Earth Observation in support of sustainable land management and food security projects in Ethiopia

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Land degradation, population growth, climate change and stagnant technology threaten livelihoods and food security.
EO4SD engages with 3 Projects in Ethiopia

- WB Sustainable land management project 2 (SLMP-2)
- IFAD Participatory Small-scale Irrigation Development Programme II (PASIDP II)
- GEF/IFAD IAP Food Security child project *Integrated Landscape Management to Enhance Food Security and Ecosystem Resilience in Ethiopia*

Overall goal: **improve food security**
- Halt land degradation (SLM practices)
- Mitigate climate risks
- Improve resilience of food production systems
- Enhance long-term sustainability
Provide **evidence-based M&E** indicators for land degradation rehabilitation interventions:
- Land cover and change
- Vegetation dynamics (trends)
- Biomass
- Soil Erosion

**EO4SD Service**
Tools to assess land degradation & environmental conditions

Local stakeholder: M. of Agriculture and Natural Resources
Does the intervention have an impact?

Long-term time series are required to reveal effective changes and trends, due to high inter-annual variability.
Does the intervention have an impact?

The SLMP-2 project started with rehabilitation measures of degraded land in the below watershed in 2012.

Vegetation cover change
- Strong decrease
- Decrease
- No change
- Increase
- Strong increase

Before intervention 1999-2012
After intervention 2012-2017
Quantify the impact

6.919 ha achieved at least 4% increased vegetation cover
Quantify the impact

Atat Keba: 385 ha.

- Increase: 299 ha
- About the same: 71 ha
- Decrease: 15 ha

Vegetation trend '12-'17 30m

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EO4SD helps to answer these questions:

- Where should we invest in new small-scale irrigation schemes (first screening)?
- How are existing schemes performing (optimisation)?
- Is rehabilitation of watersheds successful?

- Irrigation suitability
- Roadless areas
- Irrigation performance and timing
- Vegetation dynamics

Local stakeholder: M. of Agriculture and Natural Resources
Selecting the right sites for investments

Finding suitable areas for small scale irrigation schemes development. Example from Lake Tana Catchment

Constraints
- No constraint
- Exhausted soil
- Degraded soil
- Land degradation
- Riverine corridor
- Slopes <= 5 %
- Slopes > 5 %

Suitability for 4 crop classes

Irrigation suitability classes

A first screening will be done for selected AOIs for the PASIDP-II project

Earth Observation for Sustainable Development
Agriculture and Rural Development
Monitor irrigation management

Monitor productivity and optimise use of water resources

A similar monitoring system will be set up for PASIDP-II in a scheme in North Shewa
EO4SD can provide objective information for setting the baseline at project start as well as status for mid-term and final assessments.

- Vegetation cover (ha)
- Biomass
- Land cover/change

EO4SD Service
Tools to assess land degradation & environmental conditions

Implementing GEF agency: UNDP
Local stakeholders: Ministry of Environment, Forest and Climate Change (MEFCC)
Setting the baseline at project start

The IAP FS child project is in need of baseline information
Land cover and biomass map for Angolelana Tera, 2017
See where and what kind of change happens

Land cover change 10m

- Land cover change
- Other

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Collaboration and local capabilities

- May 2017: EO4SD introductory and requirements gathering visit
- July 2017: Consolidation meetings with SLMP and PASIDP and participation at the IAP-FS kick off meeting in Addis Ababa
- Regular exchange by phone and email
- Direct interaction with local partners since the first meetings

Capabilities:
- Some experience with EO already exists
- Introduction of new Sentinel data is of major interest
- Cloud services offer new possibilities
- Major interest in CB to build up local capacity
- Phase 2 roll out for entire North Shewa
- Evaluation of products with local information

- Service delivery coordinated with capacity building workshop incl. training on crop mapping with Sen2agri toolbox

- 2 Capacity building events (Beginning 2018 and 2019)