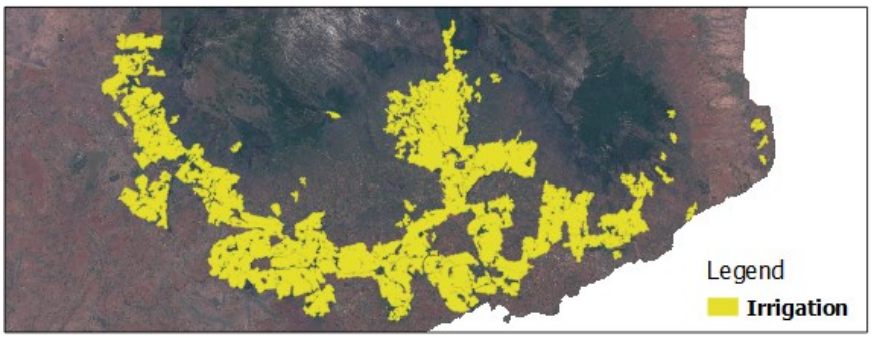
EARTH OBSERVATION SUPPORT FOR WATER LICENSING IN MALAWI

Like many developing countries, Malawi's water resources are under increasing strain, why the national water resource authority recently developed and implemented a new water license system. Yet, not having a clear overview of the large water users, especially irrigators, is a challenge that the authorities face to properly effectuate the water licensing.

This is where Earth Observation can help, as new free and open satellite data can be used to map and monitor the extent of irrigation at national scale in order to compare active water licenses with non-licensed water usage.

BACKGROUND

In Malawi the Water Resources Act of 2013 outlines procedures to be followed for water abstraction including requirements by individuals and the private sector to register their existing, or obtaining new, rights with the National Water Resources Authority (NWRA). In order to streamline the licensing process for water abstraction a new IT system/database has been developed for keeping track of the license holders, their water abstractions and the billing. However, since application for water abstraction is demand driven only those who apply are captured in the database. There is no information on other potential water users i.e. to date there is no monitoring system in place for NWRA to verify the extent of illegal water abstraction.



Example of irrigated extent mapping at the foot of Mount Mulanje using free and open Sentinel-2 data in 10 meter resolution (© Copernicus Sentinel data/DHI GRAS).

CLIENT

- National Water Resource Authority (NWRA)
- Ministry of Irrigation and Agriculture
- Zambezi Watercourse Commission (ZAMCOM)

CHALLENGE

- Inadequate or inaccurate information on location and extent of irrigation

SOLUTION

- A national map of irrigation extent integrated into the national water licensing system in order to compare with the actual licensed area and identification of non-licensed water usage

VALUE

- Better knowledge on water abstraction at national scale
- Cost-efficient approach for mapping and monitoring location and extent of irrigation
- Significant scope for cost-recovery by identification of non-licensed water usage

LOCATION/COUNTRY

- Demonstrated in Malawi, but applicable to the Zambezi countries and beyond

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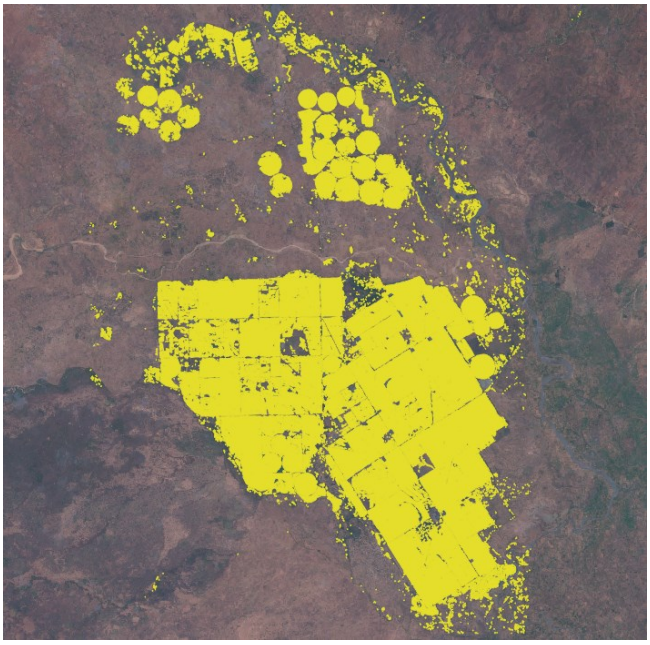
USING EARTH OBSERVATION TO IDENTIFY LARGE WATER USERS

In the frame of the EO4SD project a national map of irrigation extent has been produced and integrated into the national water licensing system in order for NWRA to compare with the actual licensed area and identification of non-licensed water usage. Ultimately, this will help safeguard the environment and avoid conflicts by ensuring better monitoring and management of water resources in Malawi.



Active irrigated fields during 2017 in Nchalo Sugar Estate in Chikhwawa District (© Copernicus Sentinel data/DHI GRAS).

ABOUT EO4SD

Satellite Earth Observation (EO) technology has a tremendous potential to inform and facilitate international development work. Since 2008 the European Space Agency (ESA) has worked together with the International Financing Institutions (IFIs) and their client countries to harness the benefits of EO in their operations and resources management.

EO4SD – Earth Observation for Sustainable Development – is an ESA initiative which aims to achieve a step increase in the uptake of satellite-based information in the IFIs regional and global programs, aiming at more systematic data user approach in order to meet longer-term strategic geospatial information needs in the individual developing countries as well as international and regional development organizations.

National map of irrigation in Malawi. During 2017. (© Copernicus Sentinel data/DHI GRAS).

REGIONAL PERSPECTIVES

It is widely known that irrigation is seen as one of the main drivers of growth in the Zambezi region. However, recent studies reveal that there are many differences in reported numbers of irrigated areas and that significant knowledge gaps and uncertainties remain to inform not only water licensing but also investment decisions and policy making. The national demonstration for Malawi is therefore not only relevant for the National Water Resource Authority (NWRA) in Malawi as support for their newly developed water licensing system but also serve as a blueprint for other countries in the Zambezi region.

CLIENT TESTIMONIAL

The national map of irrigation have helped us with difficult management decisions and prioritization of resources to better effectuate water licensing. We now have a better overview of where water abstraction takes place and when coupled with our current water abstraction permits we can use the information to focus our efforts on the ground."

Peter Banda - National Water Resource Authority, Malawi

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For more information, visit: www.eo4sd-water.net

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