

# Mapping of Coastal Degradation Hotspots

## Kenya, Tanzania, Mozambique and Madagascar



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### 1. Rationale

Coastal degradation/erosion is one of the biggest threats to marine biodiversity and ecosystems along the Eastern Africa coast. Coastal erosion is causing loss of beaches and structures adjacent to beach fronts, loss of mangrove forests (which act as the first line of defense against rising sea levels and wave action), and smothering of submerged plants such as sea grasses. Pollutants and sediments discharged through river systems and resulting from floods highly affect the chemistry of lagoons' sea water, consequently threatening biological equilibrium.

### 3. Approach/Project Activities

- ▶ Engagement of stakeholders.
- ▶ Desktop information search for degraded/erosion hotspots.
- ▶ Identification of locational coordinates of the degraded/erosion hotspots.
- ▶ Identification and acquisition of satellite images of the degraded/erosion hotspots.
- ▶ Preparation of maps of the degraded/erosion hotspots.
- ▶ Uploading the maps on the web portal

### 5. Results

The main drivers of coastal degradation include:

- ▶ Charcoal burning.
- ▶ Timber/construction poles extraction.
- ▶ Mineral/salt mining.
- ▶ Clearing of vegetation for cultivation.

	Achievements Summary	Amount
1	Number of individuals trained	16
2	Number of organizations engaged in training	13
3	Number of stakeholder engagement events	4
4	Number degraded hotspots maps prepared	40

