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GIS Based Strategy on Timber Transportation System in Mountainous Forest Regions

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Forest roads are the main infrastructure for wood transportation in forestland, especially in mountainous areas. The Mediterranean Region, having steep and rugged terrain of Taurus Mountains, has meanly 11 percent of industrial wood harvesting in Turkish forestry sector. The difficult characteristics of the region required a steadily forest road engineering and construction techniques, as well. To simplify the optimization of the road system and harmonize forest management activities and road transportation, GIS (Geographic Information System) based decision mechanism is a powerful system. The aim of the study was to develop a database system for forest road network, to assess the transportation strategies for industrial wood supply, and to design the transportation facilities in mountainous forestland of Mediterranean Region. The geographic and attribute data based on terrain and forest characteristics, and road system were collected from different forest planning unit representing the regional conditions. Forest stand type, road identification, road length, the technical class of a road segment, road slope, opening area of each road, road space, transportation capacity of a road, landing location, transportation route, sinuosity and wandering coefficients, etc. were measured and analyzed to assess the performance of the timber transportation system in each study unit. In this concept, by applying of spatial, proximity, network, and surface analysis, it was developed a GIS-based strategy. The system could help to the decision maker, manager, inspector, and all users for planning, organizing, managing, and controlling of transportation activities through the forest road network system on mountainous areas.