CHAPTER 5

Characterisation of the study area

5.1 Introduction

Characterisation of the study area requires the team to:

- Identify key stakeholders, relevant projects and NGOs located in the area;
- Conduct a reconnaissance field visit, ideally before the Focus Group Discussion (FGD, Tool 1.1 in Part 2) with the selected land users / village / community. A walk or drive around the area with a few key informants will help the team (especially if not composed of local experts) to familiarise themselves with the study area, land uses and the extent and severity of degradation. If this takes place before the FGD, it can reveal interesting land resources features and observations to catalyse discussion with the community. It can also help in subsequent selection of relevant areas and precise locations / directions for the transect walks to cut across the various land uses, land user types and degradation / SLM features. Along each transect, a certain number of detailed site assessments will be conducted which will help to relate detailed investigations to the wider landforms or land use system(s);
- Collect and review available secondary information sources. More details and a list of recommended secondary information is provided in section 5.2 (below).

5.2 Background (secondary) information

Timeline and trends: The results from such a rapid assessment of local land resources and livelihoods need to be contextualized in regard to the current situation and trends over recent years, but also taking into account the history of land use and interventions in the area. Thus, while the local assessment focuses specifically on the last ten (or so) years, historical drivers of major land use changes should also be described as this may help explain the current situation, see Figure 7.

This requires a review of existing and ongoing land use and land resources interventions, also a review of the settlement history (50 years or so, the period depending on the context). The resulting time line and understanding of land use and socio-economic changes may explain to some extent the current land use patterns and behaviour. Such a review is best conducted with local authorities and technical institutions or projects working on land resources management in the area.

Background studies and statistical data: It is also important to review relevant policy, socio-economic and technical information for the study area(s) such as policy documents, development statistics and natural resources studies / data (e.g. on poverty, land tenure and access to resources), also trends in crop, livestock and forest production and in ground and surface water resources.

Maps and Images: Maps, aerial photos and satellite images are important tools for use in the field during the local assessment of land degradation and sustainable land management. See Fig. 8. They serve many purposes:

- As a basis for discussing and drawing sketch maps with local participants;
- To help inform the assessment team on characterisation of the assessment area (topography, soils, vegetation cover, land use, infrastructure etc.);
- To help acquire a semi-quantitative assessment of some features of the landscape, such as share of various vegetation or land use types, population density, distance / access to roads, water points and other infrastructure;
- To compare situations over time (e.g. between seasons and years) and in space (e.g. an exploited area with a protected area) in order to help establish trends of degradation, stability or improvement.

The use of a camera to take landscape and site photographs is very valuable as part of the assessment, as this helps to document the situation at time "x", to compare sites and