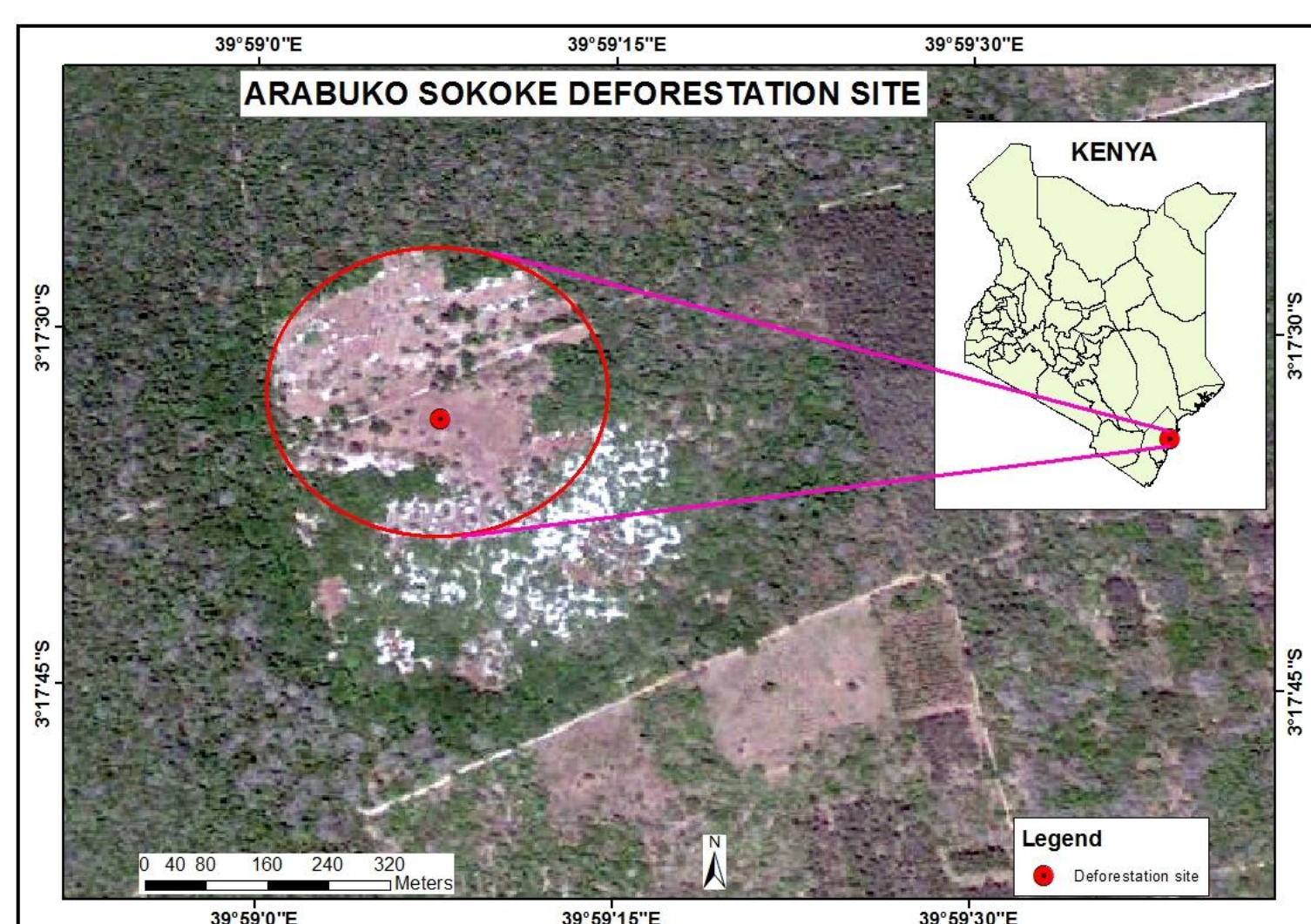


Fig. 6: Degraded site in Arabuko Sokoke Forest, Kenya  
(Image credit: Digital Globe)

