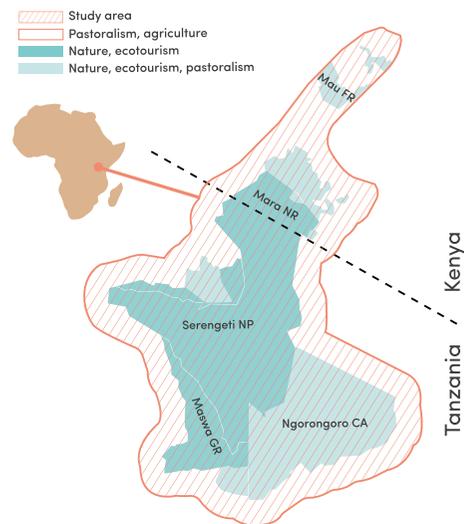


## Drivers & Recommendations

- Encourage communities towards sustainable income activities (chicken farming, fish production, eco-tourism)
- Increase education to engage people into labour force and business activities
- Increase knowledge related to conservation and disease recognition
- Increase involvement in tourist activities to reduce pressure on land and use of livestock
- Make it easier for communities to benefit from wildlife and other natural resources (attitude change)
- Reduce pressure on tall trees to stimulate plant growth and soil quality (and resilience)
- Reduce pressure on forest products by developing cheap and alternative energy sources (cooking equipment and solar power)
- Develop cheap water treatment equipment
- Assist in developing sustainable land use plans



## Tools we have developed

- 'Serengeti animal tracker' mobile app
- 'Serengeti Dawn' Board game
- 'Serengeti ServiceScape' app for management strategies
- Data Repository
- Searchable upload service

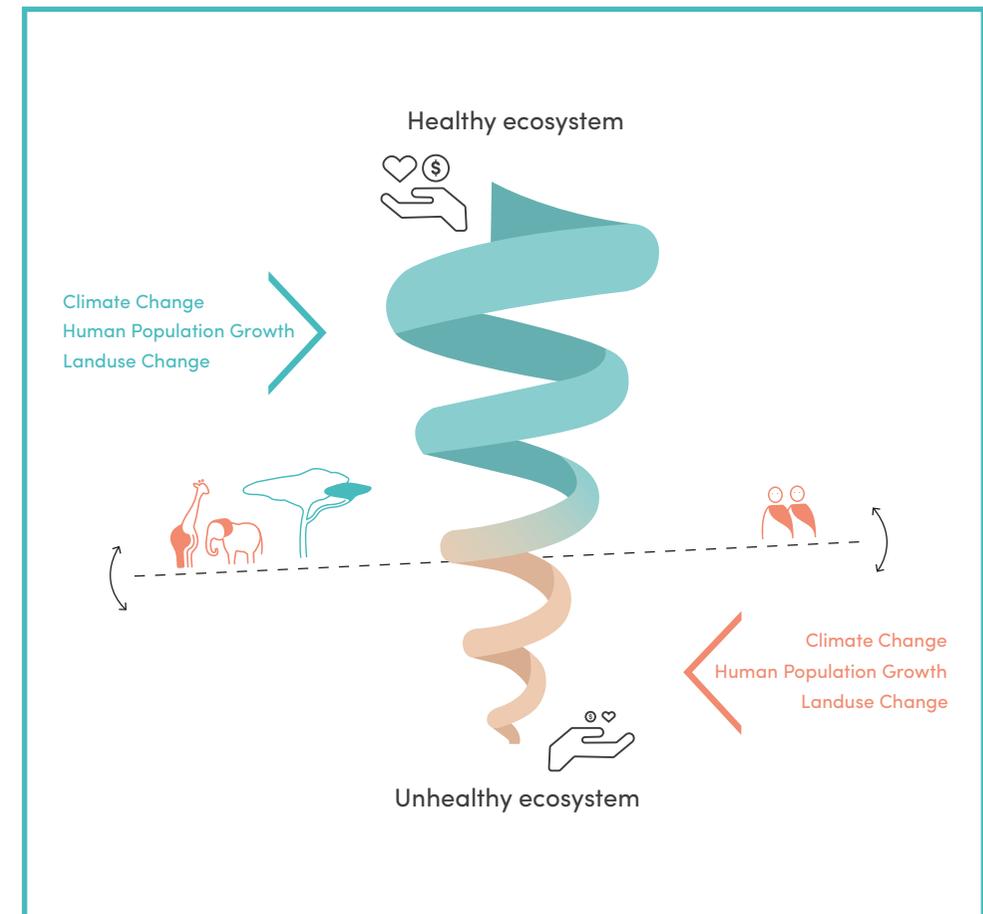


So far we have published 34 scientific publications. To read them visit:

