Scenario Analysis Based on the TEEB Agrifood Evaluation Framework of Policies for Urban and Peri-Urban Agriculture and Wetland Restoration for the Mabamba Bay Wetland System, Uganda

SCOPING REPORT

27th September, 2021
Mabamba Wetland Landscape and Urban and Peri-Urban Areas
Mabamba Wetland System and Administrative Jurisdictions

MAP OF MABAMBA BAY WETLAND SYSTEM

- District
- Subcounty
- Proposed Ramsar Site Boundary
- Nearest reference Town

WETLAND SURFACES
- Open water
- Permanently wet
- Seasonally wet

WETLAND TYPES
- Deciduous plantation or woodland
- Woodland
- Bushland
- Grassland
- Swamp Phragmites or reeds
- Swamp floating vegetation
- Converted to farmland
- Tropical high forest depleted
- Tropical high Forest Stocked
Study Approach and Methodology

**TEEBAgriFood Evaluation Framework**

- **Natural Capital**
- **Human Capital**
- **Social Capital**
- **Produced Capital**

**Scoping Report:**

- **Literature Review**
- **Field Observations**
- **Field Local Interviews**
- **Field Focus Group Discussions**
- **Field Expert Interviews**

- **Stakeholder mapping and analysis** for identification of interests and multiple and plural benefits being accrued from the Mabamba wetlands landscape.

- **Land-use and cover mapping** for habitat types classification (typology generation) and spatial analysis of ecosystem services critical for urban and peri-urban agriculture and wetlands ecosystem integrity.

- **Mapping of ecosystem services and valuation** following total economic valuation approach in the Mabamba wetlands landscape in relation to urban and peri-urban agriculture and wetlands ecosystem integrity.

- **Identification and mapping of urban and peri-urban agriculture value chains** and linkage with Mabamba wetlands landscape ecosystem services.

- **Literature review and stakeholder consultations** for Mabamba wetlands landscape visioning and development options conceptualization.

- This will ultimately result into **scenario options and analysis** of selected development pathways for informing and influencing prevailing policies, strategies, plans and practices for sustainability.
Study Approach and Methodology II

- Measuring of Social and Human Capital;
  - One Health
  - Livelihoods
  - Land rights/land access/tenure
  - Food security
  - Farmers Cooperatives
Study Approach and Methodology III

- InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs)
- Based on Data Availability; Indicative Models
  - Carbon Storage and Sequestration model
  - The Seasonal Water Yield (SWY) model
  - Crop Production Percentile and Crop Production Regression models
  - Crop Pollination model
  - Water purification; Nutrient Delivery Ratio model
  - Sediment Retention model
  - Fisheries Production model
  - Recreation model
  - Scenic Quality model
  - Habitat Quality model
  - Marine Fish Aquaculture model
  - Urban flood risk mitigation model
  - Urban Cooling model
Land Use/Land Cover Types

- Open Water
- Papyrus Wetlands
- Grassland
- Bushland
- Forests
- Farmlands
- Plantations/Woodlots
- Settlements; Urban and Peri-Urban Areas
Urban and Peri-Urban Agricultural Systems

- Cultivated Crops; Cash and Food Crops
- Small-holder
- Horticulture
- Floriculture
- Aquaculture
- Apiculture
- Livestock Husbandry; Poultry, Piggery
- Plantations/Woodlots
The role, interest, influence and power of stakeholders on the Mabamba Wetland varies.

International and Regional Level, National Level, Local Level, Civil Society Organizations, Academic and Research Institutions
Situational Appraisal

- Increasing population, urbanization, climate change
- Increasing migration from urban areas to peri-urban and rural areas for land for agriculture and settlements
- Wetlands encroachment
- Small-holder farming prevails
- UPA is characterized by food and cash crops, horticulture, floriculture, aquaculture etc
Drivers of Change and Indicators

- The main driving forces are population, urbanization and climate change. Other driving forces include agricultural production systems, corruption, Gross domestic product and infrastructural development. This is explored through indicators such as yields of rainfed crops, yields of irrigated crops, area of rainfed arable land, area of irrigated arable land, livestock numbers, livestock yields, agricultural input costs, prices of agricultural products, nutrition, dietary diversity, poverty, equity, wetlands extent or cover change and biodiversity.
Impacting Institutions; Vision, Policies, Plans, Strategies, Programmes

