



POLICIES THAT WORK FOR PASTORAL ENVIRONMENTS

A SIX-COUNTRY REVIEW OF POSITIVE POLICY IMPACTS ON PASTORAL ENVIRONMENTS

Nairobi 2008
The World Initiative for Sustainable Pastoralism (WISP)
A project of the Global Environment Facility, Implemented by UNDP and executed by IUCN

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BACKGROUND TO THE STUDY

Drylands cover about 40 percent of the Earth's surface and they are particularly sensitive to land degradation, with 10-20% of drylands already degraded. This degradation is frequently attributed to overgrazing and mismanagement of resources by pastoralists, but over the past decade this has been consistently challenged and degradation has instead been attributed to a combination of constraints to pastoralism, through restrictions of mobility and privatisation of land, and substitution of pastoralism with less sustainable forms of livestock keeping. Research has shown that where mobility and locally owned institutions for land management are maintained, the results can be biodiversity conservation and sustainable land management.

A growing body of opinion considers pastoralism to be the most viable form of production and land-use in the drylands, but it is also recognised that pastoralists often fall short of their potential due to legal, economic, social and political disincentives and barriers to mobility of livestock and to communal management of rangelands. In particular, government policies tend to be informed by the opinion that pastoralism is intrinsically harmful to the environment as well as being economically irrational, and a number of governments have adopted policy goals of sedentarizing pastoralists and transforming pastoralism. The link between these policies and environmental degradation have been clearly demonstrated, leading to the assumption that, if those policy constraints are reversed or relaxed, pastoralism can become a tool for reversing land degradation. Whilst there is abundant literature explaining how policy constraints are impeding sustainable pastoral development, less research has been made into whether the situation is reversible.

In order to examine whether this assumption is true WISP worked with 6 partner organisations, in Bolivia, Mongolia, Niger, Sudan, Switzerland and Tanzania, who reported positive environmental outcomes in their country as a result of policy changes in favour of mobile pastoralism. No guidance was given in the selection of policies and as a result the policy drivers of environmental improvement were different in different countries, though some commonalities emerged. Though all countries report significant remaining challenges to securing pastoral livelihoods and promoting sustainable land management, they nevertheless report gains have been made as a result of policy changes that have either deliberately or inadvertently enabled pastoralist natural resource management.

THE WORLD INITIATIVE FOR SUSTAINABLE PASTORALISM

The World Initiative for Sustainable Pastoralism (WISP) is a global advocacy and capacity building initiative that supports the empowerment of pastoralists to sustainably manage drylands resources and seeks a greater recognition of the importance of sustainable pastoral development for both poverty reduction and prevention of degradation. WISP has been developed in the understanding that mobile pastoralism is indispensable for the sustainable management of the drylands, but its role in preventing land degradation is undermined by policy constraints. WISP is a global network that is designed to empower pastoralists to sustainably manage drylands resources and to demonstrate that their land-use and production system is an effective and efficient way of harnessing the natural resources of the world's drylands.

WISP is currently funded by the Global Environment Facility (GEF), with additional financial support from the International Fund for Agricultural Development (IFAD) and Oxfam GB, and is implemented by UNDP and executed by IUCN (The International Union for Conservation of Nature). WISP works through partnerships at global, regional and national levels to promote knowledge sharing that leads to policies, legal mechanisms and support systems for sustainable pastoral development. WISP provides the social, economic and environmental arguments for pastoralism to improve perceptions of pastoralism as a viable and sustainable resource management system.

For more information visit the web site at www.iucn.org/wisp

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EXECUTIVE SUMMARY

This report outlines lessons learned from six country studies that looked at the positive environmental impacts of supporting mobile pastoralism through government policy. Over the past ten years, research has begun to demonstrate the economic strengths of pastoralism, and the environmental logic of pastoral production, and has begun to dispel some of the fears that pastoralism might be unsustainable, unviable, or irrational. Strong arguments have been put forward for mobile livestock keeping as both a necessary adaptation that enables people to construct livelihoods in many climatically challenging environments, and as an integral component of many rangeland ecosystems, to the extent that its removal leads to loss of ecosystem health and resilience. Given this importance to drylands environments and economies, it is important to understand how policies can support sustainable pastoralist development and promote the environmental services of pastoralism.

Development planners have frequently struggled to adapt their knowledge and science to the environmental uncertainties of the drylands, and the result is that unsustainable changes have been promoted at the expense of more sustainable land-use systems. This is one of the key drivers of desertification and biodiversity loss in the drylands and overcoming that degradation requires greater understanding of drylands uncertainty, and the way that local livelihoods have adapted to it. Pastoralism is to a large extent defined by its adaptation to these climatic uncertainties, and sustainable development of many drylands areas requires greater acceptance of and support for those adaptations.

Many of the world's drylands are considered to be co-evolved with large herds of herbivorous animals, to the extent that they are to some extent grazing-dependent. Livestock may have replaced wild herbivores in these systems, but many drylands display a degree of dependence on livestock grazing, and those environments have been further modified through the land management practices of pastoralists in recent centuries. Conservation therefore may depend on the effective continuation of pastoralism, and it is clear that both cessation and restriction of pastoralism lead to environmental degradation.

Many pastoralists have rich knowledge of their rangelands environments and their customary institutions allow them to make use of that knowledge for the sake of effective land and natural resource management. The effectiveness of how they apply their local knowledge depends on how well their institutions are functioning and their capacity to sanction malpractice. The failure of Governments to recognise those institutions and work with them leads to erosion of their effectiveness and is a contributor to land degradation. Engagement of the State (and other external actors) with customary institutions is therefore a requirement for overcoming land degradation, provided the engagement is equitable and does not marginalise groups within society, such as women.

This study makes a number of recommendations to policy makers that should be addressed if national governments are to achieve their objectives with regard to land degradation, and which will provide a platform for sustainable pastoralist development:

1. Reversing environmental degradation in pastoral lands requires governments to adopt an overarching policy goal, or political agenda, of promoting pastoralism;
2. Governments should focus particularly on legitimising pastoralist governance of rangeland resources, improving their governance capacity, and ensuring equity in the operation of customary institutions;
3. Policy makers should view pastoralism as an agroecosystem and recognise that land use planning in the rangelands requires protection of pastoralists' territorial rights and security of their land tenure.
4. Governments should promote resilience in the pastoral economy by strengthening market integration for diverse goods and services, enabling diversification of the income portfolio, and strengthening pastoralists' rangelands management capacities.

This study concludes that land is being managed more sustainably in a number of rangeland regions through a process of re-enabling mobile pastoralism, and most notably through policy support for communal land management and customary decision making. Success depends on support for customary grazing practices and arrangements rather than imported grazing models, and reversing land degradation requires social rather than technological solutions. Enabling pastoralist sustainable resource use is also a route through which land degradation and biodiversity loss in the wider landscape can be tackled simultaneously.

These studies illustrate the importance of embedding advocacy for specific policy change into a wider campaign of addressing pastoralist issues at national level, and of governments adopting an overarching (cross-sectoral) policy objective of supporting pastoralism. Attention needs to be paid to the formulation of policy objectives, development of policy instruments, the resources and political will to implement policies and the analysis of policy impacts. Continuous attention is needed to potential policy conflicts and the trade offs that may be made between competing policy objectives.

The six country studies also support the argument that pastoralism can be a component of sustainable land management and biodiversity conservation. However, greater attention is needed to understand the land-use objectives of pastoralists, and their perceptions of land degradation. These perceptions should provide the mechanism for assessing land degradation or reclamation rather than perceptions imposed by outsiders. Greater dialogue is needed between environmental scientists and pastoralists to share their different perceptions of degradation for the sake of mutual understanding.

The studies also provide some cause of optimism, since it is clear that the 'new thinking' in rangelands ecology is beginning to influence pastoralist development programming. Nevertheless, opinions remain starkly divided about the relationship between pastoralists and their environment, and as a result there are many ambiguities and inconsistencies in government policy. Much more work is needed to convince decision makers that pastoralism has intrinsic value, and the use of good practices such as those outlined in this study is particularly valuable. Above all, it is vital that a broad-based acceptance of pastoralism pervades national governments so that support for pastoralism can be made a cross-cutting policy objective, influencing not only environmental and agricultural policies, but also the policies of all government (and non-government) institutions.

INTRODUCTION

There is a growing realisation amongst ecologists and economists that pastoralists are the best custodians of drylands environments, but their stewardship is undermined by inappropriate policies and planning and by competition over their natural resources. In many parts of the world, pastoralist communities are socially and politically marginalised, their livelihoods are undervalued, they receive inadequate public and private investment, and sometimes they are systematically weakened by 'development' processes. Yet attitudes are gradually changing and a growing number of government, non-government and multi-lateral institutions are actively exploring ways to enhance pastoralism to achieve both economic and environmental goals.

Criticism of pastoralism has come from three major directions: economic, environmental and socio-political. There are those who argue that mobile pastoralists follow irrational economic practices, such as hoarding of livestock or refusal to engage in a market economy. Others argue that pastoralism is inherently destructive to the environment and causes desertification because of the 'tragedy of the commons'ⁱⁱ. Elsewhere, governments consider mobility to be anarchic and pastoralists to be ungovernable, and 'not yet settled'. The outcome of these misconceptions is that alternatives to pastoralism, mostly based on privatization of land, sedentarization of people and efforts to intensify the extensive production, have been promoted at the expense of pastoralism, and to the detriment of pastoralist environmentsⁱⁱⁱ.

These prejudices have been refuted over the past 20 years and a new understanding is emerging: of pastoralists as economically rational land-users, and of pastoralism as a successful adaptation to the high uncertainty of dryland environments^{iv}. The alternatives to pastoralism that have been promoted over the past 50 years have been shown to be economically, socially and environmentally unviable^v, particularly in the drylands where traditional pastoral systems have an estimated 2.5 times greater efficiency of resource use than meat-only ('ranching') systems^{vi}. Pastoralism has been demonstrated to be environmentally sustainable and in many cases it is indispensable for effective land management^{vii}. Pastoralism can enhance biodiversity and wildlife conservation^{viii} and, by replicating the grazing patterns of wild herbivore population pastoralism may increase primary productivity of the rangelands^{ix}. Appropriate cattle grazing in the USA can improve the quality of seasonal rangeland forage available to elk during critical periods of nutritional stress and similar observations have been made for North American sagebrush grasslands and in Mongolia^x. Furthermore, many pastoralists also practice sustainable use of natural resources based on a rich understanding of their natural environment^{xi}. Finally, people are increasingly recognising that mobile pastoralism is practiced in many of the richest countries of the world, and mobility does not have to be a handicap to governance: indeed pastoralists have strong institutions that have enabled them to govern themselves and their environment for centuries.

Yet despite the "new understanding" that has emerged over recent years, public attitudes towards pastoralists have not changed to the same extent and damaging policies and practices continue to be proposed and implemented, encouraging unsustainable development in pastoral areas. The low acceptance of the new thinking may be influenced by entrenched prejudice and misunderstanding, or by divergent objectives for development of pastoral lands. For example, countries that pursue a policy goal of agricultural intensification to tap into export markets may consider the outputs of pastoral systems unsuitable, regardless of the economic efficiency of their production. Countries that pursue a dominant policy goal of conservation through protected areas may not be interested in the sort of conservation outcomes that come from the wider landscape under pastoral management.

There is a risk that these divergent policy goals are not only contradictory, but in some cases self-defeating, although there is scope for synergy and for complementarities. Sustainable management of many dryland regions requires mobile pastoralism to be practiced effectively, rather than substituted by other forms of production. By supporting mobile pastoralism, dependency on aid and emergency interventions can be reduced and poverty in the drylands decreased, leading to the strengthening of local economies, increased supply to domestic markets, and greater demand for domestic goods. Support for mobile pastoralism enables conservation goals to be met across the landscape at large, and not only in isolated pockets within protected areas, which means that conservation does not have to lead to conflict, and instead can create a positive feedback loop of economic empowerment of local communities.

