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Effects of possible forest management scenarios in the Romanian Carpathians

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Buzau Carpathians in Romania are part of one of the main European mountain ranges, the Carpathians - one of the major biodiversity hotspots, as well as one of the biggest continuous forest ecosystems in Europe. Since 1990 they have witnessed substantial socio-economic changes and resulting changes to the forest cover mostly in form of forest expansion on the account of land abandonment but also deforestation. These have been a consequence of a complex interplay of poor economic conditions, land ownership reforms, and institutional difficulties. The spatial extent of forest disturbances in this area has not reached alarming levels of similar areas in Romanian Carpathians, however most recent trends suggest that future forest management might result in more extreme land cover changes. These trends can be described by various attempts to loosen forest-harvesting regulations, particularly in connection with clear cutting and minimum age of harvested trees to enable easier exploitation of Romanian forests. Maximization of wood provision could result in altering other forest ecosystem services: changes to habitats, and regulation of natural hazards. Possible changes to the occurrence, pattern and consequences of hydro-meteorological hazards are particularly significant, as two thirds of the area is subject to landslides. In order to understand potential consequences of possible changes to forest management, we integrated remote sensing, GIS and land use/cover modeling to explore future forest management scenarios in this part of Romanian Carpathians. By involving stakeholders we constructed three scenarios, labeled as: 1: continuation of current trends with institutional difficulties; 2: changing the forest policy to withdraw the clear-cutting limits; and 3: a sustainable future with enforced forest



control and protection. These future pathways were identified through interviews with local and regional decision makers in the field of forestry, environment and hydro-meteorological risk, researchers and foreign investors in the forestry and wood processing sector. Scenarios were spatially allocated by using the Dinamica EGO modeling environment (Soares-Filho et al. 2002), as it enables the emphasis on particular planning decisions, in this case forest harvesting. Through this research, we were able to explore the effects of alternative futures as consequences of today's decisions, and provide a comparison between different forest management pathways.

Soares-Filho, B.S., Coutinho Cerqueira, G. & Lopes Pennachin, C., 2002. Dinamica—a stochastic cellular automata model designed to simulate the landscape dynamics in an Amazonian colonization frontier. *Ecological Modelling*, 154(3), pp.217–235.

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