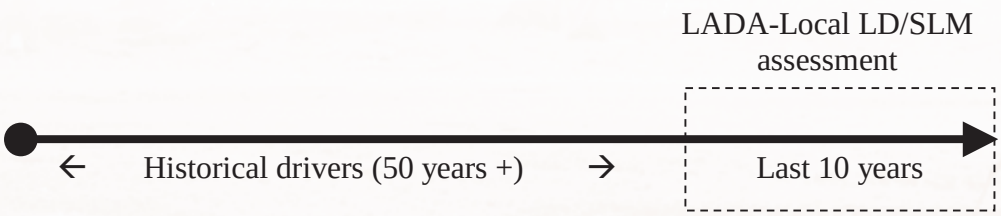

FIGURE 7 **Time line of the LADA assessment**

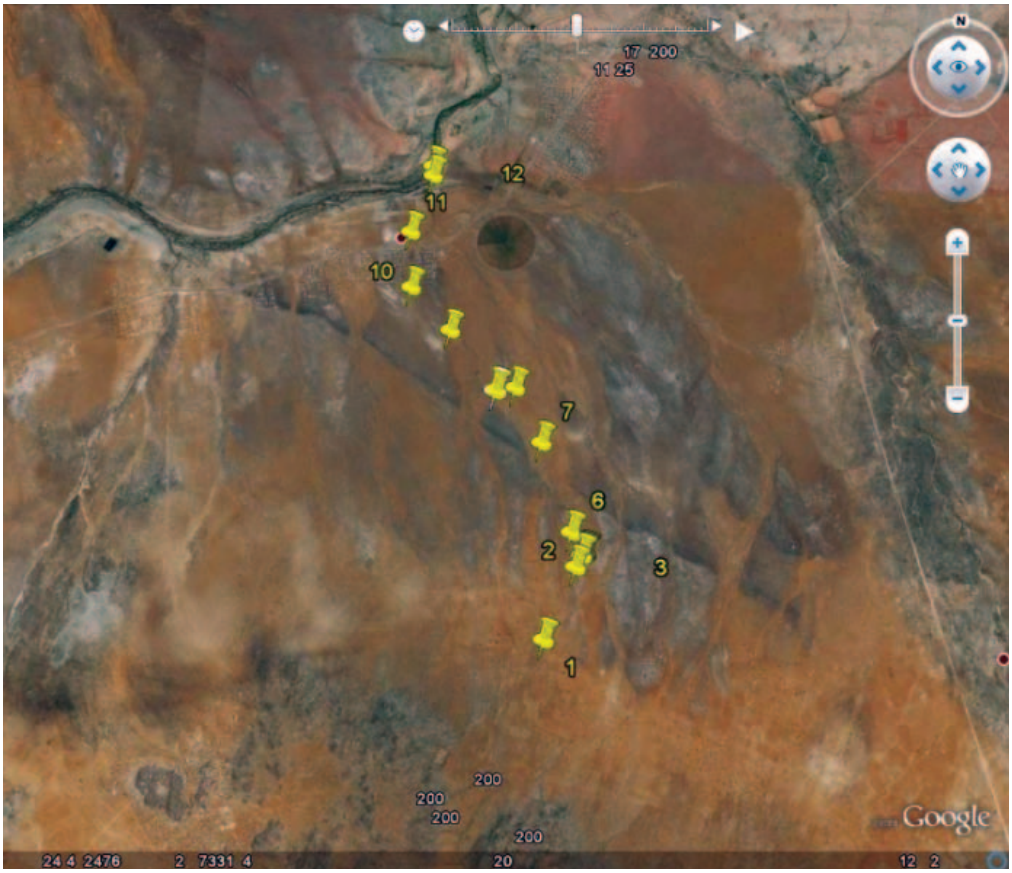

FIGURE 8 **Use of Google earth, satellite images and aerial photos**

monitor change. Photographs are valuable to present to a range of audiences to visualise differences and changes over time.

Natural resources information on the study area: After the community mapping and a reconnaissance visit and before the transect walks, a series of secondary information needs to be collected and reviewed for the study area. This will help back-up observations with reliable information and generate a better understanding of land resources status and trends (degradation, conservation, improvement).

The team should identify and review available:

- Maps, satellite images and photos;
- Climatic and meteorological records;
- Human population and poverty statistics (census reports etc).
- Databases, reports and statistics on:
  - Natural disasters;
  - Land and land use types;
  - Land tenure;
  - Farming system information (including agricultural census /crop yield data);
  - Livestock and wildlife statistics;

- Soil, vegetation and water resources;
- Economy and livelihood;
- Institutions, policies, regulations, by–laws.

There are some challenges in assessing vegetation and water resources in drylands, in particular due to the large inter-annual and seasonal variations. Assessments carried-out at a single point in time are incomplete unless they are backed-up by adequate secondary information on climatic trends, rainfall variability, population changes and so forth.

Such information is useful supportive information for the assessment report as shown in Figures 9 which shows population trends and Figures 10a and 10b which present long term records of total annual rainfall over 35 years and average monthly minimum and maximum temperatures and average rainfall and temperature.

In particular, it is important to use secondary (background) information to assess:

- **Changes in climatic conditions, seasonality and trends** (rainfall and temperature data, evaporation, drought and flood frequency and severity, storms, strong winds and dust storm events). This information over a reasonably long period (20 or ideally 30 years) should be plotted on a graph to be shared and discussed with land users / informants (for example as part of the study area characterisation with informants, Section 5.1 above). This will help, in particular, to clarify differences between reality and perceptions in regard to rainfall amounts and variability, also occurrence and severity of extreme events. For example, often changes in land management and resulting soil quality, vegetation cover and water availability make land users believe that decline in rainfall has been