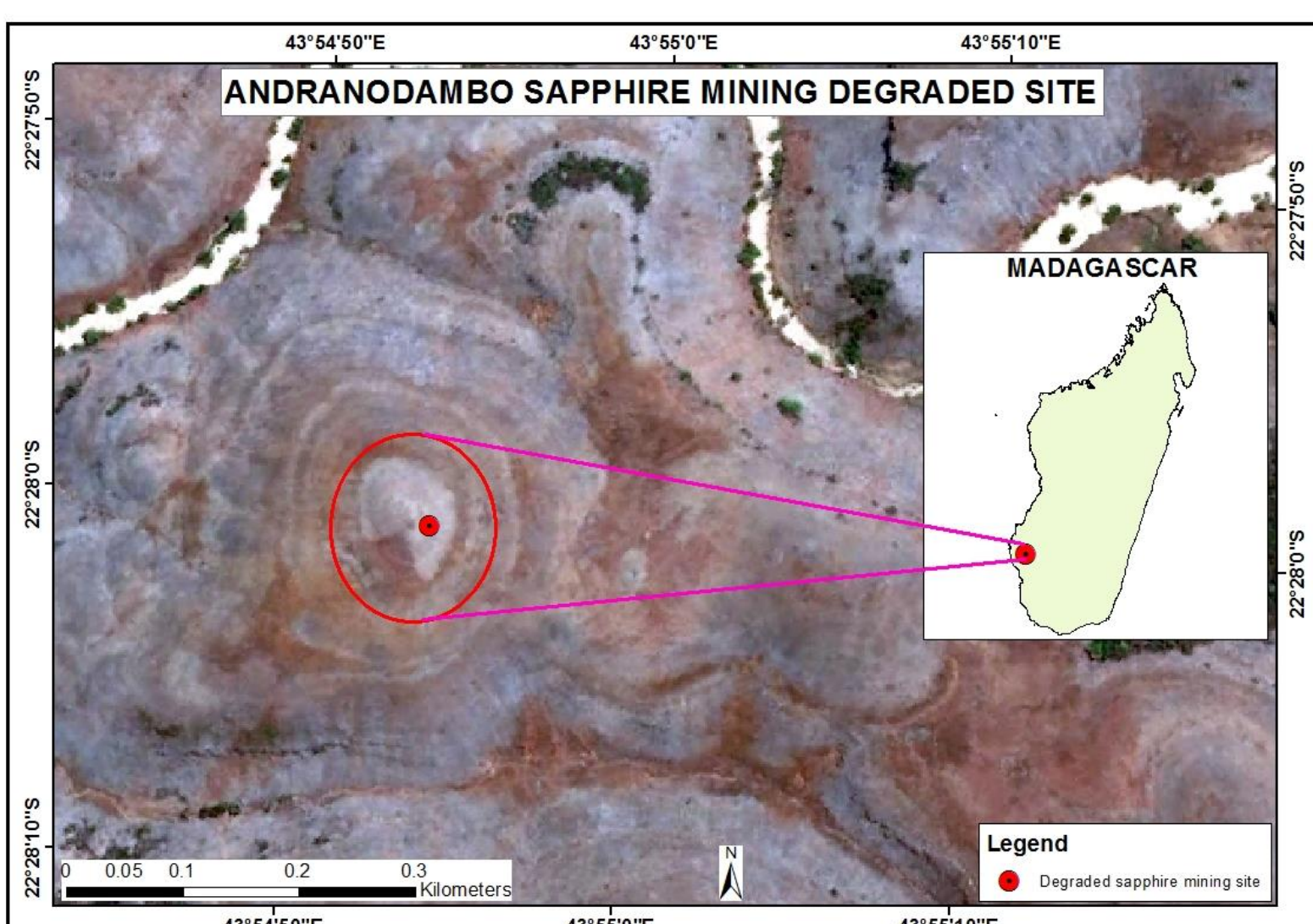


Fig. 7: Sapphire mining degraded site in Madagascar  
(Image credit: Digital Globe)



Fig. 1: Degradation of mangroves in Lamu, Kenya  
(Photo credit: commissionoceanindien.org)



