



THE ECONOMICS OF LAND DEGRADATION

A Global Initiative for Sustainable Land Management



UNIVERSITY of RWANDA

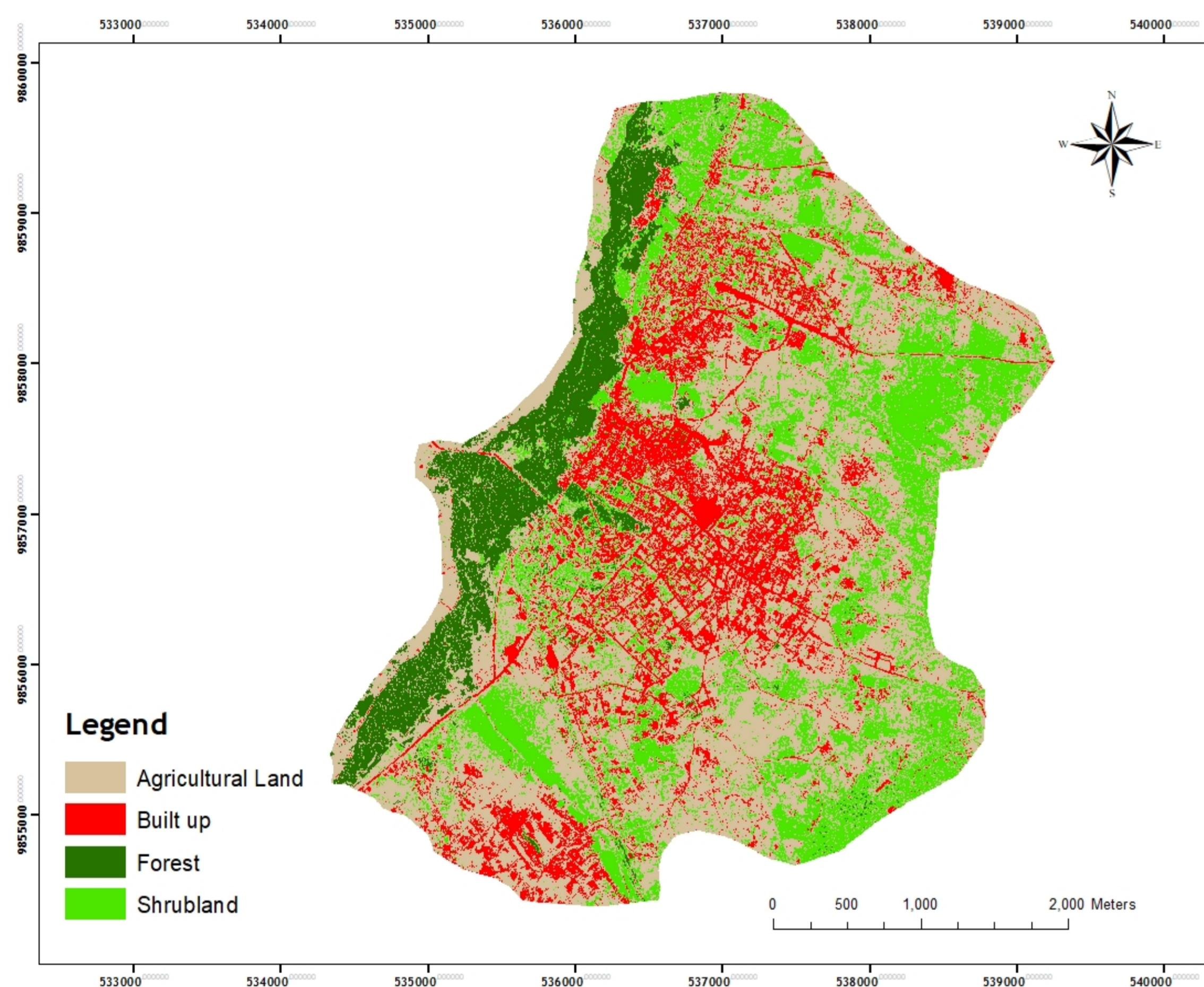
Economic valuation of selected land degradation case in eastern in Rwanda: NYAGATARE CITY

