



Building resilience to climate change, and
protecting East Africa's natural capital requires
transboundary collaborative action

Nick Oguge, University of Nairobi
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KEY REFERENCES

Walter Leal Filho
Editor-in-Chief

Nicholas Ogugu · Desalegn Ayal
Lydia Adelake · Izael da Silva
Editors

African Handbook of Climate Change Adaptation

SPRINGER
REFERENCE

 Springer



PROTECTING EAST AFRICA'S NATURAL CAPITAL THE COST OF INACTION

A synthesis of the economics of natural capital in East Africa
January 31, 2022



EAST
AFRICAN
COMMUNITY



USAID
FROM THE AMERICAN PEOPLE

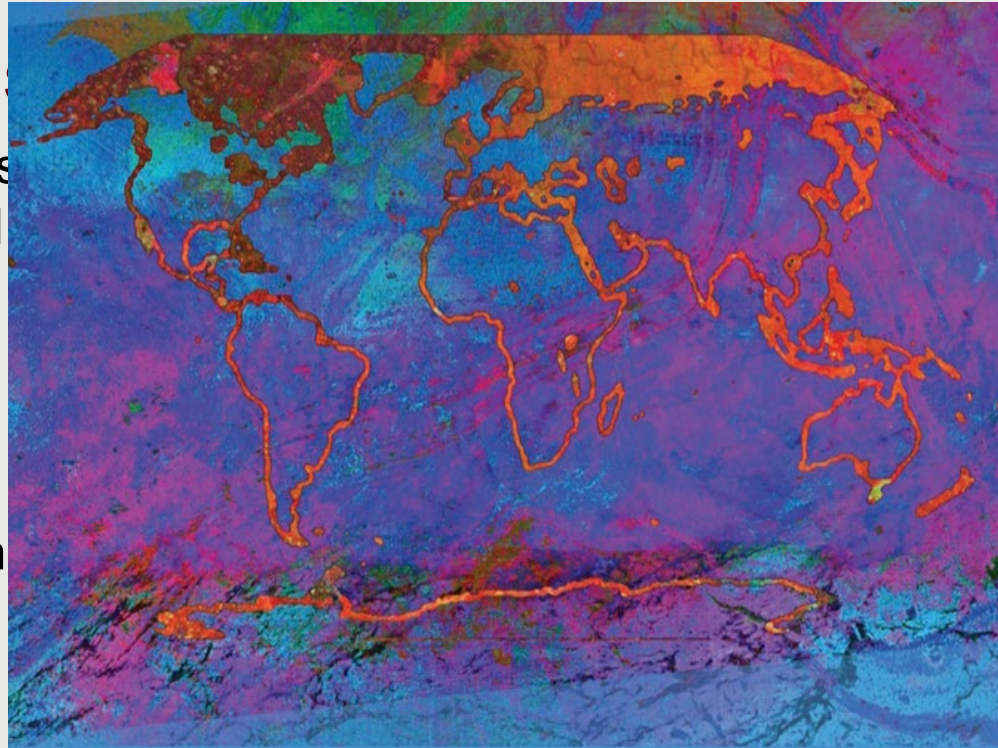


Working Group I Contribution to the
Sixth Assessment Report of the
Intergovernmental Panel on Climate Change



CLIMATE CHANGE 2021 THE PHYSICAL SCIENCE BASIS

- Diverse feasible climate responses and adaptation options to respond to Representative Key Risks (e.g., terrestrial ecosystem services) of climate change, with varying synergies with mitigation.
- Climate responses and adaptation options (e.g., biodiversity management and ecosystem connectivity) have benefits for ecosystems, ethnic groups, gender equity, low-income groups and the Sustainable Development Goals