Fig. 2: Stakeholder engagement in Nairobi, Kenya

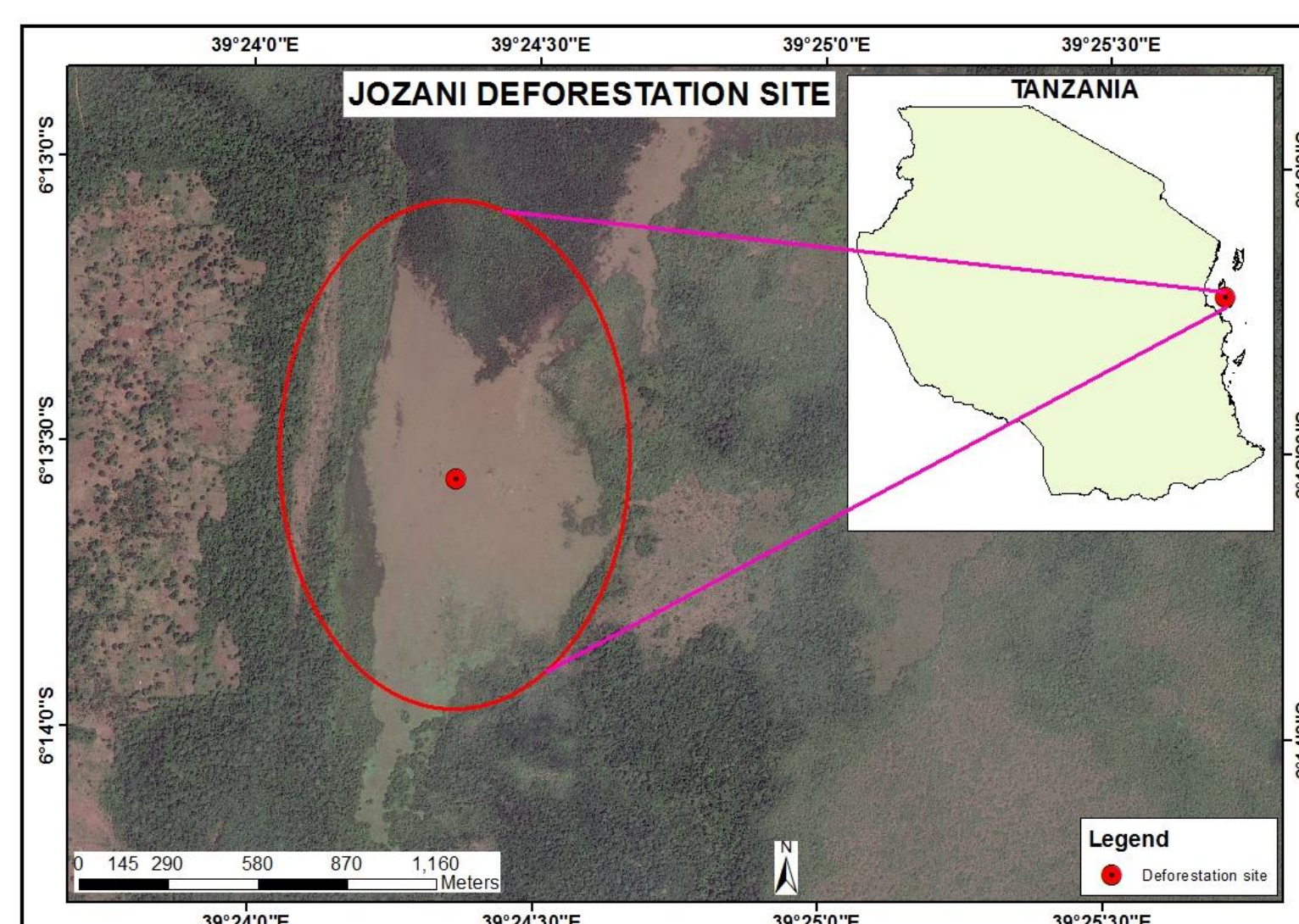


Fig. 5: Degraded site in Jozani Forest, Tanzania  
(Image credit: Digital Globe)

