

Wetlands for flood control

Ecosystem services provided by, or derived from, wetlands

Services	Examples
Provisioning	
Food	Production of fish, wild game, fruits and grains
Freshwater	Storage and retention of water
Fibre and fuel	Production of logs, fuelwood, peat and fodder
Biochemical	Extraction of medicines and other materials from biota
Genetic materials	Genes for resistance to plant pathogens, ornamental species, etc.
Regulating	
Climate regulation	Source of and sink for greenhouse gases; influence temperature, Precipitation……
Water regulation (hydrological flows)	Groundwater recharge/discharge
Water purification	Retention, recovery and removal of excess nutrients and other pollutants
Erosion regulation	Retention of soils and sediments
Natural hazard regulation	**Flood control and storm protection**
Pollination	Habitat for pollinators
Cultural	
Spiritual and inspirational	Some religions attach spiritual and religious values to aspects of wetland ecosystems
Recreational	Opportunities for recreational activities
Aesthetic	Beauty or aesthetic value in aspects of wetland ecosystems
Educational	Opportunities for formal and informal education and training
Supporting	
Soil formation	Sediment retention and accumulation of organic matter
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients

- Wetlands are “areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres” (Ramsar, 2008).

- Floods occur when a large depth of water flows over land that is normally dry. They may occur in response to a number of hydrological mechanisms, including high tidal levels (coastal flooding), direct precipitation (pluvial flooding), high ground-water levels (groundwater flooding) or high river flows(fluvial flooding)

Wetlands can influence the peak flows, timing, volume and duration of floods. Rain-fed wetlands and their managed condition influence pathways of how precipitation reaches the river, by controlling overland flow, through flow and groundwater flow.

Wetlands of Rwanda

Wetlands of Rwanda may be divided into “floodplain wetlands” and “valley-bottom wetlands”. Flood plain wetlands have a greater potential to control floods. However, landscape location and configuration, soil characteristics, topography, soil moisture and management, influence the ability of wetlands to control floods.

The diversity of wetlands across Rwanda means that they perform many valuable ecological, social and economic functions.

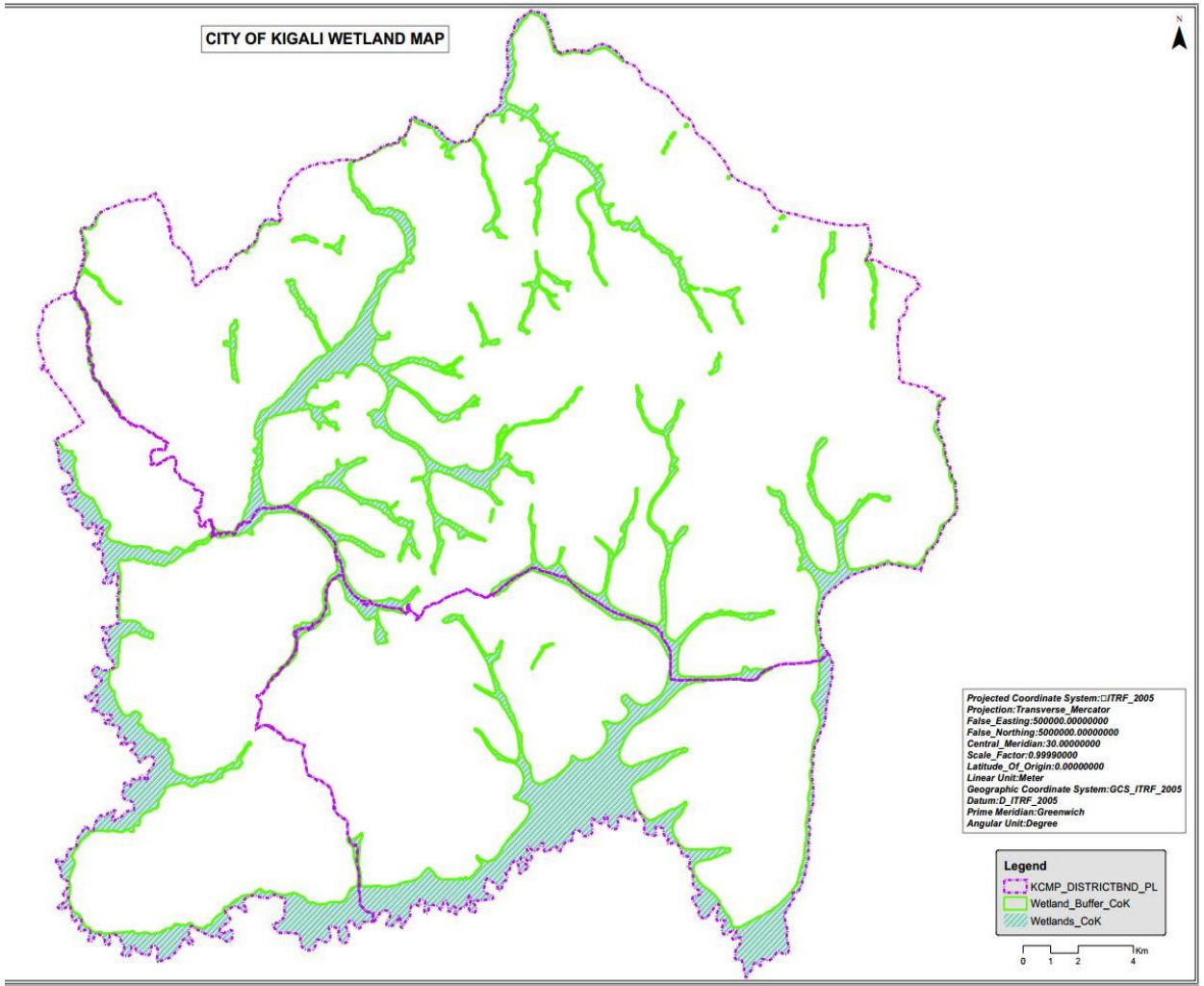
915 wetlands inventories in Rwanda and occupy 10.6% of the country total surface

