Sustaining ecosystem services in forest landscapes

Book of Abstracts

IUFROLE WG Conference in Tartu, Estonia, 2015

IUFRO Landscape Ecology Working Group Conference, 2015: Abstracts

Compiled by Tiia Lillemaa, Urmas Peterson, and Ajith Perera
English langugage editing by Krista Kallis
Layout by Tiia Lillemaa
Design by Triinu Sarv

ISBN 978-9949-9715-0-3 (pdf)

Sil, Ângelo

Ecosystem services and landscape change: Quantification and valuation of carbon sequestration dynamics in the Sabor River's upper basin

Ângelo Sil[1], Cristina Marta-Pedroso[1], Joaquim Alonso[2], João Honrado[3], João Azevedo[1]

1 CIMO - Polytechnic Institute of Bragança, Portugal
angelo.f.sil@gmail.com

2 Polytechnic Institute of Viana do Castelo, Portugal

3 InBIO – University of Porto, Portugal

Forest ecosystems provide multiple services including climate regulation through e.g. Carbon Storage and Sequestration (CSS). However, the dynamics of this Ecosystem Service (ES) is strongly influenced by Land Use/ Land Cover (LULC) changes. In order to understand the influence of these changes in the provision of this ES through time, we quantified, mapped and valued CSS in the Sabor River's upper basin (northeastern Portugal) using the InVEST model. The assessment relied on the interpretation of LULC changes between 1990 and 2006, the estimation of carbon stocks, economic valuation and the simulation of three alternative landscape scenarios for 2020. The results suggested that between 1990 and 2006 the variation of the CSS occurred mainly due to changes in LULC and especially due to the increase of the availability of forest tree biomass. Over this period, we estimated an increase of carbon stored; its distribution among the different carbon pools varied depending on LULC types. However, for all LULC types, soil was identified as the main carbon pool. In the future the expansion of forest areas in the landscape, related to a realistic scenario of rural abandonment, can further enhance carbon sequestration, eventually adding value to the climate regulation ecosystem service.