

Enabling investments in sustainable rangeland management

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Rangelands are places of important biodiversity and ecosystem services that occupy up to a half of the Earth's landmasses and up to three quarters of the world's drylands,¹ providing benefits to local communities, to national economies and to global society. Desertification and land degradation significantly affect rangelands, and in many countries measures to address rangeland degradation are weak or absent. Furthermore, integrated assessment of rangeland health status is absent in most countries and this is contributing to inappropriate investments and policies that in turn can lead to desertification and poverty.

Current projections establish that we need at least 70-100 per cent greater food production from existing land in

order to feed the current population and future generations.² This is likely to place more pressure on existing resources, leading to conversion of forest and rangeland to cropland, and consequent risk of land degradation. Land use conversion and land cover change have been identified as the leading factors in land degradation and desertification.³ Proximate causes of land degradation such as overexploitation for agriculture and extractive activities have a number of common roots. Fundamental social or biophysical processes underpin the proximate causes of land degradation and desertification, which are immediate human or biophysical actions with a direct impact on dryland cover.⁴

Despite weak evidence in many countries, there is widespread (though not universal) belief that overgrazing is a



Images: Abu-Zanat

Left, Hima Bani Hashem, Zarqa Governorate and (right) a Bedouin herder in the Hima Iyra Range Reserve, Salt Governorate

Sustainable rangeland management

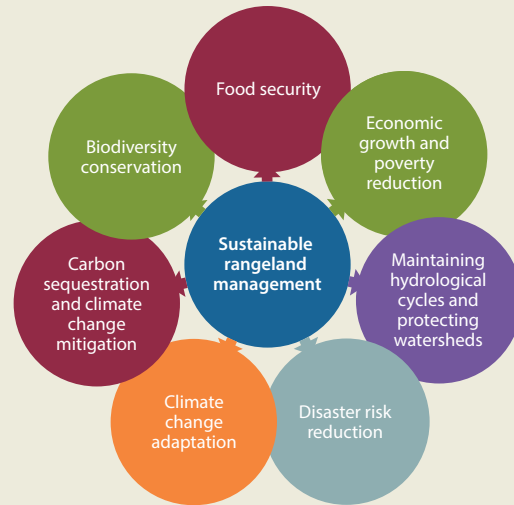
SRM should focus on enhancing the resilience of rangeland ecosystems in view of the high variability and unpredictability of precipitation, which is likely to be exacerbated by climate change. Much can be learned from local customary practices that have developed indigenous livestock breeds and management systems, which demonstrate remarkable adaptation and tolerance and are often critical to the efficiency of the system. Indeed, a frequent feature of indigenous SRM technologies is their orientation towards ensuring productivity in the worst years rather than maximizing on the good years. In lands where drought is the norm rather than the exception this is a logical adaptation and is central to resilient rangeland livelihoods. However, this age-old ecological insight can be easily jeopardized by a myopic focus on maximizing production in the short-term, and especially through use of unsuitable land use and cropping strategies.

leading cause of land degradation. In practice overgrazing is poorly understood and frequently misrepresented, and in a number of cases under-grazing is an equally important issue. Many rangeland ecosystems depend on herbivore action to maintain specific plant communities and when this action is disrupted, degradation processes can be triggered. Grazing mismanagement practices are a common outcome when herd management and seasonal herd movements are restricted. Policies and strategies of sedentization, the loss of transhumance corridors, or inappropriate location of water points contribute to this outcome. Such mismanagement can become common practice across a rangeland landscape when small but critical resource patches are rendered inaccessible (for example dry-season grazing areas converted to croplands, or forest patches fenced off to create protected areas).⁵

Sustainable land management (SLM) plays a vital role in halting land degradation and in rehabilitating degraded lands. Many countries face the challenge of maintaining long-term productivity of ecosystem functions while increasing productivity of food and other ecosystem services. This also applies to sustainable range management (SRM), a term we adopt to cater for the specific conditions of rangelands.