This recognition lies at the heart of the World Initiative for Sustainable Pastoralism, which considers pastoralism to be among the most sustainable production systems in the drylands and one of the few production systems that is genuinely compatible with 'formal' nature conservation. Where land degradation is seen in pastoral lands, it is frequently associated with constraints to pastoral mobility, and these constraints have often been imposed through unsupportive policies. If unsupportive policies that constrain pastoralism lead to degradation, then it is reasonable to suppose that supportive policies that enable pastoralism will lead to environmental improvements, or at least will arrest degradation.

This study has been implemented in order to test this assumption and to identify and analyse examples of where the pastoral environment has benefited from pro-pastoralist policy. The study was implemented by six WISP partners in Bolivia, Mongolia, Niger, Sudan, Switzerland and Tanzania, whose case studies are quoted throughout this report (partner details are found in Annex 1). The countries were selected on the basis of a response by partners in that country to a call for proposals written by WISP. The call did not stipulate which policies should be considered, but stressed the importance of identifying a clear link between a policy change and an environmental outcome through pastoralism.

PASTORALISM AS A TOOL FOR CONSERVATION

Pastoralism

Pastoralism is the extensive production of livestock in rangeland environments, and it has been practiced in different parts of the world for thousands of years. Although pastoralism appears very diverse in different regions of the world, and more precise definitions are fraught with exceptions, there are a number of features that characterise the majority of sustainable pastoralist systems, including managed livestock mobility to access seasonal resources and to evade seasonal stresses, communal management of pastures and other resources (including rich-patch vegetation), and complex systems of governance that are vital to enable both mobility and communal resource management.

Mobile pastoralism is an adaptation to extremes, in terms of climatic seasonality, risk and uncertainty, and it provides an efficient way of managing the sparse vegetation and relatively low fertility of dryland^{xii} soils. In hot dryland countries, for example in Africa and West Asia, the low level of rainfall and the high degree of inter-annual variation makes crop cultivation unreliable and favours pastoralism^{xiii}. Cold highland regions are similarly suited to livestock production, as in the case of the cold steppe of Central Asia and Western China, or the South American Andes, where temperatures frequently drop below -30°C and where severe droughts and catastrophic snow storms occur with regularity.

Pastoralists effectively accept the variability of productive inputs (pasture and rainfall) and adapt their social and herding systems accordingly. In such regions, there are often pockets of resources that are suitable for cultivation or other land-uses, for example oases in the drylands, or sheltered valleys in the highlands, and planners are often tempted to convert such land to other uses. Such 'rich patch' areas of vegetation and water are critical for the effective functioning of the wider pastoral system, and their loss can compromise the integrity of the system, which can have ramifications for the wider environment and economy. The full opportunity cost of removing such resource pockets from the pastoral system remains poorly understood, yet the impact is felt not only by pastoralists, but increasingly by a large population of non-pastoralists who depend on drylands ecosystem services for their own wellbeing^{xiv}.

Mobile pastoralists are a large and significant (often an ethnic) minority in many countries around the world. Precise figures are hard to come by, but when all types of mobility are considered, nomadic and transhumant pastoralists may number between 100 and 200 million people globally. If extensive agro-pastoralists are included, the number rises sharply, and such people are often a majority of dryland inhabitants^{xv}. Significant populations are found in the Former Soviet Rangeland States, in China, Southern and Western Asia, Africa both north and south of the Sahara, and in South America.

Mobile pastoralism is practiced in temperate climates, including many European countries^{xvi}. However, this study has a greater emphasis on drylands pastoralism owing to the cross-section of case studies that were chosen and WISP's current strategic focus on the UN Convention to Combat Desertification. Despite this, the examples from the Swiss case study highlight the relevance of the policy recommendations made by this study to pastoralism globally.

Drylands

Drylands cover over 40% of the Earth's surface and provide a vast reservoir of biodiversity that is neglected, undervalued and increasingly degraded. They possess 17% of the global Centres of Plant Diversity, 47% of the Endemic Bird Areas, 23% of the Global Terrestrial Ecoregions and 26% of the Protected Areas worldwide^{xvii}. They are home to a great diversity of domestic plants and livestock, with at least 30% of the world's cultivated plants originating in drylands, and they constitute a precious genetic stock for future development. Drylands are home to some of the most charismatic species, support high species endemism and comprise many unique ecosystems and biomes, including Mediterranean-type ecosystems, grasslands, savannahs, dry forest, coastal areas and deserts^{xviii}. Furthermore, many other ecosystems, such as riparian or forest ecosystems are located in the drylands and rely on drylands ecosystem health for their own health and resilience as well as being critical to wider dryland ecosystem functionality.

Drylands conventionally are defined in terms of water stress: as terrestrial areas where the mean annual rainfall (including snow, fog, hail, etc) is lower than the total amount of water evaporated to the atmosphere. However, the over-riding feature of drylands is a combination of both low and highly variable precipitation, and it is the variability, as much as the low quantity, which gives drylands their special features. Dryland ecosystems are constantly in flux, making it difficult to define "average" conditions^{xix}. This uncertainty requires the elaborate adaptations seen in pastoral systems: high degrees of mobility, fluctuating herd sizes that track availability of pasture, a variety of livestock that can exploit different niches and which carry different levels of risk, a high degree of social cooperation, detailed knowledge and widespread use of many plant and tree species, and a range of other adaptive strategies. Mobility of livestock is a particularly efficient tool for managing the sparse vegetation and relatively low fertility of dryland soils. Indeed, dryland ecosystems may be more ecologically resilient than has previously been accepted, as long as some degree of livestock mobility or general resource-use rotation is retained in their management^{xx}.

The uncertainty of the climate in the drylands has led some to refer to them as dynamic non-equilibrium systems, where variable precipitation and patchy natural resources prevent the ecosystem from reaching a stable state^{xxi}. In these systems, flexible and opportunistic stocking strategies – tracking the seasonal and spatial availability of resources – are more efficient and more profitable than applying fixed stocking rates^{xxii}. In non-equilibrium systems, degradation from pastoralists' grazing may be minimal compared with the periodic impact of climatic events, unless flexibility of resource use is restricted through reduced herd mobility and fixing of

herd sizes^{xxiii}. In these environments, estimating carrying capacity and prescribing stocking rates are inefficient management tools and can contribute to degradation. Nevertheless, they remain the tools of choice for many planners, as is clear from the UNCCD National Action Plans that are outlined later in this report.

According to the Millennium Ecosystem Assessment^{xxiv}, between 10 and 20% of the drylands are degraded – a phenomenon that is called desertification. This degradation is often reported to be the outcome of overgrazing, yet this explanation can be misleading and “overgrazing” is frequently a convenient scapegoat for many other causes of land degradation. Although land degradation may be evident around permanent settlements and water points, where livestock mobility is reduced, it is much less evident in open rangelands where mobility is unrestricted and where systems of communal governance are intact^{xxv}. Where mobility continues unhampered, biodiversity conservation and sustainable land management have often been demonstrated. Over-grazing is therefore often an outcome of too much time spent grazing in one place, rather than too many animals *per se*.

Pastoralism as conservation in the drylands

Overstocking and pastoral degradation of the drylands are often stated as unquestioned assumptions, and little or no thought is given to the possible environmental goods and services of pastoralism. On this basis, many conservationists have justified annexing pastoral territories and excluding pastoralists in order to conserve wildlife^{xxvi}. Yet the environments that are so coveted by conservationists are often found to have been created over centuries of management by pastoralists, as for example in the case of East African Savannah eco-systems^{xxvii}. Where land degradation is simplistically put down to an over-abundance of animals then the wrong solutions will be proposed, which may aggravate the situation. This is particularly the case where rangelands are grazing-dependent, and where degradation and loss of biodiversity can occur as a result of under-grazing^{xxviii} (Box 1).

Box 1: Environmental degradation through undergrazing

From 1974 through 1978, Pokot pastoralists of Kenya were unable to herd their livestock in Simbol, a grazing area used by them for generations. Before intensified raiding forced them to abandon the area, they managed herds of cattle, goats and sheep so as to maintain a grassy cover which restrained the spread of *A. reficiens* and *A. mellifera*. Goats, as the major browsing component of Pokot herds, are voracious predators of Acacia. Another factor in the control of Acacia was the seasonal fires set by the Pokot. The intense but transient levels of heat created by the flames sweeping over the area kept Acacia pioneers in check. For over six years following the withdrawal of Pokot herders, the Simbol area remained unoccupied. Analysis of Landsat data for the period show that Simbol became a sea of thorns, the grass retreated and the area was lost permanently as a pastoral resource area. It is estimated that an area of 8,000 to 80,000 hectares may have been affected^{xxix}.

In Kazakhstan during the post-Soviet period, the loss of traditional seasonal grazing practices has led to overgrazing around village settlements and undergrazing of remote rangeland pastures. This has been influenced by changes in land ownership, reduction in cattle numbers, failure of support services, destruction of infrastructure and the generally adverse economic situation. The abandonment of vast pastures of the dry-steppe and semi-desert zones along with the almost complete extermination of wild ungulates, particularly the Saiga antelope, has led to extensive land degradation: in particular, changes in vegetation and soil composition, and expansion of lichen-covered soils, has reduced water penetration to the soil which inhibits the growth of higher plant species^{xxx}.

Many of the world's drylands have evolved over millions of years in coexistence with large herds of herbivorous animals and have adapted to a pattern of intensive grazing followed by periods of rest. Although this phenomenon is frequently overlooked by range ecologists, it is well recognised in wildlife ecology that herbivores improve the quality or quantity of their food supply by their own activities. Research in the USA has shown that appropriate cattle grazing can improve the quality of seasonal rangeland forage available to elk during critical periods of nutritional stress and similar observations have been made for North American sagebrush grasslands and in Mongolia^{xxxi}. In recent centuries there may have been a shift from wild ungulates to domestic stock, with livestock replicating the animal impact of wild herds (grazing, manuring and trampling)^{xxxii}.

Although pastoralism may have developed recently in evolutionary terms, it has greatly modified rangeland ecosystems to the extent that removal of pastoralism can be detrimental to rangeland diversity and to the survival of grazing ungulates^{xxxiii}. Pastoralists have modified their rangelands through the use of fire and intensive grazing to promote the growth of palatable grasses and reduce the encroachment of bushes. Such strategies can create conditions favourable for wildlife, a fact supported by the presence of higher diversities and populations of wildlife in some pastoral areas adjacent to national parks, than in the parks themselves^{xxxiv}.

Conservation in dryland areas relies on pastoralism to maintain wildlife populations outside protected areas, for example in migratory corridors, and when habitat in pastoral lands declines, protected areas may function less effectively. Although it has been common to blame pastoralism for the decline of wildlife in reserve adjacent areas, this may be attributable instead to declines in pastoralism, and particularly to a substitution of pastoralism with crop cultivation, as in the case of Kenya^{xxxv}, or to the weakening of customary institutions for resource management and loss of access to key resources, or to transhumance routes.

Development literature abounds with examples of agricultural expansion into pastoral land or appropriation of pastoral lands for other purposes. Examples from Eastern and Southern Africa, North America and Australia reveal that degradation usually follows

disruptive changes that modify traditional patterns of land-use^{xxxvi}. Increased concentration of livestock around permanent settlements and water points are among the most common causes of rangeland degradation which compromise the future health and productivity of rangeland ecosystems^{xxxvii}. However, degradation also occurs where seasonal pasture, particularly dry season reserves, is put under permanent cultivation, or is otherwise removed from the grazing system, and pastoralists are excluded and permanently confined to less favourable areas^{xxxviii}.

