



Pastoralists as Shrewd Managers of Risk and Resilience in the Horn of Africa

Pastoralism is an adaptation to risk. In Africa, pastoralism emerged 5000 years ago as sedentary cultivators responded to the increasing uncertainty of their environment in the face of climate change. Pastoralism continues to survive, despite many constraints on its adaptive capacity and the many negative perceptions about pastoralism. Risk and vulnerability in pastoral landscapes arise from many factors such as drought, market fluctuations, bans on livestock trade, violent conflict or insecurity, disease and political shocks and poverty.

Pastoralists use various adaptive, and flexible risk management strategies and resilience enhancement mechanisms to maintain food and livelihood security, but these are breaking down in the face of growing human populations and land alienation. Yet pastoralism is vital to ecosystem health and integrity in the drylands and if this role is to be maintained, a number of important policy changes are needed:

- **Policies informed by the logic of pastoral mobility and flexibility** - policy processes and development interventions should complement, rather than substitute, pastoralism and should be grounded in the understanding that mobile pastoralism is vital for the conservation, resilience and productivity of the rangelands;
- **Enhance capacity of indigenous coping strategies** - in light of recurrent droughts, schemes are needed (or need to be improved) for crisis management and drought preparedness that build on indigenous coping strategies, provide new options for risk management and ensure access to dry-season “rich-patch” grazing and water for livestock; and
- **Strengthen pastoral economy** - the pastoral economy should be strengthened by reducing the susceptibility of pastoralists to volatile terms of trade, increasing marketing opportunities and access, and developing alternative and complementary livelihoods for pastoralists and ex-pastoralists.



Pastoralism, risk and resilience

Pastoralism is highly compatible with conservation and makes the most of livestock production opportunities within variable and unpredictable rangeland ecosystems. Pastoral strategies of herd diversity, flexibility and mobility are rational and crucial for survival in risk prone environments and are based on the need to respond rapidly to changing climatic and vegetative conditions. Indigenous pastoral resource management systems are usually based on customary rules governing access to resources and control of resource use. They are adaptive responses that have evolved over time, often based on kinship or social classes that determine rights of resource access, and they are critical for the long-term management of risk in dry environments.

The rangelands of the Horn of Africa support a pastoral economy based mainly on milk production, although products such as meat, blood, hides and skins, and services, such as traction and transport, are also important. Livestock play a very important role in pastoral culture in terms of livelihoods, social capital, and an insurance against disaster. Pastoralists are more exposed to risks than their counterparts in areas of higher agricultural potential and because their lives are based on how they assess risk and uncertainty, they are more sensitive to natural changes than most other population groups. Pastoralists have great practical experience and rich knowledge of their environment and the ecological relations in drylands. They have a vast knowledge of plants and their food and medicinal purposes (human and animal), as well as of animal behaviour. This is borne from the necessity to be able to move their livestock safely, and make great use of the resources available.

The resilience of a rangeland ecosystem depends on the ability of the landscape to maintain water infiltration, water storage capacity, nutrient cycles, and vegetation. Resilience refers to the ability of a system to recover after a shock (drought, flood for example), and many pastoralist risk management strategies also enhance resilience. Resilience strategies are determined by presence of drought resistant forage and landforms that enhance water retention. Managing for resilience enhances the likelihood of sustaining development in changing environments. Enhancing resilience is the key to supporting adaptive capacity, which is the ability of a social-ecological system to cope with new and different situations without losing options for the future.

Managing risk and enhancing resilience

Pastoralists have well developed drought coping and risk management strategies (Box 1), but many have broken down due to lost access to riverine forest areas, removal of trees for charcoal, increased livestock population and overgrazing. Converting rich patch areas of vegetation for cultivation further compromises the sustainable use and integrity of the overall much larger land use system. Reducing the resilience by excessive tree cutting and clearing of natural vegetation, decreases the ability of the overall system to recover. Risk and resilience are critical for any management reaction to reduce vulnerability. Pastoralists have many strategies aimed at providing a continuous supply of food, which also avoids or minimizes risks to people and livestock, yet allows for sustainable environmental management. Some of these include:

Diversification of livestock species and breeds to reduce risk and as an insurance against major disease outbreaks. The different dietary preferences of domestic species allows for a better utilization of pastures and browse. By keeping more than one species of livestock, pastoralists can generate a wider variety of livestock products, use more of the available forage and different environmental niches, and generate livestock products in different seasons. Different breeds of livestock have different abilities to handle stresses of nutritional deprivation, climate and disease, and careful selection is practiced to maintain these adaptations. Maasai red sheep, for example, are known to be resistant to some intestinal worm parasites. Combining sheep and goats, which have complementary feeding habits (grazing/browsing), results in a higher rangeland carrying capacity than for single species flocks and small stock have the added advantage of being easy to exchange and sell in times of crises.

