

GLOBAL DRYLANDS IMPERATIVE

CHALLENGE PAPER

**PASTORALISM AND MOBILITY IN
DRYLANDS**

1. EXECUTIVE SUMMARY

Nomadic pastoralists and the dryland ecosystems they occupy form a critically important but little known livelihood system. Pastoralists have been ill-served by development policies and actions so far, since planners have almost without exception tried to convert the pastoralists into something else, judged more modern, more progressive and more productive. Happily this is now changing, as researchers and planners revise their ideas and identify a new development agenda. Many of these changes have resulted from successfully listening to herders themselves.

On closer study, many widely believed ideas about pastoralists turn out to be myths without logical or factual basis, grounded in large part on ignorance and prejudice. A more realistic vision of future pastoralism envisages a flourishing economy, with well-educated and successful pastoral producers, no longer marginalised from mainstream society. To achieve this, we need for new policies about:

- the basic structure of the pastoral economy: a ranching model will not be successful;
- pastoral population growth: in many cases an overflow channel for herders who want to leave pastoralism is needed, so that pastoral populations can regain flexibility in relation to the natural resources that sustain them;
- managing natural resources to give priority to pastoralism where that is justified;
- improving natural resource tenure to remove present ambiguities and strengthen corporate tenure;
- improving pastoral productivity;
- providing more efficient markets, and encouraging pastoralists to identify and produce for particular markets;
- providing services including education and health, often through a mix of mobile and static facilities;
- providing financial services such as credit, savings, hire purchase and insurance, in forms adapted to a nomadic lifestyle;
- developing risk management plans, and ways to reduce conflict;
- improving pastoral governance.

2. BACKGROUND

Drylands cover 40 percent of the Earth's surface, and more if mountain pastures, which share many dryland ecological characteristics without necessarily being dry, are included. Drylands have one over-riding feature: they have low, but highly variable, precipitation in the form of rain or snow. As much as lack of precipitation, it is the variability which gives drylands their special features. When rain fails across the Sahelian belt of west Africa, half a dozen countries may face disaster. Yet the following year there may be so much rain that herders lose their animals in the thick grass. On the edge of deserts like the Gobi, the Dasht-e-Lut or the Sahara, a single good rainstorm transforms the landscape, creating rich meadows on a broad front 100 kilometres deep, where the previous year there had been only sand and gravel. Mobile pastoralism is a sophisticated technique to make the best use of such ecological variability. Domestic animals transform the vegetation into economically useful products - meat, hides, wool, milk, traction power - and mobility allows them to find vegetation which is scattered sometimes over huge distances. Pastoralists tend animals which are adapted to particular environmental and economic niches: camels in the driest areas, goats where shrubs and trees dominate, sheep on mountain or dry pastures too rugged for cattle and where small readily marketable animals are convenient. Cattle are herded in richer areas where open savannas provide decent grass cover and adequate water.

Pastoral development

Mobile pastoralism is an ancient form of land use, well-adapted to the problems of maintaining sustainable and productive livelihoods in drylands today. In the past half

century, research has illuminated the processes at work. Pastoralists have long been studied by anthropologists, interested at first principally in political systems and kinship, but since the 1950s also in pastoralism as an ecological adaptation to dryland environments. More recently economists and geographers have added new perspectives. Thanks to this work, we now begin to understand what mobile pastoralists do in everyday life, why, and with what consequences. Animal scientists came at pastoralism from a different point of view, often seeing traditional livestock systems as inefficient, to be modernised with the help of genetically superior animals, and new management systems. Range scientists at first followed the same path, promoting range management techniques developed in the prairies of North America. The spectacular failure of this enterprise prompted many range managers to rethink their science as it applied to the tropical drylands, with important results.

When governments and development agencies first started to address pastoralism in the early 1970s, the dominant view was that the enterprise was backward and needed to be modernised using an intensive, western livestock development model. 'Desertification' was thought to be in large part the result of anarchic pastoralism, and to threaten the future of the drylands. Modern science would provide the solutions, ignoring the very considerable scientific knowledge of the herders themselves, and the internal logic of their land use system. Government would play the main role, deciding investments and acting as overall land manager. Movement would be reduced by providing services and resources, ignoring the wider ecological necessity behind mobility. A development model depending on a new and untested scientific approach, sedentarisation, and a key role for government, underpinned the main projects funded in the 1970s.

Not surprisingly, they failed. 'Genetically superior' animals died from disease and malnutrition, grazing rules based on the ecological dynamics of the western United States didn't work in Tanzania, and sedentarisation was resisted by herders who needed grass for their animals and had to move to find it. The new services were not delivered. Following the principle of blaming the victim, pastoralists were accused of sabotaging development in the name of ignorance and tradition (which were seen as synonymous). The large pastoral livestock projects of the 1970s and early 1980s were halted, and major donors abandoned the livestock sector as too difficult.

In the last decade, interest has been growing cautiously again in pastoral livestock development, led by some imaginative projects constructed by the World Bank and by non-governmental organisations. The new generation of pastoral projects has common characteristics: a respect for mobile pastoral strategies, and for herders' technical understanding, a concern with risk and variability, a priority given to institutional development, and to a systematic participation of pastoralists themselves in project identification and management. Scientific approaches have become more relevant: range managers are starting to understand the vegetation dynamics of drylands, animal scientists have a new respect for the genetic potential of indigenous breeds, and social scientists are beginning to understand how customary institutions work. In a remarkable reversal of its reputation, mobile pastoralism is now seen as one key to environmental sustainability in the drylands. Paradoxically, just as we are coming to realize the real

value of traditional and emergent forms of mobile pastoralism to biodiversity conservation, we are once again undermining the forms of land tenure that support these systems, this time through measures “scientifically” designed for environmental protection.

Problems remain. Old myths die hard, and outdated policies are recycled. Pastoralists are still often treated as second-class citizens when it comes to investments, service delivery, political power and citizenship. Their 'irrational' mobility is often cited as a reason, although an atavistic fear among sedentary people of those who are here today and gone tomorrow may be more often to blame.

Nomadic pastoralism

Pastoral systems take many forms, adapted to particular natural, political and economic environments. There are two components in any definition: the degree of dependence on livestock-based activities, and the nature and form of mobility.

Different livelihood systems use animals in different ways. At one extreme, a farming household or a city school teacher may keep a sheep at home, fattened on household scraps for an annual religious festival. At the other is a prosperous Turkana household in northern Kenya entirely dependent on a herd of cattle for every aspect of daily life and all its income. The latter is clearly a pastoralist, the former clearly not, but where is the break point on the continuum which separates them?