Sustainably managed rangelands can also deliver important benefits through ecosystem services — such as water cycling or climate regulation — which have knock-on effects on populations locally and externally. Improved rangeland hydrological cycles lead to better infiltration of water and reduced surface flow, which contribute to fewer floods and lower risk of drought. Indeed each action that takes place in the rangelands has an impact on surface and groundwater.⁶ The hydrological cycle in rangelands can be characterized as providing irregular water inputs that are dependent on irregular rainfall patterns and, in general, regular water outputs in the form of regular flows of surface and groundwater. On the basis of these water outputs other ecosystem services can be provided as a function of the health of a rangeland ecosystem.⁷ These can include higher biodiversity, soil fertility, carbon sequestration, quality of drinking water and its health benefits, and maintenance of rangeland products like fodder that are the basis of the pastoral economy.

Multiple benefits of sustainably managed rangelands



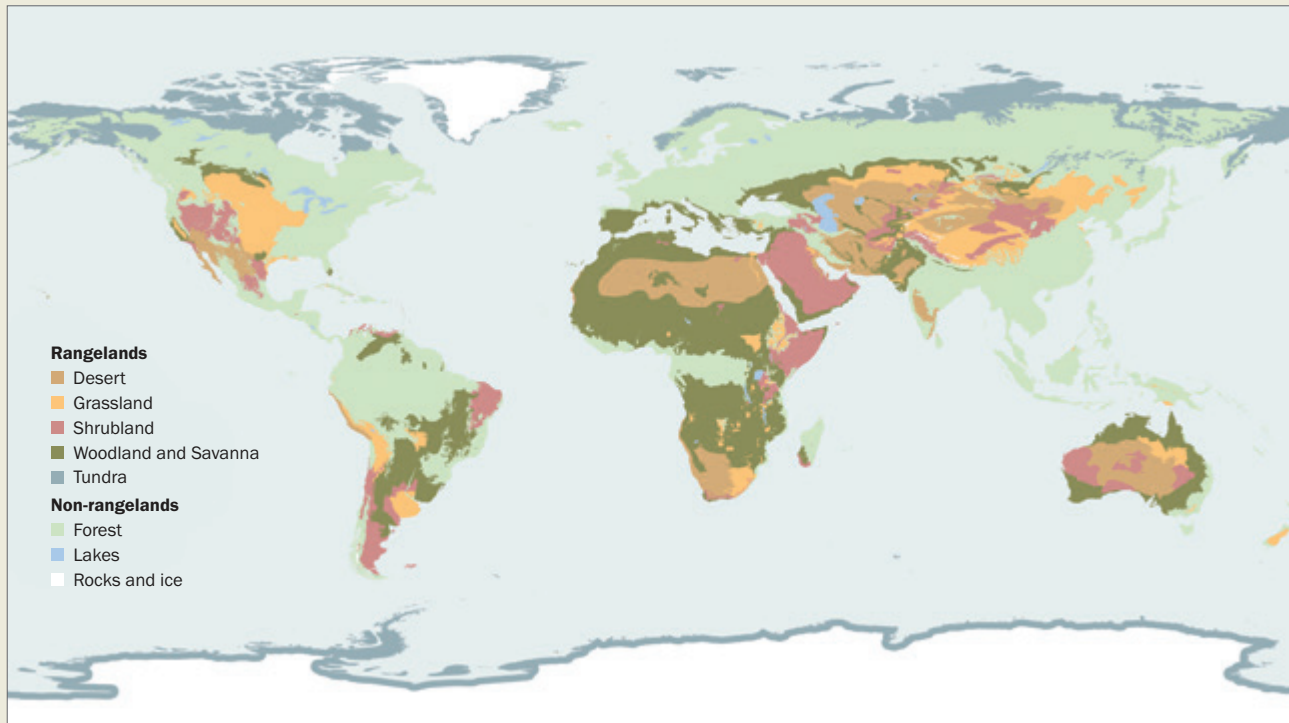
Source: Adapted from McGahey et al, 2014¹²

Recent studies have suggested that soil carbon management presents the most cost-effective climate change mitigation option.⁸ Rangelands (including grasslands, shrublands, deserts and tundra) contain more than a third of all the terrestrial above-ground and below-ground carbon reserves.⁹ With improved rangeland management they could potentially sequester a further 1,300-2,000 MtCO₂e by 2030.¹⁰ This is confirmed by research estimating that 51 per cent of the global 2011 net carbon sink was attributed to the three Southern Hemisphere semi-arid regions. The higher turnover rates of carbon pools in semi-arid areas make rangeland ecosystem dynamics an increasingly important driver of global carbon cycle inter-annual variability.¹¹

Good practices in rangeland management thus offer win-win situations for simultaneous economic, social and environmental benefits. Moreover, sustainable land management in rangelands has the potential to provide multiple benefits not only to communities that directly depend on rangelands but also to others: neighbouring rural communities, urban centres and global society. At the same time sustainable range management can be an important vehicle to contribute to land degradation neutrality (LDN).