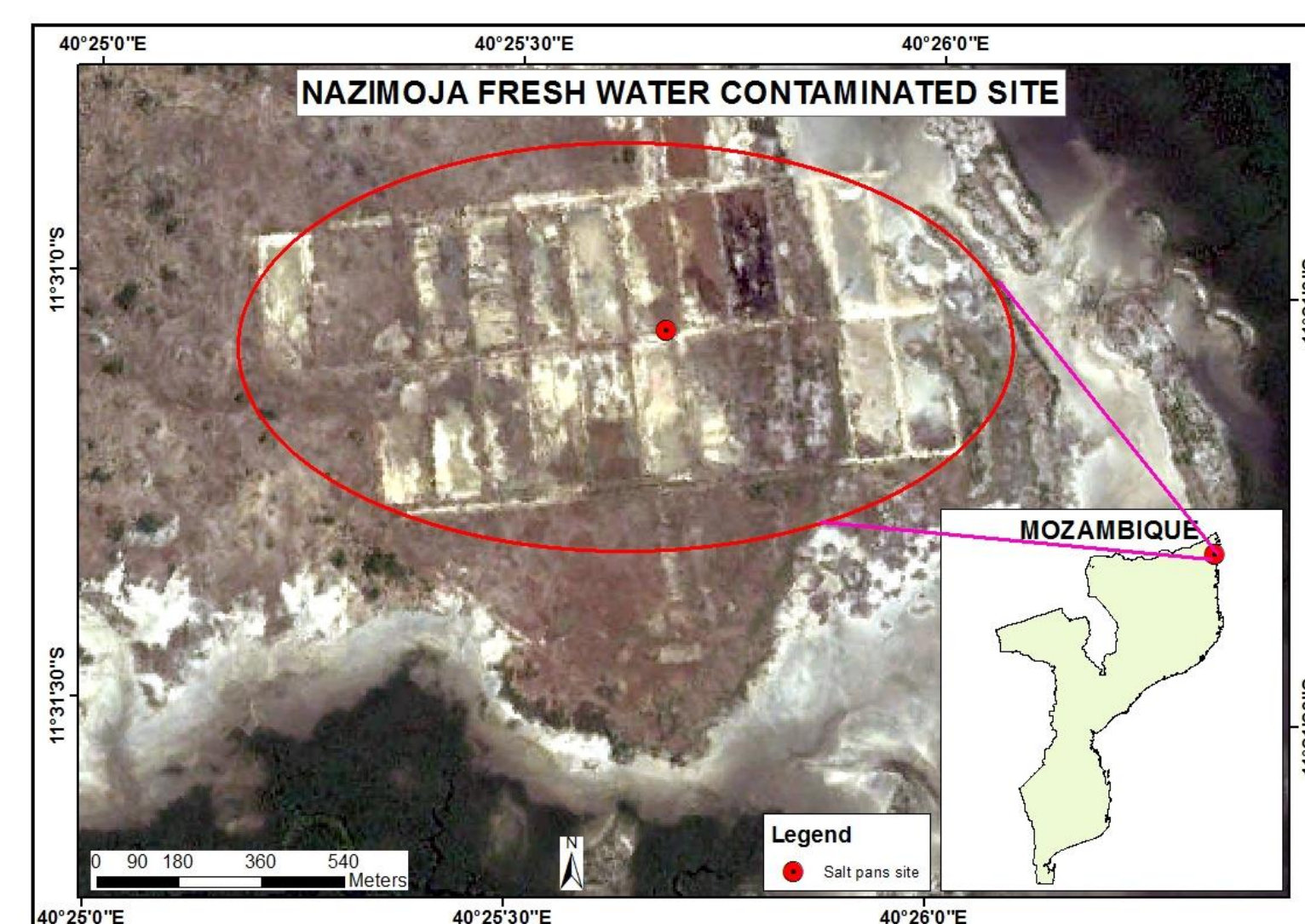


Fig. 8: Fresh water table salinized site in Nazimoja, Mozambique  
(Image credit: CNES/Astrium)

