INTEGRATED RANGELAND MANAGEMENT SYSTEMS

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Summary

Rangelands, the internationally recognized term for land where livestock are grazed extensively on native vegetation, and where the rainfall is too low or erratic for agricultural cropping or for improved pastures, are variable in both space and time. The interactions between the three major components vegetation, livestock and people are complex and not easy to manage. Integrated rangeland management seeks to establish a framework for those with interests in the rangelands to develop strategies and actions to sustainably manage change and ensure a viable legacy for future generations. The challenge is to balance the diverse economic, cultural and social needs of rangeland residents, users, and other stakeholders with the need to maintain its natural resources and conserve the biological and cultural heritage. Since rangeland ecosystems are cross sectoral in nature, there is a need for effective management strategies so as to enhance their sustainability. A holistic approach is therefore needed to identify the values, needs and threats, and to suggest appropriate and effective management interventions.

The concept of the “Tragedy of the commons” has permeated the thinking of many rangeland professionals and planners. A re- examination of the fundamental assumptions in the context of rangeland management has been attempted. Field testing has rarely been reported and the effect of various management options is not always clear. In this chapter the economic implications the pastoralists decision to add to the

size of the herd are considered against the background of three major management regimes, including open access grazing – the main target of Hardin's "Tragedy of the Commons'.

1. Introduction

As is clear from the other chapters in this volume, rangeland management is complex as it involves the interrelationship of biophysical (soils, climate, plants and animals) and the socioeconomic (See *People in Rangelands: Their role and Influence on Rangeland Utilization and Sustainable Development*). A recurring theme is that an integrated approach is required.

Figure 1. Syrian Bedouin have occupied these rangelands for centuries but recent changes to governance of the rangelands in response to accelerated degradation have affected their livelihoods.

Figure 2. The increasing degradation of rangelands owing to a combination of overuse and inappropriate policies has drastically diminished the land's contribution to feeding the sheep flocks and hence the Bedouins' well being in the Syrian Badia

Figure 3. Modern-day Bedouin have tractors to transport water for their livestock and for opportunistic plowing of the steppe.

We cannot talk about integrated rangeland management approaches without referring to the seminal paper of Gareth Hardin's-1968 on the "Tragedy of the commons" which greatly influenced rangeland management discourse and prompted the introduction of alternative technical, institutional and policy options for the management of pastoral resources (TIPOMPR). Even though much effort have been devoted to avoid the predicament of the "tragedy of the commons, there is very limited understanding on the extent to which proposed TIPOMPR have contributed to the efficiency and sustainability of pastoral production systems (Figures 1 and 2).

Hardin argued that "commons" are doomed to fail because the combined effects of increasing demographic pressures and human desire to maximize individual benefits would inevitably foster competition and overuse of finite resources, which would ultimately lead to resource degradation. He made three important assumptions to support his theory. The first assumption relates to the characteristics that common rangelands generate highly predictable and finite supply of resources. The second assumption considers that users of common rangelands are short-term profit-maximizers and given that they do not pay any additional private costs for adding an animal in the common ranges, they will have the tendency to overstock. Finally, the third assumption relates to the possibility for anyone to enter and utilize these common resources, in an open-access situation where management and control are lacking.

Therefore, Hardin proposed the establishment of state property rights or private property rights to eliminate "free riders" and establish incentives for users not to over-exploit resources, but invest in the maintenance and development of these natural resources. These propositions have had real impacts on the evolution of pastoral systems around the world and contributed to the development of various state and private rangeland development programs during the 1970s and 1980s and widespread adoption of state ownership policies for managing rangeland resources.

1.1. Misconceptions about Pastoral Systems

Notwithstanding the merits of Hardin's theory, the lack of understanding of the

characteristics of pastoral production systems represented major shortcomings, which contributed to the failure of various rangeland improvement programs. First, the assumption of a single resource approach is faulty as it obscures the various access-options and grazing management mechanisms used by pastoral communities to complement their feed requirements. There is no doubt that pastoral communities have had a very profound and clear understanding of their ecosystem dynamics, where they depend on for their survival, and as such have developed various reciprocal and contractual arrangements to complement and prevent the degradation of their resources. Second, pastoralists are members of well-identified social groups (see *Rangeland Livestock Production Systems in the Near East*) and are well aware that the sustainability of their production systems and livelihood strategies depend very much on collective action and respect of the rules governing access and use of their common resources. In addition, they respected various complementary mechanisms and rules, developed by their respective groups, to gain access to additional grazing and water resources from neighboring and other pastoral/farming communities, especially for hedging against environmental calamities. Third, herd mobility was an important risk management strategy that sustained pastoral production systems and livelihood strategies. Finally, the apparent openness of rangelands, which has misled many people, not just Hardin but also numerous developers and governmental agencies, has been a real misconception because each pastoral community knows and respects the boundaries of their neighboring communities to avoid conflicts and reciprocate access rights during periods of crisis.

Indeed, pastoral communities have developed agreed codes to enable all transhumant herds to gain access to grazing and watering on their passage from an area to another but, if they decided to stay longer in a specific area, were required to arrange access with the group that controls that area. It is the understanding of these different realties, which were discussed beforehand, and the necessity to take these realities into consideration that prompted the emergence of integrated rangeland management as a potential solution for managing and protecting common rangelands.

2. Framework for Integrated Rangeland Management

Integrated rangeland management systems could be classified into several major types, for example: 1) tribal rangeland management systems, which are remnants of traditional pastoral systems under which each community has full control over the management of its own resources; 2) pastoral perimeters that mimic direct management of rangelands resources by governmental institutions; and 3) rangeland management cooperatives, which tend to combine the two previous systems but articulate its approach around the boundaries and characteristics of tribal groups (see also *Rangeland Livestock Production Systems in the Near East*).

Integrated rangeland management has three important objectives: 1) improving and sustainably maintain the natural resource base dimension, 2) improving the human dimension, and 3) improving the legal and institutional systems. The natural resource base dimension aims at fostering efficient and sustainable ecosystem dynamics and animal production systems. This dimension has been the area where ecologists, geographers, and rangeland management specialists have been working to develop

technical options for releasing the assumption of the resource constraint through the improvement of rangeland and animal productivity and livelihoods). The human dimension seeks to set the boundaries of pastoral groups as well as promote more collective action and less competition amongst stakeholders. The legal and institutional system focuses on creating appropriate decision-making environments and promoting resource stewardship. All these three dimensions (see later sections) have been at the heart of Hardin's concerns and subsequent proposed alternative options within each of these dimensions aimed at preventing the "Tragedy of the commons". The legal and human dimensions are areas where sociologists, anthropologists, and economists have greatly contributed for the advancement of different options and institutional forms in the management of common pastoral resources. This contributed to the development of the property rights literature.

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Biographical Sketch

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