Determinants of pastoral conservation

Pastoralists usually have an intimate knowledge of their rangelands environments and of a wide variety of grass and tree species that have different uses at different times and in different places. This knowledge informs the institutional norms that allow the management and sustainable use of the rangelands^{xxxix}. In highly variable environments, pastoralist management systems must be highly adaptive and flexible: management may be better described as adaptive coping rather than optimization and control^{xl}. The rangelands provide a rich array of goods and services to pastoralists and management strategies are honed to exploit this: feeding tree leaves and pods to livestock during dry seasons; lopping branches to improve access to browse; burning over-mature pastures; and harvesting medicinal plants and other natural products that are of benefit to livestock and people.

There are numerous management techniques through which pastoralists sustainably manage their environment, including defining and protecting grazing reserves, either for seasonal grazing or to support specific stock-types (e.g. calf pastures near the homestead), and controlled burning to reduce woody growth, to encourage germination of new grasses and to control pests. Pastoralists also effectively manage dryland forests, lopping branches as opposed to felling trees, and preserving many valuable species to provide shade, medicine or provender. Many pastoralists also have elaborate systems of ecological classification that facilitate pasture management and the practice of deferred rotation management: moving livestock to seasonal pastures to optimise the use of crop residues, grasses and shrubs^{xli}.

Such rich knowledge of rangelands environments is only useful if pastoralists are able to implement their management plans effectively, and for this many pastoralists rely heavily on customary institutions to govern resource management and to sanction malpractice. Reciprocity and negotiation is vital for the conservation and allocation of resources and pastoral institutions have enabled societies to withstand the extreme pressures of both their environment and their competitors. These institutions are fundamental to pastoralist risk management and are integral to the social safety nets and shared claims over productive assets that characterise pastoralist systems, and there is often an overlap between institutions for social support and those for resource management^{xlii}.

Institutions facilitate social interaction by allowing individuals to cooperate and achieve common objectives for the common good. They are regulatory systems of formal laws, informal conventions and norms of behaviour, and the relative strength and integration of customary systems and new forms of governance differs greatly between locations^{xliii}. Customary pastoral institutions are often not recognised by the modern state, but they remain as habitual ways through which society manages day-to-day affairs. These institutions are not simply traditions but they are adaptive responses that have evolved over time, often based on kinship or social classes. The effective functioning of customary institutions and their conservation outcomes relies on the ability of those with authority to impose sanctions on those who break the rules. Identifying common ground between customary and new systems of governance is a key development challenge for many dryland regions.

Securing the environmental services of pastoralist livestock production and promoting the conservation practices of pastoralists requires support for the application of indigenous knowledge, through effectively functioning institutions. It is also critical to understand the power dynamics within and between pastoral societies, and between pastoralists and their neighbours, since internal and external conflict can lead to a diminishing of the power of the customary leadership and breakdown in resource management and conservation. The role of women in pastoralist societies for example is often distinct from that of men, and pastoralist women may sometimes have limited decision making power. Nevertheless, the gender distribution of labour roles ensures that women play a vital role in the use of certain natural resources and therefore in sustainable rangelands management. Ignoring the decision making powers of women and other marginal groups within pastoral societies poses risks to conservation outcomes^{xliv}.

Security of resource access and control is an important factor in the sustainability of pastoralism, owing to both the importance of diverse resources to the overall viability of the system and to the undermining effect that resource loss has on customary institutions. Where control over rangeland resources has become unclear, or when power relations between competing groups of resource users has changed, communally managed lands can quickly deteriorate into an open-access free for all, with the environmental outcomes predicted by the 'tragedy of the commons'. Although development planning has long been influenced by the economic theory of the tragedy of the commons, it is now recognised that few pastoral lands are open access, and that most 'commons' are in reality communally managed under common property regimes, and unauthorized use of pasture is sanctioned. Non-exclusive land tenure and land-use are key features of pastoralist resource management regimes that enable mobility and allow herders to avoid areas where forage is insufficient or exploit areas of temporary abundance^{xlv}.

NATIONAL POLICIES AND THE PASTORAL ENVIRONMENT

Policies are guiding principles that are designed to influence the decisions and actions of any institution, although in this study there has been a dominant focus on the policy of government. Policies in this case are seen as lines of argument rationalizing the course

of action of a government (Box 2). This study was developed based on the assumption that policies have frequently failed pastoralists by guiding governments to invest public resources inappropriately in pastoral areas, to invest resources disproportionately in non-pastoralist areas, or to otherwise favour non-pastoralist land practices in the rangelands over pastoralism. Non Governmental Organisations and multi-lateral agencies also have their own policies to inform their decision making and resource allocation which may or may not differ from those of government.

Box 2: Functions, objectives and instruments of policy

Policy processes are sometimes rationalised as a cycle of policy analysis, policy making, and policy implementation. Policy analysis consists of comparing different policy choices, examining their likely impact and seeing how they support the policy objectives. Deciding on the objectives of the policy and determining the instruments that will be used constitutes the process of policy making, and carrying out these decisions is the process of policy implementation.

A policy strategy is a systematic plan of action that is executed to achieve a policy objective, and policy instruments provide the means of implementing the strategy. Policy making does not demand a single objective or a single instrument, and multiple objectives and instruments are often found, although this can lead to, and may stem from, a conflict of interests^{xvii}.

In reality, a systematic approach to policy making is often not adhered to, and the distinction between policy objective and policy instrument is blurred. The outcome is that interest groups pursue their own agendas: either to secure their chosen objective, or to ensure a particular instrument is given priority. "Policy-making is not a linear process... We often start with a very simple linear model of the policy process in which the problem is identified, the alternatives are analysed and the best option is chosen, implemented and evaluated. We know policy-making does not work in that way"^{xviii}.

Conflicts of interest in policy making

Within a country, different policies may conflict or contradict each other, both between sectors and even within the same sector, which can negate some of the benefit of positive policy changes. Tanzania is a case in point, where the 1998 Wildlife Policy proposed measures to bring an equitable share of revenue from tourist operators to rural communities whose land the industry uses, but in practice relationships between communities and tour operators (particularly in the hunting tourism sub-sector) remain strained as a result of the country's Wildlife Conservation (Tourist Hunting) Regulations (2000), which restrict opportunities for communities to reap the benefits of this lucrative industry^{xviii}.

Conflicts of interest are also apparent in Niger's Land-use Policy, which favours the needs of crop cultivators over those of pastoralists. A number of decrees have been promulgated in Niger with the intention of securing the interests of pastoralists, but a 1993 Ordinance stipulating that natural resources are part of the nation's common heritage to which all Niger's population have equal claim may prejudice the interests of pastoral populations. In Dallol Zone, the site for the WISP case study, the Ordinance is enabling farmers to encroach on the herding zone, to secure exclusive ownership rights over land, to clear land for cultivation and to obstruct livestock access to water resources, which has serious environmental implications (Box 3)^{xix}.

Box 3: Tensions between agricultural and pastoral land-use policy in Niger

Under the colonial regime, Niger was officially divided into agricultural and nomadic zones for crop farming and herding respectively. Cultivation was formally proscribed north of the line and in return, herds had to stay within the nomadic zone until the grain harvest ended, after which the customary exchange of manure for crop residues took place. Relationships between farmers and herders were occasionally strained, as when desiccation of northern pastures forced a southward retreat of herders before the harvest was complete. In general, however, land-use was complementary rather than competitive.

In 1961, a law was passed that pushed up the boundaries of the northern herding zone, effectively reducing the area available to herders. This was followed in the early 1970s by a marked increase in farming for export-crops (mainly ground nuts) in the agricultural zone leading to a decrease in the surface of the agricultural zone committed to food production. The cereals shortfall was supposed to be recouped by earnings from groundnut sales but these earnings largely accrued to a government corporation, SONARA, and to a cadre of large traders, with little benefit for small-scale producers.

Unable to earn enough on their farms to purchase grain, and lacking both capital and labour to intensify production, farmers attempted to meet their survival requirements by bringing more land under the hoe. This expansion took place in the herding zone. By 1977 farming was being practiced up to 100kms north of the line dividing the two zones. The agricultural migration met with no official resistance, herders received no compensation for the transformation of pasture into farmland, and relationships between herders and farmers deteriorated to the extent that in 1991 they escalated into violence that cost the lives of 100 FulBe women and childrenⁱ.

Securing the right policy to support pastoralism is only a small step and more attention needs to be given to conflicting government policies as well as to government planning processes in order to capitalise on the options provided in policy: policies remain only as good as their implementation and the political will to support pastoral development. In Sudan for example, Presidential Decree No.

20/2005, which established an Administrative Committee for Route Delineation in the Darfur States, has foundered in the face of under-funding, despite displaying positive outcomes on both pastoral livelihoods and the environmentⁱⁱⁱ. The lesson for advocates of sustainable pastoralism is that securing a change in policy is one step in the process of securing sustainable pastoral livelihoods. Getting supportive policies implemented and suppressing the disincentives of contradictory policies requires a continuous effort in making the case for pastoralism as a worthwhile investment for scarce public resources, and ensuring that government gives greater support to the over-arching policy objective of supporting pastoralism.

Policies on the environment

An important observation from this series of country studies is that securing positive environmental outcomes in the drylands is not achieved exclusively through environmental policies, given the importance of governance and land tenure for enabling communities to manage their resources sustainably. Nevertheless, some environmental policies have contributed to reversing land degradation through their enabling impact on pastoralism, particularly where they have supported Community Based Natural Resource Management and Community Conservancies, and where they enable rural communities to capture the additional benefits of conservation, such as tourist revenues (Box 4).

Box 4: Pro pastoralist policy in Tanzania yields promising resultsⁱⁱⁱ

The Tanzanian government's Wildlife Policy of 1998 addresses the conflict between pastoralism and wildlife conservation. Recognizing the role of pastoralism in conserving biodiversity and the opportunity costs borne by pastoralists in performing this role, the policy proposes measures for equitable sharing of revenue earned from tourism. A recent survey confirmed that tour companies are investing in pastoral development projects in return for renewed commitment from the recipient communities to protect wildlife and conserve wildlife habitats. Successful examples of this policy intervention can be seen around Tarangire and Serengeti National Parks where wildlife migratory routes and dispersal areas overlap with pastoral grazing areas. For example, the Tarangire National Park established a Community Conservation Service Unit (CCSU) to improve relationships with local communities. The CSSU facilitates the process of benefit sharing to target communities and assists communities to gain access to information, resources and services that promote sustainable development through conservation and utilization of natural resources. Village Natural Resource Management Committees and Village Land Councils oversee the implementation of conservation activities and the design of projects to promote the social and economic welfare of participating communities.

Although this study has identified environmental impacts from a range of policies, and in some cases has shown that some environment-related policies have the potential to encourage land degradation, greater attention is required to identify which environmental policies work for pastoralists and enable sustainable land management. To achieve this, the objectives of environment-related policies need to include protection of landscapes and ecosystems as well as species, and must explicitly recognise the capacity of pastoralists to achieve this. Policies and laws should support and promote Community Based Natural Resource Management and improved benefit capture, and should be designed to mainstream the cross-cutting importance of mobile pastoralism to other sectors, such as agriculture or land.

Land tenure

Land tenure is a complicated issue for pastoralists because of the overwhelming necessity for communal land management, and the damage that can be done to the drylands when pastoral land is privatised. Where government policy has overtly favoured privatisation, the outcome for pastoralists has been increased conflict, impoverishment of herders and degradation of the environment^{iv}. Where government policy has firmly supported communal land tenure, the opposite outcomes can be found, as recent experiences in Mongolia demonstrate (Box 5). The shift to customary land tenure and management in Mongolia in recent years has delivered many positive benefits, both to pastoral livelihoods and to conservation of their rangeland environments, although it has also perpetuated traditional inequities in resource distribution and access, for example between rich and poor, or between men and women, that still need to be addressed.