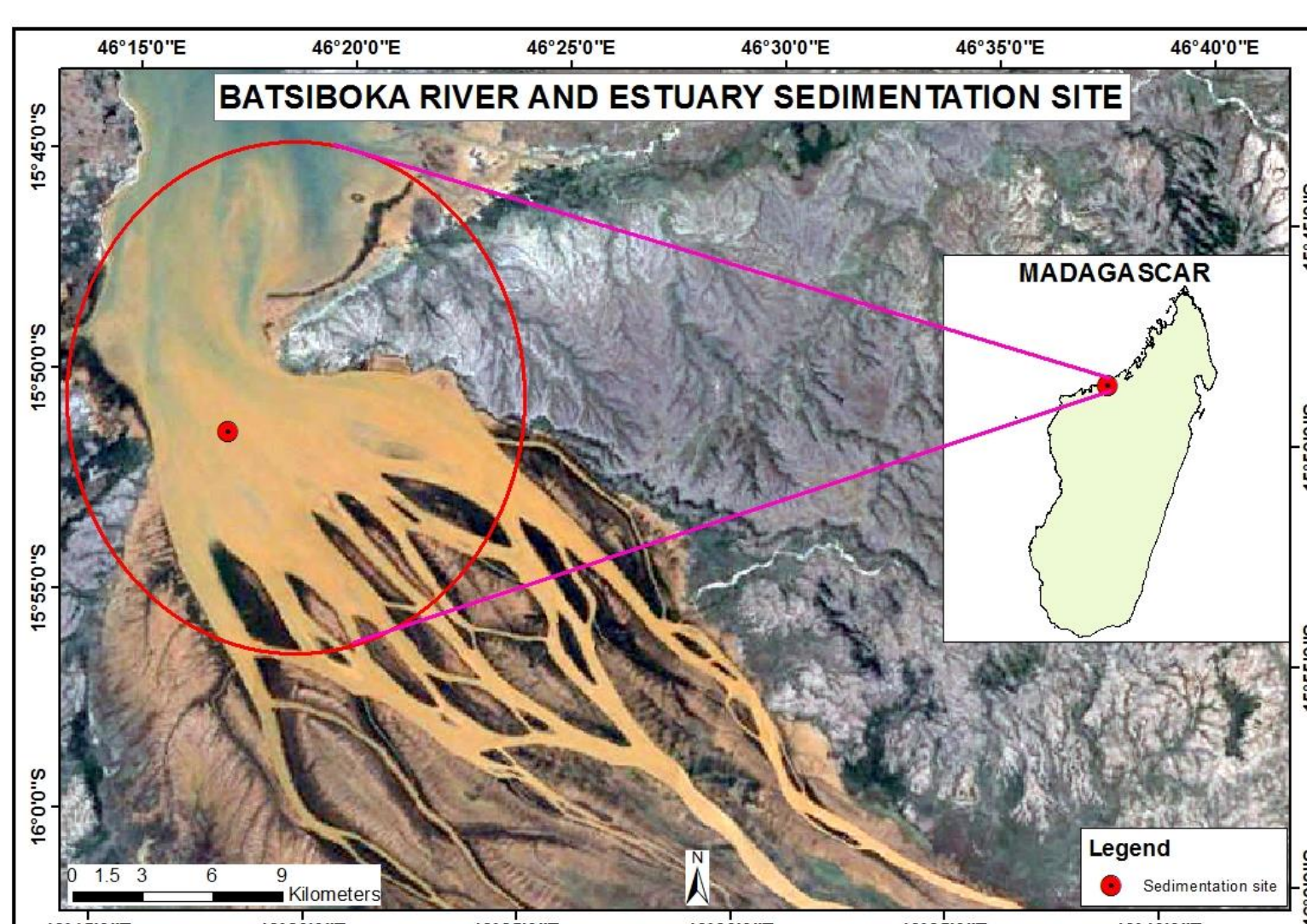


Fig. 9: Sedimented site in Batsiboka River Estuary, Madagascar  
(Image credit: CNES/Astrium)

### 2. Objective

- ▶ Develop maps showing the location of the coastal erosion/degraded hotspots.

### 4. Earth Observations and Other Inputs

- ▶ GeoEye-1 with 4 light channel bands of 0.5 meter spatial resolution.
- ▶ WorldView 2 with 8 light channel bands of 0.5 meter spatial resolution.

