

**NBDF FORUM**

**RWERU BUGESERA TRANSBOUNDARY  
WETLANDS COMPLEX**

**Economic Assessment of Biodiversity and Ecosystem services**

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# OUTLINE

- Case study site
- Objectives
- Methodology
- Legal, Policy and Strategic framework
- Stakeholders
- Ecosystem services
- Total Economic Value of Ecosystem Services
- Degradation
- Development options
- Conclusions
- Recommendations

# CASE STUDY AREA



- Transboundary : Rwanda and Burundi
- Administratively Rwanda –Bugesera district. Burundi –Kirundo Province
- Aquatic and marshlands shared by the two countries in Rweru. Mugesera sub basin, Cyohoha sub basin and Akanyaru river and wetlands
- Bugesera Natural Region : depression ,agro climatic zone straddling the two counties
- Both around what is called the source of the River Nile – benefits to the river
- Nested in the NBI wetlands management
- TEEB in the Nile Basin Initiative

# OBJECTIVES

- The Economics Assessment of Ecosystem services and biodiversity

Specific objectives include:

- i. To investigate beneficiaries of case study wetland generated economic benefits
- ii. To determine the current value of case study wetland biodiversity and ecosystem services
- iii. To determine the economic impact of case study wetland degradation and loss
- iv. To determine the value added or costs of investing in case study conservation and wise use

# METHODOLOGY

- Secondary data
- Virtual interviews
- Benefit transfer estimates
- Travel cost
- Market price
- Data sources

# Data sources

- ARCOS studies      Albertine Rift Conservation Society
- GIRET project      Bugesera Transboundary Resources  
Management Project
- IGEBU Burundi      Institute of Geography of Burundi
- NELSAP briefs
- TEEB databases
- Rwanda Water Portal Rwanda
- REMA                  Rwanda Environmental Management  
Authority
- UR-CGIS              University of Rwanda GIS
- WRI                      World Resources Institute

# LAWS ,POLICIES AND STRATEGIES

Burundi	Rwanda
Vision 2025	Vision 2020
Framework for Growth and Poverty reduction 2012-2015	Economic Development Policy and Poverty Reduction 2013-2018
Environmental code 2000	National Strategy for Transformation <sup>1</sup> 2018-2024
Forest Code 1985	Organic Law on Environment 2005
EIA Decree 2010.	National Strategy on climate Change 2010
National Water Resources Management 2001	Green Growth and Climate Resilience Strategy
Water code Law 1/02 of 26/3/2012.	Rwanda Biodiversity policy 2011
National Strategy and Action Plan Climate Change 2012	Rwanda water law 2008
National Strategy for Biodiversity 2013 -2012	National Policy on Water Resource Management 2011
National Environmental Strategy	Rwanda Water Master Plan



# Stakeholders

- Interest and influences
- Direct and indirect
- State and non state
- Primary and secondary
- Present and future
- National, regional and global
- International

# Users

Users	Elaboration
Direct Extensive users	Directly harvest wetland goods in a sustainable manner
Direct Intensive users	These have access to new technology
Direct exploiters	Dredge sediments in the wetland exploiting minerals, clay and peat
Agricultural producers	Convert land into agricultural land areas
Water users	Use wetlands as a source of water for agriculture, irrigation etc
Indirect users	Flood mitigation
Human settlement	Expansion
Nature conservation	Conservation
Non users	Intrinsic value of wetlands

# Multiple stakeholders

	Stakeholder Category	Br	Rw	Glob	Reg	Pri	Sec	Int	Infl
1	Government Ministries	V	V			V		V	V
2	Parliament	V	V				V		V
3	Autonomous government agencies	V	V				V		V
4	Local Government Administrators	V	V			V		V	V
5	NGOs working in the area	V	V				V	V	
6	NGOs working on environment	V	V				V	V	
7	International NGOs with opinion	V	V	V			V	V	
8	Private Sector	V	V				V	V	
9	Infrastructure Developers	V	V				V	V	
10	Researchers	V	V	V	V		V	V	
11	Conservationists	V	V	V	V	V		V	
12	Tour operators	V	V				V	V	

13	Farmers	V	V			V		V	
14	Livestock keepers	V	V			V		V	
15	Women	V	V			V		V	
16	Youth	V	V			V		V	
17	Genocide Survivors		V				V	V	
18	IDP	V					V	V	
19	Foreign Investors Agriculture	V	V	V	V				V
20	Foreign Investors Industry	V	V	V	V		V		V
	Farmers	V	V			V		V	
21	Hotel Owners	V	V				V	V	
22	Donors	V	V	V					
23	Nile Basin	V	V		V	V		V	V
24	LVEMP				V		V		
25	Green Growth bodies	V	V	V		V		V	V

# ECOSYSTEM SERVICES

Provisioning Services	Regulating Services	Cultural Services
food (seafood, game, crops, wild fruits, spices fiber pharmaceutical, biochemical and industrial products energy (hydropower, biomass fuels)	carbon sequestration and climatic regulation waste decomposition and detoxification crop pollination pests and disease control	cultural, intellectual, spatial, spiritual recreational experiences including ecotourism scientific discovery
<p style="text-align: center;"><b>Supporting services</b>                      nutrient dispersal and recycling                      seed dispersal                      scientific discovery</p>		