[africanbioservices.eu](http://africanbioservices.eu)



## What drives change in the Serengeti-Mara Ecosystem?

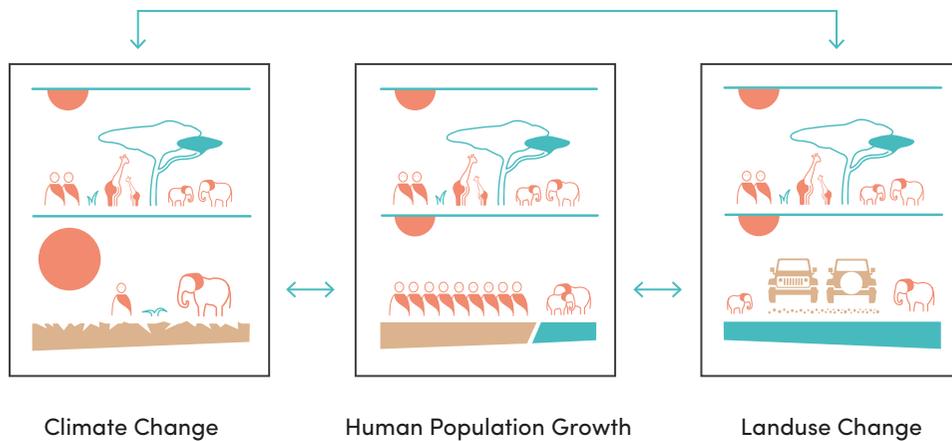


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AfricanBioServices 

## Research Results:

# How these drivers change ecosystem services, biodiversity, and human well being?



### Human-wildlife conflict

- Crop raiding, human attacks, livestock attacks and property damage are forms of human-wildlife conflict
- The severity of conflicts varies across time and season
- Local people see no benefit of Wildlife Management Areas to their livelihoods
- Lions can survive within pastoral regions if communities gain economic benefits from wildlife
- Rhinos' preferred forage area are limited by frequent fire

### Human Livelihoods

- Survey involving 1000 homes in 24 communities close to the ecosystem
- Poor people are highly dependent on ecosystem services
- 50-80 % of total household income come from the ecosystem

### Quality of water sources

- 94 human water sources tested
- 50 % had bacteria that cause diseases
- Clean water shortage is a health problem

### Land fragmentation

- Most fences are close to major roads & urban centers
- Road and fences are a major cause of fragmentation
- Migratory wildebeest and zebra are increasingly obstructed by a higher number of fences

### It will not be long before the Mara is gone

- Kenya's wildlife has decreased by nearly 70% in under 40 years due to:
  - Sheep and goats are increasing (76%)
  - Temperature increase (2°)
  - Frequent occurrence of intense droughts
  - Increased number of camels
  - Fencing and fragmentation

### Livestock diseases

- Temperatures, rainfall and extreme events (El Niño) influence disease outbreaks in various, complex ways
- Prevalence of Rift Valley fever, foot and mouth disease, and field fever are influenced by climate change

### Human and livestock populations

- Human and livestock population growth affect the stability of the ecosystem
- In areas with weak border control, livestock has moved further into the park
- The range of the migratory wildebeest is being squeezed inside the park
- Annual fluctuations in rainfall affect animal population and biodiversity (data from 1935 to 2015)

### Illegal Hunting

- Much higher in Tanzania than Kenya
- Illegal hunters are adapting to improved patrolling to reduce the chance of being arrested
- Illegal bush meat consumption is highest close to the park

### Nutrients in Soil

- Land use, tree canopies, and root decomposition influence nutrients in soil
- Fire and large mammalian herbivores are direct influences on root decomposition
- Root decomposition in savannas also depends on termites that feed selectively

**Preliminary recommendations on the back. A synthesis of links between the drivers, ecosystem services, biodiversity and human well being is to come!**