Box 5: Property regimes in Mongolia and their impacts on the pastoral environment^v

Since 1990, Mongolia has transitioned from a centrally planned to a market-oriented economy. During the process of Structural Adjustment prescribed by the World Bank in the 1990s, all collective properties including livestock, livestock shelters at winter and spring camp sites as well as collective machinery and buildings were privatized. Grazing lands, however, remained under the control of the state. Although privatization improved individual property ownership, the absence of formalized land rights for pastoralists together with the absence of customary institutions and arrangements to manage land led to land grabbing by the wealthy, conversion of land to non-pastoral uses such as mining, and widespread overgrazing and environmental degradation.

The 2003 "Law on Land" and the 2006 "New Amendments to the Law of Nature and the Environment" reversed this situation by placing greater control of natural resources in the hands of customary institutions. Subsequent efforts to organize herders in community groups and restore customary institutions and common property management regimes have resulted in significant improvements in environmental quality and the economic status of group members. Herders are reverting to traditional risk management strategies, developing multi-species herds and returning to customary and more localized levels of cooperation for the management of labour and the production of hay and other inputs. This has led to numerous benefits for both livelihoods and the environment. Incomes have risen, poverty has fallen, and environmental condition has improved as a result of the resurrection of community pasture use rules, increased seasonal movement, improved access to pastures, and increased control over productive resources such as water points. The conservation benefits have been directly felt by pastoral households through tourism and improved livestock and products marketing. Extensive areas of rangeland have been rehabilitated through the application of effective grazing regimes, the use of alternative fuels, and through improved community efforts to monitor and protect against illegal use of resources.

Tanzania's experience in land policy lends further support for the importance of customary land tenure arrangements in supporting community based sustainable natural resource management. The policy, introduced in 1998, guarantees security of tenure for

pastoralists by providing for the delineation and legal recognition of pastoral lands, thereby forestalling encroachment and restoring under utilized, abandoned or neglected pastoral lands back to their former owners. Implementation of this policy has enabled pastoralists to reclaim formerly alienated lands, increase the area available for grazing and, by allowing greater mobility and dispersion of herds, has reduced land degradation. The policy also recognizes customary land management practices and authenticates participatory land-use planning with the full involvement of all land-users. Encouraged by this policy and by the new Wildlife Policy of 1998, Maasai pastoralists in the Ngorongoro district of Tanzania have adopted range management strategies that conserve wildlife and the environment while increasing revenue flows to the community through improvements in livestock production and tourism. Non consumptive tourism (photographic and game viewing tourism) earns participating villages around the Serengeti and Tarangire National Parks annual incomes of between US\$36,000 and US\$60,000 per annum^{vi}.

Policies to improve local governance

The importance of promoting community control over natural resources and strengthening customary decision making has been demonstrated in a number of the case studies, including Mongolia, Tanzania, Bolivia and Niger. Policies that create space for customary decision-making and for local enforcement of rules and regulations over resource-use have been successful in reversing land degradation in some cases. In Bolivia, commercialization of pastoral production in the absence of a sound environmental policy led to the almost total disappearance of customary norms and practices in the management of the plains and Bofedales (high altitude wet lands), and led to huge increases in individual herd sizes, which both degraded the environment and led to significant loss of productivity. Reversal of government policy towards indigenous production practices and renewed respect for indigenous knowledge and customary decision making is leading to a reversal of this degradation (Box 6).

Box 6: Reversing degradation of the Bolivian Bofedales^{vii}

The Bofedales are managed wetlands in the Andean high plains. They are fed by surface and ground water flows and characterized by dense mats of compact vegetation. In the cold and hostile environment in which they occur, these highly productive ecosystems are regarded as oases supporting up to 70 per cent of the plant species consumed by camelid herds. Bofedales have been utilized by pastoralists for over 4,000 years and it is postulated that domestication of camelids was only made possible by the existence of these wetlands.

The fragile Bofedales depend on regulated inflows of water to maintain their ecological character and integrity. For centuries if not millennia, the flow of water into the Bofedales was regulated by pastoralists using dykes and dams. Management prolonged the productivity of the wetlands allowing pastoralist to utilize them for extended periods. However, over the last 20 years, water flows into the Bofedales from the snow and ice fields of the Andes has been steadily diminishing due to climate change. At the same time, abstraction of water for irrigation, increasing cultivation of the Bofedales and surrounding mountain slopes and weakening of traditional water management practices are compromising the water balance and water quality of the wetlands. These changes accompanied by an unprecedented increase in camelid populations have resulted in the siltation and drying up of the Bofedales and wide spread environmental degradation in the surrounding areas.

During pre-colonial times, pastoralism was carried out in relation to the organization of the "ayllu", and in some areas this traditional system still prevails. Regions that still maintain the traditional style of communal management are Ulla Ulla (Apolobamba Mountains in the Department of La Paz), Pacajes Mauri, Sajama (Oruro Department), and San Pablo de Lipez (Potosí Department). The use and management of water in these pastoral societies has been carried out based on inter-family agreements, enabled through the powers of regional or local traditional authorities (malkus, jylacatas). Where they have weakened, the modern system of authorities (judges, mayors, leaders, secretaries, etc.) has partly assumed this organisational role.

Over the past two years Bolivia has undergone some profound political changes, one of the most important of which is the reaffirmation of indigenous culture in Bolivian society. Government policy now recognizes the rights and the cultural identity of indigenous peoples, their traditional knowledge and medicine, and their intellectual collective property knowledge. Government is promoting recognition of traditional knowledge and incorporating them into new techniques for a better traditional sustainable management of natural resources. This policy has underscored the National Plan for Development approved in June 2006 and two related legislative instruments that are currently under discussion: the Intellectual Property Law, and the State Constitutional Proposal. This respect for customary institutions and indigenous knowledge is critical for the sustainable management of the Bofedales.

Enabling effective management decision making implies not only a greater role for customary institutions, but also greater integration of customary institutions with government. Community organisations require legitimization and support from local authorities and local government has to be enabled to work extensively with the local community organizations, which requires broader support from central government and at policy and planning levels. Donors, government and projects should support and empower, not replace and alienate such institutions. The roles and responsibilities of local government require clarification in legislation and there need to be formal mechanisms to evaluate the quality of local government's collaboration with customary institutions^{viii} (Box 7).

Box 7: Local governance in Mongolia^{ix}

The Mongolia case study highlights the wide-ranging benefits of community organisation and the importance of continued protection and increased support for these institutions in national policy and planning:

- Community organisations improve livelihoods and have an appreciable impact on income, halving poverty in one case between 2002 and 2005.
- Community organisations improve environmental condition through community decision making, scheduled seasonal movements, improved roads and repaired wells that improve access to unused pastures and enable rotational pasture use.
- Conservation actions benefit community households, through tourist revenues and increased local marketing opportunities, providing further incentives for rehabilitation.
- Community organizations can be effective institutions for pasture land management, although there is a risk of exclusion of the poorest households, which can restrict livestock movements by those households.

Policies in support of mobility

Managed livestock mobility, broadly referred to as transhumance, is one of the central management tools of pastoralism. Economically, mobility is crucial to enable producers to efficiently harvest rangeland resources that are 'patchy', meaning that they are spatially and temporally heterogeneous. Environmentally, livestock mobility is crucial for sustainable management of the rangelands and is central to the provision of many of the environmental services of pastoralism, enabling grazing benefits on pastures that are seasonally inaccessible, transporting seeds, allowing intense periodic grazing as opposed to steady-state grazing, and managing for risk and resilience.

Mobility has been promoted in Spain, where a 1995 Act of Parliament legitimizes the country's 120,000 kilometres of Cañadas, or transhumance corridors, to ensure that pastoral flocks continue their transhumance and in so doing, continue to preserve the country's biodiversity^x. Transhumant pastoralism in Spain, particularly between mountain regions, connects ecosystems with a network of biological corridors in which livestock play the role of vector for native plants, improve the fertility of soil through manuring, and assist germination through gut scarification, thereby improving biodiversity in the country's rangelands^{xi}. Plant seeds are transported through these corridors for distances in excess of 400 km, and the loss of transhumance would have profound consequences for plant biodiversity^{xii}.

The environmental degradation that stems from loss of livestock mobility has been widely documented and has been noted in the WISP case studies. In Sudan, a combination of population growth, civil war, agricultural expansion, range enclosure, resource degradation and drought have curtailed movement of pastoralists by either blocking their traditional migratory routes or forcing them to occupy safe refuges for inordinately long periods of time. This has led to violent confrontation between farmers and herders and extensive degradation of the environment. In an effort to remedy the situation, the Government of Sudan enacted a decree demarcating transhumance routes and providing essential services to pastoralists along these routes (Box 8). The aim of these routes was conflict mitigation and economic development, and the measures are reported to have relieved tensions between herders and farmers. However, the route delineation also promises to hasten environmental recovery and to reverse land degradation in pastoral areas^{xiii}.

Box 8: Demarcation of transhumance corridors in The Sudan

In March 2005 Presidential Decree No. 20/2005 established an Administrative Committee for Route Delineation–Darfur States (ACRD-DS), whose role is to demarcate the transhumance routes and prepare project proposals for services and development along those routes. Six main routes were demarcated in the first year, amounting to 1443 km of livestock corridor, with other routes under planning. The routes were demarcated with posts at intervals of 1-3 km, set 150 metres apart and farms that fell within the routes (part or whole) were compensated in cash. Services were provided along these routes, including ten schools for nomads and the construction of fire grids to protect the rangelands against seasonal fires. Other developments such as water points have been incorporated within the country's 5 years action plan (2007-2011).

A review of the policy of demarcation has highlighted the strength of pastoralists in organising themselves and prioritising their social and economic development needs and illustrates that bottom-up approaches can be initiated by nomads themselves, but this requires investment in education, awareness raising and training. Representation of the Pastoralist Union in the compensation committees helps to mitigate the bitter feelings of the pastoralists and has improved relations between herders and farmers. Pastoralists are now represented in the National Assembly as well as at State level Legislation Councils and they are strengthening the quality of their representation^{xiv}.

In many countries, pastoralists and non-herding farmers come from ethnically as well as occupationally distinct groups. The political elites in many of these countries come from agricultural and urban communities and sometimes from groups with histories of antagonistic relationships with herders, and they often respond negatively to the interest of pastoralists. In many countries, particularly in Africa as a result of European colonialism during the 19th and 20th centuries, the rights of cultivators have been given much greater respect than the rights of pastoralists, and policies of “land to tiller”, or “mis en valeur”, have ceded title to cultivators over land that pastoralists consider to be traditionally theirs. Reversing this trend and upholding the traditional rights of pastoralists over rangeland resources has proven critical for achieving success in reversing land degradation (Box 9).

Box 9: Policies and legislation in favour of pastoralism in Niger^{xv}

A number of laws have been passed over the past half century that have created an enabling environment for pastoral sustainable land management in Niger. Decree N° 87-077, 18 June 1987, provides recognition of the multi-functional nature of resource spaces, regulating the circulation of cattle in agricultural zones and recognizes pastoralists’ right to access the southern agricultural zone, albeit only on fallow lands and non-cultivated spaces where cattle will not cause damage. Ordinance N° 93-15, March 3 1993, asserts the willingness of government to secure rural production land tenure bases in the Orientation Principles of the Rural Code (POCR) and has been used to create cattle corridors and transhumance routes in pastoral areas. Law N° 93-14, March 2 1993, determines the legal status of rural water supply and should enable pastoralists’ mobility by legitimising herd access even to private water sources, provided the load capacity of the infrastructures allows it. Decision A/DEC.5/10/98 on the regulation of transhumance between ECOWAS member states has further contributed to the sub-region’s recognition of the need for and usefulness of mobility at the regional level, and has enabled pastoral mobility between a number of member States.