- Uganda Vision 2040
- District Development Plan
- Uganda’s second national biodiversity strategy and action plan (NBSAP II 2015-2025) in 2014
- National Fisheries and Aquaculture Policy 2018
<table>
<thead>
<tr>
<th>No</th>
<th>Category</th>
<th>Ecosystem Services</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Provisioning</td>
<td>Water supply (domestic, livestock, irrigation)</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fishing/capture fisheries</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wild meat/Hunting</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medicinal plants</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Papyrus</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pasture/Fodder</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fuel wood/Biomass</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crops/Horticulture/Floriculture/Yams, Sugarcane</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Livestock (chicken, pigs, goats, cattle, sheep, Bees/Honey)</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fish farming/Aquaculture (pond and cage)</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sand mining</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brick making</td>
<td>Local community</td>
</tr>
<tr>
<td>No</td>
<td>Category</td>
<td>Ecosystem Services</td>
<td>Stakeholders</td>
</tr>
<tr>
<td>----</td>
<td>---------------</td>
<td>---------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>2.</td>
<td>Regulation</td>
<td>Microclimate regulation</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water purification</td>
<td>Local community and Regional community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flood regulation</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pollination</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erosion regulation</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aquifers recharge</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cultural sites</td>
<td>Local Community</td>
</tr>
</tbody>
</table>
## Mabamba Wetland Supporting Ecosystem Services

<table>
<thead>
<tr>
<th>No</th>
<th>Category</th>
<th>Ecosystem Services</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Supporting</td>
<td>Carbon storage/sequestration</td>
<td>Local, Regional and Global community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil formation/fertility; sediments and soil traps/deposits</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nutrients Retention</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Breeding and Nursery Grounds</td>
<td>Local and Regional Community</td>
</tr>
</tbody>
</table>
### Mabamba Wetland Cultural Ecosystem Services

<table>
<thead>
<tr>
<th>No</th>
<th>Category</th>
<th>Ecosystem Services</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Cultural</td>
<td>Tourism/Birdwatching</td>
<td>Local, Regional and Global community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Boat transport</td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research and Education</td>
<td>Local, Regional and Global community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Habitat and Biodiversity</td>
<td>Local, Regional and Global community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cultural sites</td>
<td>Local Community</td>
</tr>
<tr>
<td>No</td>
<td>Human</td>
<td>Social</td>
<td>Produced</td>
</tr>
<tr>
<td>----</td>
<td>-------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>5.</td>
<td>One Health (Nutrition etc)</td>
<td>Land rights/land access/tenure</td>
<td>Inputs/Outputs</td>
</tr>
<tr>
<td></td>
<td>Livelihoods</td>
<td>Food security</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Farmers Cooperatives</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Scenarios Options

- Drivers include population increase, urbanization and climate change

I. Business as Usual Scenario (BAU).....ONE

- This is the baseline projected scenario; no intervention
- High land cover change to arable land
- Increase expansion of unsustainable UPA (high erosion rate)
- Focus on agriculture and food production
- Encroachment into Mabamba Wetlands for Agriculture/Settlements

Tourism growth and behavior, infrastructure (roads, bridges), agricultural land use, settlements and urban expansion, conservation zonation and protected areas (including IBAs, Ramsar Sites, Forest Reserves....Tap on relevant indicators
Scenarios Options

Drivers include population increase, urbanization and climate change

I. Alternative Green Scenario......TWO

- Low land cover change to arable land
- Mabamba Wetlands Restoration/Green Infrastructure
- Mabamba Wetlands Biodiversity protection
- Sound land use planning
- Resilience building of agricultural production system
- Strong enforcement of policies and regulations

- Tourism growth and behavior, infrastructure (roads, bridges), agricultural land use, settlements and urban expansion, conservation zonation and protected areas (including IBAs, Ramsar Sites, Forest Reserves....Tap on relevant indicators
Scenarios Options

Drivers include population increase, urbanization and climate change

I. Alternative Green-Grey Scenario......THREE

- Medium land cover change to arable land
- Optimal expansion of sustainable UPA
- Hybrid of conservation and sustainable UPA growth
- Moderate Mabamba Wetlands Encroachment

- Tourism growth and behavior, infrastructure (roads, bridges), agricultural land use, settlements and urban expansion, conservation zonation and protected areas (including IBAs, Ramsar Sites, Forest Reserves....Tap on relevant indicators
Q & A Session

- Any critical capital or associated elements not captured?
- Any agricultural system not captured?
- Any stakeholder not captured?
- Any data sources e.g., spatial data/shapefiles etc?
Thank you