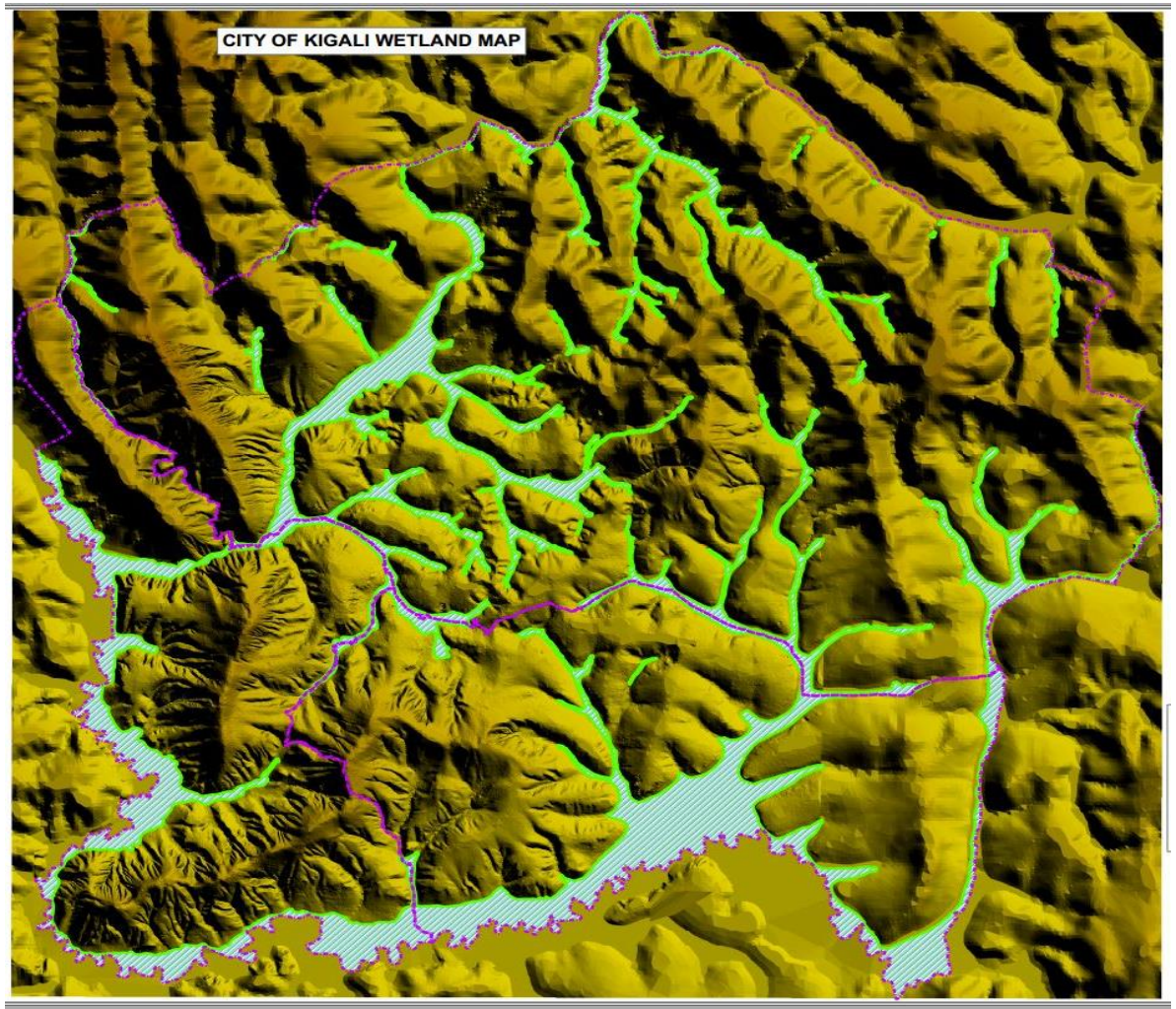
Categorization of wetlands

- Wetlands with the status of total protection: 48,021 ha (27% of all wetlands). 31,000 ha (64 % of total protection) protected within National Parks.
- Non-protected wetlands with status of use under specific conditions: 120,492 ha of wetlands (68% of all the country’s wetlands).
- Non-protected wetlands with status of Use without specific conditions: Only 4% (7,834 ha).

