The Challenge

While Ethiopia has been making strides in substantially boosting food security over recent years, millions of its citizens still remain dependent on food aid. With a vision of becoming self-sufficient by the year 2025, the government is working on a plan to increase the output of major crops from 19 to 27 million tons for a fast growing population.

One approach to achieve this goal is to enhance private investment in the country. Therefore large land areas have been transferred to domestic and international investors until 2014. This approach was expected to bring foreign currency, technology transfer, employment opportunities and to modernize the agricultural sector.

However, progress towards achieving these goals has largely been poor. Many of the investors have never developed the areas leased to them or have used the area for other purposes than contractually agreed. Such monitoring, which is crucial for controlling the investment spatially and enhance compliance of contracts and guiding of investment has been lacking. Monitoring such investments, dispersed across wide geographic and often remote areas, requires substantial financial and human resources.

To fill this gap, the Support to Responsible Agricultural Investment (S2RAI) project in Ethiopia developed an earth observation tool based on remote sensing technology that can provide repetitive, timely, cheap and objective information from the vantage point of an elevated platform.

Eyes on Lock: Its Approach

S2RAI, in collaboration with the Joint Research Center of the EU Commission developed a remote sensing monitoring tool. It is based on satellite data and counterchecks contractual agreements on the investment boundaries, the crop types and the pace of cultivation using remote sensing. High resolution and freely provided satellite imageries from the Copernicus earth observation program of the EU Commission are utilized. By manually interpreting visuals from satellite images or by using advanced machine learning algorithms for crop type recognition, it transforms the satellite data into information related to an actual land use.

The tool produces digital maps, reports and statistics, where such products will serve as inputs for geographical information systems to regularly monitor changes in the land use and land cover.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Support to Responsible Agricultural Investment (S2RAI)</th>
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</thead>
<tbody>
<tr>
<td>Regions</td>
<td>Ministry of Agriculture, Benishangul Gumuz Regional State, and to be scaled up nationwide</td>
</tr>
<tr>
<td>Budget &amp; Duration</td>
<td>50,000 EUR approx., 2017-2019</td>
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<tr>
<td>Commissioned by</td>
<td>German Federal Ministry for Economic Cooperation and Development (BMZ), Co-financed by the European Union (EU),</td>
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<td>Implementation Partners</td>
<td>Former Ethiopian Horticulture and Agriculture Investment Authority, Ministry of Agriculture (MoA), Ben-</td>
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<td>Lead Executing Agency</td>
<td>Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH</td>
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<tr>
<td>Target Groups</td>
<td>Large-scale agricultural investors and smallholder farmers in Benishangul-Gumuz</td>
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Development progress of a large-scale agricultural investment project
Current Status

S2RAI has up to now developed and supported the implementation of a basic tool, which is based on visual interpretation in Benishangul-Gumuz State. It is implemented on a cloud-based Google Earth Engine with a user-friendly simple graphical user interface.

Additionally, vector-based large scale agricultural investment project boundaries can easily be overlaid on top of the images to check if and to which extend the investors have developed the land granted to them.

Next Steps

Annual monitoring of large-scale agricultural investments is not practical from a logistics point of view and budget constraints for the government at federal and regional levels.

The development and implementation of the remote sensing tool's advanced functionalities based on freely available remote sensing datasets and its integration with the Commercial Agriculture Management Information System (CAMIS)—an application that supports land management for agricultural investments and different contract farming models—will facilitate the monitoring process and reduce the frequency of physical monitoring of projects.

The utilization of the remote sensing tool for monitoring the performance of large-scale agricultural investments will be scaled-up nationwide.

For the immediate future, however, the program is currently collecting ground field data from selected 28 large-scale agricultural investment projects in Benishangul Gumuz State to develop the inputs for the advanced monitoring functionality.

The tool will continue to monitor crop development starting from land preparation stages in May 2019 to the final harvesting stage in January 2020.

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