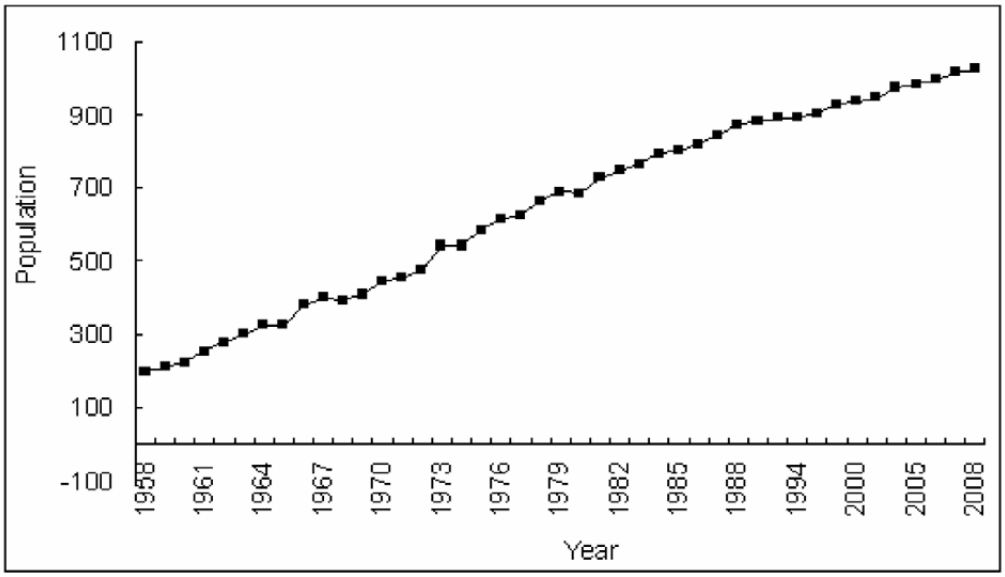

FIGURE 9 **Population change of Ulan'aodu, Wengniute Banner (1958-2008)**

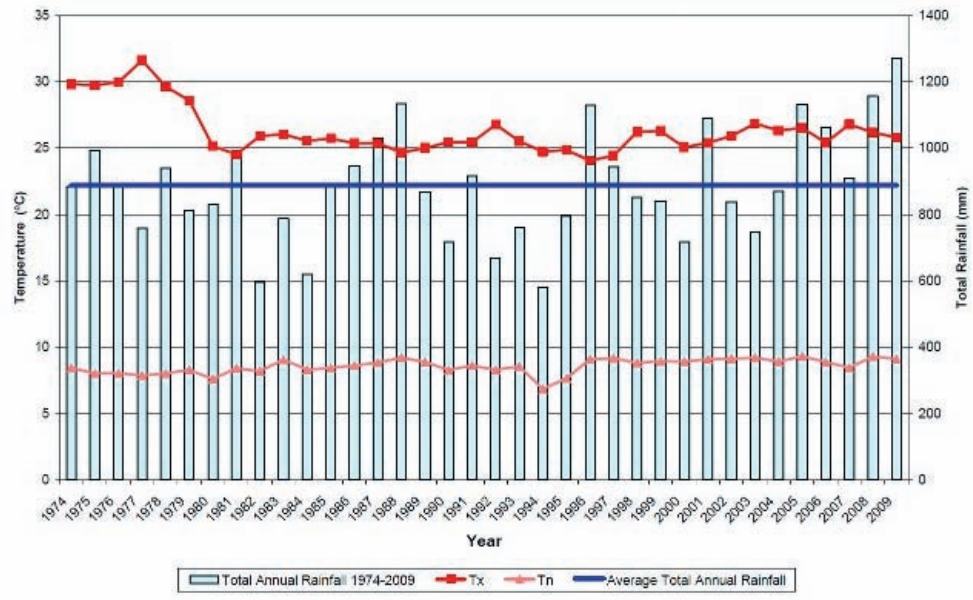

FIGURE 10a **Long term record of annual rainfall (total, max. and min.) and temperature (Kwa-Zulu, South Africa)**

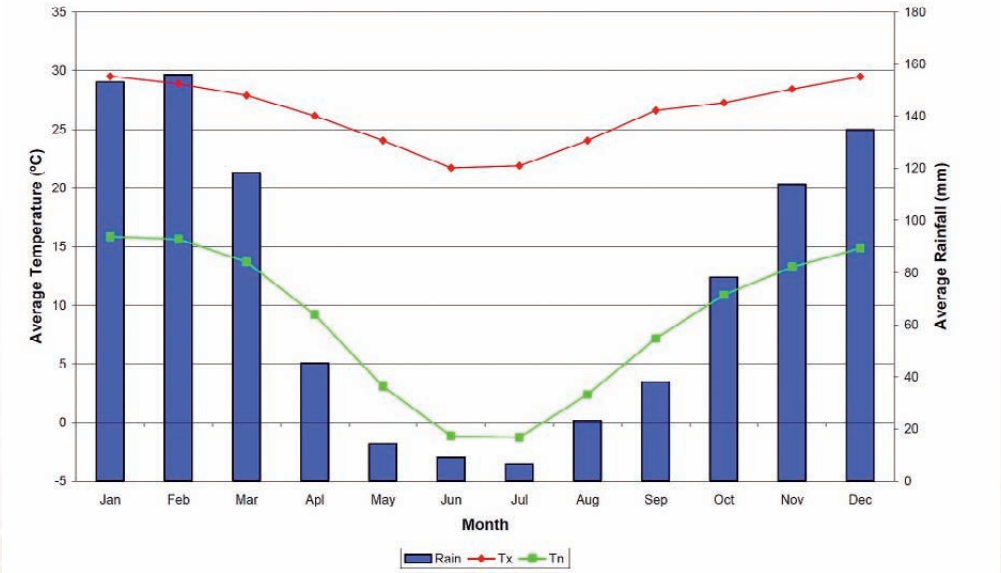

FIGURE 10b **Long term monthly averages (36 years climatic data) Kwa-Zulu, South Africa**

more dramatic than it has actually been. The graphs facilitate discussion of the effects of land management practices on rainwater retention, recharge of ground and surface water supply, drought and flood events and risk of natural disasters.

