



Top-down population density grid based on European land monitoring services

Author 1: Konstantin ROSINA

Slovak Academy of Sciences, Institute of Geography, Slovakia

Author 2: Pavol HURBANEK

Catholic University in Ruzomberok, Slovakia

Keywords: population density, dasymetric disaggregation, soil sealing, CORINE land cover

While increasing effort is dedicated to the production of national bottom-up population grids, top-down approaches (such as dasymetric disaggregation) are still significant as a means to produce comparable datasets at global to continental levels or in countries where bottom-up approaches are not applied. Top-down approaches (usually) do not have the confidentiality issues and can be used to model population not only in registered homes and/or workplaces, but where it is really present at a given moment or in a given time period (as a mean over time – ambient population density). Moreover, retrospective population estimates are feasible as long as suitable ancillary data are available from the past. This paper describes an attempt to disaggregate population density from commune level data to a regular 100m grid in the study area of Slovakia and Austria. The employed dasymetric method uses two datasets – CORINE Land Cover and Soil sealing layer (SSL) as ancillary data and an iterative algorithm to tune population density coefficients. Both ancillary datasets are available at no cost with EU-wide coverage allowing for extension of the study area to the whole of the EU. The results show that improvement of population density estimates can be achieved by combination of multiple ancillary datasets. Additionally, the possibility of improving the population estimates by incorporating the information obtained through the validation of SSL is examined. Simple random sampling approach is used to validate SSL. The accuracy assessment of SSL suggests that the quality of the product varies among studied countries and this fact needs to be taken into account when it is used for population downscaling.