Box 1: Pastoralists risk management strategies at a glance

- Livestock Mobility:** mobility optimises the use of the range, using large & diverse ranges comprising wet, dry & drought time grazing areas managed as common property resources;
- Livestock Diversity:** diverse herds and flocks (grazers & browsers), reduces risk from disease, droughts and parasites;
- Maximizing Stocking Densities:** stock accumulation helps to ensure long term survival after drought stock loss.
- Redistributing Assets:** mutually supportive relationships and support networks are critical for coping with crises;
- Livelihood Diversification:** mitigating risk from drought may involve diversification into distant labour or trading markets;
- Herd Splitting:** herd splitting spreads risk and enables systems of strong social relations and security to be maintained;
- Use of Wild Foods:** households may gather provender in order to supplement reduced yields during droughts; and
- Opportunistic Cultivation:** rain-fed or flood recession agriculture is practiced to spread risk..

Mobility for risk management is critical as pastoralists have to move over the rangelands to obtain sufficient supplies of forage and water, to avoid disease outbreaks or because of social and political instability. For example, the Turkana in northwest Kenya move for distances of 20-50 km, 5-10 times a year. Mobility is the most efficient way of accessing resources that are fragile and variable both spatially and temporally. In arid lands, uncertainty is high, and the risks associated with production and survival are higher. The risk burden is too much for an individual to bear and common-property regimes are devised to share the risk and spread the burden. Mobility is a mechanism to access unevenly distributed rangeland resources in a most cost effective manner. It is a means to conserve the rangeland environment and is critical for pasture maintenance, improvement, and regeneration. Since dryland ecosystem productivity is spatially and temporally variable and, to a large degree, unpredictable, mobility enables better opportunistic use of resources. This includes moving to minimize the effects and impacts of droughts, and being able to use distant pastures, or those that are only seasonably available;

Dry-season grazing or “rich-patch” areas such as swamps, highlands and riverine areas are of critical importance, during dry seasons and droughts, to pastoralist risk management strategies. While, such areas are relatively small in size compared to wet season pastures, they provide forage and water until the coming of the next rains. This allows livestock to move back onto the wet season ranges. Grazing pressures on these areas may be regulated by restricting access at certain times of the year;

Maximizing stock numbers is a subsistence pastoral milk-based production strategy which requires large numbers of livestock. Such accumulation helps ensure long term survival of herds despite losses incurred during periodic droughts and disease outbreaks. Another reason for stock accumulation is that many pastoralists lack alternative means of investment. One of the main methods for self-insuring against risk is to accumulate food stocks and marketable assets. Here, pastoralists tend to respond to drought or crisis conditions in steps: risk minimization, risk absorption, and risk-taking to survive. During the risk minimization stage, pastoralists accumulate livestock and minimize the risk of loss. During the risk absorption stage, they undertake measures to sustain their most valuable animals, and market less valuable animals to buy food. In the stage of risk-taking to survive, pastoralists sell their most valued animals and/or migrate from their home areas;

Herd splitting, depending on species, maturity and reproductive condition, and pasturing them in different areas ensures that animals are herded in optimal habitats, and spreads the risk of loss through drought, disease and raiding. Reciprocal exchanges of animals help to ensure that one has animals all the time and pastoralists have complex systems of giving and loaning animals to relatives and friends. The logic here is that the more one gives to somebody in need the more one stands of getting something back in times of crisis. Ewoloto among the Maasai and Iribu among the Afar are systems of mutual assistance where relatives and clan members who lose livestock are helped to regain their pastoral status through contributions from others.

Redistribution of assets such as food, cash, animals, and labour, either on a reciprocal basis or from wealthier to poorer households, are vital mechanisms for pooling and reducing risk, and for maintaining mutually supportive relationships. Families can divide themselves into different settlements some members move to urban areas or villages, while other members maintain pastoralist lifestyles;

Diversification of income and resource pooling enables pastoralists to supplement their income from different sources such as the sale of livestock, charcoal production, increased sale of dairy products, and wage earning in urban areas. Families pool their livestock to market them. Their purchases are often divided amongst them, which reduces transaction costs incurred in transportation, holding pens, taxes and other expenses; and

Labour migration can help pastoralists to temporarily adapt to lower herd productivity caused by drought. Some members go elsewhere, to earn income, and help the family buy some of its food needs. There are possible negative effects, as it is the young men who do this, yet they are the most productive workers in the pastoral economy. In Kenya, for example the flow of migrants from the Borana economy meant that more distant pastures are no longer effectively used, leading to bush encroachment or invasion by neighbouring pastoral groups. Conversely areas close to Borana settlements are overused, leading to low herd productivity and localized pasture degradation.

Knowledge and institutions for managing risk

Early warning is a first key step towards effective mitigation and intervention, and involves tracking the rangeland environment in a predictive manner. While pastoralists in eastern Africa have the ability to describe their environment and recognize drought, they are often unable to utilize external early warning information in a predictive manner. Scientists have achieved little success in effectively tracking the rangeland environment in a predictive manner and early warning systems (EWS) instituted by national governments have focused more on crop production than on pastoralism. There are various indicators, which pastoralists use to track their environment, including livestock and wildlife quality, soil water retention and stability along with many indicators of vegetation condition.