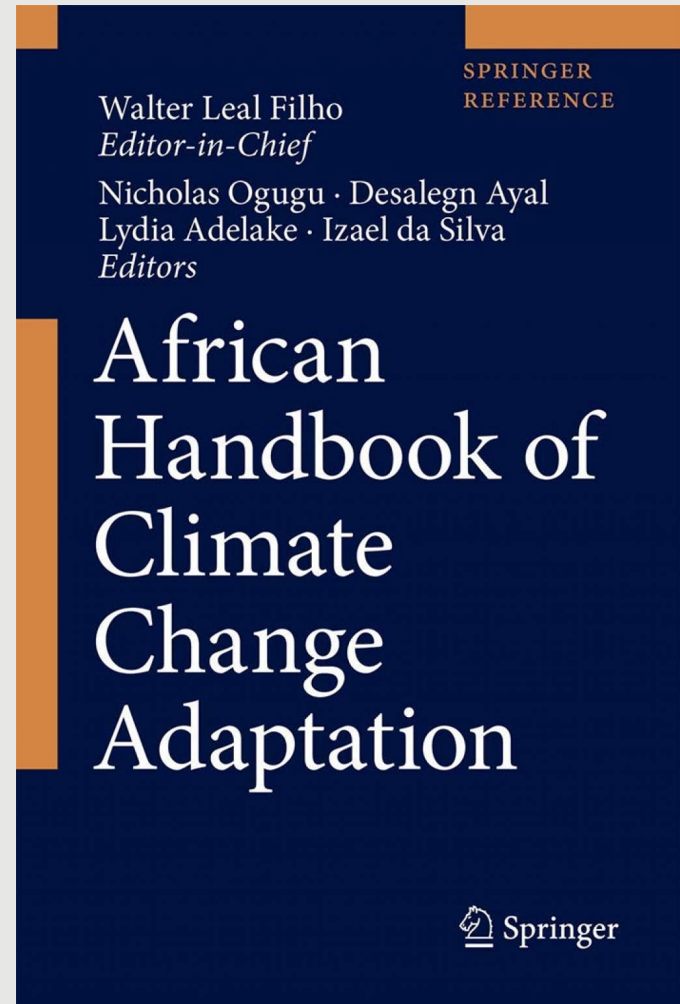


Working Group I Contribution to the
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Walter Leal Filho, Nicholas Oguge, Desalegn Ayal, Lydia Adeleke, Izaelda Silva

- **135 cases** Algeria, Burkina Faso, Cameroon, Ghana, Ethiopia, Kenya, Malawi, Morocco, Nigeria, Uganda, Tanzania, Tunisia, Zimbabwe, Biomes (Guinea coast, Savanna, Sahel)
- Presents deep coverage of climate change adaptation in Africa:
 - Agriculture: foods & cash crops
 - Artificial Intelligence (AI)
 - Climate change and health
 - Climate finance
 - Climate models
 - Disaster risk management
 - Education
 - Energy
 - Governance (Triple Helix)
 - Urban resilience
 - Water resources