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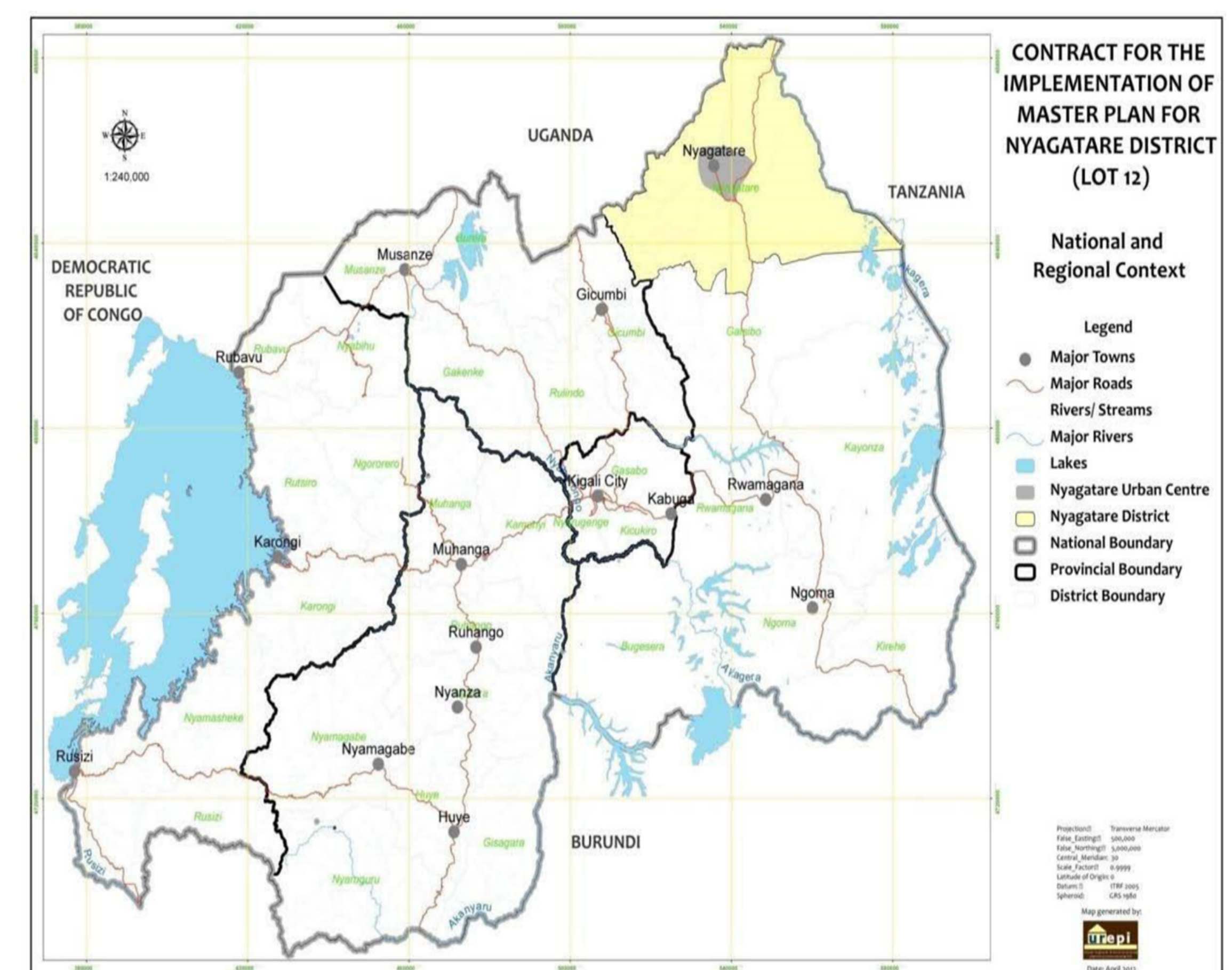
1. CONTEXT AND PROBLEM

