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PAVE THE IMPENETRABLE? AN ECONOMIC ANALYSIS OF POTENTIAL IKUMBA - RUHIJA ROAD ALTERNATIVES IN AND AROUND UGANDA'S BWINDI IMPENETRABLE NATIONAL PARK

In July 2012, the Uganda National Road Authority (UNRA) advertised a request for expressions of interest to design and construct 1,900 kilometres (km) of strategic roads in the country. The objectives of this investment by the Ugandan government are:

1. To promote equal access to economic and social development opportunities across the country;
2. To improve the quality of the national road network and improve connectivity to all areas of the country; and
3. To promote the continual improvement of the national road sector in Uganda.

One of the proposed projects is an upgrade of the road from the Ikumba junction on the Kabale – Kisoro road, through Ndego gate, Ruhija, Kitahuriira, Hamayanja and then to Buhoma. Approximately 13 km of the Ikumba – Ruhija section of the proposed road passes through Bwindi Impenetrable National Park (BINP), a globally recognized UNESCO World Heritage Site, and a refuge for about half the world's population of the critically endangered mountain gorilla (*Gorilla beringei beringei*), one of Uganda's main tourist attractions.. Another 12 km of the road runs along the park boundary. Specific objectives for the project that includes the Ikumba – Ruhija section are:

1. To improve the performance of the tourism sector by easing access to the tourist attractions in the region;
2. To improve access to goods/passenger transport services, and reduce transport costs along the route;
3. To improve access to social and economic development opportunities along the route; and
4. To ensure no roadside communities become worse off as a result of the road upgrading works.

If the upgrade comes to fruition under the proposed plan, evidence suggests that the gorilla population will be affected in two ways: 1) gorillas will actively avoid areas of high human activity; and 2) gorilla mortality from disease, poaching, and vehicle collisions will increase. Given BINP's importance to Uganda's development and conservation objectives, the International Gorilla Conservation Programme (IGCP) and the Uganda Chapter of Po-

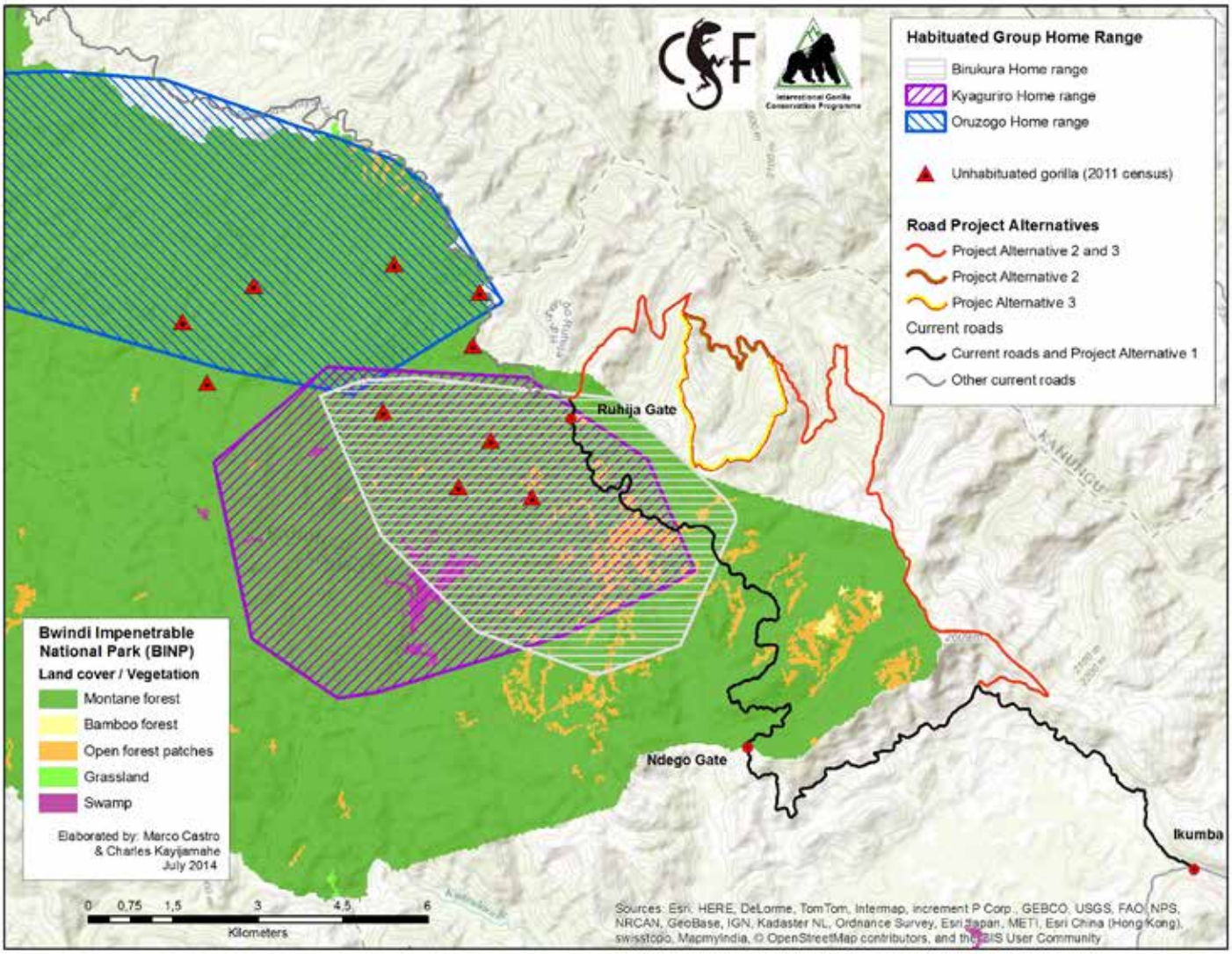

Figure 1 Road project alternatives through and around BINP, habituated gorilla home ranges (2007-2012), and location of individual unhabituated gorillas discovered during census (2011).