Mobility creates a similar definition problem. There are many types of mobility and the degree of mobility may change according to environmental conditions, or household life cycle stage. Mobility can be seasonal, regular as a pendulum between two well-defined pasture areas, following marked transhumance routes that have not changed for centuries. It can also be nearly random, following erratic rain clouds, and rarely the same from one year to another. Movement can be up and down mountains, between a summer and a winter village. Movement is not necessarily only for ecological reasons: it can be for trade, because of conflict, or to seal new political alliances. People move away from drought, animal disease or conflict, towards newly available resources, or simply because they don't like their neighbours.

This makes it difficult to classify mobility. At one extreme, a Wodaabe pastoral nomad household in Niger may move its camp every few days throughout the year. It is clearly highly mobile. The same household, after a catastrophic drought in which it loses all its animals, may settle and live from agriculture, food aid or migrant labour while it builds up its herd again. For a time it becomes sedentary. But as soon as the herd grows large enough again for the household to live from it, the household will become mobile again, to find pasture for the animals. At the other extreme from the Wodaabe is a farming household where a young girl takes the sheep away from the village every day a mile or two to graze. There is some displacement, but the livelihood system clearly does not depend on mobility. There is also a difference between mobility of animals (some may move and some stay behind, or all may move) and mobility of people (members of the

household may all move together, or herdsmen and women alone may move, leaving other family members in a fixed camp or settlement).

Any definition is arbitrary to some degree, but we need to clarify how we are using words. Recognising that there will be many cases which are borderline or fall outside neat categories, we may think of mobile pastoralism in a grid. One axis shows the degree of dependence on livestock, the other the importance of mobility. We may arbitrarily label an economic system in which most households gain more than 50 percent of total gross household income (ie including the value of products produced and consumed within the household) from livestock related activities, using unimproved pastures, as *pastoral*. Systems where more than 25 percent of income comes from livestock, and more than 50 percent from cropping may be labelled *agro-pastoral*, other rural households as *agricultural*, ignoring in this the important role played in most rural household income by off-farm activities. On mobility, we may label all types of movement which include substantial irregularities as *nomadic*, regular back and forward movements between two relatively fixed locations (for example summer and winter pastures) as *transhumant*, and others as *sedentary*. This gives the following grid. The number of stars gives an idea of how commonly these two sets of criteria combine in real livelihood systems:

	pastoral	agro-pastoral	agricultural
nomadic	***	*	
transhumant	***	***	*
sedentary	*	***	***

In this paper, if not otherwise qualified, we use the term mobile pastoralism to refer mainly to nomadic and transhumant pastoral livelihoods. But many of the conclusions also apply to nomadic and transhumant agro-pastoral livelihoods.

Mobile pastoralists are found in most of the world's drylands and mountains. This includes South America, where there are indigenous grazing economies in the highlands of Peru, Bolivia, northern Chile and Argentina. One example: Aymara herders live at a mean altitude of 4,000m in the Bolivian Altiplano at the limit of agricultural production, where altitude and latitude combine to form one of the harshest and driest landscapes in the continent. Native varieties of potato yield a meager harvest once every two or three years, making agriculture a precarious investment. Livestock - alpacas, llamas, and sheep - remain the core of local livelihood systems. Paradoxically, the Aymara keep their animals in the same pastures most of the year, but make a seasonal migration to their distant potato fields.

Mobile pastoralists are found in Alpine and Mediterranean Europe. Transhumance is widespread in the dry uplands across southern and parts of central Europe. Flocks - mainly sheep and goats, but in some cases cattle - depend on natural rain-fed pastures and sometimes cereal stubble. Harvested fodder is rare. Seasonal movements of flocks with their shepherds, occasionally also with their families, are generally from summer highland pastures, where herding households have a village base, to winter lowland areas. In some cases the pattern is reversed: the base is in the winter pastures, with summer visits to the uplands.

Such mobile pastoral populations are usually ethnic minorities, and include the people of the Spanish Sierra, Basque shepherds, shepherds of Languedoc in France, herders in the Abruzzi in southern Italy, Sarakatsani and Koutsovlach shepherds in northern Greece, other Vlachs distributed throughout the Balkans, Muslim shepherds in the mountains of Bosnia-Herzegovina, as well as pastoralists on the islands of Corsica, Sardinia, Sicily and Crete. In many parts of Alpine Europe, cattle from agricultural villages migrate in summer to mountain pastures. Mobile pastoralism is also found in northern Europe if Sami reindeer herders in northern Scandinavia, and the transhumant sheep flocks of Wales are included.

Africa is home to large numbers of nomadic pastoralists, ranging from the camel and sheep herders of North Africa, the Sahara and northern Sahel (including Sudan), the cattle herders of the belt of savanna vegetation from west Africa to the Horn and south into Kenya and Tanzania. Pastoralists, some of them mobile, are also scattered throughout southern Africa.

Much of the Middle East, and south-west Asia, especially Iran and Afghanistan, has large nomadic pastoral populations, as do the deserts and mountains of India and Pakistan. Mongolia has the distinction of being a largely pastoral country, with between a third and a half of the national population engaged in mobile livestock husbandry. Large areas of China are inhabited mainly by pastoralists, as are parts of central Asia, although on a smaller scale

Because of the difficulty in defining them, it is almost impossible to say how many pastoralists there are in the world today. Using the strict definition of nomadic and transhumant pastoralists outlined above, there may be between 100 and 200 million people in such livelihood systems. If nomadic and transhumant agro-pastoralists are included, the number rises very sharply, and such people are often a clear majority of dryland inhabitants. Interestingly, the number of mobile pastoralists is probably stable in many countries, but rising in some. In parts of southern Europe for example, and even more in central Asia following de-collectivisation, mobile pastoralism is seen as a viable and modern livelihood, and people are reverting to ways of living which seemed to have disappeared a generation earlier.

Mobile pastoralists are the subject of an unusually large number of myths and misunderstandings. These lead to inadequate, often hostile, development policies and

interventions. In this paper we discuss some of the key myths, and explore an alternative set of policies in favour of sustainable development for mobile pastoralists.

3. MYTHS AND MISUNDERSTANDINGS

Nomadic pastoralism is still viewed by many people, including decision-makers, through a prism of myths and half-truths. These distort policy-making about pastoral livelihood systems and result in policies which are at best inadequate and ineffectual, and at worst highly destructive and discriminatory. Some of the most enduring myths:

"Nomadic pastoralism is an archaic form of production, whose time has passed." A century ago it was believed that nomadic pastoralism was an intermediate development stage between mobile hunting and gathering on one hand, and settled agriculture on the other. Nomadic pastoralism was considered a historical anomaly, practiced by people who were not modern and who had been left behind by evolution. Modern archeological research shows this is untrue. Animal domestication took place at the same time as, or later than, the domestication of plants. Nomadic pastoralism developed as a specialised form of production, almost certainly initially based in early agricultural settlements, to allow the productive use of extensive seasonal rangelands. Pastoralism is no more archaic than agriculture itself, and mobility was a feature from the beginning, allowing herders to use rich resources away from the early settlements.