- **Changes in intensity of management** in croplands, grazing lands and forests/ woodlands, where possible, in relation to demographic changes and market forces, also their implications on land resources and livelihoods (e.g. human population density, livestock numbers / stocking density by type; cropping system, inputs use, crop, livestock and forestry productivity; land fragmentation, diversity of products for consumption and sale, access to markets etc.)
- **Status and trends of water resources (supply / quality in relation to demand)** – the spatial distribution, quantity and quality of natural and man-made ground and surface water sources, uses (domestic, livestock, irrigation, other) and changes in demand (surface and groundwater extraction e.g. irrigated area, number of extraction points (dams, boreholes, wells pump capacity etc.). Water is intimately interrelated with vegetation and soil resources. This is why it is invaluable for the water resources assessment to triangulate visual observations and field measurements (soil, water, vegetation) with secondary data and with more qualitative information from land-users, and key informants in order to build up a reliable picture of water resource state and dynamics, the seasonal fluctuations and the longer term changes over time and the effects of soil and vegetation management.
- **Natural resources policies and institutional arrangements**, including:
  - Land tenure arrangements and access rights, land availability / shortage, land policy, legislation and other relevant institutional issues (e.g. land use plans);
  - Water allocations, access and costs, institutional rules and arrangements, water policy, legislation and other relevant institutional issues (e.g. water management plans);
  - Energy sources, availability / shortages, access and costs, policies, legislation and other institutional issues including bioenergy.

A more complete list of secondary information sources 1 to be collected and reviewed prior to and during the assessment, as relevant and available is provided in Table 6.

TABLE 6 **List of secondary information for collection and review**

Categories	Contents
Maps, satellite images and photos	• Maps: administrative boundaries, soil, terrain, land-use, vegetation, watersheds, agro-ecological zones, land use systems (LUS), roads etc • Aerial photographs • Time series satellite images (SPOT-NDVI) • Land use and water resources plans
Climatic (including natural disasters) and meteorological records	• Rainfall amounts and variability; temperature; humidity • Trends in rainfall and temperature over recent decades • Incidence and impacts of drought and flooding etc. • Information and studies on the impacts of climate change including likely future impacts on water resources (Sources: National Meteorological Office, projects, IPCC 2007 reports)
Human Population	• Total population and recent trend(s); age, gender and ethnic minority distribution • Household and family composition information • Employment by sector; labour force; migration information; settlement patterns etc. • Poverty and food security etc.
Land use types	• Size of land use types in the local assessment area and community territory; farm land and protected areas • Areas and proportions under different land use types (including forest and protected areas) • Land cover and land resources surveys, etc.
Farming system information	• Existing agricultural plans, programmes and projects • Crop and livestock and forestry systems information • Presence & extent of local and introduced practices for land management / land degradation control • Information on livestock numbers, distribution, ownership, actual and recommended stocking densities, management
Water resources	• Water resources records over the last decade (Sources: water boards / authorities) to show - water flow regimes in rivers - water storage capacity and water levels of lakes, dams and reservoirs - sedimentation load / rates • Incidence of water borne diseases and pollutants (Sources: health sector and water authorities) etc.
Economy and livelihood	• Household income information; composition of income (i.e. contribution from farming and other activities) • Household consumption information • Poverty and food security profiles (proportion of population below poverty line, % of food insecure, malnutrition etc.) • Credit / loan availability, etc.
Land Tenure	• Information on land-holdings: ownership, size and distribution • Type and prevalence of renting/leasehold arrangements • Legal status of holdings (civil, cooperative, government arrangements, titles) etc.

TABLE 6 **List of secondary information for collection and review** *(continued)*

Categories	Contents
Institutions, policies, regulations, byelaws	• Relating to land, agriculture, livestock, water resource, environment, rural development, technical sectors, extension • Relating to implementation of the multilateral environmental conventions (UNCCD, UNCBD, UNFCCC, Ramsar, etc.) • Access to services ((official/informal), private / public sector), application / effectiveness of regulations / policies, mandates / capacities of actors, etc. • Presence, roles and activity of NGOs, community based organisations in their implementation, etc.
Basic infrastructure and investments	• Road and market access; input supply • Schools; health centres; • Water points (wells, boreholes, piped / tap water); • Irrigation systems; reservoirs;
Planning reports and other relevant documents	• Land use planning; water resources planning; agriculture and forest management plans; livestock / environmental management; etc.