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## **A comprehensive process of forest residues energy planning through public participation and DSS use in a real case in Piedmont**

The work describes the application to the real case of Parco Naturale delle Alpi Marittime (Piedmont, Italy) of r.green, a DSS that is able to estimate the energy potential of renewable energies. The Open source DSS is based on GRASS GIS and was developed by EURAC, UNITN and CREA in the frame of the European project "Alpine Space recharge.green". It contains the submodule r.green.biomassfor that was applied to calculate the forest biomass energy potential in Gesso and Vermenagna Valleys. The model was applied in a participative planning process that involved different local stakeholders like the Natural Park, forest enterprises, environmental agencies. They were asked to give their opinion regarding the possible use of forest biomass to produce energy. The results were the base to carry out further meetings in which the parameters of possible forest bioenergy development scenarios were defined. The model allowed to evaluate the maximum energetic potential on the base of mean annual increment and total prescribed yield and to calculate how much can be really extracted depending on terrain morphology and mechanization level. Through an analysis of the extraction and transportation costs and of the prices of wood and of energy, an evaluation of costs gain was carried out and only the areas where the extraction of forest biomass for energy was economically feasible were considered. The model run using the parameters suggested by stakeholders creating plausible scenarios (like the use of different extraction techniques) and incorporating the observation expressed in the different public meetings (like the number and positioning of possible power plants). The percentage of consumption that can be covered with woodchips renewable energy in different scenarios was calculated through an estimate of local consumption for residential heating. Finally, the different scenarios and the results were presented and discussed in a final public meeting with stakeholders, citizens and all interested subjects. The model was evaluated in a very positive way by the stakeholders and was the fulcrum of the participative planning process since it generated discussion and inspired alternatives, and at the same time the model was the collector of the options that were processed, summarized and displayed in the final results.

Parole chiave: Forest biomass, Decision Support System, Recharge.green, Alpine Space, Participative process, Forest management, Protected areas

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