"Mobility is inherently backward, unnecessary, chaotic and disruptive." Pastoral mobility is a rational response to the scattered and uncertain distribution of natural resources. Most pastoral groups are found in environments with low and highly seasonal rainfall, where it is impossible to graze animals all year on the same pasture. Movement allows herders to use a variety of pastures, water points and other resources such as salt licks, and is a sophisticated adaptation to the problems of risky environments. Movement also has economic and social reasons: to take products to distant markets, join with kin for a seasonal festival, acquire or share information. Movement often follows precise patterns, and in most cases has developed clear rules about rights and duties. Until recently, pastoral movements were well synchronised with neighbouring herding and farming peoples, although many of these arrangements are now under stress, often as a result of inappropriate government action and agricultural population growth.

"Most rangelands are degraded as a result of pastoral over-grazing." Grazing, like other uses, may cause a change in the plant species composition of rangelands, but if rangeland degradation is defined as a long-lasting or permanent reduction in livestock production, the evidence of widespread rangeland degradation under pastoral grazing is shaky. Contemporary ecological research shows that dry savannas follow a different logic from wetter grasslands. In dry areas, vegetation growth is mainly determined by the rainfall that year, not by the grazing pressure of the previous year, as standard range management theory and practice suggest. Where rainfall is highly variable from year to year, vegetation production will vary also. In such situations, and especially where annual grasses dominate the sward, the definition of a precise carrying capacity becomes

impossible. Grazing pressure is a less important determinant of species composition and biomass production than the amount of rain and available soil moisture. (Snow plays a similar role in central Asian pastoral economies.) Although the danger of damage by concentrations of livestock to soil structure and vegetation must not be ignored, and often becomes apparent at places where livestock concentrate - such as wells, markets, or trekking routes - there is little evidence that dryland pastures as a whole are over-stocked and overgrazed. Indeed, in large areas of East Africa and the Horn the opposite is true: because of insecurity due to conflict, and in some cases a reduction in livestock numbers due to drought, formerly productive pastures have been invaded by unpalatable shrubs and trees, closing them to grazing.

"Pastoralists do not take care of the land because of the Tragedy of the Commons." The 'tragedy of the commons' supposes that land held in common will inevitably be overgrazed. The argument is that there will be no incentive for a herder to limit the number of animals he puts on the commons in situations where any other herder could increase his animals. But the tragedy of the commons rests on a misunderstanding. It supposes that all commons are open access, and that anyone can use them. In such circumstances competitive grazing leading to environmental damage could indeed occur. However most collectively grazed pastures are not open access, but are or have traditionally been collectively managed by identified groups of users. In this case it is entirely feasible for rights holders to agree to rules and enforce them. It has been government insistence that all pasture land belongs to the state, and that no group of users can make and enforce rules, that has undermined traditional collective action and created open access and overgrazing. This happened historically in southern Europe, Latin America, and large parts of Africa.

Box 1. Corporate land tenure in highland Bolivia

Until the 1970s, rights to pasture in highland Bolivia were corporately held by large clusters of communities traditionally known as *ayllus* with strict rules of entry and resource management. The Bolivian agricultural reform that had followed the nationalist revolution of the 1950s was the last in a series of blows to highland pastoral community structure. One of the reform's main goals was to provide peasants with individual title to land, a policy that herders had opposed for decades. Their advocacy to maintain corporate tenure of pastures was invariably read by the government as an irrational resistance to modernisation or a stubborn attachment to 'primitive' and 'dysfunctional' ways of life. As a result of these policies, in the 1970s herders and the state finally compromised by subdividing the *ayllus* into smaller units (hamlets comprising a group of families), each of which received a land title. Within this structure, the basic laws of indigenous pastoral production remain what they have always been. Land tenure, rules of entry to social groupings, collaborative practices, customary laws, residence patterns are all regulated to ensure that the balance is kept between demographic constraints and the distribution of scarce resources. Culture as such is not so much at stake in the Aymara herders' desire to preserve corporate land tenure as the need to protect the only instruments that made pastoral production a relevant investment in the harsh mountain environment.

Source: Latin America regional paper

"African pastoralists do not sell their animals; they prefer to hoard them, admire them and compose poems to them." It is widely believed that herders in Africa do not sell animals, but prefer to hold onto them, and accumulate large herds merely for the pleasure of the sight of them. Policy-makers commonly talk about the need to persuade African herders to sell animals. This myth is one of the easiest to demolish. If no animals are sold, (and unless large numbers of one sex are being slaughtered in the household, for which there is no evidence), herds will contain equal numbers of males and females. Every survey of herd structure among nomadic pastoralists shows the contrary: above the age of maturity, often the only males in the herd are those needed for reproduction. The others have been sold, and appear in large numbers in national and international trade. Since livestock are working capital for herders, it is entirely rational to build up herds, and even to withhold animals from the market if prices are unfavourable. This is very different from irrational hoarding of animals. Nevertheless the myth persists, fuelled perhaps by the well-documented fact that some African herders do indeed admire individual animals, and sometimes have a favourite ox, whose beauty they boast about and to which they dedicate poems. Herders in other parts of the world have always sold animals to meet their needs, and their problem is more often an absence of markets than a reluctance to sell.

"Pastoralists contribute little to national economic activity." This myth is easily demolished. The economic contribution of extensive nomadic pastoral livelihood systems to GDP and exports is high, and is at least partially captured by national economic statistics. For example, in Mongolia pastoral livestock are responsible for one third of GDP and are the second largest source of export earnings (32 percent) after minerals (41 percent). In Ethiopia, the livestock sector (of which nomadic pastoral production is a key component) is 16 percent of GDP, one third of agricultural GDP and 8 percent of export earnings. The conclusion is that in the drylands pastoral livelihoods make a major contribution to national economic activity.

"Pastoralism has very low productivity. Sedentary cattle raising is more productive than mobile systems." Research shows that mobile pastoral systems have higher economic returns per hectare than ranching systems under similar conditions. The difference ranges from two or three times higher to ten times higher. Productivity per unit of labour and per animal is generally lower, although in Uganda, economic returns per animal in a pastoral setting were one third higher than in local ranches. Mobile cattle raising has also been shown to be more productive than sedentary husbandry under the same environmental conditions. In the Sahelian droughts of the 1980s, herders who moved their cattle long distances to find pasture fared much better than those who stayed. In Sudan and Mali, sedentary cattle producers have lower productivity than the nomads.

