Proposal methodology for Land Carbon Accounting across Europe

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The need to account natural resources as capital, in the same way as we account economic and financial resources, is getting an important awareness-raising channel for governments, producers, and consumers in order to manage the environment capital. Besides that, the forthcoming Part II of the revised System of Integrated Environmental and Economic Accounting will enclose a framework for experimental ecosystem accounts. This conceptual framework is an initiative led by the European Environment Agency and the World Bank WAVES global partnership for which robust data and indicators are needed.

In this context, the aim of this work is to demonstrate a preliminary methodology for land carbon account across Europe. The study area covers EU+38. The territorial unit used was the Socio-Ecological Landscape Units based on the Land Cover Functional Units and other geographical dimensions such as relief, belonging to a river basin, or proximity to the sea. Finally, the grid size used for accounting was 1km x 1km.

The characteristic indicator considered for ecosystem capital carbon accounts is the carbon content which is derived from the Net Primary Production (NPP) and its removal by agriculture, forestry. Accordingly, the output data obtained were the stocks of carbon recorded in tons of carbon.

The current approach is based on the combination of CORINE Land cover, traditional remote sensing (RS) indicators like NDVI – Normalised Difference Vegetation Index and the modern advances on RS techniques where new indicators like GPP (Gross Primary Productivity) and NPP. Other additional attributes were temperature, precipitation and vegetation type or Land cover.

Different national and European data sources were used for the analysis as well as downscales procedures. In the present work soil carbon content were assumed to be a fixed fraction. Nevertheless further research will also take into account soil carbon data considering scenarios of land use change.