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Rutatora, Sabrina Deocles

University of Dar es Salaam

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# **The role of GIS in sustainable forest management planning**

*Sabrina Deocles Rutatora*

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The local inhabitants around Kazimzumbwi forest reserve do not benefit adequately from the forest resource thus leads to non-sustainable management practice and encroachments, because they do not see the importance of conserving it. This study intends to reveal the potential of GIS in sustainable forest management planning in the case of Kazimzumbwi forest reserve. The existing management model were evaluated and the challenges of the existing management practice were identified. The impact resulting from existing management practices were examined and the projection was performed to understand future scenario of Kazimzumbwi forest. Finally, the model that fosters suitable management was established and evaluated. It is through interviews, 1995 to 2015 land cover change analysis and 2035 spatial temporal projection it was found that; the Kazimzumbwi forest reserve is managed by Tanzania Forest Service Agency (TFS) in place of the state, the impacts resulted by the existing management model were reduction of quality of land in the forest and loss of forest cover which were all ascertained by the 58% changes of the forest that occurred between the years 1995 to 2015 and it was a matter of time before the whole forest deteriorate if the present trend under the existing management practices continues. Thus the GIS based model was developed using the spatial decision support system, it took into consideration both villagers opinions obtained from participatory GIS and the Tanzania Forest Agency opinions. The GIS model developed contained mapped resource which could be accessed by the villagers and it indicated path to be used to and from the forest reserve without depleting the forest reserve. As long as the villagers benefited from the forest reserve they were willing to safeguard the forest reserve by adhering to the developed resource allocation model, so it is recommended to integrate GIS technology in the process of forest management planning.