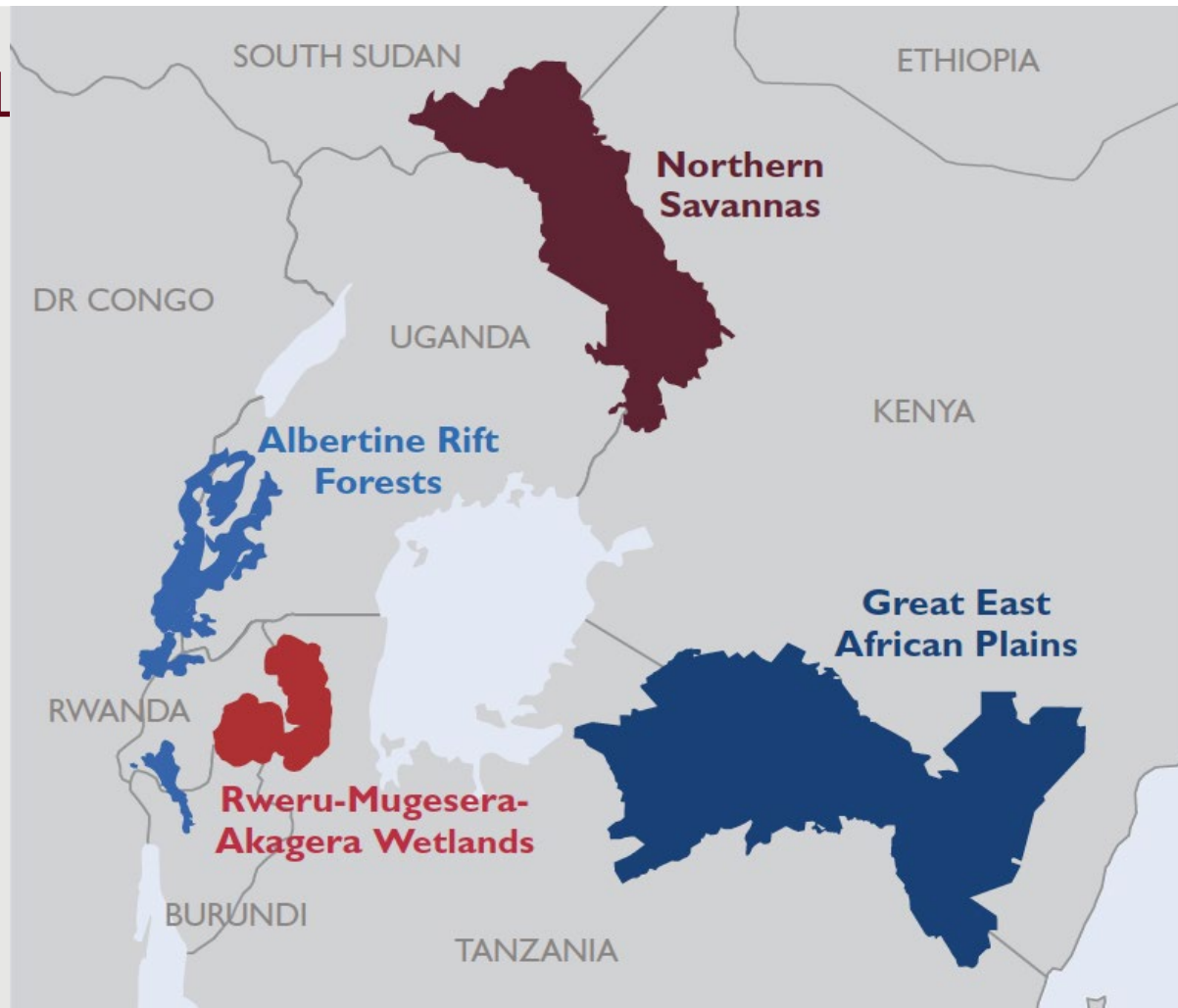


NATURAL CAPITAL ASSESSMENT



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VALUATION BASED ON NINE ECOSYSTEM SERVICES

Provisioning services



Harvested wild resources



Livestock production

Cultural services



Biodiversity existence



Nature-based tourism

Regulating services



Water quality amelioration



Water flow regulation



Erosion control



Crop pollination

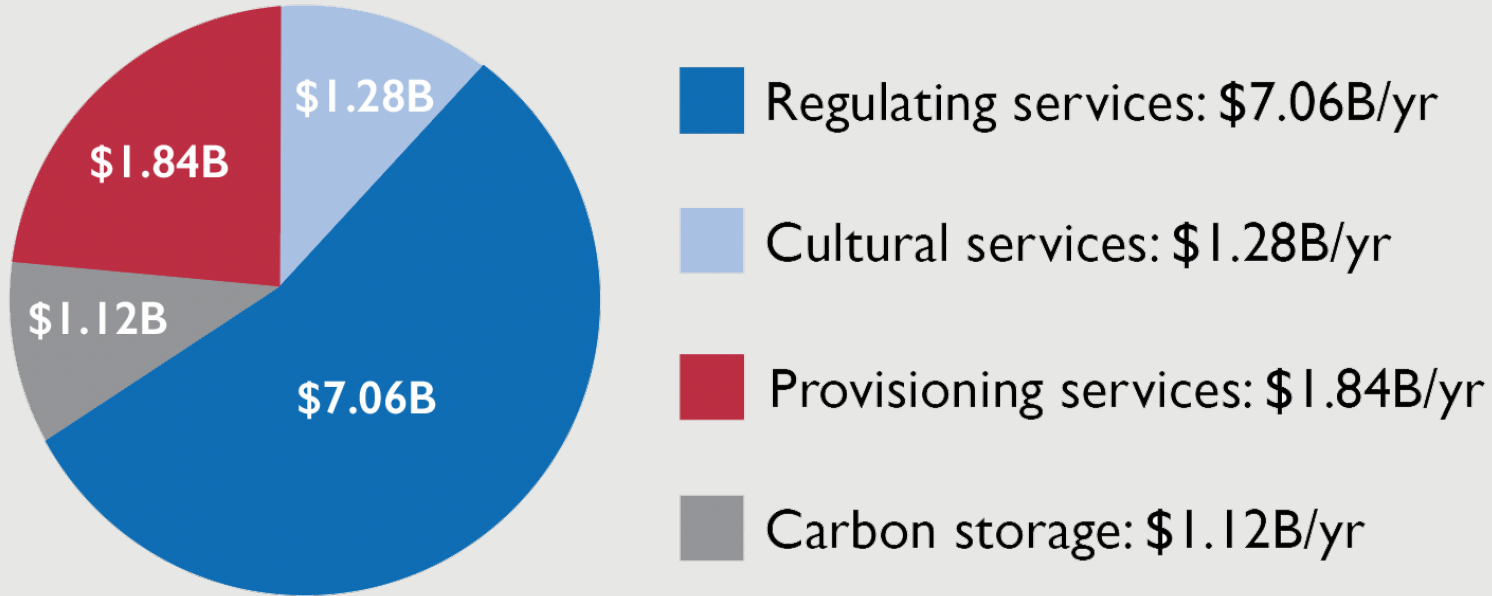


Carbon storage

KEY FINDINGS



LANDSCAPES' TOTAL VALUE TO REGION: **\$11.3 BILLION**



All values in U.S. dollars in 2018

INSIGHTS

Tourism only
11% of total
value

Regulating services 72% of total value:
(US\$8.18 billion)

- Water flow regulation: US \$1.52 billion
- Preventing soil erosion: US\$4.77 billion
- Crop pollination: US\$772.6 million
- Carbon storage, regional value: US\$1.12 billion *(avoided costs of damage from climate change)*

Photo: Matthew Erdman for USAID

WHAT'S AT STAKE



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TOP THREATS

1. Unsustainable land use
2. Over-extraction of resources
3. Triple threat of COVID, climate, and conflict

STRESSES ON NATURAL ENVIRONMENT

4. Degradation of vegetation and soils
5. Decline in habitat quality and connectivity
6. Decline in freshwater quality, quantity, and flow
7. Decline in wildlife diversity

IMPACT ON ECO SYSTEM SERVICES

8. Tourism revenue declines
9. Regulating capacity declines; cost to mitigate damages rise
10. Decline in harvestable resources

IMPACT ON ECONOMIC AND HUMAN WELL-BEING

11. Job losses, livelihoods diminished
12. Food and water scarcity increases
13. Negative health impacts grow

CLIMATE CHANGE 2021

THE PHYSICAL SCIENCE BASIS

IPCC_AR6_WGII_SummaryForPolicymakers.pdf

- Weather and climate extremes are causing economic and societal impacts across national boundaries through supply chains, markets, and natural resource flows, with increasing transboundary risks projected across the water, energy and food sectors.
- Water demand in the Mara RB to increase from 30 MCM in 2010 to 2,620 MCM by 2045 (8,800%)

(Metobwa et al., 2018)



Nakuprat Gotu Conservancy, Credit: Mwangi Kiburi, USAID

SECTORS AT RISK

- Weather and climate extremes are causing economic and societal impacts across national boundaries through supply chains, markets, and natural resource flows, with increasing transboundary risks projected across the water, energy and food sectors

