

EARTH OBSERVATION AND PARTNERSHIPS TO SUPPORT LAND USE MANAGEMENT

The cooperation of three European projects has shown how collaboration supports local authorities in wetland management.

The challenge

The Kilombero Ramsar site in Tanzania is one of Africa's largest wetlands. The Ramsar convention encourages sustainable and wise use of wetlands for economic activities. However, during the last decade the area has experienced an exponential increase in immigration. Combined with a lack of property rights and low resources for management, farm encroachment and deforestation have grown uncontrolled dramatically reducing its natural habitats. Its vast area and difficult access make it challenging to obtain information on the current situation and develop land management plans that fit national and local needs.

The space based solution

In this context, the Belgian project KILOWREMP (Kilombero and Lower Rufiji Wetlands Ecosystem Management Project), the EU project SWOS (Satellite-based Wetlands Observation Service) and the German GlobE project have joined in a partnership to provide the government of Tanzania with the tools necessary to overcome the spatial challenges presented. This partnership directly contributes to the GEO-Wetlands initiative that was recently established as part of the 2017–2019 Work Programme of the Group on Earth Observations (GEO). Using satellite imagery from the Copernicus programme and NASA, the partnership provided the Tanzanian authorities with maps, models and science-based recommendations for land planning.

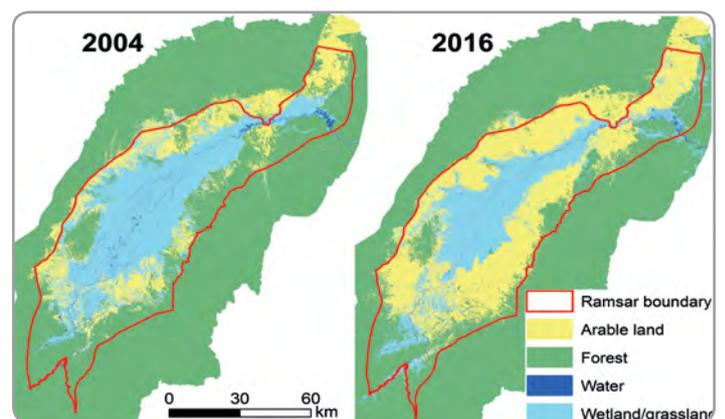
The products delivered show the spatio-temporal patterns and trends undergone in the floodplain during the last decades. Human activities such as deforestation and agricultural expansion have caused changes in the biophysical properties of the landscape.

These changes impact the water regimes, land surface temperature and vegetation cover affecting all flora, fauna and local human populations. The land cover changes and the biophysical properties are traceable from space using different sensors and ancillary ground data provided by local users.

Benefits to Citizens

The area is undergoing a development phase to modernise the farming practices that aim to improve food security and sustainability. The results are being used to develop strategies that will allow economic progress with a better knowledge of the natural resources available in the floodplain and the impact that human activities cause upon them.

Conflicts between local farmers, authorities and itinerant herders took place in the past due to weak land management systems. Mapping of historical trends of agricultural expansion and the current situation will provide a solid framework that will facilitate negotiations and planning between stakeholders.



Agricultural expansion in the Ramsar site between 2004 and 2016.

Thematic Area



BIODIVERSITY AND ENVIRONMENTAL PROTECTION

Region of Application



KILOMBERO, TANZANIA

Sentinel mission used



S2

Copernicus Service used



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Usage Maturity Level



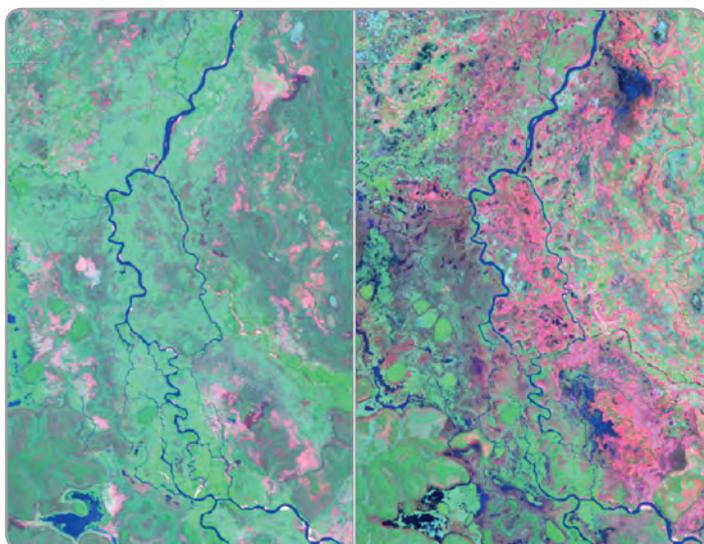
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The creation of this partnership has allowed the maximisation of the resources invested, preventing duplication of work. The use of freely available satellite imagery and cartographic products has also contributed to a cost reduction.

Besides the products delivered, local users were trained in how Earth Observation can be used for monitoring. This will provide continuity for the monitoring tasks needed for the Ramsar reporting obligations once the projects end, and the process can be replicated in other areas.

Outlook to the future

The GEO-Wetlands initiative facilitates cooperation between different projects and institutions under the common goal of improving the monitoring and assessment of global wetland extent, status and trends. Collaboration between multidisciplinary teams is crucial to achieve the ambitious targets set by international conventions and frameworks. Enabling stakeholders to continue monitoring after the lifetime of projects is therefore an essential goal.



Changes in the wetland between 2004 and 2016 due to farming in the Ngapemba swamp. Healthy vegetation features in green and bare soil in pink. RGB: SWIR, NIR, G

“This analysis has opened the eyes of the many stakeholders of this valley over its environmental change.”

*Pellage Kauzeni,
Ministry of Natural Resources and Tourism of Tanzania*

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ABOUT COPERNICUS4REGIONS

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The model cases focus on local and regional authorities who successfully applied Copernicus data in 8 major public policy domains. The views expressed in the Copernicus User Stories are those of the Authors and can in no way be taken to reflect the official opinion of the European Space Agency or of the European Commission.

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