# Shores of Lake Rweru





# Water hyacinth- deadly weed



# Cyohoha –ex Kirundo



# Akanyaru river – 'brown' water



# Aviculture -potential



# TEV OF ECOSYSTEM SERVICES

	Ecosystem services	Value USD
1	Provisioning	92,396,338
2	Regulating	25,488,048
3	Cultural	1,862,240
4	Supportive	4,352,200
		<b>124,098,826</b>

# WETLANDS DEGRADATION

		Degradation
1	Falling water level Rweru	Drying lakes
2	Falling water level Cyohoha	Drying lakes, sedimentation
3	Unsustainable Fishing Rweru	Overexploitation
5	Unsustainable use of marshlands	Overexploitation
5	Water hyacinth	Pollution
6	Soil erosion	Erosion (Rusumo,over grazing Kirundo)
7	Animal depletion/overhunting	Loss of fauna
8	Disappearance of plants	Loss of flora

# Threats

	Threat	Rweru	Cyohoha South	Akanyaru
1	Agriculture	H	H	H
2	Pollution	H	H	H
3	Peat mining	-	-	H
4	Sand and clay mining	L	L	M
5	Invasive species	H	H	H
6	Bush fire	H	L	H
7	Infrastructure development	L	L	M



# Cost estimate

- Transboundary wetlands of Rweru Bugesera cost of degradation well above 27.6 million USD, which is about 1.6 per cent of the GDP of the two countries.

# DEVELOPMENT OPTIONS- scenarios

- Business As Usual
- Worst Case Scenario
- Best Case Scenario

# Components

	Development areas of intervention	Components
Pillar 1.	Wise Use of lakes, marshes and the river	<ul style="list-style-type: none"><li>• Water resources</li><li>• Agriculture</li><li>• Livestock</li><li>• Fishing</li><li>• Energy</li></ul>
Pillar 2.	Protection, restoration and conservation of strategic areas in RBWC	<ul style="list-style-type: none"><li>• Regulation</li><li>• Biodiversity</li><li>• Cultural services</li><li>• Wild goods</li><li>• Wild animals</li></ul>
Pillar 3	Promotion of Green water infrastructure development	<ul style="list-style-type: none"><li>• Transport</li><li>• Watershed management</li><li>• Tourism and recreation</li><li>• Technology</li><li>• Settlements</li></ul>
Pillar 4	Governance and Enabling drivers for sustainable development	<ul style="list-style-type: none"><li>• Transboundary laws and regulation</li><li>• Gender and youth and stakeholder roles</li><li>• Awareness Information and education</li><li>• Capacity building</li><li>• Financing</li><li>• Research and science</li></ul>

# CONCLUSION

- Southernmost wetlands complex that straddle 2 countries with considerable value to both
- Disjoint studies and uncoordinated studies not necessarily focused on ecosystems and biodiversity values
- Multiple stakeholders with multiple interest
- Limited site specific knowledge on Ecosystems and biodiversity
- Wide ranging policies and strategies to govern wetlands but all national and broad. Yet implementation and enforcing them is broadly low
- Enforcing estimated at 30 to 35 per cent coupled with population pressure, degradation and climate change the future of the wetlands may not be sustainable

- With available data and information the value of ecosystems of the Wetlands is about USD 124,098, 826
- But there is evidence of pervasive degradation which has been estimated at USD 27million or at least 1.6 per cent of GDP of the two countries of Burundi and Rwanda
- Choice is between linear development and the best-case scenarios as a way forward to wise use. The best case choice would embrace sustainable management of ecosystems in the medium and long term, application of technologies to spur high levels of productivity in different sectors
- A minimum of 26 areas of focus in the best case scenario have been identified.. Could be looked at in an integral way for wise use of the ecosystem services in the wetlands complex.

Four pillars of interventions are possible for clustering these development options involving wise use that determine an optimal use of resources while not damaging the environment. These include

- i. water and marshes provisioning services,
- ii. protection, restoration and conservation initiatives,
- iii. green infrastructure development
- iv. governance of the wetlands resources including cultural services that can spur sustainable development of the wetlands

# RECOMMENDATIONS

- i. Conduct a more detailed identification and mapping of ecosystem services especially where values such as that for regulating services needs technical studies
- ii. Following from 1 gather more data to put together a credible TEEB database for the wetlands complex as part of the current effort on Managing Wetlands in the Nile Basin
- iii. Look into how laws, policies and strategies for protection and management of wetlands can be better enforced and plans implemented with a clearer transboundary focus
- iv. Develop mechanisms to enable sectorial, state and regional stakeholders work jointly for sustainable development of the wetlands complex
- v. Follow up current and potential interventions for protection of critical ecosystems and biodiversity in the national framework or as RAMSAR sites
- vi. Support work for a comprehensive and integrated master plan for the long term development of the wetlands complex.