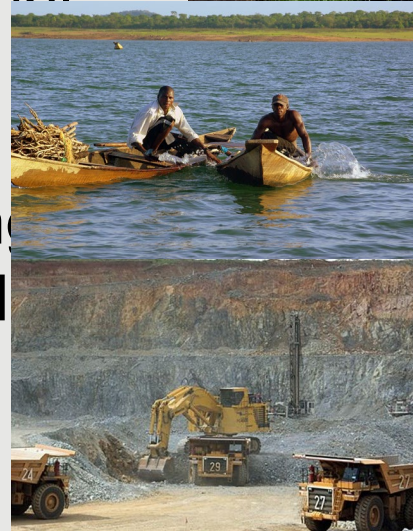
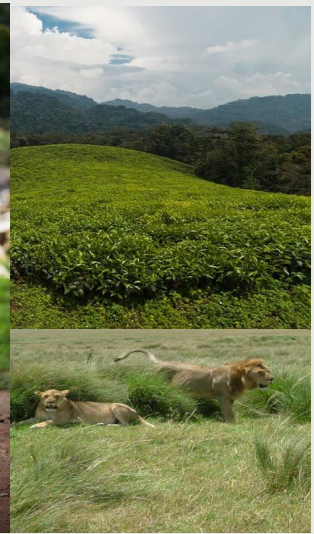
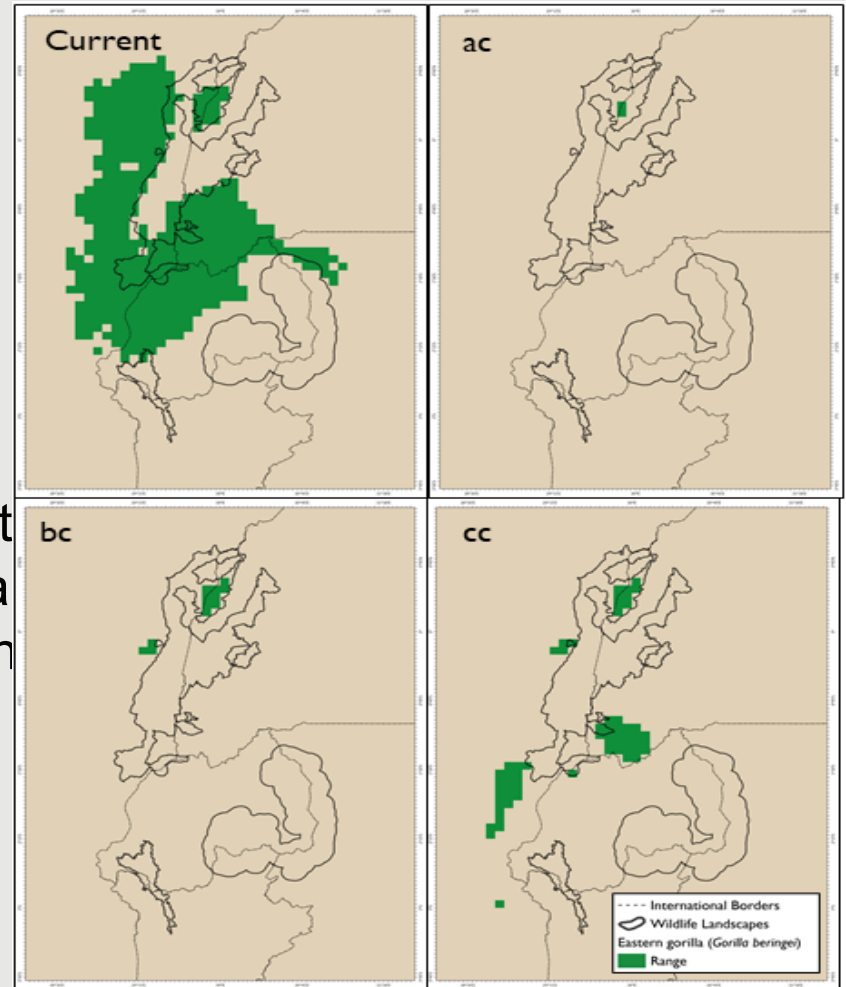


Photo: Global Water for Sustainability

BIODIVERSITY ALSO AT RISK

- Habitat suitability of mountain gorilla (*Gorilla beringeiberinge*)
- There is increasing need for climate informed transboundary management and cooperation to address societal and ecosystem challenges to build resilient and natural adaptive capacity.