"Pastoral techniques are archaic: modern scientific methods need to be introduced." There is considerable experience of trying to introduce new animal husbandry techniques

and new genetic material into pastoral systems. Most experiments have failed. Replacing local breeds or cross-breeding with high productivity stock, introducing new management systems which try to eliminate the need for nomadism, cultivation of fodder crops, introduction of mixed farming, and many others have not brought benefits, and have generally been abandoned. On the other hand, research has illuminated the extensive knowledge and skills of herders, the genetic qualities of local breeds, and the rationality of local pastoral livelihood systems. Improvements can certainly be made, but the starting point should be existing livestock management systems, knowledge and skills, not an imported model.

"Pastoralists need to settle to benefit from services." A common argument advanced by policy-makers is that it is impossible, or anyway too expensive, to deliver satisfactory services to nomadic pastoralists, that it is the duty of the state to provide services to all citizens, and that therefore nomads should settle. Governments provide facilities for settlement on this basis. This argument can be turned on its head: if it is the duty of states to provide services to all citizens, and some citizens are mobile for logical reasons, then it is the duty of the state to provide services to nomadic people. Some successes, reported in the 'issues' section below, show this is possible.

"All pastoralists are rich; alternatively, all pastoralists are poor and food insecure." Farmers or urban people, whose main investment may be a single cow or three sheep, see herders with what seem like large herds, and may think that they are immensely rich. This ignores the fact that the herd is working capital; animals cannot simply be sold at will if the pastoral enterprise is to survive and prosper. At the opposite end of the scale, the droughts and famines of the last three decades have created a media image of pastoralists as destitutes, too poor to survive other than on food aid. Neither picture is wholly true. Within pastoral society, like any other, there are rich and poor households. Recent economic events, especially famines from which some people benefit, have created a few rich households and many poor ones in most pastoral societies. Policies for nomadic pastoralism need to design and target interventions accordingly. In fact, because of the need for a substantial capital investment in the form of a household herd, pastoralism is not a good route out of poverty. Historically, poor pastoral households often moved out of herding into other economic sectors. Today many impoverished households may be kept on the edge of pastoralism by food aid, when a better use of the same help might be to create jobs for such people outside pastoralism.

4. MAJOR ISSUES FOR SUSTAINABLE PASTORAL DEVELOPMENT

4.1 Vision of future pastoral livelihoods

A vision of a sustainable, productive, mobile pastoral society in the medium-term future (say by 2020) might look like this:

Nomadic herders are the principal users and managers of large areas of grassland, steppe

and desert edge. They manage optimally-sized flocks and herds with a high degree of professionalism on pastures under their own day to day control.

The herders are sometimes accompanied when they move by their families, sometimes not. On migration they live in comfortable, mobile, tents or huts of traditional design, incorporating some modern materials. Tents are grouped in small camps for company but also to encourage sharing of tasks and to allow more flexible use of labour. Many households have a small generator or solar panel, to provide electric light and to power a television that receives national and satellite broadcasts, including programmes in the herder's own language, and detailed regional weather forecasts. Some herders have satellite telephones and use them to check distant markets, the progress of a disease outbreak or a more detailed weather forecast. Most households own at least a motorcycle, and some own a four-wheel drive vehicle and trailer. Most households have a settled base, a house in a local town connected to the utilities, where the elderly stay, and children live during part of their schooling.

Pastures are corporately owned and managed by small associations of herders (in most cases based on kin groups), within a loose enabling framework maintained by the state. These groups have 50 year rolling leases to key seasonal pastures, usually the group's dry season or winter home base. Long-term grassland quality is a stated aim of the management groups and appears as a benchmark in their pasture leases, when they are evaluated every ten years. Making use of flexible financial services to provide capital, most groups have invested in water supplies and pasture improvements.

Households increasingly produce for specialised and niche markets, or under futures contracts for major animal and animal product traders. Road networks function year round, allowing easy access and marketing. Primary processing of pastoral products - for example dairy products, or combing and washing wool or cashmere - take place within the camp or at the local market centre. Small enterprises run by women, mainly for dairy processing, are particularly notable. Locally, households are grouped into loose marketing and service co-operatives to enhance their bargaining power and to benefit from economies of scale in the organisation of services. Education is provided through a mix of static schools, mobile schools and radio, and all children of primary school age are enrolled. Where boarding schools are unfeasible, television provides the basis for a distance learning programme for all school age children, as well as adult education in specialised topics. The curriculum includes items relevant to pastoral livelihoods, and the attitudes among teaching staff and other pupils towards pastoralism are positive and encouraging. The great majority of pupils go on to secondary school, and a significant number to vocational or university training. A healthy proportion of those educated in this way return to pastoralism after graduating, so it is not unusual to meet a pastoralist with a university degree in agriculture or land management. Veterinary and human health care meet minimum accepted standards through a mix of sedentary and mobile facilities, staffed in large part by trained specialists from a pastoral background. Trained traditional birth attendants assist at all human births, and in cases where complications are expected mothers are transported by four wheel drive ambulance to a medical facility. Immunisation coverage is high due to effective outreach programmes. Herders have easy access to financial services, including savings and credit, at realistic interest rates, again through a mix of static and mobile provision. All livestock are insured against

catastrophic loss.

This is not an unrealistic wish list: on the contrary, a real-life example of almost every forecast in the preceding paragraphs can be found in an existing nomadic pastoral society, especially in central Asia and Iran. Such a vision could provide a goal for all nomadic pastoral societies. It is notable that mobility provides no bar to the style and level of such a livelihood.

4.2 Achieving the vision

For this vision to become fact, many policies need to be rethought. Some key ones are:

(i) Structure of the pastoral economy

Unlike 'modern' ranching, the main production inputs in nomadic pastoralism are provided through non-market mechanisms: land is accessed communally through lineage and other social relationships, livestock are mainly acquired through social mechanisms, especially family inheritance, although some are bought, and labour is mobilised largely on a family basis. In a fully developed ranching strategy, all key inputs are accessed through the market: hired labour, bought or rented land, and bought animals.