Kigali City Case

Nearly equally distributed in Kigali City. Occupy 7700 ha (10.5%) of the City.
Wetlands are very essential for floods control in hilly cities
Ecosystem services are provided to the whole City including floods control

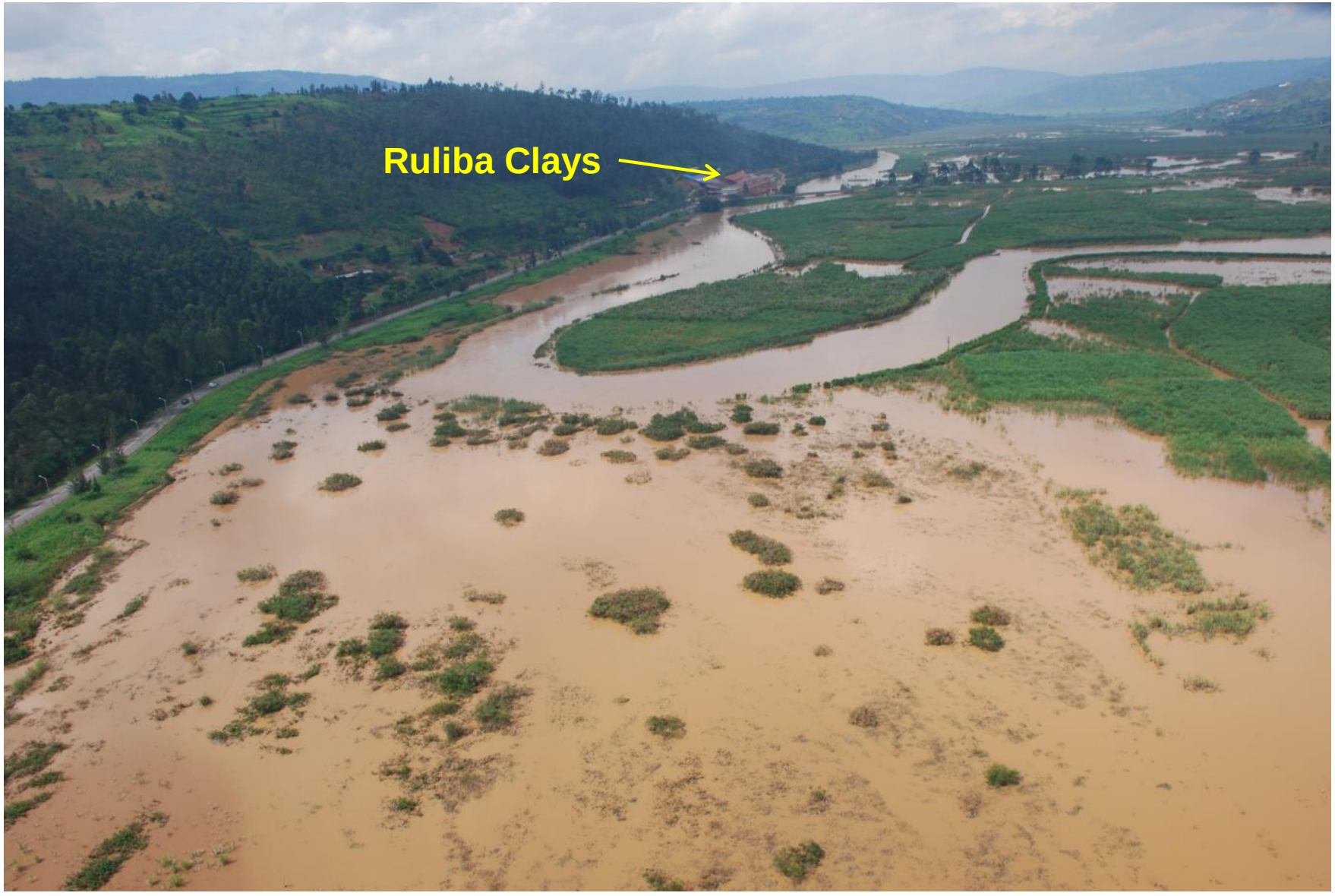




Nyabugogo transport hub

Gatsata – Nyabugogo valley

South highway on Nyabarongo




Kigali-Bugesera highway on
Nyabarongo/ Akanyaru (Akagera)


