CONTRIBUTION TO GMES OPERATIONAL CAPACITY REFERENCE DATABASE

Land Cover Dataset

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A B S T R A C T

Bulgaria is the first member state of the European Union, which has started a land cover database, based on LCCS[1] of FAO-UN[2] for the whole territory of the country. Following the Bulgarian experience and acquiring the relevant know-how, Romania has built also a land cover database, based on the same methodology and classification approach. The interoperability of both datasets significantly improved the decision-making process in relation to various cross-border issues between the two countries – regional planning, emergency response, risk assessment.

LCCS is the only universally applicable system in operational use at present. It enables a comparison of land cover classes regardless of data source, economic sector or country. Most other land cover classification systems are single-purpose systems, tailored to requirements of a specific project or based on a sectorial approach. Land cover classes produced by such systems are generally not comparable. LCCS is an a priori classification. Therefore all the classes must be defined before any data collection and their classification take place. Main advantage of a priori classification systems is that they allow standardization of classes, are independent of geographic area and data collection methodology. The LCCS method enhances the standardization process and minimizes the problem of dealing with a very large amount of pre-defined classes. The new innovative approach means that instead of pre-defining the classes, it pre-defines the classification criteria that uniquely identify the classes. The concept is based on the presumption that any land cover class, regardless of its type and geographic location, can be defined by a set of pre-selected independent diagnostic attributes, the classifiers.

The reference land cover dataset was derived on the base of semi-automatic photointerpretation and classification of satellite imageries from the Landsat TM, acquired in the late spring and summer periods of 2009 and 2010. The spatial resolution of the imageries is 30 meters, and the data capture method developed, allowed generation of land cover datasets on a scale 1:50 000. In addition, elevation and slope information from the SRTM Digital Elevation Model (version 4) were used for further refining the spatial objects and

enhancing the alphanumeric information assigned to each geospatial feature. Subsequently, there was performed validation, which is relevant to overall thematic accuracy of 85%.

This reference database, presented land cover within the territory of Republic of Bulgaria was prepared by the specialists from ASDE[3] and ReSAC. Consultations with land cover and LCCS specialists from the FAO-UN have been made, as well.

The resultant database is submitted to the Executive Agency ECNIS[4] to Ministry of Transport, Information Technology and Communications. It can be used as a part of the data managed by the National geoportal, for harmonization of various thematic datasets and for quality assessment. The main purpose of the reference database is to support decision-making process at national and regional level, as well as to give an opportunity for checking the accuracy and reliability of different thematic spatial geodatabases. In the frame of GMES[5], the reference land cover dataset gives also opportunities for applying simulation models, damage assessment, analysis of losses from historical disasters and many other applications.

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[1] LCCS: Land Cover Classification System

[2] FAO – UN: Food and Agriculture Organization of United Nations

[3] ASDE: Agency for Sustainable Development and Eurointegration

[4] ECNIS: Electronic Communication Networks and Information Systems

[5] GMES: Global Monitoring for Environment and Security