In the medium term, it is not realistic or desirable to plan for a ranching economy to replace a pastoral one. In the medium term, most pastoral economies will move slowly towards a hybrid model incorporating parts of both parents. Access to land will remain largely based on communal rights, although other feed inputs, such as fodder, concentrates and crop residues, may increasingly be acquired through the market as long as the potential impact of this on natural pasture is carefully monitored. (In parts of the Middle East, ready availability of supplementary fodder has led to serious pasture degradation.) Family labour will remain the backbone of the household enterprise, although some wage labour will be employed, especially in busy seasons. Animals will still be mainly acquired through inheritance and intra-lineage gifts, with a slowly increasing number of bought animals.

(ii) Reduce pastoral populations

Pastoral populations are now high compared to historic levels, and to the diminishing natural resources that sustain them. These resources have shrunk substantially, because of land grabs for cropping and nature conservation. In the past, droughts and other threats led to a regular exodus from pastoralism by many people, including usually the poorest. Economic opportunities existed in other sectors to absorb these migrants, as box 2 shows. Although some of the exodus was cyclical, and people returned to pastoralism when conditions improved, much was not; people were permanently lost to pastoralism, and gained by other economic sectors. In extreme cases, pastoral livelihood systems have disappeared altogether, victims of overwhelming pressure. In such cases, former pastoralists have lost their identity, and merged into the wider population.

Box 2. Responses to population pressure in the Bolivian altiplano

In the Andean highlands, there have always been strong currents of out-migration. Pastoral production requires little manpower, leaving options for able-bodied people to search for additional incomes outside the community. This exodus to more productive regions is not a proof that the drylands are unproductive. Rather, it is an age-old mechanism that allows diversification of income and diet, and it was present in the Andes long before demographic pressure hit the drylands. There is simply no room for unchecked continuous demographic growth in a fragile ecosystem. In Aymara specialised herding communities, the carrying capacity of highland pastures is well-known, and the whole social organisation is structured around it. Aymara herding communities cannot over-stock their pastures - even briefly - because it would lead to the rapid demise of the herding economy itself. The kinship system, property devolution rules, residence patterns, patterns of co-operation for production, boundary crossing, are all part of a sophisticated system polished by centuries of experience to prevent this rupture. Out-migration is the chief means by which this is achieved.

Source: Latin America regional paper.

Without productivity increases, pastoral human populations can only grow over the long term as fast as the animal population they depend on. Present highs in cyclical livestock populations are probably in many cases close to or above the maximum a diminishing land base can support over the longer term. Although there is some ecological respite when animal populations crash, increased livestock productivity is scarcely possible when human and animal populations are pressing constantly against natural resource limits. A reduction in the human pastoral population would allow a reduction in the total number of animals, and the possibility of greater productivity per animal. Pastoral development policies should plan for a slow reduction in human population, perhaps by as much as a quarter or a third depending on the circumstances. This could be achieved, on the one hand by facilitating women's education, economic development and reproductive choice, and on the other by encouraging economic diversification and alternative employment outside pastoralism.

(iii) Manage dry rangelands sustainably

Governments, donors and range technicians have, at very high cost, failed to improve on customary pastoral range management and make it more sustainable. Changes in the external environment - land encroachment by farmers and nature conservationists, the collapse of accepted legal process to resolve disputes, the creation of quixotic international boundaries based mainly on colonial precedents - have irretrievably altered the framework within which pastoralism struggles to remain viable. Researchers are only now starting to illuminate the powerful internal logic of pastoral grassland management. But the caravan has moved on, and there is no simple way to return to customary arrangements.

Some things we can do however. There is an urgent need for land use policies and

planning to halt further encroachment by farmers and nature conservationists onto pastoral land, except where multiple land uses of benefit to both sides can be negotiated. This should prevent broad front advances of farming into rangelands, and also the alienation of small areas of high quality land within otherwise uniform, low quality rangelands - the patch resources which make economic use of much larger land areas possible. Creation of conservation areas which exclude pastoralists must also be resisted, although there may be imaginative compromises of benefit to both sides. These include revenue sharing from tourism which combines wildlife viewing and immersion in a pastoral community, or areas reserved for nature conservation which are opened to herders as emergency grazing in drought. There is an urgent need for policies to support capital investment in rangeland: for example, providing water or rehabilitating degraded agricultural land for grazing. In places where much of the land is cultivated, seasonal transhumance corridors and livestock access routes to pasture and water need to be mapped, marked and managed. Emergency grazing areas with water need to be gazetted and managed, as do emergency water sources, normally closed but opened as part of a contingency plan in event of drought. If pastoralism can raise its own productivity, there are many places where run-down irrigation schemes or low productivity dryland farming areas should be converted back to high productivity pastoralism, using the accepted argument that land should be put to its highest value use.

International frontiers are sometimes a problem. Emergency grazing formerly used by a pastoral group is now sometimes located in a different country, and migration across the border is resisted by the security forces. Herders are often willing to allow neighbours (especially ethnic kin) into their pastures in a drought, knowing that one day they will need the same favour in return, and such mutual access is often enshrined in long-standing customary agreements. There is experience in East Africa of international negotiation, usually most successfully between district governors either side of the border, to settle this issue. If not negotiated sensitively, such cross-border migrations are likely to take place anyway, leading to chronic inter-state conflict. It is in the long-term interest of both sides to reach an amicable solution which meets the pastoralists' needs

The role of pastoral groups or associations needs to be explored in detail. Experience suggests that associations of herding households can be successful managers of pastures and water. In Mongolia, some groups have received formal 50 year rolling leases to key winter-spring pastures, and are managing them effectively. In northern Kenya, local environmental management committees and water users' associations in some pastoral districts are regulating herders' movements into defined areas to reduce grazing pressure on stressed pastures and to reduce conflict over resources. In many areas, control of water leads to control of grazing. The key to both achievements is twofold: they are based on customary structures, rules and perceptions, and they receive formal backing from state authorities and local government.

(iv) *Clarify and strengthen pastoral tenure systems*

Resource tenure is a fundamental part of the task. Nomadic pastoral livelihood systems are a rational response to life in an environment where resources are scarce and highly variable between seasons and years. Pastoralists move, not out of a perverse desire to be

different from sedentary people, but in order to be able to use pasture and water scattered over a huge area. In any one place, resources tend to be abundant one year and scarce the next. Tenure rules must reflect this pattern.