Although there are criticisms of some of these policies, particularly for their lack of consultation with pastoralists, and subsequent lack of ownership by pastoralists, significant progress has been made over the last decades in certain zones of Niger. In one study, at least 250 000 ha of highly degraded land have been rehabilitated, the impact of conflicts on the management of agro-pastoral resources is minimal, and transhumant populations report particular satisfaction with the securing of transhumance axes^{xvi}.

Although mobility of *livestock* is often the crucial factor in maintaining the economic and environmental logic of pastoralism, mobility of *pastoralists* is equally crucial in many regions, particularly where the production system demands high labour inputs (e.g. for milk processing, or for maintaining security). Therefore enabling pastoral mobility requires attention to resource access (e.g. access to salt pans or to critical water points), governance (e.g. bringing government to the people), services (e.g. providing health and education services) and a wide range of other issues that are related to a diverse array of policies.

Policies in support of sustainable economic growth

It has already been suggested that the positive environmental externalities of mobile pastoralism can be secured and supported in many ways, and it is reasonable to assume that policies which support economic development of pastoralism can also have a positive impact on the environment, by enabling pastoralism. This assumption is valid if economic development of pastoralism is compatible with the core features of pastoralism that are responsible for delivering the environmental services: respecting mobility and communal tenure, allowing effective decision making, and enabling pastoralists to capture the benefits of their actions. Pastoral development has often taken an inappropriate direction, and has proven to be both economically and environmentally unsustainable, particularly when the important decisions over development planning have been made by non-pastoralists^{xvii}.

The history of policies that support Alpine pastoralism in Switzerland gives an insight into how economic policies can promote sustainable development: development that is both environmentally sound, and self-perpetuating. A series of policies have been implemented in the Swiss Alps over the past 60 years that have sustained mobile pastoral systems, have conferred tangible benefits on pastoralists, and have contributed significantly to conservation of biodiversity and to maintaining environmental quality (Box 10).

Box 10: Sustainable development of Alpine pastoralism in Switzerland^{xviii}

Swiss support for sustainable development of pastoral regions began in 1944 when the Report by the Federal Council on the Constitutional Basis of the New Agriculture Legislation not only granted subsidies for mountain agriculture (a long neglected sector) but also legislated on the size of individual farms, ensuring that they were large enough to enjoy economies of scale and conserve biodiversity. This led to the development of mountain agriculture and improvement of marketing for mountain agricultural products while creating a balance between the economic development and conservation of the environment. Development was reinforced by the 1951 Agriculture Act, which granted subsidies to farmers in mountain areas, enabling them to introduce further improvements in land-use and livestock management and develop the traditional cheese industry which in turn translated into improved mountain economies, creation of job opportunities, increased tourism and preservation of the mountain ecology.

Subsequent revisions of the Agriculture Act have sought to strengthen the economic competitiveness of mountain regions, facilitate the exploitation of their potential, conserve their socio-cultural features, guarantee their sustainable development and strengthen cooperation between mountain municipalities, sub regions and regions. Though it doesn’t directly devolve powers to the local communities, it devolves power to the local authorities/cantons who in turn work together with the local communities. There is also a deliberate effort to invest in pastoral areas to encourage pastoralists to continue living in such areas. This has led to improvement in pastoral livelihoods and created tourism opportunities and markets for pastoral products.

Swiss mountain policy aims at both the protection of nature and securing people's right to socio-economic development and is reflected in federal and cantonal laws. This policy together with the Federal Act on Aid to investment in Mountain Regions (901.1 of 1997) aims at ensuring that the environment is conserved and a symbiotic relationship between the society, economy and the environment is maintained. It is also very much reflected in the International Alpine Convention that aims at the protection and sustainable development of the Alpine Region.

INTERNATIONAL POLICY INFLUENCE

There are numerous international conventions, agreements and framework policies that could have a bearing on pastoral environments, deliberately or inadvertently, and this study does not have the scope to examine the list exhaustively. This section highlights two of the International Environmental Framework Conventions that were created at, or evolved out of, the "Earth Summit" (the United Nations Conference on Environment and Development) in Rio de Janeiro in 1992, which have the explicit aim of protecting and improving the environment: the United Nations Convention to Combat desertification and the United Nations Convention on Biodiversity.

The Earth Summit and the Brundtland Commission

The Brundtland Commission, formerly the World Commission on Environment and Development (WCED), was convened by the United Nations in 1983 to address growing concern about the accelerating deterioration of the human environment and natural resources and the consequences of that deterioration for economic and social development. The report of the Commission^{lxxx}, also called the Brundtland Report, places emphasis on the importance of sustainable development and the change of politics needed for achieving that. The definition of sustainable development used in the report is still widely cited: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

The Brundtland Report was highly influential in raising awareness of the importance of traditional knowledge in natural resource management:

Indigenous communities are the repositories of vast accumulations of traditional knowledge and experience. Their disappearance is a loss to the larger society, which could learn a great deal from their traditional skills in sustainably managing very complex ecological systems. It is a terrible irony that as formal development reaches more deeply into rain forests, deserts and other isolated environments it tends to destroy the only cultures that have proved able to thrive in these environments.

The United Nations Conference on Environment and Development in Rio de Janeiro in 1992 followed on from the Brundtland report with its emphasis on the role of indigenous peoples and their role in natural resource management^{lxxx}:

[Indigenous peoples'] ability to participate fully in sustainable development practices on their lands has tended to be limited as a result of factors of an economic, social and historical nature. In view of the interrelationship between the natural environment and its sustainable development, and the cultural, social, economic and physical well-being of indigenous peoples, national and international efforts to implement environmentally sound sustainable development should recognise, accommodate, promote and strengthen the role of indigenous people and the communities.

The Convention on Biological Diversity was adopted during the Earth Summit in 1992 and makes clear recommendations for the role of indigenous knowledge in protecting biodiversity, as discussed below. Also at the Summit, the UN programme "Agenda 21" was adopted, which led to the formation of the Convention to Combat Desertification in 1994.

The UN Convention to Combat Desertification (UNCCD)^{lxxxi}

The United Nations Convention to Combat Desertification was adopted in Paris on 17 June 1994 and entered into force in December 1996, and has been ratified by 192 countries. The convention explicitly recognises the need for integrated natural resource management in pastoral lands (Annex I, Article 8, 3bi) and the importance of building pastoralists' capacity (Article 19). The UNCCD has also recognised pastoralism at its biannual review meeting in Bonn (CRIC3, 2005), which emphasised "support to mobile pastoralism in the drylands should receive a higher level of priority under the UNCCD, given pastoralists specific adaptive management practices and traditional knowledge of coping strategies in dryland conditions. Consideration of pastoralism and the sustainable use of rangelands should therefore be kept under review by the COP [Conference of the Parties] and its subsidiary bodies."

Mobile pastoralism is inextricably entwined with the Convention to Combat Desertification, and pastoralists make up a very significant part of the drylands population. Yet attitudes towards pastoralism, and its role in combating desertification, are highly divergent between signatory countries. Differences in national policy between signatory governments demonstrate the striking polarisation of perceptions of the role of pastoralism, which has profound implications for the success of this Convention. Clearly there are a number of governments that are inclined to accept the role of pastoralism in preserving the drylands, given the show of support at the UNCCD Eighth Conference of the parties (COP 8) in Madrid for WISP's recommendation that the focus of the convention should shift from "ranching" to "rangelands and sustainable pastoralism", and the Convention is in a position to play a leading role in promoting pastoralism as a tool for reversing land degradation within the strategies of signatory countries.

How does the UNCCD impact on pastoralists?^{lxxii}

The main instruments for implementation of the Convention to Combat Desertification are the National Action Programmes (NAPs). These are intended to be designed from the bottom up and consider both ecological and societal factors, based on good

governance, integrated and participatory programmes, and national consultations with all groups of society. With the exception of Switzerland, which does not have any true dryland regions and therefore does not have a NAP on desertification, pastoralism and over-grazing are cited as causes of desertification in the NAPs of all the countries included in this study. However, the way over-grazing is represented, and the recommendations to deal with it, differ between countries. Mongolia and Tanzania provide an interesting contrast, in which the former country identifies over-grazing as the outcome of changes in management practice (Box 11), whilst the latter considers over-grazing to be the outcome of simply too many animals. The recommendations are therefore entirely different, with Mongolia's NAP recommending extension of grazing strategies (e.g. zonation of pastures, management of grazing reserves and rotational grazing), whilst Tanzania's NAP recommends destocking and settlement of pastoralists. As this study shows, the recommendation from Tanzania is unlikely to reverse degradation and is more likely to aggravate the current situation.

Box 11: Combating overgrazing in Mongolia: recommendations from the National Action Programme

According to the National Action Plan, Mongolia's national herd has remained remarkably constant over the years, even with an annual human population growth of about 1.5%. Scientific research suggests that the grazing lands are being exploited at their carrying capacity's level. Small increases in animal populations or changes in land-use patterns may therefore result in localized degradation. Such changes include the tendency to settle for more prolonged periods around infrastructural facilities, herding by salaried herdsman, and herding by inexperienced herdsman fleeing the cities where employment opportunities have been greatly reduced after the socialist era.

Animal husbandry is the most prevalent human activity in Mongolia that can potentially induce anthropogenic degradation. However, pastoralism-related degradation is not exclusively the result of over-grazing and reduced livestock movement. Other anthropogenic factors in desertification include vehicle-induced disturbance, cropping activities to supply fodder and hay to livestock, and providing livestock with drinking water^{lxixiii}.

Positive recommendations for promoting pastoral land management, as opposed to restricting pastoral land-use, are also presented in the NAPs of Sudan and Niger. Sudan has implemented a programme of "rotational deferred wet season grazing system" with groups of pastoralists and has promoted the technology of rest-rotation grazing whilst Niger's NAP recommends the creation of transhumance corridors and the delimitation and protection of pasture areas. These strategies appear to be founded on the intention to support pastoralism, but a more critical appraisal is needed to both confirm the technical and social relevance to pastoralists of each country, and to assess the extent to which pastoralists have been consulted in formulating these strategies.

Tanzania's NAP presents a broad array of recommendations, many of which could support sustainable pastoral development, including basing future action against desertification on the traditional practices of the pastoralists, developing comprehensive land-use plans to cater for the requirements of all land-users, and legitimising movement of livestock based on negotiations and social contacts between leaders and communities involved. Success in the implementation of these plans may be contingent on improving the participation of communities, which the NAP recognises as being inadequate and a constraining factor.

Recognition of the importance of indigenous knowledge is a feature in the NAPs of most of the countries in this study, including Sudan, Tanzania, and Niger, which recommends "promotion and popularization of endogenous technologies and valorisation of local knowledge". None of the NAPs go to the next step of recommending support for the institutions that enable pastoralists to exploit that knowledge, for example the customary institutions for resource management. However, Mongolia's NAP does present the recommendation to develop local-level institutions for pasture management, which is consistent with the successful results presented in the country case study for WISP.

Securing land tenure in pastoral areas is mentioned in some of the NAPs of countries in this study, including Tanzania's, which states that the "present land-use tenure system demotivates land-users from conserving natural resources" and recommends to "expedite action to put all land in Tanzania under customary and statutory law". Niger's NAP, as stated above, recommends delimiting pastoral grazing lands, and recognises that agriculture and pastoralism, as sub-components of the reform, can be complementary (fodder, fertility and energy), but often end up in competition for land (extension of farming lands and subsequent conflicts between crop farmers and livestock herders).

The NAP from Niger raises one of the key messages of this study: that desertification control and natural resource management are not sectoral but must take into account the social, economic and ecological development conditions. Desertification control and natural resource management must also be foreseen from the angle of poverty reduction. However, in a country where livestock production represents 12 to 16% of the GDP and is the second source of export earnings, it is crucial to distinguish between the different livestock development strategies, some of which are consistent with sustainable land management, and others which may be less environmentally sustainable.