Nyakariro-Juru access on Akagera
Bridges

Agricultural risks (Rusororo-Masaka sectors)

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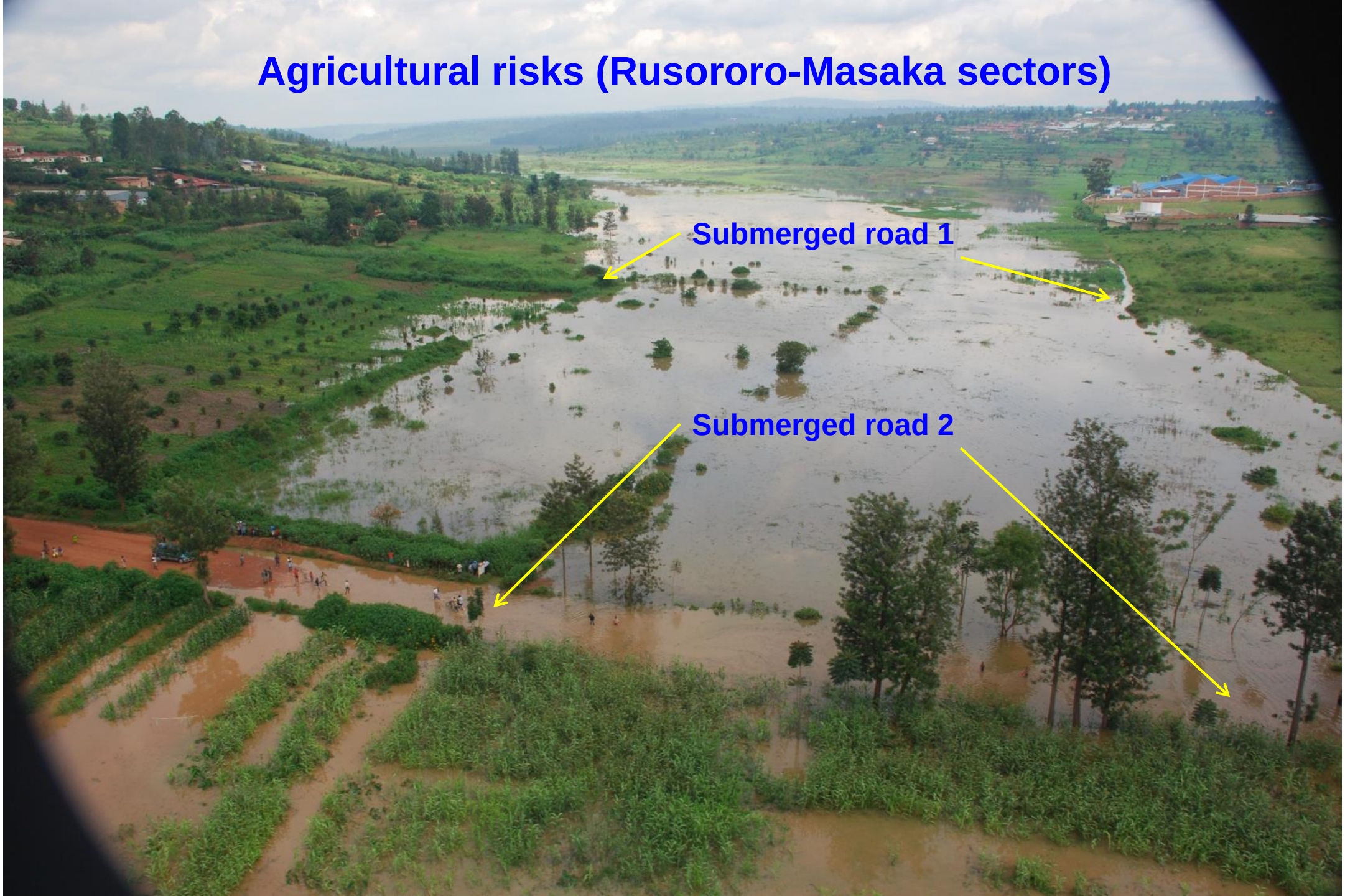


Nyabihu-Musanze
Busogo-Mukamira (19th May 2012

THANK YOU FOR YOUR ATTENTION