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Rangelands management: A foresight in Afghanistan

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Introduction

Afghanistan, a land locked country with arid and semi-arid climatic conditions and the average amount of rainfall is 250 mm per year, heavily depends on the rangelands for livestock feed. Permanent pasture cover around 46% of the total land area i.e. 30 million ha rangeland exist in the country (Thomson *et al.* 2003), whereas forestry covers around 3% of total area i.e. around 1.9 million ha. Based on seasons, the rangelands of Afghanistan divided into three categories; the winter (16 million ha); the spring and autumn (16 million ha) and summer (22.5 million) pastures. Rangeland degradation is quite severe and widespread problem in Afghanistan (ESCAP, 1983). Overgrazing is a major cause of rangeland degradation in dry areas leading to desertification (FAO, 1993). The reduced plant cover due to overgrazing accelerates soil erosion resulting in loss of fertile topsoil. It adversely affects the productivity as well as biodiversity of the land, and causes for the spread of invasive species of non-native weeds. The destruction of rangeland vegetation of Afghanistan is not recent, dating back to hundreds of years (Pittroff, 2011). Keeping in view these constraints, a foresight survey was conducted to assess current status and future prospects on rangelands in Afghanistan.

Materials and Methods

A foresight survey through literature compilation was conducted to assess current status and future prospects on rangelands in Afghanistan second half of 2014. The major outcomes of literature review are presented here.

Results and Discussion

In Afghanistan, the vegetation types of rangelands vary from desert to subalpine and alpine types, from *Pistacia* and *Juniperus* woodlands to deciduous forest to temperate coniferous forest to riverine forests and steppe to shrub lands (Flora Iranica, 2009; Schloeder and Jacobs, 2010). Sayer and van der Zon (1981) described vegetation types of Afghanistan as desert vegetation, steppe vegetation, riverbed and lakes, *Amygdalis* scrublands, *Pistacia* and *Juniperus* woodland, arid sub-tropical woodland, Himalayan deciduous forest, temperate coniferous forests of east Afghanistan, sub-alpine vegetation and alpine and nivale vegetation. There is a high quality pasture in the upper alpine zones although for a short season only. The variations in plant species towards Pakistan are attributed to monsoon effects. Similarly, the vegetation cover of the great deserts of the west and south-west comprises more or less similar flora of Iran and Balochistan. The main plant species of this vast grazing land is *Artemisia maritima*. This species is associated with the viviparous grass *Poa bulbosa* and *stipa* spp. throughout most of its range. There is also a short flush of annuals in spring, which does not last long and dry off quickly. Other sub-shrubs associated with *Artemisia* are *Astragalus* spp. (Leguminosae), *Cousinia* (Compositae), *Acantholimon* (Plumbaginaceae), *Acanthophyllum* (Caryophyllaceae) and *Ephedra* spp. (Ephedraceae). Grasses like *Chrysopogon*, *Heteropogon*, *Cymbopogon*, *Aristida* etc. often associated with *Acacia modesta* Wall. and *Olea europaea* subsp. *Cuspidate* (Wall. Ex G. Don) Cif are usually found in eastern zone comprising Laghman, Kunar, Nangarhar and Paktia, where rainfall is adequate.

In north-west Afghanistan, sand dunes are moving onto agricultural land in the upper reaches of the Amu Darya basin because their path is cleared by the loss of vegetation cover due to overgrazing (Brown, 2006). Heavy grazing and firewood collection together have reduced the vegetation cover, affecting the natural grazing with a loss of productivity and desertification, and further led to wind erosion due to the destruction of forests and shrubs (Suttie *et al.*, 2005). There are cases where pastures were converted into cropland in rainfed areas. The shifting of large parts of northern and western rangelands and hill pastures to cropland led to environmental degradation besides reduction in grazing area (ADB, 2012). Further large population of small ruminants have put great pressure on the rangelands. Besides, the concept or system of community grazing is being phased out slowly and thus making protection of rangelands a difficult task. Furthermore,

wars, political turmoil and other human-induced activities are also responsible and contribute significantly to the process of land degradation.

Rangelands are the major source of fuel today. Uprooting of shrubs as the only source for fuel for Kuchis for heating and cooking. The scattered field studies from different provinces of Afghanistan namely Herat, Kandahar, Helmand and northern provinces confirm that the practice of uprooting shrubs for fodder and fuel purposes is an ongoing process, which is bound to contribute, possibly more than overgrazing, to desertification and wind erosion. This is leading to a great problem on the sustainability of rangelands in Afghanistan. Some of the rangeland species in Afghanistan have a medicinal value as *Ferula Asafoetida*, *Licorice*, *Black Cumin* and *Artemisia*.

Therefore, these rangeland species are being indiscriminately being uprooted for alternative uses leading to their extinction and posing serious problems of desertification and soil erosion in the country. Overgrazing because of early and continuous grazing on rangelands with low rainfall reduces or prevents seed setting, diminishes plant vigor and leads to a steady lowering of productivity. Shifting to dry land cultivation and consequently destruction of natural vegetation strongly increases the risk of soil erosion. Overall scenario foresight suggest that rangelands have suffered tremendously over the last decades due to unsustainable political situation, lack of awareness among the people, dry land conditions, weaker linkages with outer community, weaker institutional and scientific linkages and poor scientific capability within the country.

Conclusion

Therefore, there is an urgent need to sustain these rangelands in Afghanistan through better scientific and international knowledge sharing and linkages. The sustainability of rangelands will help to enhance livelihood, reduce soil erosion, sustain natural resources and improve environment.

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