THE ALBERTINE RIFT FORESTS *A BUSINESS AS USUAL SCENARIO*

- **More resilient tourism model**
(high end, low impact)
- Projected a US\$5.3 million increase in tourism revenue for Rwanda if gorilla conservation efforts remain sustainably managed.
- Up to **89,000 ha of forest** (15%) could be lost by 2050. (Deforestation prevalent even within protected areas)
- **390% increase** in phosphorus export, potentially impacting Albertine Rift Valley Lakes, and Lake Victoria, with annual treatment cost of US\$338,000



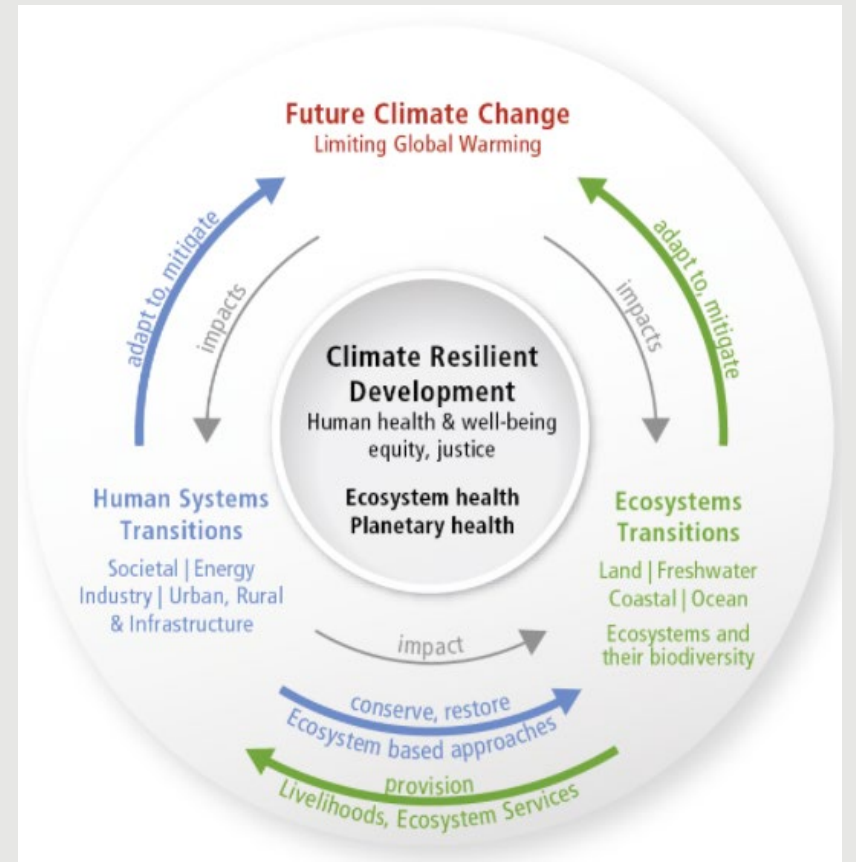
Photo: WWF (independent.co.ug)

