

Temporal Changes Analysis (1960-2019) of a Greek Rural Landscape

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Abstract : Recent research in the mountainous and semi-mountainous rural landscapes of Greece shows that they have been significantly changed over the last 80 years. These changes have the form of structural modification of land cover/use patterns, with the main characteristic being the extensive expansion of dense forests and shrubs at the expense of grasslands and extensive agricultural areas. The aim of this research was to study the 60-year changes (1960-2019) of land cover/ use units in the rural landscape of Mouzaki (Karditsa Prefecture, central Greece). Relevant cartographic material such as forest land use maps, digital maps (Corine Land Cover -2018), 1960 aerial photos from Hellenic Military Geographical Service, and satellite imagery (Google Earth Pro 2014, 2016, 2017 and 2019) was collected and processed in order to study landscape evolution. ArcGIS v 10.2.2 software was used to process the cartographic material and to produce several sets of data. Main product of the analysis was a digitized photo-mosaic of the 1960 aerial photographs, a digitized photo-mosaic of recent satellite images (2014, 2016, 2017 and 2019), and diagrams and maps of temporal transformation of the rural landscape (1960 - 2019). Maps and diagrams were produced by applying photointerpretation techniques and a suitable land cover/ use classification system on the two photo-mosaics. Demographic and socioeconomic inventory data was also collected mainly from diachronic census reports of the Hellenic Statistical Authority and local sources. Data analysis of the temporal transformation of land cover/ use units showed that they are mainly located in the central and south-eastern part of the study area, which mainly includes the mountainous part of the landscape. The most significant change is the expansion of the dense forests that currently dominate the southern and eastern part of the landscape. In conclusion, the produced diagrams and maps of the land cover/ use evolution suggest that woody vegetation in the rural landscape of Mouzaki has significantly increased over the past 60 years at the expense of the open areas, especially grasslands and agricultural areas. Demographic changes, land abandonment and the transformation of traditional farming practices (e.g. agroforestry) were recognized as the main cause of the landscape change. This study is part of a broader research project entitled "Perspective of Agroforestry in Thessaly region: A research on social, environmental and economic aspects to enhance farmer participation". The project is funded by the General Secretariat for Research and Technology (GSRT) and the Hellenic Foundation for Research and Innovation (HFRI).

Keywords : Agroforestry, Forest expansion, Land cover/ use changes, Mountainous and semi-mountainous areas

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