The NAPs from these six countries do not appear to be fundamentally hostile to pastoralism, and national pastoralist institutions could gain from engaging with the NAP process to ensure that they remain relevant to, and owned by, pastoralists. The NAP process is country-driven, from the launching of the preliminary activities (awareness raising, studies, participatory workshops) through to the validation of the NAP through a national forum, and the UNCCD Secretariat may be consulted during the workshops or forums, for example to advise on issues of participation, partnerships, and stakeholders roles and responsibilities. However, if

national or international agencies wish to influence a country NAP, they need to engage directly with the lead agency (usually the Ministry of the Environment) in each country. This poses obvious challenges for the UNCCD Secretariat in providing technical input to the NAP, setting minimum standards, improving situation analyses, challenging bad practice or ambiguities, or for overcoming inconsistencies in the NAPs.

The Global Mechanism (GM) is a subsidiary body of the Convention, mandated to "increase the effectiveness and efficiency of existing financial mechanisms...[and]...to promote actions leading to the mobilization and channelling of substantial financial resources to affected developing country Parties" (Article 21). The GM is housed in IFAD, and has used this relationship to promote mainstreaming of the NAPs in donor funding and country strategies and to promote priorities related to desertification. This direct link from the NAPs to development funds raises the importance of the NAPs, but it remains unclear whether there is any associated influence over the content of the NAPs, or whether donors such as IFAD accept the NAPs on face value. Although the GM and the CCD do not appear to have direct input to the NAPs, they nevertheless provide a means to demand accountability, particularly in the inclusiveness of consultations at country-level^[xxiv].

The extent to which the UNCCD impacts on pastoral lands depends on the degree of engagement of governments with pastoralists, and with pastoral civil society. This can be improved through more proactive efforts from pastoralist civil society and greater efforts of government to consult with pastoralists directly. Some national governments need stronger technical guidance over the role of pastoralists in combating desertification and how this can be promoted: in particular how to address issues of governance and land tenure that are crucial for success. Governments also need greater exposure to the importance of the social solutions to desertification, which must often take precedence over technical solutions.

The UN Convention on Biodiversity (UNCBD)^[xxv]

The Convention on Biological Diversity (CBD) is an international treaty to sustain the diversity of life on Earth that was opened for signature at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June 1992 and entered into force in December 1993. The triple principal objectives of the Convention on Biological Diversity are: the conservation of biological diversity; the sustainable use of its components and; the fair and equitable sharing of benefits arising from its utilisation. Currently, there are 190 Parties to the Convention, each represented by so called primary Country National Focal Point (NFP), who is usually a government employee from the respective Environmental Ministry.

Although the Convention does not place much emphasis on pastoralism, in essence it strongly supports traditional livelihoods as a mechanism to protect biodiversity. The convention clearly highlights the role of indigenous communities and the importance of protecting traditional knowledge especially through its provisions on traditional knowledge and customary use of biological resources in the articles 8 j) and 10 c) respectively (see Box 12). The Convention also has a number of thematic work programmes, of which those on Dry and Sub-humid Lands, Mountain Biological Diversity and the Ecosystem Approach are particularly relevant to pastoralism.

Box 12: UNCBD and Traditional Knowledge, Innovations and Practices^[xxvi]

Article 8J of the UNCBD makes explicit mention of the role that traditional knowledge plays in sustainable development, and recognises that most indigenous and local communities are situated in areas where the vast majority of the world's genetic resources are found. The Convention recognises that biological diversity has been created and managed sustainably for thousands of years by indigenous and local communities, and that they implement practices that have proven to "enhance and promote biodiversity at the local level and aid in maintaining healthy ecosystems". Article 8J goes further in recognising that the "skills and techniques [of indigenous and local communities] provide valuable information to the global community and a useful model for biodiversity".

"There is also a broad recognition of the contribution that traditional knowledge can make to both the conservation and the sustainable use of biological diversity, two fundamental objectives of the Convention". For this reason the Conference of the Parties to the Convention established a working group specifically to address the implementation of Article 8 (j). Representatives of indigenous and local communities have been invited to participate fully in the working group on traditional knowledge and a fund has been set up to facilitate participation of indigenous and local communities in Convention meetings.

As part of a programme of work addressing the commitments embodied in Article 8 (j) and other provisions of the Convention dealing with traditional knowledge, Governments and Contracting Parties have undertaken a series of commitments, including:

To establish mechanisms to ensure the effective participation of indigenous and local communities in decision-making and policy planning; To respect, preserve and maintain traditional knowledge relevant to the conservation and sustainable use of biological diversity; To promote its wider application with the approval and involvement of the indigenous and local communities concerned; and To encourage the equitable sharing of the benefits arising from the utilization of such traditional knowledge.

How does the UNCBD impact on pastoralists?

The main instruments through which the Convention on Biodiversity influences national policy are the National Biodiversity Strategies and Action Plans (NBSAPs). According to article 6 of the Convention on General Measures for Conservation and Sustainable Use, these national strategies, plans or programmes may be custom made for the CBD, or may be adapted from existing strategies, plans or programmes. Of the six countries in this study, three of them have NBSAPs on the UNCBD website

(Bolivia, Mongolia and Sudan). Niger's "Vision Nationale de la Diversité biologique" is available online and information for Tanzania and Switzerland has been taken from their National Reports on the Implementation of the Convention, also accessible from the UNCBD website.

Of the six countries in this study, all of them make mention of livestock and overgrazing as a factor in the loss of biodiversity. However, there are few recommendations for tackling overgrazing, with the exception of Mongolia's strategy, which proposes a role for livestock production in the protection of biodiversity and makes concrete recommendations to improve the sustainability of livestock production. Mongolia, The Sudan and Niger's Biodiversity Strategies all make explicit mention of the need to protect and conserve livestock biodiversity (domestic animal genetic resources) and Indigenous Knowledge receives prominent mention in all the documents except Switzerland's.

The Biodiversity Strategy of Bolivia makes scant comment on pastoralism, although it states that the areas of most significant biodiversity are the Puna, the Inter-Andean valleys, and the Chaco, which are all pastoral areas and which are affected principally by overgrazing, inadequate agricultural practices, and burning of pasture lands and forests. The impact of overgrazing is briefly mentioned in relation to the risk it poses to relatives of domesticated cereals in mountain areas. Indigenous knowledge also gets little mention, though the use of natural plants for feeding camelid species, and the importance of this for production of fibre, is mentioned.

Tanzania's latest Report on the Implementation of the Convention (April 2006) also makes little comment on pastoralism, other than to imply that livestock migration is one of the key factors that can adversely affect conservation and sustainable use of biological diversity. Considering the findings of this study, such analysis is likely to generate recommendations that aggravate biodiversity loss in a country with such a large coverage of rangelands. According to the UNCBD website, Tanzania's Biodiversity Strategy has incorporated traditional knowledge, innovations and practices of indigenous and local communities and has raised awareness and cooperation among stakeholders on traditional and indigenous knowledge for sustainable utilization of biological resources. Among the specific projects related to Article 8j was a series of case studies of the Maasai, Barabaig and Hadzabe communities on their interaction with the surrounding ecosystems, though there are no details of how this is being used to conserve biodiversity.

Mongolia's NBSAP identifies overgrazing around settlements, where livestock mobility is constrained and where urban dwellers keep increasing numbers of animals, as a major cause of biodiversity loss. Significant habitat destruction and erosion was also caused in the aftermath of the "crop-land" program of the 1950's. Where pastures were taken out of production, grazing capacity has reduced and additional pressure has been placed on remaining pasturelands. The Country Strategy recognises that "grazing of large herds of yak, horses, cattle, sheep, goats and camels has played a large role in determining the vegetation cover and species composition of the grasslands" and is explicit on the importance of promoting traditional forms of livestock husbandry as a means to conserving biodiversity. The Country's action plans include promoting the revival of traditional grazing patterns and ensuring that "the best of traditional and modern grazing management are used". Mongolia's Biodiversity Strategy includes provision for 'Limited Use Zones': Protected Areas where traditional livestock grazing is allowed.

Biodiversity loss in The Sudan is attributed to recurrent droughts and population growth over the last three decades, particularly in the semi-desert and savannah ecological zones, which has led to unsustainable land-use practices. Livestock population growth is cited as a factor in biodiversity loss, though livestock populations are quoted to be kept in check by the recurrent droughts, and the significant loss of tree species in the drylands may be attributable not to livestock keeping but to reliance on non-livestock incomes. The National Biodiversity strategy recommends legislative protection of pastoralist rights to biological resources and protection of their indigenous knowledge, practices and technologies.

Like The Sudan, Niger's Biodiversity Strategy (the National Vision) proposes measures for improving biodiversity conservation in pastoral areas that include promoting and developing pastoralism. Recommendations include boosting local economies through investment in and development of traditional livestock products, increasing the opportunities for livestock keepers to capture the benefits of biodiversity conservation, reducing conflict and resolving land disputes, and promoting livestock keeper associations. However, the National Vision also recommends the intensification of livestock production, and there is an underlying assumption that this will lead to reduction in livestock pressure on pastoral lands. This recommendation is founded on the assumption that livestock population is the cause of overgrazing, whereas the reality may be that overgrazing is the outcome of intensification and sedentarization: the measures that the National Vision espouses.

RECOMMENDATIONS FOR POLICIES TO SUPPORT SUSTAINABLE PASTORALISM

Securing pastoral land tenure and promoting inclusive approaches to natural resource management

A fundamental starting point to enable pastoral custodianship of the drylands is to secure their land tenure and other resource rights. The current discourse on communal land rights, particularly in Africa, is providing plenty of examples of how such moves can be supported by policy and law. However, securing land rights in most pastoral societies is tightly inter-linked with promoting customary institutions (see the following recommendation), and effective, formalised communal tenure will rely heavily on those institutions. It is critical that communal tenure is afforded equal recognition in law as private and other forms of tenure, so that pastoralists' tenure is truly secure. At the same time, it is crucial that issues of inequity that exist in many customary institutions are addressed, such as the rights of women to use, own and inherit resources.

Equitably securing pastoralists' tenure depends on enabling the wider society to understand their rights and responsibilities as citizens, providing avenues for dispute settlement that satisfy customary and formal institutions, and providing access to legal resources. Pastoralists, the practitioners of pastoralism, need protection from appropriation of their rights to resources by non-practicing "pastoralists", or absentee herd-lords, who may be better educated and better politically connected. Interim measures may also be needed from some governments to protect pastoral territories whilst the necessary capacities are built amongst pastoralists to develop appropriate tenure arrangements and whilst acceptable legal frameworks are developed.

Sound management and utilization of land-based resources hinges on pastoral communities being made responsible and accountable for the resources they use. This can only be achieved through the enactment of policies and interventions that facilitate:

1. Restoration of community control over these resources;
2. Acceptance of ecologically sustainable land boundaries, and where necessary, transboundary resource access;
3. Strengthening of local leadership structures and ensuring that they are accorded the power of regulating access, control and management of resources;

Strengthening local governance

In many pastoral societies, customary institutions play a crucial role in governing natural resource use, in enabling mobility, in managing conflict and in negotiating resource use rights. However, the extent to which these institutions have been legitimised in the eyes of government varies greatly between countries. The on-going process of decentralisation in many countries may create more opportunities for pastoral institutions to work more closely with government and achieve mutually agreed goals, and in places where these institutions have already been enabled, pastoral communities have observed improvements in natural resource management.

Engagements with customary institutions, whether by government, Civil Society or other actors, should be made in the understanding that these institutions are dynamic and they continuously change, and engagement with new institutions and agencies contributes to that change. Poorly informed consultations with an unrepresentative group can have a particularly distorting effect on the way these institutions function, for example, overt consultation with elders and neglect of the rights of women can lead to a shift in internal power relations and could damage the very functions that the engagement seeks to develop^{lxvii}. The role of government and other actors should be to provide a framework within which customary local institutions and rules can regulate everyday economic and political affairs and the State needs to promote greater participation and accountability within local government decision making.

