

# Rangeland Management

Roughly 60–75% of the total area of Afghanistan is covered by rangelands. They form an essential resource and livelihood strategy for many people, as more than 85% of the rural Afghan population keep livestock (Ismail et al. 2009). However, since they are a common resource, they have been and still are a source for conflicts: conflicts over land tenure, conversion of rangelands into rain-fed agricultural land, overexploitation of rangeland resources, including overgrazing and uprooting shrubs for fuel, among others. Moreover, climate change will drastically increase challenges and conflicts in regards to rangelands. This stresses the need to implement sustainable rangeland management (Ali et al. 2013).

## Types of rangelands

Rangelands can be differentiated into various types with regard to their vegetation, category or utilisation:

### Vegetation

1. Rangelands of short-lived plants like *Carex pachystylis*
2. Rangelands of long-lived plants like *Cardaria draba* and *Artemisa spp.*
3. Rangelands of small jar or vat plants (*Indegofera spp.*; bush species)
4. Rangelands of deserts
5. Rangelands of forests (oak forests in eastern provinces and and *Haloxylon salicornicum* forests in the north and west)
6. Rangelands of annual plants like *Poa bulbosa*, *Bromus spp.*

### Categories

Afghan rangelands can be divided into three categories: winter, spring and autumn and summer rangelands, while so-called *Artemisia* steppe provides winter grazing in the south and west.

1. **Winter rangelands** are usually located on lower parts of mountains (foot hills rangelands)
2. **Spring and autumn rangelands** are usually located on medium altitude in between of both summer and winter rangelands
3. **Summer rangelands** are usually located on the top of mountains (top hill rangelands)

### Utilisation

Different animal species prefer different rangelands, mainly due to topography and vegetation:

1. **Sheep** like gentle slopes and plants, which are palatable and not coarse. Sheep are grazers and mainly feed on grass species.
2. **Goats** can climb on sloping and rocky areas and browse trees and shrubs. Goats, like camels, are browsers.
3. **Cattle** like less sloping sites with easy pathways. They prefer grass as they are grazers.

## Sustainable management

Sustainable rangeland management has to involve different disciplines (soil science, climatology, botany, zoology, ecology, agronomy, animal husbandry, etc.), stakeholders (women and men, communities, government etc.) and be sensitive to the different social and ethnic groups (e.g. sedentary farmers and transhumant, nomadic pastoralists). The complexity, however, is that various users – in particular pastoralist communities – visit the rangelands only in a particular season. Familiarity with the tracking patterns of all the users is a pre-condition for involving everyone.

The main strategies for sustainable rangeland management include (Ali et al., 2013):



Figure 1: A herd of sheep and goats grazing on rangelands

- Creating an enabling policy environment for rangeland management (rights of access, community-based management),
- Promoting sustainable rain-fed cultivation practices,
- Promote fodder cultivation using drought resistant species,
- Developing and diversifying sources of rural energy and improving energy efficiency,
- Monitoring rangelands for proper management.

There should be a healthy balance between the heads of livestock and the available pasture vegetation to avoid degradation. If the pressure of livestock is above a certain limit, the pasture becomes overused, which leads to land degradation and reduced productivity (see Box 1). The appropriate grazing pressure is achieved by **regulating the number of heads of livestock and the duration of grazing**. The following three rules form the framework for a balanced grazing management (Rahim et al. 2012):

- Do not graze before the leaves and the roots of plants are re-established after a first grazing;
- Do not let animals return to the pastures too early in spring, when plants are still in their development stages;
- Do not let animals stay too long in autumn on pastures so as to preserve the residual biomass for the re-growth of the plants in spring.

Grazing should ideally occur after the plant has completed its physiological growth, but this often does not coincide with the time animals need to graze. There is no comprehensive solution to this problem, but sustainable grazing systems can be promoted by training and experience.

Developing and implementing grazing management must take the social, economic and political circumstances of all involved actors into consideration. Good communication is the crux of implementation. In addition, short- and long-term perspectives have to be considered. In the **short term**, rangeland protection predominate, including the limitation of grazing and collection of rangeland plants, as well as soil and water conservation measures, whereas **long-term** emphasis should be placed on sustaining and improving the productivity of rangelands (Ali et al. 2013).

Nevertheless, climate change poses a major threat to rangeland ecosystems, especially in years of prolonged drought. Efforts are needed to help local communities develop strategies to cope with climate change.

### Clear rangeland entitlements and responsibilities

The 2003 Land Law has given the government (MAIL) ownership of the country's rangelands. MAIL intends to encourage **community-based management** which acknowledges traditional knowledge and assets, and favours environmental sustainability. Everybody who depends on rangelands - sedentary livestock keepers and transhumant, nomadic pastoralists (Kuchis) - have **access rights** to rangelands. Conflicts among rightholders must be solved by bringing all the actors together to negotiate and reach a compromise agreement with the help of a neutral moderator (Ismail et al. 2009).

### Community-based management

The users of rangelands should be regarded as their custodians by means of a community-based organisation. The voices of rangeland users need to be heard, for instance through local decision-making bodies (e.g. committees) and agreements (e.g. rangeland user plan) for local management of the rangelands.

#### Box 1: A degradation classification of pastures in temperate mountain meadows in Afghanistan

##### Heavily degraded pasture

Previously dominant perennial species have been replaced by less productive and often annual species. Vegetation coverage per unit area is below 20%. Average height of grasses per unit area is less than 10 cm. Dry matter production is less than 300 kg/ha.