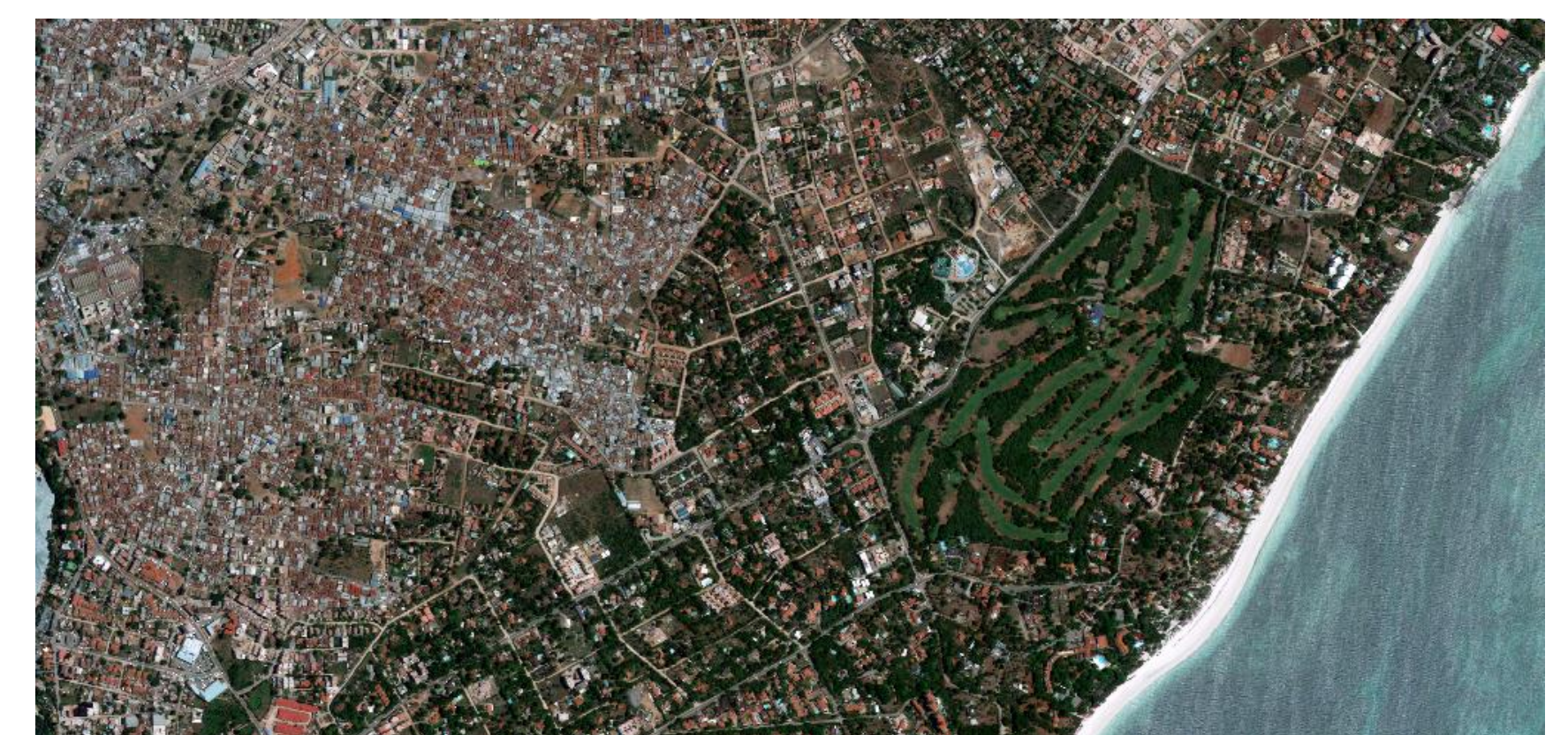


Fig. 3: GeoEye1 High Resolution Satellite Image  
(Image credit: Digital Globe)