Private individual tenure of pasture and large water sources is not viable in such circumstances, since each privately owned pasture or water point might have plentiful resources one year, but none the next. State tenure and management has a poor record for ecological efficiency, equity and management standards. The most sustainable and productive system for major resources such as pasture and high capacity water points is one of corporate tenure in the hands of well-defined, usually kin-based, associations of herders, who negotiate among themselves stocking rates, rules, responsibilities and management objectives. The state can retain overall ownership of such resources, while granting long (50 year) renewable leases to pastoralist groups under well-defined conditions about the quality of use, and providing an accepted legal framework to settle disputes which cannot be resolved by the herders themselves. It will be important to ensure that women in general, and women-headed households in particular, are able to participate in such leases on terms of equality with men. Leases with a set of ecological benchmarks and periodic review eliminate the problem of group ranches which drift towards sub-division and privatisation. Corporate leases of major resources held by pastoralist groups can be combined with private individual ownership of key point resources such as individual camping sites, winter barns and animal shelters in central Asia, small seasonal water points, or hayfields elsewhere. In southern and Alpine Europe, the historical combination of corporately managed mountain pastures and privately-owned or rented pastures and crop land has allowed grassland resources to be used in highly sustainable ways, and continues to do this successfully. In places as diverse as the western United States, parts of the Andes, Switzerland and Wales, access to corporately managed summer mountain pastures is reserved for those who own adjacent private agricultural land at lower altitudes. The number of animals you can put on the commons is determined by the size of your private 'hay base' land. Such combinations of corporate and private land appropriation have application in many other places.

(v) *Improve pastoral productivity*

As mentioned above, recent research has come to a surprising conclusion: mobile pastoral systems are more economically productive per land unit than the highly capitalised ranches of northern countries. Productivity per unit of labour is low, but this is not a matter for concern, since labour is abundant, and policies in the short term should not seek to replace cheap labour with expensive capital items such as fences and pumps. Productivity per animal is also low, and remedying this is important.

Livestock productivity gains can only be achieved by reducing the total number of livestock and increasing their individual productivity. We now know many of the strategies to be avoided: cross-breeding with productive but vulnerable breeds, and dependence on cultivated or industrial fodder, are obvious mistakes, and there are many others. But there are ways to improve animal productivity in a sustainable manner: selection from within well-adapted local breeds, management systems which promote such genetically-superior animals, better veterinary care, identification and promotion of

local best management practice, better management of grazing and seasonal feed variability, targeted feed supplementation and many others. Women, who often have special responsibilities for, and knowledge about, sheep and goats, must be prominent in any drive to improve livestock productivity.

Pastoral livestock also contribute to the productivity of other livelihood systems as box 3 notes.

Box 3. Livestock and crops

In Sahelian west Africa, an important but often underrated contribution of pastoral livestock to the national economy is their role in manuring farmer's fields. Where chemical fertilisers are too expensive, or simply not available in remote markets, animal manure is a critical crop input. Elaborate arrangements are made between herders and farmers. The primary exchange is usually for farmers to provide water and allow herders to graze their animals on stubble after the harvest; in return, the animals are stabled on the fields at night and manure them. Dryland millet yields in Senegal and Mali are reported to double or quadruple as a result. A range of additional relationships between farmers and herds develop around this primary exchange, including barter of milk for grain and a variety of social events. In recent years such arrangements are in decline, as farmers sell or use crop residues themselves, and accumulate cattle of their own.

Source: Africa regional paper

(vi) Improve markets

Successful pastoralism depends on markets. A more productive pastoral economy must have outlets for its produce. Market infrastructure and information need to be improved in all pastoral areas. IFPRI research suggests that likely future shifts in demand will be favourable to pastoralists. Rapid urbanisation in most southern countries, and a demand for animal products rising faster than that for other staple foods, are creating a rapidly growing market for pastoral products. Growth in agricultural production in the next two decades is likely to be mainly in such animal products.

Pastoral producers should identify and orient production towards particular market openings depending on location. This might mean strategies as diverse as cow-calf operations producing young animals for fattening outside the drylands, producing young male animals for training as plough oxen, peri-urban dairy production (likely to be a women's speciality), or specialising in very high quality cashmere or dairy products with a regionally distinctive and registered trade mark. A particularly interesting long-term option would be for pastoralists to capitalise on concerns among northern consumers about intensive livestock production methods ('mad cow' disease, abuse of antibiotics and hormones, animal welfare considerations) and market their products as organically produced, free range on natural pasture without chemical supplements. (Among other problems, there are animal disease issues - reflected in OECD import regulations - to be solved before this can take place). In some places, local primary processing of animal products can be undertaken profitably with a small capital investment, training and market development. Dumping of subsidised animal products by industrial producers

must be controlled. International rules governing trade in livestock products need to be reviewed with pastoral producers in mind.

(vii) Provide services for mobile pastoralists

Governments often use the difficulty of providing services to nomadic pastoralists as a reason to encourage settlement. This is egregious, and sometimes conceals an intention to settle pastoralists for other reasons. Instead, we should turn the question around and ask: if mobility is a sensible and necessary part of a pastoral livelihood strategy, how can we deliver the right services to a mobile population? There are encouraging examples to draw from.

In fact, mobility is not the only, and may not be the most important, problem to be solved in delivering services to nomadic herders. Sparse human population distribution - often as low as 1-10 people per square kilometer - means that there are usually too few people within the watershed for a primary school or clinic to provide an economic justification for the facility, even if the population is sedentary. If it is mobile, the justification is even harder. Governments are left with the choice of using scarce funds to provide facilities for a very small number of nomadic pastoralists or a much larger number of sedentary people elsewhere.

There are several solutions to this twin problem of mobility and low population density. Schooling is an example, although the same principles apply to other services such as human and animal health. Most attempts at educating nomad children have involved boarding schools. In Africa, these have had some success, and most of the current generation of educated children of nomad parents went to a boarding school. However African boarding schools are often hostile places for nomad children. Bullying is common, girls are often abused, and the curriculum is irrelevant to nomadic pastoral life. The worst feature is that nomadic culture is commonly despised by teachers and pupils from an agricultural or urban background, and schools are often seen as a way to transform nomadic children into settled adults. Drop-out and failure rates for nomadic children are high, creating a paradox: drop-out children often find themselves alienated from pastoral culture, but not accepted by mainstream culture.

Boarding schools do not have to be like this. In Mongolia, boarding schools were until recently friendly places for nomad children, and school enrolment rates were very high as a result. The main difference from African boarding schools is that in Mongolia nomad culture was highly esteemed by fellow pupils and teachers, so parents and children felt that their way of life was important and valued. Curricula were adapted to a herding economy, and school timetables were geared to the labour demands of the pastoral year. With this example in mind it is premature to dismiss the potential for boarding schools for nomad children, as long as a different school culture - one that values nomadic life and teaches appropriate skills - can be created and maintained. However, standards in Mongolian boarding schools are declining, and teachers may be less convinced than before of the rationality of nomadic pastoralism; it remains to be seen if this translates into declining school enrolment.

