



Food and Agriculture Organization
of the United Nations

LESOTHO Land Cover



Justification

Severe land degradation, including excessive soil erosion caused by water run-off, inappropriate agronomic practices and overgrazing is one the main contributors to declining food security in Lesotho. This situation is exacerbated by the impact of Climate Change and compounded by socioeconomic challenges to sustainable production, nutrition and food security. Up to date information on the status of national natural resources is scarce and fragmented, yet the need for evidence base decision making is critical in the protection and sustainable exploitation of Lesotho's natural resources.

Background

The new National Land Cover database supported by FAO in Lesotho with financial assistance from the European Commission Humanitarian Aid Department (ECHO) and the Swiss Development Cooperation (SDC) is an important element of FAO Resilience Strategy. Since 2012, FAO Lesotho, the Ministry of Agriculture and Food Security (MAFS) and the Ministry of Forestry, Range and Soil Conservation (MFRSC) started implementing the Resilience Strategy, promoting adaptation to climate change, promotion of sustainable farming systems with emphasis on sustainable land management. The Resilience Strategy is implemented at national level and involves an increasing range of stakeholders with expansion in schools and inclusion of local leaders. The Land Cover database has been implemented in partnership with the Government of Lesotho through CEDAMA (Committee for Environment Data Management) chaired by the Bureau of Statistics.

DESCRIPTION

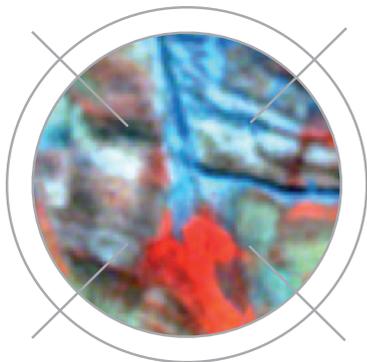
The land cover database covering the entire territory of Lesotho is developed through multi-spectral image fusion (or pan sharpening) technique using the following two sets of images:

- satellite imagery (Rapid Eye 2014) at lower spatial resolution (5 m) but higher spectral resolution (visible and infrared bands);
- the panchromatic band of aerial photography (ortho-photos 2014) at very high spatial resolution (0.5 m) but lower spectral resolution.

The result is a set of pan sharpened and mosaicked tiles (60) from merging 1,237 aerial photographs covering the whole country.

A legend including relevant land cover classes was developed in country using the Land Cover Classification System (LCCS3/LCML) methodology. Interpretation of the land cover database was undertaken to generate a national land cover object oriented vector database according to the legend with 1.5 m resolution in lowlands and 2 m resolution in highlands.

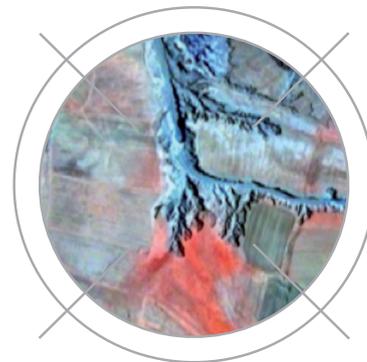
Additional spatial ancillary data has been provided by line ministries to enrich the dataset and foster coordination among spatial data users.



Rapid Eye 542 band composite image at 5 m res.



Aerial photograph-derived panchromatic band at 0.5 m res.



Pan sharpened image at 0.5 m res.

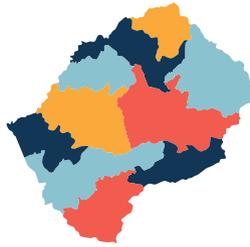
GOALS



LAND RESOURCES DATABASE

1

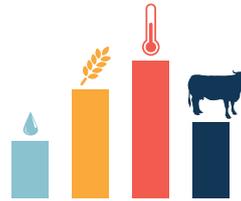
Generate a Land Resources Database (LRD) of Lesotho enriched with existing ancillary spatial data.



LAND COVER MAP

2

Produce a Land Cover map for Lesotho using a locally generated and adapted legend.



BASELINE

3

Provide detailed base information on the Natural Resources conditions and Hazards at national level.



SUPPORT

4

Support projects, research and new applications on Natural Resources Management, Risk Management and Agriculture.



IMPACT

This newly enriched Lesotho dataset will strengthen organizational capacities in the generation and utilization of spatial information for Natural Resources, Agriculture Management and agro-environmental studies. Furthermore, it will build and support the dialogue and technical information flow among Government institutions, national and local authorities, farmers, stakeholders in Natural Resources management and will provide information for evidence-based decision making.

FUTURE APPLICATIONS

Apart from providing a robust baseline of the current state of land cover in the country as of 2014, the Lesotho Land Cover datasets opens the development of diverse range of applications, such as:

- Land Cover Change analysis of agriculture, forestry, rangeland, urban areas, etc;
- Percentage of agricultural land in sloping areas;
- Disaster Risk Maps;
- Monitoring frameworks for Integrated Water Catchment Initiatives;
- Erosion Risk Assessment;
- Rangeland Monitoring;
- Above-ground Biomass assessment and change;
- Development of a Land Resources Information System.

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and implemented by:



the Government of Lesotho
and the Food and Agriculture
Organization of the United
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FAO

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