In the many cases where pastoralism is practiced unsustainably, the common response is to intensify land use, notably by converting rangeland to croplands. However, land use intensification is driving investments away from the multiplicity of benefits from ecosystem services towards a narrower focus on single benefit streams. At the same time, such conversion bears the multiple costs of land degradation, degradation of watersheds, reduced biodiversity, increased poverty, social inequity and release of greenhouse gasses, as well as concomitant costs of land and biodiversity restoration or rehabilitation.

The world's rangelands



There is considerable disagreement over how rangelands should be defined which leads to divergent estimates of their extent. According to the World Resources Institute (1986) rangelands cover 51 per cent of the total land area of the world. This shows that rangelands are not confined only to drylands, but the majority of rangelands are in drylands and the majority of drylands are rangelands.

Source: Society for Range Management¹³

Sustainable management of rangelands requires innovative solutions to manage the high levels of climatic risk that are experienced over these landscapes and to address the many other unique features of dryland ecology. While such innovations are often found in customary management practices, these practices have often been undermined by inadequate development and policy interventions. Re-enabling customary practices and supporting them to adapt and flourish in a modern economy is central to SRM. Local institutions are vital for rangeland development and effective solutions tend to be grounded in improvements in local governance and communal resource rights.

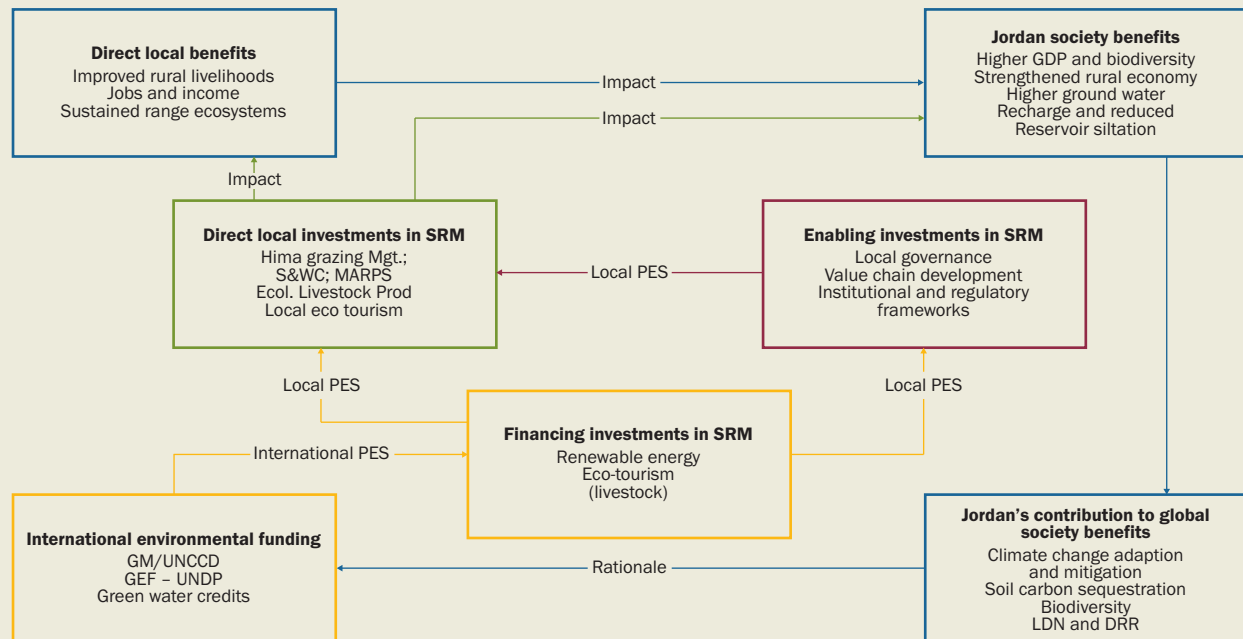
This approach to SRM requires a rethinking of orthodox investment paradigms and the role of the private sector. Local rangeland users already invest heavily in terms of labour and social capital to produce a wide array of environmental and economic benefits; new investments should be responsive to these existing investments and the risk management strategies of these local rangeland users. Innovation is needed in designing clever investment options and capturing the interest of investor groups to provide appropriate rangeland management solutions. Moreover, enabling investments may be required to establish conditions for improved asset investment and to put in place necessary safeguards.