- This study covered the following two cells (Akagali): Nyagatare and Barija. Economic valuation of land degradation aims to transform the global understanding of the economic value of productive land based on both market and non-market values, and to improve stakeholder awareness for socio-economic arguments to improve sustainable land management (SLM), prevent loss of natural capital, preserve ecosystem services, combat climate change, and address food, energy and water security.
- Ecosystems contribute to human well-being by playing four major roles highlighted by the Millennium Ecosystem Assessment (ELD Initiative 2013; MEA 2015): regulation, provision, cultural and supporting roles. The ecosystem regulates climate, pollution, diseases, natural hazards and disasters among others. It also provides food, water, firewood, minerals, local medicine and the oxygen we breathe. The human well-being component affected by the above mentioned services are health, security, basic materials for good health, good social relations and freedom of choice (ELD Initiative 2013; MEA 2015)
- Ecosystem quality is declining due to increased land degradation. Over the years there have been a continued decline of ecosystem services and goods in size, arrangement and quality (Dobson et al. 2006; ELD Initiative 2013). Continued degradation of ecosystem services reduces the capacity of the earth to grant human well-being and sustain life.

2. STUDY AREA



- Nyagatare town is located in Eastern province, about 200 km northeast of Kigali City. The town's transborder geographic/geo-strategic position contributes significantly to its accelerated growth.
- This sector is limited to the North by Rwempasha sector and the West by Tabagwe sector, and in the southwest by Katabagemu and Mumuli sectors. Those defined town boundaries cover a surface of 158 km² (15,800 hectares).



3. OBJECTIVES

- To estimate and discuss the value of environment and ecosystem services to scale-up green urbanization development in Nyagatare and adopt sustainable land management approaches (such as afforestation and retention of indigenous trees).
- Report process: 1) process of area analysis and dialogue conducted to identify and quantify ecosystem services along an urbanisation gradient of Nyagatare city, (2) map their physical extent, (3) value their economic performance and (4) identify the key success factors that already exist, as well as those that are currently missing and need to be in place to facilitate progress on valuation of ecosystem services.

4. METHODOLOGY

ELD Initiative's '6+1 step' approach: Inception, determination of geographical characteristics of the study area, identification of types of ecosystem services, estimation of economic value of the key ecosystem services, description of land degradation patterns and drivers, and cost and benefits analysis (CBA) of the sustainable land management options that can reduce the degradation pressures.

Data used were collected through focus group discussions, and a reconnaissance survey was conducted for three weeks in September 2019 and involved physical observation and discussion with Nyagatare residents and other stakeholders on the district.

The study selected 2 cells (Akagali): Nyagaate cell and Barija cell. In each cell, two villages (midugundu) were selected: Nyagatare, and Kinihira all in Nyagatare cell; and BarijaA and BarijaB in Barija cell. Ten households were selected in each village, which made up to 40 respondents.

The study then conducted CBAs across different scenarios to determine the viable option. A discount rate time of 17 years was used.

The business as usual (BAU) CBA used a 9.18% discount rate. It was found that the most optimal scenario is afforestation because it has high NPV and high total benefit at the first year.

5. RESULTS

Nyagatare District is one of the districts which is characterised by lower forests and much risk of environmental degradation due to higher Biomass consumption. Afforestation in Nyagatare city would be the best sustainable land management practice to reverse and degradation in Nyagatare city.

KEY RECOMMENDATIONS TO LAND USERS

Urbanization in Nyagatare city has to cater for the creation of a green city without endangering indigenous tree species. A good number of these tree species should be retained during construction and more exotic species should be planted on the boundary of a plot of land; therefore the use of SLM is commendable for land degradation reversal.



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