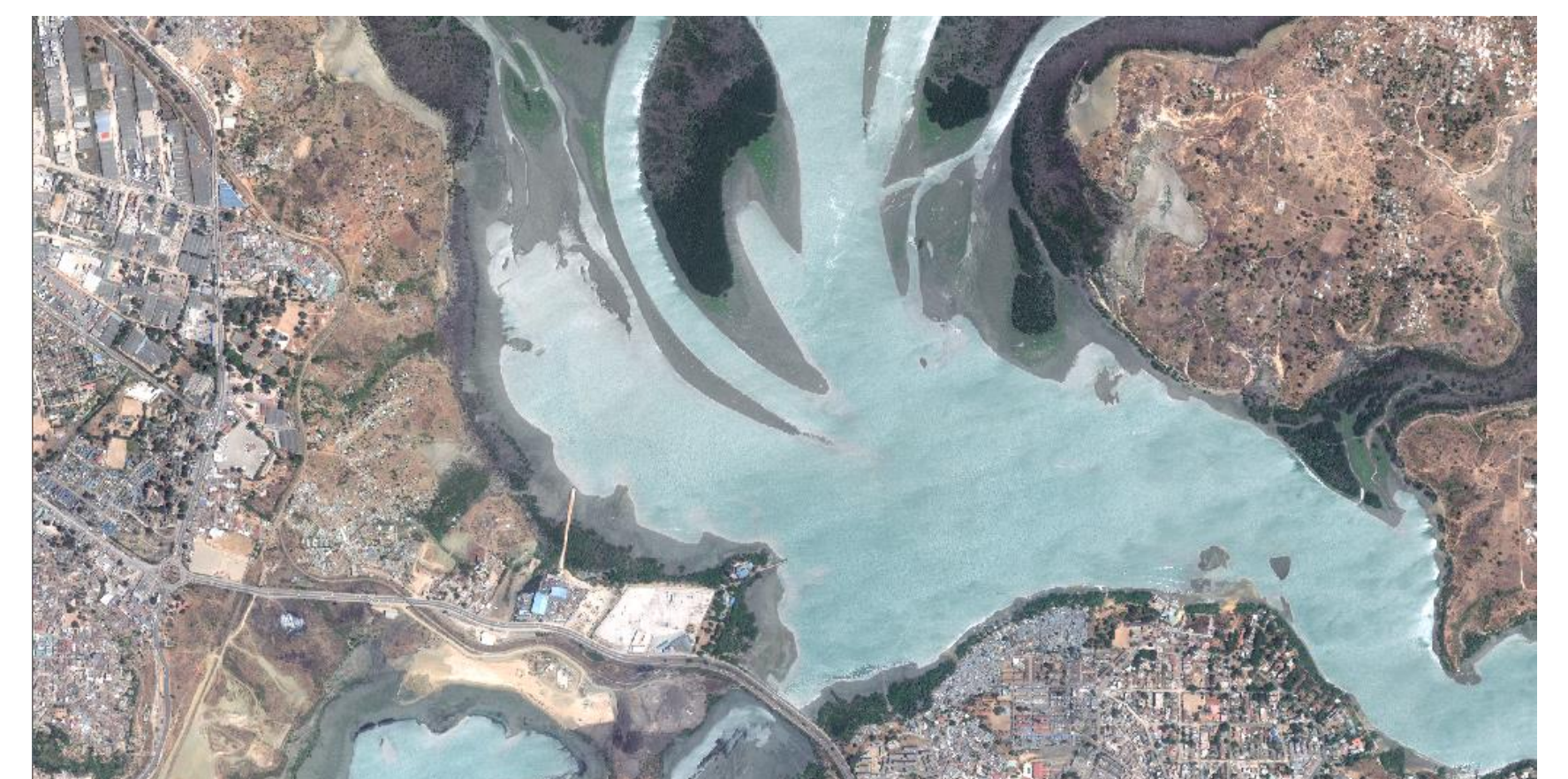


Fig. 4: WorldView2 High Resolution Satellite Image  
(Image credit: Digital Globe)

### 6. Outcomes/Anticipated Impacts

- ▶ Improved access of information on degraded hotspots via the web portal.
- ▶ Enhanced skills of the trained personnel in degraded hotspots mapping.
- ▶ Improved capacity of stakeholder organizations in degraded hotspots mapping.

### 7. Project Partners

- ▶ National Aeronautics and Space Administration (NASA)
- ▶ Kenya Marine and Fisheries Research Institute (KMFRI)
- ▶ Tanzania Fisheries Research Institute (TAFIRI)
- ▶ Mozambique Fisheries Institute (IIP)
- ▶ Institut Halieutique et des Sciences Marines (IHSM)
- ▶ University of Dar es Salaam
- ▶ Universidade Eduardo Mondlane (UEM)
- ▶ World Wide Fund for Nature (WWF)

### 8. Project End Users

- ▶ Kenya Marine and Fisheries Research Institute (KMFRI)
- ▶ Tanzania Fisheries Research Institute (TAFIRI)
- ▶ Mozambique Fisheries Institute (IIP)
- ▶ Institut Halieutique et des Sciences Marines (IHSM)