verty and Conservation Learning Group (Ug-PCLG) have proposed, in consultation with local communities and engineers, two road alternatives that would reroute the Ikumba – Ruhija road section outside of BINP.

The proposed alternatives follow the same route outside of the park except that Alternative 3 follows a mountain ridge in order to avoid steeper terrain (Figure 1). To support the decision-making process, Conservation Strategy Fund (CSF) and IGCP studied the potential economic costs and benefits associated with the proposed upgrade of the current road through BINP, and compared these with the costs and benefits of the two proposed alternative routes.

Given the Ikumba – Ruhija road's specific objectives, we analysed road alternatives in terms of:

1. Overall economic performance;
2. Performance in reduced transport costs (benefits) versus construction and maintenance costs;
3. Effects on rural communities living around the park;
4. Impacts on tourism revenues; and
5. Ability to offset construction and maintenance costs via revenue generated by increased tourism.

Results

The results of our analysis show that both road alternatives outside BINP would have better overall economic performance than upgrading the route through the park. This conclusion rests on lowered overall risks to the gorilla population, lowered risks to specific gorilla groups upon which lucrative tourism activity depends, as well as on the greater number of people and communities who would benefit from routes outside the park. These benefits outweigh the higher construction costs of the alternative routes. When the risk to gorilla populations and associated loss of permit revenues is included, upgrading the current road option through the park is estimated to cost approximately twice as much as the alternatives. Considering impact on tourism

more broadly, at the national level this translates to a possible loss of some US $214 million over the next 20 years (in Net Present Value terms - NPV). Furthermore, both the national and specific objectives under which the Ikumba – Ruhija road improvement were proposed are best met by those alternatives that divert vehicles outside of the park.

The specific findings of this report are as follows:

- For all three road options, road maintenance and construction costs outweigh benefits generated from reduced transport costs (time, vehicle operation and maintenance costs). Without the incorporation of social or environmental benefits and costs, all projects would generate a net cost ranging from US $13.7 million to US $18.4 million (NPV). Upgrading the current road through the park presents the lowest net cost with a NPV of US $13.7 million. Project Alternative 2, which circumvents the park and passes through the surrounding communities, has the next lowest cost at US $16.7 million. Alternative 3, which follows the mountain ridge, is the most expensive, at US $18.4 million.

- While the alternatives outside the park have higher construction costs than upgrading the existing road within the park, they would serve 19,000 people (6,000 more people than upgrading the current road) and deliver a greater improvement in mobility per capita, as there is currently no road serving most of the communities east of BINP. Including paving of the current road up to Mukiyorere, 3 km from the proposed point of diversion, within the construction of the project alternatives that circumvent the park would further improve road access. This addition would serve both the communities to the east and south of BINP, bringing the estimated number of people served by a paved road to 25,000 at the additional cost of only US $2.0 million.

- Tourism linked to the Ikumba – Ruhija road is centred on gorilla trekking. Upgrading the current road through BINP risks changing gorilla behavior and ranging patterns during and after construction phases. This could potentially lead to losses of US $15.7 million in permit revenue, US $26.5 million to the Bwindi-region economy, and US $214.2 million to Uganda's economy over the next 20 years (NPV). Choosing to build either of the two road project alternatives would avoid such risks to the economy.

- The current state of the Ikumba – Ruhija road is not a limiting factor in the growth of tourism in BINP. Under current tourism growth rates in BINP, tourist numbers will have increased beyond the current maximum number of gorilla trekking permits before the completion of the new road in 2018; tourism numbers will be limited by the capacity of the habituated gorilla population (based on established best practices) and the road would be unable to further increase tourist numbers. Road-induced tourism revenues to the Ugandan economy are therefore predicted to be insufficient to offset the costs of the road upgrade project.

- Given the limited benefits to tourism from the road investment and the likely economic losses due to disruptions to gorilla behaviour and home range, the precautionary principle should be applied to ensure that the Ugandan government safeguards its tourism economy, which is currently highly dependent upon this iconic species. Any tourism investment in the area should focus on guaranteeing the protection of the current gorilla population and its potential to grow.

We recommend that only road alternatives outside the park be further explored through detailed design analysis, and that the most appropriate of the routes be developed to ensure the maximum socioeconomic return from the road investment. Such a strategy would provide the same improvement in access for the tourism industry as the upgrade of the existing road, and would more than compensate higher upfront costs by mitigating potential negative impacts on the gorilla population and tourism revenue. This strategy would also improve access to markets and important services like health and education for a total of 19,000 to 25,000 people (6,000 to 12,000 more people than would be served by the upgrade of the current road).

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Notes:
1. Conservation Strategy Fund
2. International Gorilla Conservation Programme (a coalition programme of Fauna & Flora International and WWF)