Improvement in local governance can be enhanced as a result of increased education and greater awareness by pastoralists of the functioning of the State. Although there are many examples in the literature of harm done by 'pastoralist elites', these educated and connected individuals can also play a very positive role in connecting communities and government, and as communities become more empowered they are able to exert more influence over which 'elites' represent them. The process of empowering local communities is already underway in some countries and a growing number of government and non government initiatives are being developed in the recognition that conservation is most effective when it is achieved in partnership with the resource users rather than at their expense. A few principles of sound local governance include:

1. Customary institutions should represent all members of society and consultations with outsiders should ensure that all sectors of the community are consulted (women, youths, elderly, lower castes);
2. The entire process of developing collaboration between government and communities needs to be based on inclusive consultations to ensure ownership by all parties;
3. The roles of government in relation to the roles of customary institutions need to be clearly defined;
4. Collaboration should accommodate change rather than stifle it, and should be prepared to encourage change as appropriate, for example in the empowerment of women;
5. *Historic relations between different pastoralist groups and between pastoralists and non-pastoralists, particularly in areas of shared resource use, need to be factored into local (and possibly central) government structures.*

Promoting resilience of the pastoral economy

Pastoral economies are under continuous change, reacting to environmental exigencies, market forces, shifts in labour supply and changes in subsistence demands. Sustainable pastoral development requires support that enables pastoralists to adapt effectively to such drivers of change. This includes enabling pastoralists to adapt and improve their livestock-oriented livelihood, and also to adopt non-livestock centred sources of income that complement their livestock enterprise. Enabling pastoralists to adopt non-traditional income sources has the added advantage of equipping pastoralists to move out of the pastoral system when circumstances demand it, whether temporarily or permanently.

The role of economic diversification was not explicitly drawn out in the WISP country studies, but it is reasonable to infer that strengthening the resilience of the pastoral sector is critical to enable pastoralists to make effective management decisions and to sustainably manage their rangelands. However, introduction of new livelihoods, and poorly planned development of the existing livelihood, can generate new resource competition that poses a risk for sustainable land management. This may be the case where alternative livelihoods create a conflict of interests between private and communally managed land. It is also the case where changes to the livelihood portfolio compromise the environmental logic of pastoralism, for example tying up labour that is critical for transhumance, or removing key resources from the wider livestock production system.

In many pastoral lands, drought is a routine phenomenon, to which pastoralism has adapted over many centuries. However, there is concern, particularly in Africa, that this capacity to adapt has weakened and as a result pastoralists have become less able to cope with the shocks that characterise their system. This is increasingly important in the face of climate change, since pastoralists are amongst the most adaptable rural populations and could have the greatest resilience to climate change, but their resilience has been undermined by efforts to modernize their production system^{lxviii}. Where pastoralists struggle to cope with shocks, and with the ongoing changes that they experience, they may be more likely to adopt less sustainable practices for the management of their resources, as for example where herd sizes become too small to justify continued transhumance. At the same time, the loss of adaptive capacity has led to the adoption of unsustainable pastoral practices, such as over-reliance on charcoal production, which may reduce the overall productivity of the system and further impacts on pastoral poverty. Development planning and policy therefore needs to be designed to build on and improve pastoral risk management strategies.

If the sustainable future of pastoralism is to be secured, attention must be paid to environmental services and benefit capture. There are inherent environmental externalities of mobile pastoralism that deliver a range of services that are enjoyed by many people besides pastoralists. Yet frequently the attitude of conservationists is that pastoralism is inherently destructive to the environment, and the environment needs to be protected from pastoralism. The result has been the creation of many National Parks that exclude pastoralists. In some industrialised countries, the role of pastoralism for creating and protecting High Nature Value is well recognised, and a variety of schemes have been devised to ensure that pastoralists capture some of the benefits of these environmental services, such as through investment in tourism. Lessons in benefit capture and promotion of environmental services need to be transferred so that pastoralists in developing countries can benefit more from their land management system, since this can help to ensure that pastoral development follows a sustainable trajectory.

Promoting resilience in the pastoral economy may be a critical way of enabling sustainable land management, and it requires a wide range of policy support and investment, including:

1. Diversification of pastoral livelihoods to incorporate both complementary and alternative sources of income;
2. Increasing equitable access to markets, domestic and international, for the full range of goods and services produced by pastoralism;
3. Technical innovations to bolster the rangelands management capacities of pastoralists, which build on the adaptive capacities of pastoralists in the face of climate change;
4. Provision of financial services and products that are tailored to the needs and resources of pastoralists;
5. Reform of macro economic policy and international trade rules to reduce obstacles to marketing.

REVERSING DESERTIFICATION THROUGH SUSTAINABLE PASTORALISM

The principle conclusion from this series of case studies is that land is being managed more sustainably in a number of rangeland regions through a process of re-enabling mobile pastoralism, and most notably through policy support for communal land management and customary decision making, although the precise nature of the environmental improvements is poorly measured. In this regard, conservation outcomes are benefiting from development processes of decentralisation and empowerment, and the twin goals of sustainable development and conservation are becoming increasingly compatible. The conservation sector is changing and there is growing attention to issues of equity and rights of local communities, and to the policies and practices that can integrate environmental sustainability with sustainable development, which creates opportunities for rural communities to capture additional benefits from their sustainable resource management practices, and which creates avenues to outweigh the perverse incentives that encourage unsustainable land management.

Sustainable land management, in all the case studies, is based on customary grazing practices and arrangements rather than imported grazing models. Reversing land degradation in pastoral lands therefore does not necessarily require the development of new technologies or management innovations, but it often requires acceptance that mobile pastoralism is valid and that pastoralists have existing knowledge and skills that can be used. Imported land-use models have been tried and have often failed, and in many countries pastoralists are still recovering from the damage that those imported models have done to both their environment and to their customary arrangements.

Enabling sustainable resource use by pastoralist communities may provide the most cost effective option for conservation in many countries and may be the route to ensure that conservation is practiced across the landscape, and not only in the isolated pockets created by protected areas. In developing countries, the cost of "fortress conservation" can be significant when opportunity costs associated with lost livelihoods are taken into consideration. As an example, the opportunity cost of wildlife conservation in Kenya's protected areas, 70% of which are in the drylands, measured in terms of forgone livestock and agricultural production, is around US\$203 million per year whilst revenues from wildlife tourism and forestry in those protected areas contributes only around US\$42 million per year to the national economy^{lxix}.

Recognising the intrinsic environmental benefits of pastoralism offers a route towards what could be considered as Sustainable Conservation: conservation that promotes both development and equity. In this view of conservation, local communities conserve

natural resources for the sake of their own livelihood, complemented by payments for the externalities of their livelihood that are enjoyed by other users, such as tourists. These approaches to sustainable land management are being increasingly and successfully adopted in a number of countries, and experience from Europe suggests that they may be critical for maintaining rural populations in remote and marginal areas where animal impact needs to be maintained.

This study has highlighted some of the positive environmental outcomes that have occurred as a result of policy changes and has shown that policies which broadly enable pastoralism or pastoralists can foster sustainable land management and can lead to environmental improvements. A wide range of policies that are seemingly unrelated to the environment may therefore influence sustainable land management, and particularly those policies that strengthen the capacities of pastoralists. For example, though it may be hard to clearly define the link between education or health and desertification, it is less difficult to illustrate how health and education policies strengthen pastoral livelihoods^{xxx}, and the link between livelihood resilience and sustainable land management has already been made.

The Sudanese case study provides an important lesson for advocates of sustainable pastoralism, that securing a policy change in itself is not sufficient. Once a policy is in place, continued pressure is needed to ensure that government allocates sufficient funds for the policy's implementation. In addition to funding policy implementation, further advocacy may be needed to suppress the disincentives of conflicting policies, or to ensure that supportive measures are put in place for the implementation of a policy. Securing individual policy change should perhaps not be an objective in its own right, but should be an indicator of a more profound change in the attitudes of development planners in government and in other institutions. A more appropriate advocacy objective may be to persuade government to adopt a pro-pastoralist political agenda in which support for pastoralism becomes an overarching policy goal.

Reflections on the methodology and on knowledge management

This study has successfully identified a number of potential policy drivers of positive environmental outcomes using a methodology that has enabled national pastoralist advocates to engage in advocacy at local, national and international levels. The country studies demonstrate a rich understanding of the social and political context in which pastoralists live, and through which their land management is constrained or enabled. However, there is a lack of consistency in the validation of the precise details of the environmental services that have emanated from pastoralism, and improving that validation is an important area of future work for WISP and its partners.

According to the UNCCD, land is the terrestrial bio-productive system and land degradation is the loss of this service^{xxxii}. The Millennium Ecosystem Assessment concludes that the definition of biological productivity and economic benefits therefore depends on users' priorities^{xxxiii}. This means that it is valid and necessary to base an assessment of degradation of rangelands on the land-use objectives of pastoralists, but for the sake of interpretation by outsiders it is important to be explicit about what degradation means to pastoralists and what indicators they use. WISP should therefore support development of practical methodologies for understanding and communicating the indicators of rangeland health that pastoralists apply to their environment. The methodologies should also examine the management mechanisms that pastoralists use to respond to those indicators, and this in turn will improve the targeting of interventions that are intended to support sustainable land-use practices.

This study was primarily designed to test one of the fundamental assumptions of WISP: policies which support pastoralism will lead to positive environmental outcomes in the rangelands. The study did not try to assess which policies were more effective, or which policies contributed to the opposite outcomes. The study simply provides a qualitative insight into the role policy could play in enabling pastoralism, and of the role pastoralism can play in improving rangeland environments. It is important therefore to note that the absence of key policies from country studies does not imply their non-existence. Future studies should aim to be more ambitious in their scope, conducting a more exhaustive review of national policies that impact on pastoralism, and exploring the role of international conventions on the local environment more thoroughly.

WISP is a knowledge management programme and the aims of this study were therefore multiple: to capture and share recent learning, to develop advocacy, and to build capacities for learning, analysis and advocacy. The extent to which this has been achieved at country level is being assessed as part of the ongoing programme monitoring and will inform future project design. The impact at global level has been generally positive: for example, the findings of these studies have been presented by the country partners at UNCCD meetings, notably the Fifth meeting of the Committee for the Review of the Implementation of the Convention (CRIC5) in Buenos Aires, March 2007 (Box 14). The work is feeding into ongoing global advocacy, and this creates new opportunities for national pastoralist agencies to influence their governments and convince them to domesticate these international mechanisms.

Box 14: Statement by study partners and WISP to the UNCCD CRIC5

UNCCD secretariat was recommended to make an addition/clarification/amendment to the Bonn declaration to:

- Acknowledge the importance of mobile pastoralism for drylands management and to refer to livestock systems, rather than only ranching systems. Mobile pastoral systems have been clearly proven to enhance rangelands management and are economically more productive in drylands environments than other livestock production systems. In some countries, ranching systems have been promoted at the expense of mobile pastoral systems and have led to land degradation and livelihood failure. Therefore it is important to rebalance the Bonn declaration by highlighting the important role that mobile pastoralism has traditionally played in drylands management, and the important role that it still can play.
- Clarify the difference between common land and communally managed lands, and recognise that most pastoral lands have been communally or privately managed, except where a management vacuum has been created. Pastoralism has been practiced in many of the world's drylands for centuries and many drylands environments are grazing-dependent. Pastoralists have a rich understanding of the environments that they manage and have developed sophisticated systems of resource management that protect biodiversity. Customary institutions have traditionally managed these environments, but in many cases the institutions are under pressure. The effectiveness of pastoral traditional knowledge and management systems needs to be recognised, and wherever new institutional arrangements emerge, they should accommodate existing knowledge.
- The recommendations were supported by a number of government delegates, and as a result the CRIC5 Chairman has recommended that the Committee for Science and Technology (CST) of the UNCCD recognizes the importance of pastoralists for effective rangelands management and adopt pastoralism as one of its priority areas.

