

LAND-USE ANALYSIS FIELD REPORT

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The *Land-use map of southern Oromia Region* is based on a local classification scheme, built during the workflow and based on FAO directives about land-use classifications.

Some land uses are difficult to differentiate using only satellite imagery and existing databases, so the work has been divided in four steps including different data sources, like satellite images, local experts and field survey.

There are four stages in the land use mapping process:

1) Data collection

A number of existing datasets have been used to support mapping decision, which either define the land use for an area based on tenure (e.g. Military Camps) or provide valuable information about possible land uses (e.g. satellite imagery). This includes:

- SPOT images (January 2008), radiometrically corrected, rectified, with a resolution of 2.5 meters
- ASTER images (2007) radiometrically corrected, rectified and re-sampled to a resolution of 15m meters
- SRTM elevation model, with 90 meters precision in Z
- Participatory mapping made by LVIA and local partners

2) Image interpretation and data integration

Land use is mapped primarily on the interpretation of SPOT and ASTER images. Other datasets are used to assist the mapping process:

- Participatory mapping has been used in many cases, especially to define the ambiguities in *Communal enclosure systems*.
- SRTM has been used to point out the geomorphology of the area that is often correlated to land-use changes

3) Verification and editing

Verification and editing involves local knowledge, field checking and editing of land use polygons to annotate and enhance draft maps.

The main part of this process took place in the study area.

The field survey has been developed with the help of a local expert, both for the knowledge of the area and for interviews to population.

The GPS (Trimble GeoXT) used has a precision of 1 meter, and permit to visualize a real-time 'moving map' on display to facilitate navigation to areas requiring checking.

Field edits can be entered directly and a new coverage generated for incorporation into the map. A strong relationship between satellite imagery and the 'real world' can thus be formulated, and this will assist with subsequent interpretation (see map on the fig 1).

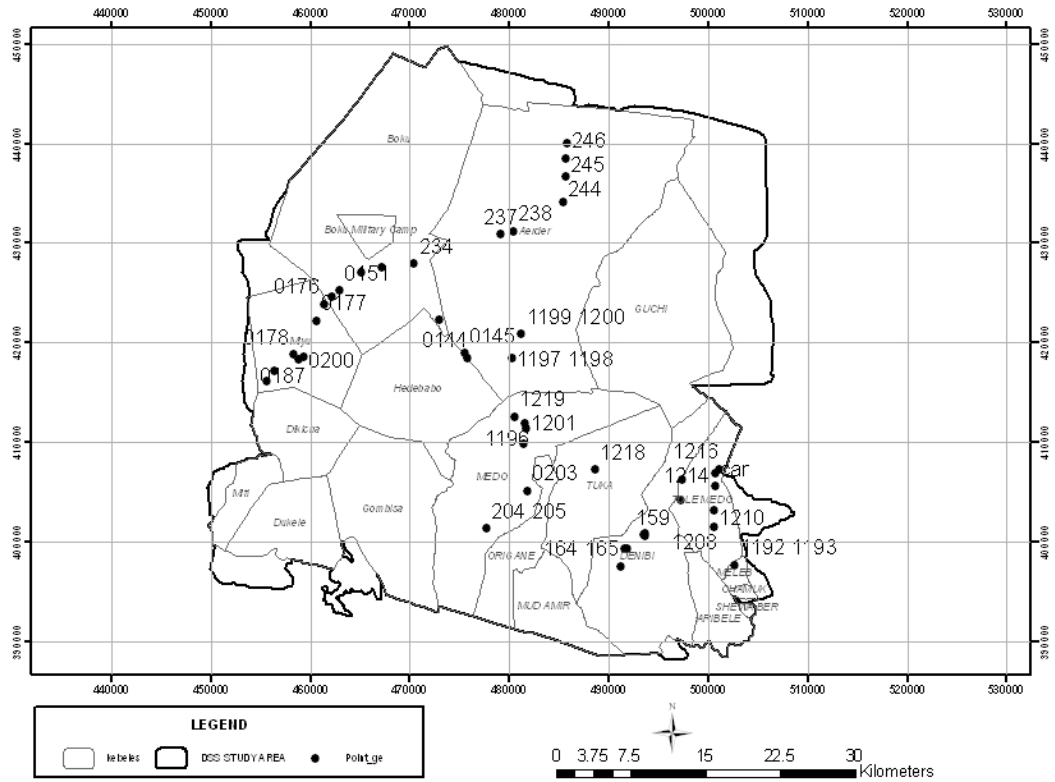


Fig 1

4) Final outputs

Spatial data products from the land use mapping process are:

- Land-use map of southern Oromia Region, in a 1:30.000 scale
- Geodatabase where all the data are stored
- Poster of Land-use in A0 in a scale 1:80.000

LEGEND

BARE SOIL:

Area dominated by soil with less than 20% of herbaceous layer (graminoids). The herbaceous layer can grow subsequent to rains events. It hasn't to be considered as a sub-land cover classification for grazing.

GRAZING AREA

The variety of land-cover categories on which grazing area might be available can influence, especially in terms of life form like spatial patterns and vertical distribution of canopy (grass, shrub, tree) grazing suitability for the different type of livestock.

Cattle category is present in a number of those wherever grassland, (with seasonality and up to less than 10% of the coverage) is present. Browser (as camel and goat) may privilege palatable species leaves of shrub and tree dominant covers. For these reasons it was decided to include sub-type of land-cover for 'grazing area' land use only. For sub land-cover types LCCS (Land Cover Classification System) basics principle were applied.

CLOSE TO OPEN GRASSLAND GRAZING AREA

Grassland is both seasonal (around 4 month a year) and permanent. Shrub layer is always less than 20%. Trees are not present at all.

CLOSED TO OPEN SHRUBLAND GRAZING AREA

Shrub layer is less than 50% and trees are not present (> 5 m). Shrub species can range from 50 cm to 3 m. Grassland is seasonal in character (around 4 month a year).

SPARSE TREE OPEN SHRUBLAND GRAZING AREA

Dominant life form is shrub from 50 cm to 3 m. Stratification of life form vegetation is not clearly definable with some high shrub or medium trees emergents. It can be considered particularly suitable for 'browser' type of livestock (camel and goat).

SPARSE TREE CLOSED SHRUBLAND GRAZING AREA

Shrub is dominant again but with a more dense spatial distribution. Bare soil coverage (or grassland during rainy season) can be

RIVERINE AREAS:

Area subjected to regular or semi-regular presence of water, mostly associated with seasonal stream or small river. In these areas the presence of water affected the type of soil and vegetation which is typical of all riverine areas encountered. In most cases these areas were found to be rich of biodiversity content. Regularly frequented by animal for seasonal water availability.

CLOSED FOREST

Typical of southern highland close to the border with Kenya. The are featured by multi-stratified layer of trees with predominant species over 10 m. Shrub and grassland are anyway present. Exposed rocks can be present scattered. Grazing can happen (especially with goat category). For

poisonous plants presence and ragged landform it is not considered highly suitable for grazing. Forms of opportunistic agriculture or grazing enclosures might be present inside the class.

CLOSED TO OPEN FOREST

Frequently located into the highland southern slopes. Tree layer is dominant with closed to open spatial distribution and associated with sparse closed shrubs and scattered grassland.

CULTIVATED AREAS

Crop farming practices are common and addressed for the main part of year. Most of these covers are present in high altitude areas. Main cultivated crops are maize, bean and teff.

OPPORTUNISTIC CROP FARMING DOMINANT AREA

Usually fenced area with dominant farming practices during good wet season. Cultivated fields are more than 50% of land-cover. The rest of the land can remain uncultivated and reserved for grazing.

COMMUNAL ENCLOSURE SYSTEM (DROUGHT SEASON GRAZING RESERVES DOMINANT)

Usually fenced area with dominant part of it addressed for grazing reserves for calves, lactating and weak animals. Opportunistic agriculture can be present scattered (up to 50%). Area are often particularly subject to bush encroachment.

SETTLEMENT

Anthropized or semi-anthropized areas with presence of villages or encampments. Often associated to scattered bare soil and overgrazed phenomena.