TRANSBOUNDARY COLLABORATIVE ACTIONS



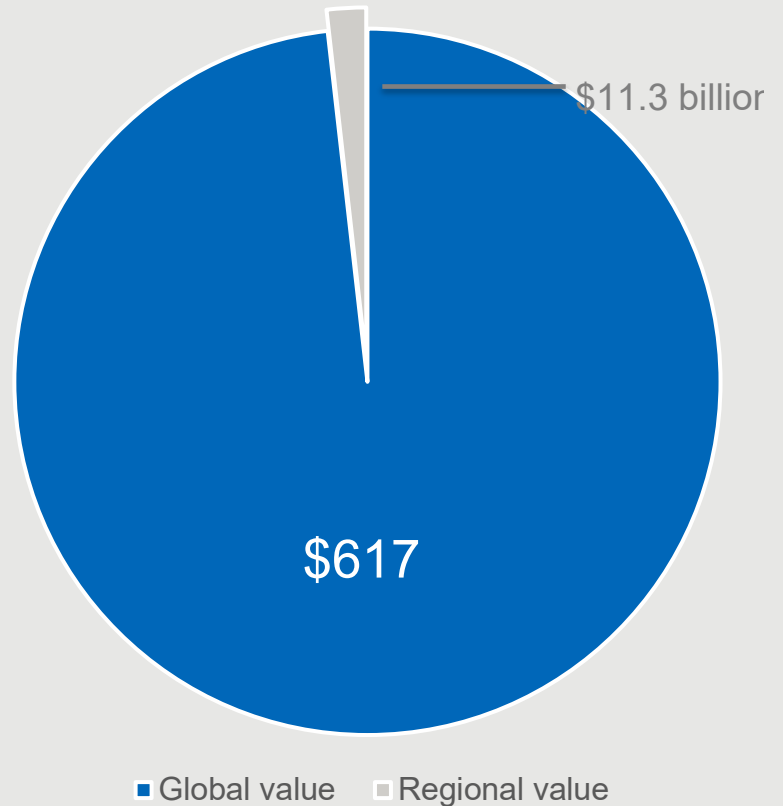
TO REDUCE CLIMATE RISKS AND ESTABLISH RESILIENCE

- Transformation entails system transitions strengthening the resilience of ecosystems and society.
- Arrow colours represent human system interactions (blue), ecosystem (including biodiversity) interactions (green) and reduced impacts from climate change and human activities (grey)



SYSTEMS TRANSITIONS AND TRANSFORMATIONAL ADAPTATION

- Social Cost of Carbon is \$600 billion/
- economic damage that would result globally from emitting carbon if landscapes are degraded
- EAC and partner states can use these findings in their climate finance discussions
- Nature-based Solutions would provide climate responses and adaptation options with varying synergies with mitigation





Albertine Rift Forests

Potential enterprises

sustainable silvoarable
agroforestry with non-timber forest
products * handicrafts * mushroom
* apiary * dairy * renewable energy
* eco- and cultural tourism + PES +
savings & loans



Great East African Plains

Potential enterprises

sustainable silvopasture * apiary *
eco- and cultural tourism *
handicrafts * renewable energy *
sustainable charcoal production +
carbon markets + savings & loans



Rweru-Mugesera Wetlands

Potential enterprises

Sustainable aquaculture and
fisheries * Sustainable
agribusinesses *
handicrafts, renewable energy *
and eco- and cultural tourism
+ Wetlandbanking + savings &
loans

Climate response and adaptation option

Investments can target building cohesive communities, e.g., in southern Kenya/northern Tanzania transboundary area to double space for wildlife and livestock from its current 11,000,000 hectares under communities in Kenya and capture up to 3300 MtCO₂^e annually valued at US\$252 million

VISUAL AND INTERACTIVE DATA LAYERS

new interactive map ([RCMRD Apps Portal - Economics of Natural Capital in East Africa](#))



apps portal

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Economics of Natural Capital in East Africa



An online map-based tool that can be used to simply and interactively view the key spatial findings and narratives from the **Economics Value of East Africa's Transboundary Wildlife Landscapes: A Natural Capital Assessment of Four Selected Landscapes and Assessment of the Current Trajectory** report.

Click the Web Links: [Economics of Natural Capital in East Africa](#)



Photo: Delphin King/Laikipai Wildlife Forum



THANK YOU

Photo: Jason Houston for USAID