National level policy dialogue has been less forthcoming as a result of this project and greater attention is needed to specific advocacy training for some partners, as well as more strategic definition of partners that are actively engaged in, or interested in, pastoralist advocacy. As a global network, WISP is increasingly in a position to identify such partners and ensure that partnership with different agencies has the right emphasis, for example ensuring engagement of government institutions in country studies as a mechanism to open policy dialogue for NGOs that do not normally engage in advocacy work.

This study has provided valuable examples in support of one of the core arguments of WISP and follow-up studies would be appropriate to further test the argument and to improve the assessment of environmental impact. Future work on this issue should look at adding new country studies, building on the recommendations outlined here. There should also be discussions with the country partners in this study about the value of taking their studies to a higher level, bringing in government collaborators for example, or improving the use of indicators of environmental change.

CONCLUSION

Sustainable land management is crucial for pastoral development and pastoralists should be amongst the primary beneficiaries of any improvements in the way drylands are managed. Many pastoralists are very aware of the importance of sustainable land management to the sustainability of their livelihoods, and their approach to land management reflects this understanding. Where pastoral land management has become unsustainable it usually reflects radical changes to pastoralism that constrains the way they use their knowledge of the environment. The experiences in this study, and the statements that are made in a number of the National Desertification Action Programmes and National Biodiversity Strategies, reflect an increasing acceptance of indigenous knowledge as an asset for enabling sustainable land management. This is a crucial departure from development paradigms that have held sway in the past, in which pastoralists have been assumed to be irrational land-users who present an inherent risk to their rangeland environment. It is critical that the mutual benefits of economic development and dryland conservation continue to inform planning, and that planners keep in mind that any effort to achieve conservation goals which fails to also support rural development in the wider landscape is likely to be self-defeating.

The successes that have been portrayed in this study highlight a significant change in thinking about drylands environments and drylands management strategies. The major change in thinking about the drylands that took place during the 1990s has enabled some practitioners and policy makers recognise the importance of flexible management strategies and to promote the adaptive skills of mobile pastoralists. However, the change in thinking, and the change in policy and practice that it implies, remains to be fully accepted in some quarters. As a result there is a dissonance in some development thinking, wherein the knowledge and skills of pastoralists are recognised, yet pastoralists are still considered to act irrationally, for example in hoarding livestock at any cost, and therefore they are not trusted to manage their resources according to their production goals. The persistence of the belief that over-grazing automatically means there are too many animals suggests that some environment strategies will continue to advocate de-stocking, and will therefore remain at odds with the land-use objectives of many pastoralists.

There is need for a clearer discourse on what over-grazing really means in pastoral lands, and greater recognition that it is usually an outcome of too much time spent in one place, rather than too many animals *per se*. For this reason over-grazing is a phenomenon found around water points, markets and settlements, but is not generally noticed in open rangelands. Environmental policy and planning should make greater efforts to understand the land-use goals of pastoralists and to accept the knowledge and institutions of pastoralists that will enable them to achieve those goals. In this respect, most national environmental strategies need to go one more step, beyond recognising the importance of indigenous knowledge to also recommend empowerment of pastoralists to use that knowledge.

Empowering pastoralists to manage their environment more sustainably is not an issue for a single policy but is a cross-cutting issue that has to influence a range of policies, government departments and non-government institutions. It must be embedded in development as well as environment projects, and it needs to be a central pillar even of emergency relief work if such interventions are not to undermine the long-term sustainability of the communities they assist. At a global level, empowering rural communities (rather than only permitting their participation) needs to be a guiding principle of institutions like the UNCCD and UNCBD and should influence National Action Programmes and Biodiversity Strategies, which would ensure greater ownership of these strategies at grassroots level and is ultimately indispensable for the success of the strategies.

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ANNEX 1: PARTNER DETAILS

Country	Partner	Contact
Bolivia	SAVIA	savia@entelnet.bo
Mongolia	The Initiative for People Centered Conservation (IPECON)	http://www.nzni.org.mn/
Niger	L'Association pour la Redynamisation de l'Elevage au Niger	aren@intnet.ne
Sudan	The Pastoralist Society Sudan	http://pas1.org/
Switzerland	The European Forum for Nature Conservation and Pastoralism (EFNCP)	http://www.efncp.org/
Tanzania	The Pastoralist Indigenous NGO Forum (PINGOS)	http://www.policyforum-tz.org/node/5319

¹ Additional details on these partners is included in Annex 1.

ⁱⁱ Hardin 1968

ⁱⁱⁱ Niamir-Fuller 1999

^{iv} Swift 2003

^v Scoones 1995

^{vi} Western & Finch 1986

^{vii} Savory 1999, Voisin 1959

^{viii} Fratkin and Mearns 2003

^{ix} Frank and McNaughton 1993

^x Mearns 1996

^{xi} McGahey et al. 2008

^{xii} Pastoralism is not practiced exclusively in the drylands, but also in other pasture systems such as mountain ecosystems. Mountain systems display many similarities with the drylands. Between them, highland and dryland regions account for the majority of pastoral lands.

^{xiii} Little 1996

^{xiv} Rodriguez 2008

^{xv} FAO 2001

^{xvi} Transhumant pastoralism is practiced in France, Spain, Italy, the UK, Sweden, Greece, Romania, and other European countries

^{xvii} White et al. 2002

^{xviii} Zeidler and Mulongoy 2003, White et al. 2002, Bonkougou and Niamir-Fuller 2001, World Bank 2000

^{xix} Behnke et al. 1993

^{xx} Niamir Fuller 1999

^{xxi} Vetter 2005

^{xxii} Behnke et al. 1993

^{xxiii} Ellis and Swift 1988

^{xxiv} www.millenniumassessment.org/

^{xxv} Niamir-Fuller 1999

^{xxvi} Prins 1992

^{xxvii} Little 1996

^{xxviii} Lamprey and Waller 1990, Little 1996

^{xxix} Bates and Conant 1980

^{xxx} Kazakhstan Community Based Adaptation Country Programme Strategy 2008. UNDP GEF, Almaty.

^{xxxi} Mearns 1996

^{xxxii} Voisin 1959

^{xxxiii} Lamprey and Waller 1990

^{xxxiv} ILRI 2006, Gichohi et al. 1996

^{xxxv} Homewood et al. 2001

^{xxxvi} Swift et al. 1996

^{xxxvii} Herlocker 1996

^{xxxviii} Little 1987 cited in Swift et al. 1996

^{xxxix} Kilongozi et al. 2005, Barrow 1996

^{xl} Behnke et al. 1993

^{xli} McGahey et al. 2008

^{xlii} McGahey et al. 2008

^{xliii} Harriss et al. 1995

^{xliiv} McGahey et al. 2008

^{xli v} Behnke et al. 1993

^{xli vi} <http://www.fao.org/Wairdocs/ILRI/x5499E/x5499e04.htm>

^{xli vii} Maxwell 2003

^{xli viii} Ole Nasha 2007

^{xli ix} Gandou Zakara and Harouna Abarchi 2007. Evaluation des impacts des politiques pastorales au Niger : Expériences du Niger en matière d'application de la législation nationale en faveur de la mobilité des pasteurs et des droits de circulation du bétail. Case Study for the World Initiative for Sustainable Pastoralism.

^l Horowitz and Jowkar 1992

ⁱⁱ Gandou Zakara and Harouna Abarchi, *ibid.*

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- ^{lii} Pastoral Society Sudan 2007. Sudan's Policy towards Traditional Livestock Migration Routes: evaluation of the Intervention of the Administrative Committee for Stock Routes Delineation-Darfur States. Case Study for the World Initiative for Sustainable Pastoralism.
- ^{liii} Edward Porokwa, Anna Eusebi, Andrew Msami 2007. A study on the Impact of National Policies Processes on Pastoralism in Tanzania. PINGO Case Study for the World Initiative for Sustainable Pastoralism.
- ^{liiv} McCarthy et al. 2000
- ^{liv} Undargaa Sandagsuren 2007. Community Organization: a policy level study of "community organization" as a grass-root institution that contributes to strengthen co-management of sustainable pastoralism and nature conservation. NZNI-IPECON Case Study for the World Initiative for Sustainable Pastoralism.
- ^{lvi} Porokwa *et al. ibid.*
- ^{lvii} SAVIA 2007. Politicas de patoralismo de camelidos en las tierras altas de Bolivia. Case Study for the World Initiative for Sustainable Pastoralism.
- ^{lviii} Undargaa Sandagsuren *ibid.*
- ^{lix} Undargaa Sandagsuren *ibid.*
- ^{lx} Jefatura del Estado 1995
- ^{lxi} Raquel Casas Nogales y Pablo Manzano Baena 2007. Valoración Económica del Pastoralismo en España. Report for the World Initiative for Sustainable Pastoralism.
- ^{lxii} Manzano and Malo 2006
- ^{lxiii} Pastoral Society Sudan 2007. Sudan's Policy towards Traditional Livestock Migration Routes: evaluation of the Intervention of the Administrative Committee for Stock Routes Delineation-Darfur States. Case Study for the World Initiative for Sustainable Pastoralism.
- ^{lxiv} Pastoral Society Sudan, *ibid.*
- ^{lxv} Gandou Zakara and Harouna Abarchi 2007. Evaluation des impacts des politiques pastorales au Niger : Expériences du Niger en matière d'application de la législation nationale en faveur de la mobilité des pasteurs et des droits de circulation du bétail. Case Study for the World Initiative for Sustainable Pastoralism.
- ^{lxvi} CRESA, 2006.
- ^{lxvii} Scoones 1995, Niamir Fuller 1999.
- ^{lxviii} Jean-Pierre Biber 2007. The SAMI project – a project for the marketing of mountain agriculture products in Switzerland. European Forum on Nature Conservation and Pastoralism (EFNCP). Case Study for the World Initiative for Sustainable Pastoralism.
- ^{lxix} World Commission on Environment and Development 1987
- ^{lxx} United Nations Conference on Environment and Development 1992. Adoption of agreements on environment and development, Section III, Strengthening the role of major groups. Agenda 21, Chapter 26. Recognising the roles of indigenous peoples and their communities
- ^{lxxi} <http://www.unccd.int/>
- ^{lxxii} All country-specific information in this section, unless otherwise stated, is taken from the relevant country NAPs:
 Niger – <http://www.unccd.int/actionprogrammes/africa/national/2000/niger-fre.pdf>
 Sudan – <http://www.unccd.int/actionprogrammes/africa/national/2006/sudan-eng.pdf>
 Tanzania – <http://www.unccd.int/actionprogrammes/africa/national/2000/tanzania-eng.pdf>
 Bolivia – <http://www.unccd.int/actionprogrammes/lac/national/1997/bolivia-spa.pdf>
 Mongolia – <http://www.unccd.int/actionprogrammes/asia/national/2000/mongolia-eng.pdf>
- ^{lxxiii} National Plan of Action to Combat Desertification in Mongolia, page 20
- ^{lxxiv} http://www.ifad.org/rural/learningnotes/ksf7/7_2.ht
- ^{lxxv} <http://www.cbd.int/>
- ^{lxxvi} <http://www.cbd.int/programmes/socio-eco/traditional/>
- ^{lxxvii} McGahey et al. 2008
- ^{lxxviii} Nori and Davies 2007
- ^{lxxix} Norton-Griffiths and Southey 1995, cited in Mearns 1996.
- ^{lxxx} For more information on appropriate models for education of pastoral populations, see the WISP report "Good Practice in Social Service Provision for Pastoralists", written by the Swiss Tropical Institute, 2008
- ^{lxxxi} The United Nations Convention to Combat Desertification, Part I, Article 1 (e), <http://www.unccd.int/convention/text/convention.php?annexNo=-1>
- ^{lxxxii} <http://www.millenniumassessment.org/>