

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 of conflict: conflicts over land tenure; conversion of rangelands into rain-fed agricultural land; overexploitation of rangeland resources, including overgrazing and uprooting shrubs for fuel; and others. Moreover, climate change will increase the challenges and conflicts with regard to rangelands. This emphasises a need to implement sustainable rangeland management strategies (Ali et al. 2013).

Rangeland resources

Rangelands can be differentiated into various types according to their vegetation, category or utilisation. The most important categorisation is whether they are winter, spring and autumn and summer rangelands, while so-called *Artemisia* steppe provides winter grazing in the south and west of the country

1. **Winter rangelands** are usually located on lower parts of mountains (foothill 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 top of mountains (top-hill rangelands).

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 (rural women and men, communities, government, etc.) and be sensitive to a variety of social and ethnic groups (e.g. sedentary farmers and transhumant, nomadic pastoralists). The complexity, however, is that various users – in particular pastoralist communities – only visit the rangelands in a particular season. Familiarity with the tracking patterns of all the users is a precondition for involving everyone.

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

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

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

Nevertheless, climate change is 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 (Ministry of Agriculture, Irrigation and Livestock (MAIL)) ownership of the country's rangelands. MAIL intends to encourage **community-based management** that acknowledges traditional knowledge and assets, and encourages environmental sustainability. Everybody who depends on rangelands - sedentary livestock keepers and transhumant, nomadic pastoralists (Kuchis) - have **access rights** to rangelands. Conflicts among rights holders 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 are regarded as their custodians through 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. These committees and rangeland user plans need to be drawn up and implemented in accordance with the principles of good governance (see Box 1).



Figure 1: Meeting of a herders' alliance

However, local rangeland users are not a homogenous group, and their interests often conflict. It is therefore of the utmost 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).

Box 1: 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.

Source: HELVETAS, 2009.

Herder alliances

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

Grazing plan

A healthy balance between the heads of livestock and the available pasture vegetation avoids degradation. If the pressure of livestock exceeds a certain limit, the pasture becomes overused, leading to land degradation and reduced productivity. The appropriate grazing pressure is achieved by **regulating the number of heads of livestock and the duration of grazing**. The following three rules are 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; and
- Do not let animals stay too long on pastures in autumn to preserve the residual biomass for the re-growth of plants in spring.

Grazing ideally occurs after the plant has completed its physiological growth, but often this 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.

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 special grazing systems and their combinations, which give the rangelands time to recover through protection and rotation:

- A 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.
- In a rotation grazing system the rangeland area is divided into plots, and each plot is grazed after the other in sequence.

- A deferred-rotation grazing system is a combination of deferred and rotation grazing. One plot is protected from grazing (deferred), whereas the other are grazed in rotation system.
- In a 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.

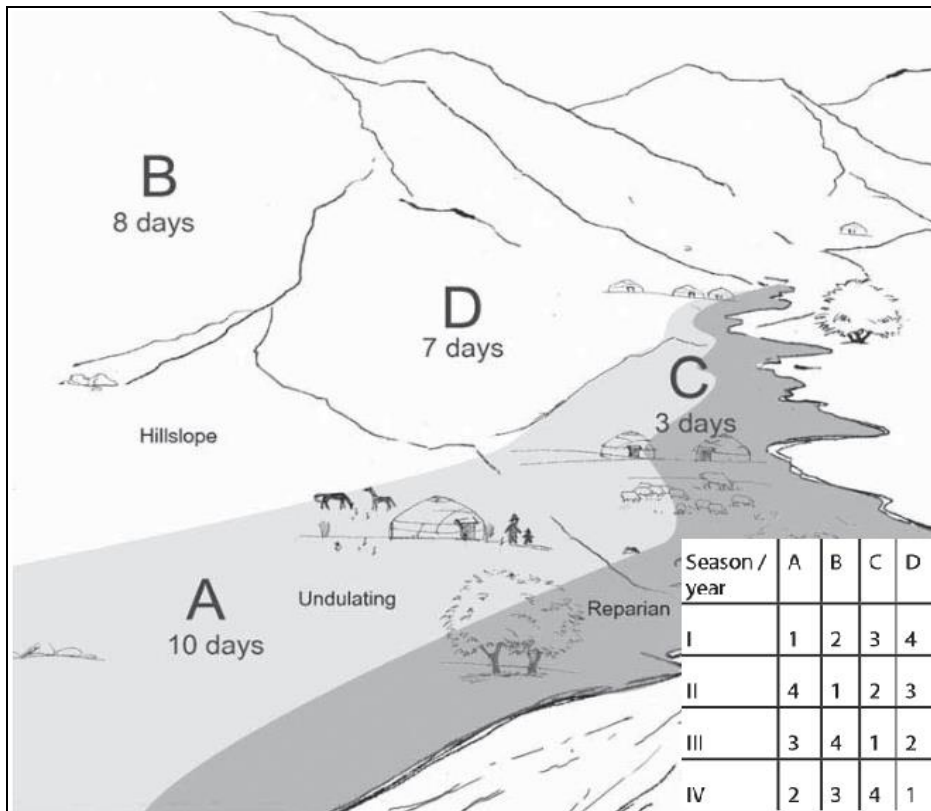


Figure 2: An example of a rotation grazing system (Rahim et al. 2012).

However, climatic variability necessitates the adaptive management of rangelands, especially of more sporadically and less frequently used ones. 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 variable conditions and climate.

Afghanistan’s rangelands are, however, not used exclusively for livestock grazing. Rangelands are also used for collecting firewood, medicinal plants and minerals, and are a source of water, biodiversity, etc. Different users and stakeholders require a coordinated management effort (see Box 2). Co-management comprises three main steps for reaching agreements: preparation, negotiation and implementation. For more information refer to Ismail et al., 2009.

Box 2: Co-management of rangelands for multiple purposes

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: Ismail et al., 2009

Improving rangelands

In the long term, rangelands need to be maintained and also improved, and the following measures offer suitable strategies:

- 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.



Figure 3: Conversion of rangelands into rain-fed wheat fields (<http://cnrit.tamu.edu>)

Converting rangeland to rain-fed agricultural land

Over the last 30 years many rangelands in Afghanistan have been converted to rain-fed agricultural land. Conversion to rain-fed agricultural land often leads to significant soil erosion, with all its attendant consequences.

In rain-fed agricultural land the emphasis should be on promoting sustainable cultivation, with soil and water conservation as 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 way of promoting drought-resistant species for fodder. Sainfoin, a perennial leguminous fodder plant, not only provides protein-rich fodder but, as a nitrogen fertiliser, it also helps to improve soil fertility. Sainfoin presented a viable way of improving fodder cultivation in Kyrgyzstan (see: [WOCAT, 2011](#)).

Sources of 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. For more information, refer to the concept note *SYS5B Alternative Energy*.

Further reading and references

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