Indigenous ecological knowledge is essential to a thriving of pastoral people, and represents experience acquired over generations to understand and predict environmental events, and manage for uncertainty upon which their livelihoods and survival depends. The critical role of the ecological knowledge of the pastoralist men and women, whether traditional or contemporary, is central and facilitates monitoring and interpretation of resource and ecosystem dynamics. This knowledge is part of pastoralist institutional memory, in terms of how to respond to environmental crisis, disturbance, and other changes. Indigenous ecological knowledge differs from “modern, scientific” knowledge in that it is more intuitive and holistic (as opposed to analytical and reductionist), spiritual (as opposed to mechanistic), and is based on empirical experience through trial-and-error (rather than systematic experimentation by experts).

Institutions for risk management, such as the Gurti in Somali, the Gadda in Borana, and the Medaa in Afar, are used to advocate for policy decisions to protect pastoralists’ interests. These institutions form the basis for risk spreading among pastoral groups and they ensure sharing of resources and insurance-type mechanisms to support those members who succumb to shocks. Traditional pastoral institutions are usually governed by elders with accumulated ecological knowledge and were created to safeguard the interests of the community. They are accountable to the community, of which they are part, while newly introduced institutions such as pastoral associations were primarily created to enforce government rules and regulations which may not necessarily be in the interests of pastoralists.

Biodiversity conservation in rangeland areas is more problematic than most when it comes to conserving or restoring biodiversity. In addition to the conservation of biodiversity for aesthetic, ethical, or psychological reasons, there are pragmatic reasons for conservation. Erosion of biodiversity may lead to vulnerability and risk, and alterations in nature's capacity to supply society with essential ecosystem services and support. This degrades people's relationship with their natural resources and ecosystems. Enhancing functional biodiversity is a key ecological strategy to promoting sustainability over space and time, and to reduce risk and enhance resilience.

Threats to pastoral risk management

Mobility is misunderstood by policy makers and development practitioners and has often been subsumed to the "Tragedy of the Commons" rhetoric which argues that all common land is doomed as each individual will maximize his or her outputs whilst minimizing inputs. It is one of the most important means by which pastoralists manage risk and conserve their resource base, yet it is actively discouraged by most governments in the region and in some cases is systematically restricted and undermined. Pastoralists in Tanzania, for example, have to struggle against a policy environment that supports sedentarisation and individualisation of land tenure.



The commercialization of pastoral production through, primarily "meat focused" livestock development policies, has met with differential success. Most pastoral communities are relatively integrated into the market economy, which provides a means of diversifying risk and broadening their livelihoods, as well as exposing pastoralists to new risks of uncertain terms of trade and general inflation.

The increasing displacement of many pastoralists due to the expansion of mechanized farming and irrigation has forced them to devise, at greater social and economic cost and risk, new mobility patterns to allow them longer periods in the increasingly confined and reduced dry-season grazing grounds. Others have had no choice but to settle and undertake farming. Many of those who have settled in the urban fringes are finding opportunities to sell milk to urban consumers, with herd management practiced by women while men sell firewood and charcoal, or eke out a living in the urban informal sector.

The policy of agricultural expansion and establishment of large-scale schemes has contributed to the reduction of migratory areas for pastoralists. For example, the Gezira Scheme in central Sudan illustrates how the introduction of cash crops displaces pastoralists and forces them into different and more unfavourable ecological zones. Similarly, the Gash Scheme in eastern Sudan has deprived the Hadendowa of valuable dry season pasture and the Khasm al Girba Scheme and other rain-fed mechanized schemes have had similar effects on the pastoralists of eastern Sudan.

Competition over resources undermines pastoralist risk management strategies and is a basis for conflict between pastoralists and sedentary agriculturalists, Darfur being an extreme expression of this. But the long continued conflicts and the resulting movement of peoples have also aggravated competition over resources. This creates a bitter cycle of poverty and erosion of adaptive capacity amongst pastoralists, and the outcome is poverty and environmental degradation. A production system that is perfectly suited to sustaining both livelihoods and the environment in the drylands is characterised more and more as the source of failed livelihoods and environmental degradation.

Conclusions

Pastoralism is an adaptation to risk and it is a means of sustaining the resilience of drylands ecosystems. It can be seen as the search for, and attainment of, optimal land use performance over space and time, through utilizing complex and interactive strategies in a highly uncertain environment. Pastoralism is not characterised by the avoidance of risk, but by the active management of it.

A fundamental disagreement between pastoralists and development planners may lie in their attitudes towards risk, with pastoralists recognising that it is an unavoidable part of their lives and something to manage, whilst planners and policy makers prefer to minimise risk or try to avoid it. Yet the sheer scale of risk in the drylands makes avoidance a futile pursuit. The most rational course of action is to recognise the extraordinary adaptation that pastoralism demonstrates and to find ways to support and enhance it.