An alternative approach is indeed needed that focuses on the optimization of investment returns in a variety of ecosystem services through greater capture of local benefits and reward for positive externalities. Advancing this investment approach requires improved local governance, stronger consultation with rangeland users, better informed decision-making and the facilitation of financial flows, possibly through payment for ecosystem services (PES) or other compensation for environmental benefits. Progress towards these targets requires greater motivation within government agencies in particular, to establish enabling investments for sustainable growth, and also within the private sector to strengthen value chains and to target appropriate asset investments.

Priorities for intervention include strengthening communal management of rangeland resources through the revival and strengthening of local institutions, adaptation of traditional governance practices according to the changing environmental and political context, and more secure communal resource management rights.

It is also important to improve local decision-making in the rangelands; better informed decision-making can be achieved through more inclusive, stronger participation of local rangeland users in public planning, improved

Linking local range governance to productive SRM investments and PES



In Jordan, the International Union for Conservation of Nature Regional Office for West Asia and the Ministry of Agriculture have engaged with key relevant stakeholders in more detailed studies on rangeland investment options. This has led to proposals for investments in SRM such as ecological livestock and medicinal plant production, 'Hima' grazing management and soil, carbon and water (SCW) conservation as well as in ecotourism and renewable energies.

In order to create long-term impact and sustainability, this study emphasizes close participation and management ownership of local range users. It is argued that this will require important investments in appropriate local governance structures. Where most of the above mentioned investments can be economically viable, others such as in SCW conservation and local governance may be more difficult to finance. Economic valuation studies have indicated that in Jordan, the value of

rangeland restoration can amount to JD15 million (US\$21.5 million) per year for roughly 30 per cent of the rangelands, if sustainably managed. This value does not yet consider other resulting ecosystem benefits such as increased biodiversity and carbon sequestration.

The proposed investment packages have high potential to create local and societal ecosystem benefits. By implementing them Jordan can also contribute to ecosystem benefits at the global society level, such as biodiversity conservation, climate change adaptation and mitigation and LDN. Such contributions need to be rewarded, and global PES could provide a platform for this. Engaging in promising investments such as in ecotourism and renewable energy could provide the vehicle, through taxation and licensing, for country-level PES modalities. Both PES modalities could provide the financing flows needed to invest in SCW conservation and in required local governance structures.

Source: Laban, 2015¹⁴

coordination between public sectors for more integrated, responsive and sustainable development, and through participatory technology development and innovation.

Better science-based evidence is needed in targeting policy and investment. Evidence of rangeland health and development opportunities for better targeting of policy and investment can be strengthened through the use of scalable assessment tools that are adapted to non-equilibrium dryland ecology. Evidence-based decision-making can be boosted with support for knowledge management, communications, capacity building and advocacy.

Advocacy is a priority to address sustainable development concerns in rangelands. Motivation for effective policy implementation within government agencies, and prioritization in rangeland investment, can be stimulated through greater, more informed engagement of local rangeland users in public consultations and involvement in political processes.

It is important to leverage appropriate investments in SRM. Greater investments can be generated through awareness-raising based on economic valuation of ecosystem services and communication of the multiple values of rangelands. In many countries enabling investments in appropriate public services and infrastructure are a priority. Investments in multiple ecosystem services are needed, as well as mobilizing innovative market-based options such as value chain development and PES.

Emphasis must be placed on policy implementation. Policy barriers may impede SRM and LDN in some cases, but in most countries supportive policies already exist and priority should be given to raising awareness and capacity and mobilizing resources to implement these policies.

Considering the importance of rangelands within the drylands, progress towards a land degradation neutral world will only be possible if major attention is now given to this globally important biome, and if investments and policies are oriented towards supporting locally generated solutions.