Some countries have developed mobile primary schools. In Iran, teachers from a nomadic

pastoral background are trained, equipped with a white school tent (in contrast to the black tents of the nomads) and school equipment, and join a group of nomad camps. During the winter and summer, when the camps move rarely, the tent schools are open for business. One advantage of tent schools is that there is likely to be equal enrolment of boys and girls, since girls remain under the close supervision of their parents. Families tend to camp near the tent school, which is often in a local chief's camp, meaning there are enough children for a mixed-age class. In spring, when the camps move from lowland winter quarters up into highland summer pastures, and in autumn when they move back down, the tent school moves with them, although there is not usually much teaching during the moves. Children who qualify for secondary school go to standard sedentary facilities in local towns.

The tent school system, and a similar mobile primary health care system, has now operated for over 50 years, and has successfully educated several generations of nomadic children. However, the circumstances are quite special. Summer and winter territories are largely fixed, and people move little during these seasons; schools are assured of a large enough watershed population during summer and winter, and can close during the period of long-distance movement in spring and autumn. This pattern of migration is common in south west Asia, and parts of central Asia, but is rare in Africa. However there may be cases where the Iranian model can be replicated successfully. Current attempts in some parts of Africa to create small mobile pre-school or primary school groups, as a way to prepare children for entry to formal schooling, also deserve to be evaluated.

Distance education, using radio, is a promising alternative. In pastoral Australia, radio education for children in the remote outback has a long history. Experiments in the Mongolian Gobi shown that radio education for both adult women and children can be successful. Students receive initial training and periodic back-up at fixed facilities, and combine this with regular radio teaching based around written work done at home. In future, when more pastoral households have television sets, satellite television will have an enormously important role to play in this respect. Perhaps the most imaginative mobile service was the mobile *yurt* libraries found in the summer pastures in Kyrgyzstan during the socialist period and after.

Attempts have been made to incorporate formal education into the curriculum of the mobile Quranic schools common among Muslim pastoral groups in Africa, where a religious teacher is employed by a group of mobile households. Although in some cases - where there is a dedicated and well-educated teacher - this is successful, many Quranic teachers do not have the skills or desire to teach secular subjects.

Research shows that perhaps the most important feature for successful schooling for nomadic pastoralists is the school culture and the way teachers and other pupils view pastoralism. In schools where it is seen as a viable and respectable way of life - as in Iran and Mongolia, at least until recently - primary schooling for nomads has been successful, through widely different delivery systems. In countries where pastoralism is despised, the same delivery systems have largely failed.

Other services follow a broadly similar pattern. The most successful human and animal health services for nomadic pastoralists combine fixed and mobile facilities, incorporating local knowledge and specialisation where appropriate. In northern Kenya,

mobile outreach camps are a model. The initial large-scale camps, providing multiple services to pastoral communities on the model of the 'red caravans' of 1930s Soviet central Asia, became too cumbersome to continue to move with the nomads. A combination of smaller mobile camps and local community workers, often women, works better. The mobile camp provides initial capacity-building, training and motivation. It leaves behind a cadre of community health and animal health workers, and traditional birth attendants, who continue to work within the community. Referral to fixed facilities is key. Initial attempts for community workers to provide services on a voluntary basis were not successful, but where they can charge fees, sell drugs, and operate community drug stores, they can cover their costs and make a small monthly income. Over 30 percent of pastoralists in three remote pastoral districts now buy their drugs from the community animal health workers. Such workers also motivate communities to improve general sanitation. This approach works best in remote areas without other health services. In future, it is likely that telecommunications will play a central role, linking paramedics and paravets to fully trained professionals via radio or television.

(viii) Financial services for nomadic pastoralists

Financial services have largely ignored nomadic pastoralists. This is because pastoral mobility is seen as an obstacle to normal banking procedures, and because, wrongly, pastoralists have often been seen as outside the cash economy. In fact, the large capital investment a household herd represents, the high risk and high returns associated with it, and the high level of involvement of most pastoralists with the market, suggests that financial services have a key role to play in pastoral development. But products on offer and management procedures will have to be adapted to pastoral circumstances. This requires a substantial redesign.

Restocking loans have been tried in many places as a response to poverty and drought deaths of animals. Loan conditions, beneficiary targeting, and interest rates vary widely. Most schemes are not based on market rates of interest, and monitoring and supervision have been weak. Few, if any, restocking schemes have evolved into a realistic safety net for pastoralists vulnerable to periodic risk. Restocking is rarely a viable way of helping very poor pastoralists out of poverty, but does, if carefully targeted to those with the knowledge, skills, labour and social networks to successfully manage their herds, enable competent herders to increase their herd to a sustainable level. There is little experience of cash savings among pastoralists or of savings and loan operations, although these may interest poor herders as a way of funding training and capitalisation for alternative jobs. There is some experience of hire purchase agreements among pastoralists, for example where herder groups acquire large lumpy investments such as solar pumps or mobile dips under hire purchase agreements. Business training among pastoralists, to enable them to handle loans effectively, is important. Women may face greater difficulties than men in setting up pastoral enterprises, but in northern Kenya pastoral women's enterprise groups have been more successful than men's. At first such enterprises often cannot afford to borrow at commercial bank interest rates, but can once they are established.

There is a new interest in the potential for insurance among pastoralists. Although there is little experience, index insurance, so far mainly used in crop agriculture, seems to have a

potential application for livestock-based economies. Index insurance works by offering insurance against specified environmental hazards for which an area index is readily available: annual or seasonal rainfall, snowfall or snow depth, livestock mortality, or vegetation production as measured by remote sensing. Herders can insure against a particular threshold index - for example less than a certain annual rainfall - in a particular area, and receive an indemnity if the nominal threshold is not reached, irrespective of their own losses. Index insurance reduces the possibility of moral hazard, and simplifies and reduces transaction costs.

Any new type of financial product for pastoralists will be easier to manage if herder groups take responsibility for negotiating, managing and paying back on behalf of their members. Better access to loans, insurance or hire purchase is likely to be a positive incentive to herders thinking about forming groups.

(ix) Reduce and manage risks

Because nomadic pastoralists use marginal and highly variable resources, they face high risks. Variable rainfall, or snowfall, creates severe environmental uncertainty. Although pastoralism is more resilient in the face of bad weather than farming because herders can move away, large scale droughts or *zuds* (central Asian frozen snow disasters) can kill many animals and devastate pastoral livelihoods. This leaves pastoral households without the necessary animal capital, putting herders in a much more critical position than farmers, who can return to their land after a drought and produce a crop the following season. High levels of dependence on market exchanges for everyday food also leave pastoralists vulnerable to adverse markets. In recent African famines, pastoralists were prominent victims for these reasons. However, there is now good experience of contingency planning for drought and *zud*. Effective measures can ensure that lives are not lost and livelihoods not devastated. Successful early warning and rapid response mechanisms have been developed specifically for pastoral populations, for example in Kenya.

