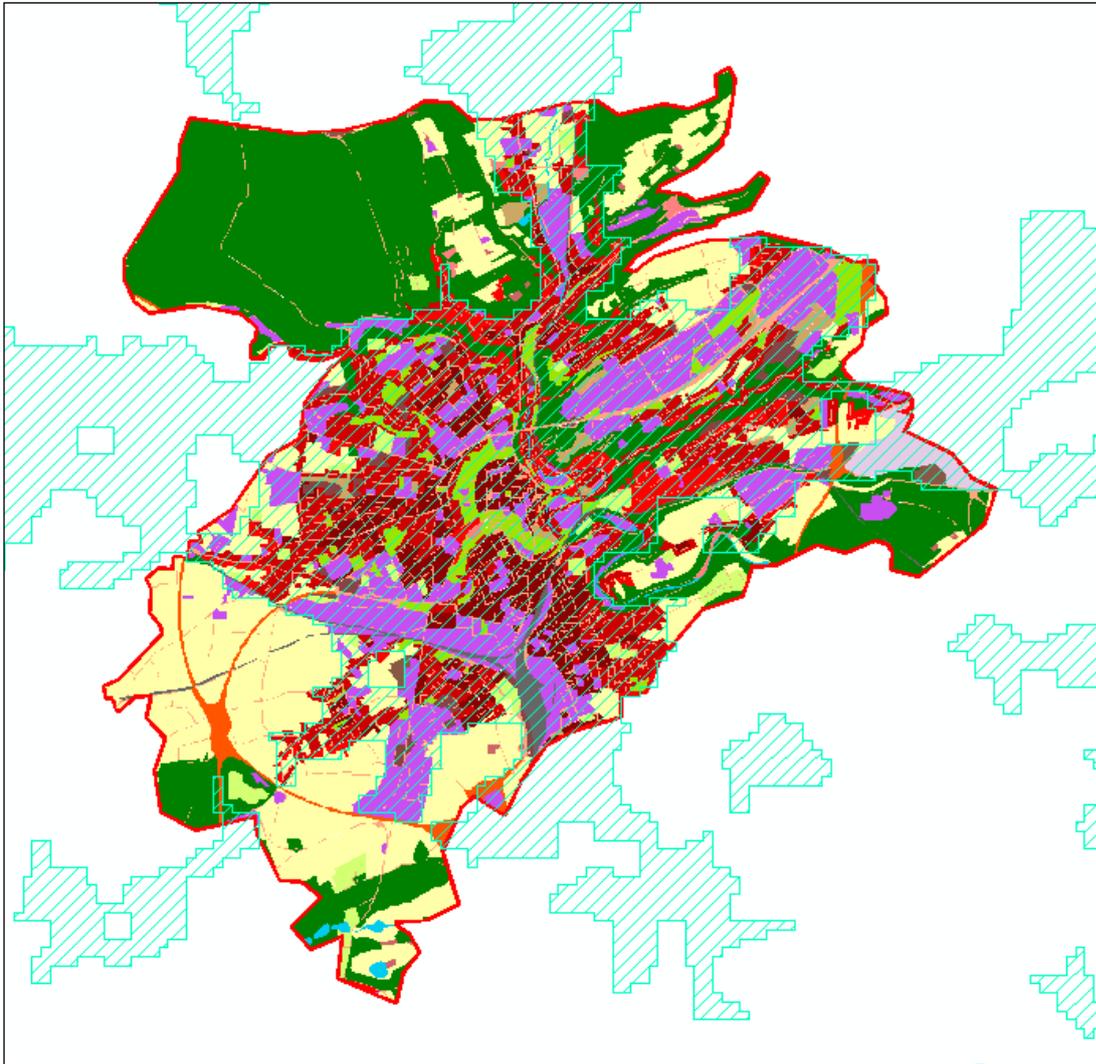
European Environment Agency

Figure 1: Urban Atlas map of the core city of Luxembourg, UMZ objects on top in cyan-coloured hatching

3.   PROCESSING

Both data sets are available as shape files. First both data sets are overlaid, subsequently the UMZ which contain much more objects than the core city layer are clipped by the outlines of the core cities. The result is an UMZ layer that only contains those UMZ objects that are located within the core cities. UMZ objects that cross the core city boundaries are cut off along the borders. The last processing step is the creation of one UMZ per core city, so that all UMZ objects located within the core city become one object (they are not physically connected, but logically, i.e. they possess only one object ID).

Those "UMZ within the core city" objects build the basic spatial reference unit for the computation of further indicators, in particular for the extraction of the Urban Atlas information.
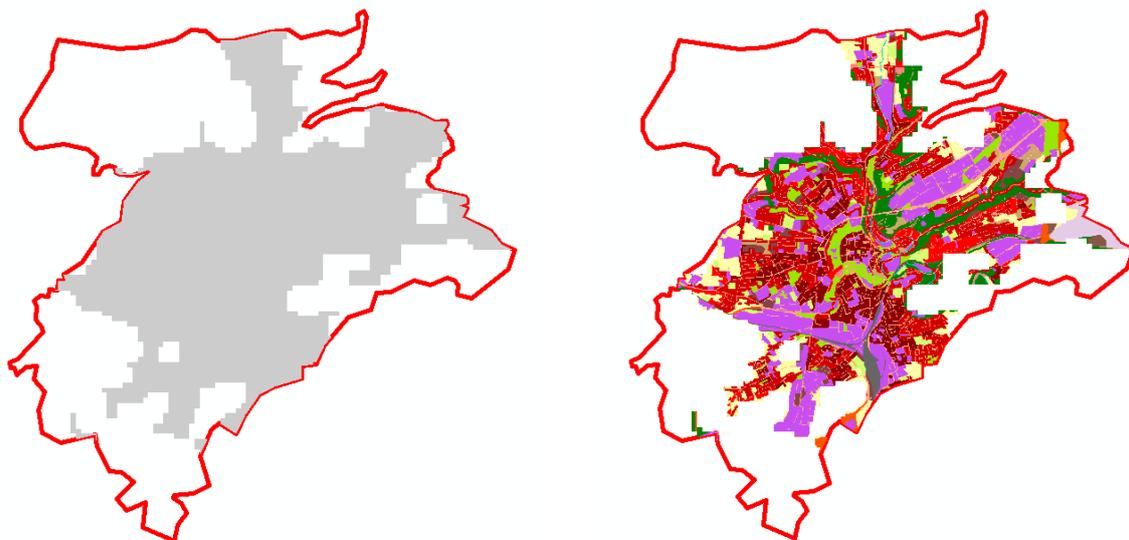
Figure 2: Workflow illustration; core city of Luxembourg in red on the left, containing the UMZ which are located inside the core city in grey; the resulting Urban Atlas map inside the "UMZ within core city" on the right

Data sources:

UMZ_v15_2006 Urban Morphological Zones 2006 (EEA)
http://www.eea.europa.eu/data-and-maps/data/urban-morphological-zones-2006-umz2006-f3v0

Urban Audit database (Eurostat)
http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/introduction

Urban Atlas (EEA)
http://www.eea.europa.eu/data-and-maps/data/urban-atlas