##### Moderately degraded pasture

Annual or less productive plants are common. Vegetation coverage per unit area is between 20% and 40%. Average height of grasses is 10 - 15 cm. Dry matter production is 300 - 400 kg/ha.

##### Lightly degraded pasture

Vegetation coverage per unit area is 40 - 50%. The average height of grasses is 15 - 20 cm. Dry matter production is 500 - 700 kg/ha.

##### Non-degraded pasture

Vegetation coverage per unit area is greater than 50%. The average height of grasses is greater than 20 cm. Dry matter production is greater than 700 kg/ha.

Source: Bedunah, 2006



Figure 2: Meeting of a herders' alliance

However, local rangeland users are not a homogenous group and their interests often conflict. It is therefore of the upmost importance to involve representatives of different groups (sedentary farmers, transhumant, nomadic pastoralists), ethnicity, gender, age and well-being in the local decision-making bodies (Ismail et al. 2009).

### Herder alliances

Herder alliances aim to resolve problems with regard to rangeland management by facilitating regular meetings with Kuchi herders and providing services as per their needs.

## Adapting grazing

The rangelands near villages and summer rangelands are often used for everyday grazing, and so grazing is continuous. It is crucial to implement “**special grazing systems**” to manage these rangelands in a sustainable manner.

The distribution of watering points and the placement of salt blocks play an important role to optimise grazing. The following section presents two systems and their combinations, which allow the rangelands time to recover through protection and rotation.

- **Deferred grazing system:** Protects the rangelands for some time from grazing and browsing. This allows the important plants to complete growth, including giving them time for the seeds to mature.
- **Rotation grazing system:** The rangeland area is divided into plots and each plot is grazed after the other in sequence.
- **Deferred - rotation grazing system:** This system is a combination of deferred and rotation grazing. One plot is protected from grazing (deferred), whereas the other are grazed in rotation system.
- **Rest - rotation grazing system:** The rangeland is left fallow for two or three years, which helps the plants to become vigorous and increases yields. This is particularly important when rangelands are degraded.

Climatic variability also demands adaptive management of all other rangelands that are used more sporadically and less frequently. The traditional transhumant, pastoralist grazing patterns are appropriate in such uncertain conditions. **Rotational grazing**, in which flocks move in accordance with the availability of grass and water, is a good practice and is well suited to dealing with extreme weather conditions and climate.

## Improving rangelands

The long-term productivity of rangelands needs to be increased through the following measures:

- Rangeland management planning,
- Fertilisation of rangelands by natural fertilisers,
- (Re-)seeding in rangelands,
- Protection of poor rangelands to allow rehabilitation,
- Removing of weeds (unwanted/unpalatable plants) from rangelands,
- Soil and water conservation measures,
- Improvement of water ponds in rangelands,
- Establishment of salt places for animals,
- Improvement of pathways (stock routes),
- Establishment of night shelters,
- Monitor and study the rangelands.

### Box 2: Good governance

The principles of good governance - participation, transparency, accountability, the rule of law, effectiveness, equity and non-discrimination - are crucial to the sustainable management of common resources and should be promoted.

### Box 3: Co-management of rangelands for multiple purposes

Afghanistans rangelands are not used exclusively for livestock grazing. Rangelands also serve for the collection of firewood, medicinal plants and minerals, and are a source of water, biodiversity, etc. Different users and stakeholders require a coordinated management effort.

Co-management is when “...social actors negotiate, define, and guarantee amongst themselves a fair sharing of the management functions, entitlements, and responsibilities for a given territory, area or set of natural resources.”

Source: Isamil et al., 2009



Figure 3: Conversion of rangelands into rain-fed wheat fields

## Converting rangeland to rain-fed agricultural land

Over the last 30 years many rangelands in Afghanistan have been converted to rain-fed agricultural land, and this is still happening at a rapid pace today. Conversion to rain-fed agricultural land often leads to significant soil erosion with all its attendant consequences.

It is virtually impossible to stop rangelands being converted into rain-fed agricultural land. The emphasis should therefore be on promoting sustainable cultivation, with soil and water conservation the main aim. **Conservation agriculture** is a sustainable way of attaining these goals and involves: 1. minimal soil disturbance (reduced tillage), 2. keeping the soil covered and 3. mixing and rotating crops.

## Promote fodder cultivation using drought-resistant species

The cultivation of **sainfoin** is a sustainable strategy for promoting the cultivation of drought-resistant species for fodder. Sainfoin, a perennial leguminous fodder plant, not only provides protein-rich fodder, but as a nitrogen fertiliser also helps to improve pastures. sainfoin presents a viable way of improving fodder cultivation in Kyrgyzstan (see: [https://qt.wocat.net/qt\\_summary.php?lang=english&qt\\_id=159](https://qt.wocat.net/qt_summary.php?lang=english&qt_id=159)). Seed availability is a major challenge, however.

## Alternative energy

The collection of biomass for fuel, especially the uprooting of bushes, needs to be aligned with sustainable rangeland management. This is best promoted through developing and diversifying sources of rural energy, improving energy efficiency at household level, and also by creating woodlots on common land around the village, for instance.

Author(s): Mohammad Ismail Nasri, May 2014

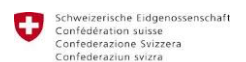
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