



## WB1.2: Mapping degradation and conservation (“WOCAT map”)

### Defining the Base map units:

#### The basic unit of evaluation: The Land Use System (LUS)

Before the degradation and conservation mapping exercise along the WOCAT/LADA/DESIRE mapping guidelines (QM) can start, a map with base units to be evaluated is required. The starting point for mapping degradation and conservation is land use. This is one of the main drivers of degradation / conservation and the basis for identifying the units for which subsequently the information on land degradation and conservation is to be filled in. FAO has prepared a global LUS map but at low resolution (5'). This map – though referred to in the WOCAT/LADA/DESIRE Mapping manual (QM) is therefore not practical for using within the DESIRE study sites.

We hence propose a hierarchical system for defining LUS-mapping units. Information that is contained in that specific unit will be displayed in the [online system](#) and contains the mapping unit delineations and a number of ecosystem and socio-economic attributes. The following steps should be followed to delineate the base map units.

1. First, delineate the main Land Use Type (please use definitions according to WOCAT, below):
  - a) Cropland
  - b) Grazing land
  - c) Forest/woodland
  - d) Mixed
  - e) Other
2. These main Land Use Types can be split up into subcategories: e.g. for Cropland: annual, perennial cropping; extensive or intensive Grazing land, etc. Rainfed and irrigated land will also need to be separated (see also below)
3. Further subdivisions, if needed and sensible, can be made on basis of:
  - a) Major physiographic / geomorphologic criteria: plain / hillslope / mountain / plateau; slope types: flat-gentle / medium slopes / steep slopes, etc.
  - b) Watersheds / catchments
  - c) Administrative units: districts, village etc.
  - d) Access: / land use rights: e.g. access: land proximity to village/ watering points (on grazing land); or land use rights: individual , communal

The order of importance of these additional criteria depends on local situations: where in some sites physiography plays a determining role rather than socio-economic criteria, this may be the contrary in other sites. In other words: LUS are classified first on the land use subtypes and additional criteria for subdivision on basis of physiography, administration, soil, slope etc.

A base map unit is not necessarily confined to a single closed polygon, but may include many larger and smaller polygons (see example in QM, page E1 and E3), together forming a map unit for which degradation and conservation need to be assessed.

The sizes/ scales of the different study sites vary between several km<sup>2</sup> and several thousand km<sup>2</sup>. It is proposed that for the larger study sites one or several representative area(s) - covering an area of up to a few hundred km<sup>2</sup> - is (are) selected, for which the mapping is carried out. Later the whole study site might be addressed at a different scale. This will help in sharing experiences between the different study sites. Even though the mapping method is scale-independent, the accuracy and level of information of course vary with the scale.

The number of mapping units should be more or less similar for all study sites. Each study site should have in the order of 30-100 units for which information needs to be filled in on the matrix tables. The size of the study area and the variability within the area will determine the scale of the mapping exercise and the size of the mapping units.

## **Land Use Type subcategory codes:**

### ***Cropland: Land used for cultivation of crops (field crops, orchards).***

- **Ca: Annual cropping:** land under temporary / annual crops usually harvested within one, maximally within two years (eg maize, paddy rice, wheat, vegetables, fodder crops)
- **Cp: Perennial (non-woody) cropping:** land under permanent (not woody) crops that may be harvested after 2 or more years, or only part of the plants are harvested (e.g. sugar cane, banana, sisal, pineapple)
- **Ct: Tree and shrub cropping:** permanent woody plants with crops harvested more than once after planting and usually lasting for more than 5 years (eg orchards / fruit trees, coffee, tea, grapevines, oil palm, cacao, coconut, fodder trees)

### ***Grazing land: Land used for animal production***

- **Ge: Extensive grazing land:** grazing on natural or semi-natural grasslands, grasslands with trees / shrubs (savannah vegetation) or open woodlands for livestock and wildlife
- **Gi: Intensive grazing/ fodder production:** improved or planted pastures for grazing/production of fodder (for cutting and carrying: hay, leguminous species, silage etc) not including fodder crops such as maize, cereals. These are classified as annual crops (see above)

### ***Forests / woodlands: land used mainly for wood production, other forest products, recreation, protection***

- **Fn: Natural:** forests composed of indigenous trees, not planted by man
- **Fp: Plantations, afforestations:** forest stands established by planting or/and seeding in the process of afforestation or reforestation
- **Fo: Other:** eg selective cutting of natural forests and incorporating planted species

### ***Mixed: mixture of land usetypes within the same land unit.***

- **Mf: Agroforestry:** cropland and trees
- **Mp: Agro-pastoralism:** cropland and grazing land (including seasonal change between crops and livestock)
- **Ma: Agro-silvopastoralism:** cropland, grazing land and trees (including seasonal change between crops and livestock)
- **Ms: Silvo-pastoralism:** forest and grazing land
- **Mo: Other:** other mixed land

### ***Other:***

- **Oi: Mines and extractive industries**
- **Os: Settlements, infrastructure networks:** roads, railways, pipe lines, power lines
- **Ow: Waterways, drainage lines, ponds, dams**
- **Oo: Other:** wastelands, deserts, glaciers, swamps, recreation areas, etc

**For all the subtypes:** Separate rainfed and irrigated (including complementary irrigation) e.g. annual cropping irrigated (Cai) from annual cropping rainfed (Cap) if relevant.