

Economics of Land Degradation Online Course

Final assessment: Cost-benefit analysis

Scenario: Fencing Mt. Kenya National Park

Several organizations (Rhino Ark, Kenya Wildlife Service, Kenya Forest Service, many others) are cooperating and have started to build a fence around Mt. Kenya N.P. It will be a game-proof electrified fence mainly using solar power. Access gates will be provided at various locations to allow local community user- groups (grazers, honey gatherers, dead wood collectors, etc.) to access the forest. The fence will take 5 years to complete, encircle an area of 2000 km² and be over 400 km long (<http://www.rhinoark.org/news/52-mt-kenya-fence-construction-to-start-in-april-2012.html>), also <http://www.rhinoark.org/our-projects/mt-kenya-fence-project.html>).

The fence's main purpose is to stop regular crop damages by wildlife, especially elephants, as also to stop human fatalities from human-wildlife encounters. The fence however should also reduce unsustainable extraction of forest resources, loss of biodiversity and poaching.

Cost-benefit analysis

While the initial idea was to use the results from the travel-cost calculations applied to visitors to Mt. Kenya National Park (exercise 4), this concept has been disregarded: Neither the current damages of unsustainable extraction of resources through community members (nor the farms destroyed by elephants) are significant for visitors decision whether or not to visit Mt. Kenya N.P. Instead it was chosen to assess the benefits of reduced compensation payments (compensation not paid because of reduced numbers of destroyed farms).

Without project scenario:

Regular crop damage mainly through elephants occurs as population density outside the park has increased over the last years. For the sake of this exercise we could assume an average of two farms being destroyed per month. Incurring transfer payments are compensations for farms destroyed (Estimated compensation amount is 5,000 KShs per destroyed farm), i.e. 120,000 KShs/a.

With project scenario:

The fence will take 5 years to complete, encircle an area of 2000 km² and be over 400 km long, requiring an estimated 1 million KShs for construction. Once completed, it can be assumed that the destruction of farms by elephants will be reduced by over 90% if not stopped completely. No further compensation payments would be necessary.

The conducted analysis assesses the cost of the fence construction against benefits (saved funds from reduced compensation payments) and has been timed over 15 years, the without project scenario contains costs of compensation payments. A discount factor of 10% has been chosen.