Conflict is now endemic in pastoral areas. Traditional local cattle raiding has been transformed by the easy availability of small arms, by business interests in raided cattle as a saleable commodity, and by political maneuvering, into a major source of uncertainty and risk. Conflicts over pasture and water are escalating as customary management systems are undermined, and no formal system replaces them. But recent experience shows there are effective techniques to reduce and manage such conflict. The key is to involve all the disparate source of influence and power, including different arms of the state (the administration, security forces, politicians), and traditional local power (chiefs, elders, womens' groups or youth associations). The formal legal system must support and strengthen local customary ways of managing natural resources.

4.3 Pastoralism, governance and participation

Governance of pastoral lands has been notably unsuccessful. Normal government functions, such as creation of a legal environment able to settle disputes, the management of social services and safety nets, and even the maintenance of peace, have worked badly or not at all. Donor interventions have more often failed than succeeded. Pastoral areas are increasingly places of poverty, environmental degradation and unrest. A new approach to pastoral governance is urgently needed.

The critical question about pastoral governance concerns the relationship between the formal institutions of the state - laws, government departments, local administrations - and the informal and partly traditional rules and social structures of the pastoralists. Pastoral areas are unique in that customary authorities and traditional rules still dominate large areas of decision-making, especially about natural resource management, poverty alleviation and economic life generally. Formal government authority has struck an uneasy compromise with customary authority, and overlaps in its functions. But jurisdiction is ill-defined. In many places the state apparatus is now in retreat, under the influence of structural adjustment or a new realism about what it can achieve. Effective pastoral governance needs to be a mix, varying with local circumstances, of formal and informal institutions and rules, and this mix should move towards greater involvement and responsibility for strengthened informal institutions. The role of formal government should be to provide a framework within which customary local institutions and rules regulate everyday economic and political affairs. Often the state needs also to encourage greater participation and democracy within local decision-making.

No single type of governance will be appropriate for all pastoral areas. But three general principles should apply. First, there is a need for great flexibility and diversity in institutional design to make it possible to track dynamic changes in the environment, such as drought. Second, subsidiarity is crucial, that is to say, administrative tasks should be carried out as near to the level of actual users of resources or beneficiaries of administration as is compatible with efficiency and accountability. This means more than superficial decentralisation, which has sometimes (for example in places in West Africa) led to more, not fewer, barriers to mobility. Third, the transaction costs of organisation should be kept as low as possible: complex and costly forms of administration should be avoided.

Such an agenda generally means a retreat from formal state administration, and an extended role for customary institutions and mixed customary/formal ones, operating often through local associations or groups of pastoral households at the lowest level. This does not mean we should uncritically resurrect customary governance institutions. They may be inefficient, are not easily adapted for modern administrative purposes, and sometimes are extremely hierarchical or undemocratic; they may have been captured by elites or outsiders, and would not perform in the public interest if given new powers. But in many cases customary institutions and organisations do have some legitimacy and can provide the basis for new pastoral administrative structures, especially close to the grassroots. In many cases, mixed organisations (part customary, part formal) provide the way forward, and planning should help create such mixed institutions with clearly defined powers and resources.

If a more important role is given to customary institutions, there will need to be a process of democratisation at all levels. At national level, recent experience with pastoral lobby groups composed of elected members of parliament from pastoral areas (for example in Ethiopia and Kenya) is very promising. Significantly, some of these lobby groups encourage MPs from non-pastoral areas to join so the lobby becomes one in favour of representation and development of marginal areas, not just a special interest group for pastoralists. Herder associations may have a dual role. They can link local representative groups, through regions, to a national lobbying structure. But they can also facilitate and educate at grass roots level about the processes of democracy, especially the importance of voting and transparency about policies and investments.

Such an agenda means a substantial rethinking of the role of formal government structures in pastoral areas. Policies should create an enabling environment, and remove the present disabling environment, for sustainable pastoral development. The main role of formal government should be:

- to create the legal framework within which a devolved pastoral administration can operate efficiently, especially over natural resource tenure;
- mediation of conflict and arbiter of last resort;
- guarantor of minimum democratic processes in local administration;
- providing the appropriate macro-economic policies including development of markets;
- provide major infrastructure investments;
- provide major public services;
- guarantee an effective social security safety net in case of disaster such as drought or *zud*.

5. PASTORALISTS AND THE FUTURE

Pastoralists have had a bad press. The myths with which we started remain in the minds of many senior administrators and ordinary people. The fact that these ideas are groundless - are, in fact, no more than myths - is little comfort, since they still determine many decisions made by those in positions of responsibility. But not all. As we have seen, there are new approaches to pastoralism, based on scientific research and on the ideas and desires of pastoralists themselves. Partly this is due to the presence of well-educated people of pastoral origin in government and development agencies, including non-governmental organisations. One indicator of this changed perception of mobile pastoralism is what is happening in a highly industrialised economy, that of Europe (box 4).

Box 4. Pastoralism and the future: mobile European herders

The persistence and even revival of mobile pastoralism in 21st century Europe suggests that this form of livelihood has staying power. Despite profound economic, social and political changes, pastoral transhumance continues in southern Europe, although it has changed in important ways. Many towns and ethnic enclaves based on herding maintain a distinct social identity closely related to their pastoral heritage, and combine this with a vibrant economy and access to modern services. Herders use a combination of 'traditional' and 'modern' techniques. Improvements in communications and infrastructure mean ease of access to distant pastures. Animals increasingly migrate by lorry, even by train, although some still follow millenia-old transhumance routes conducted by their herders on foot. The combination of private crop, fodder and hay land, and private meadows on the household farm, with corporate, usually mountain, pastures managed by clear rules of joint access and use has proved sustainable and productive. Within the European Community, pastoralism benefits from local and global markets, and in the past from subsidies from the EC common agricultural policy. The latter have now been halted, but mobile herders are likely to benefit from any future subsidy, now under discussion, for the maintenance of valued landscapes within the European countryside. European pastoralists have a diversified economy. Many people migrate out of pastoralism into urban or parallel rural jobs. This provides a safeguard against pastoral over-population, and remittances back and forward between the pastoral and non-pastoral economies helps manage risk. In all this, access to the commons remains a key plank in a successful diversified rural economy, as well as a focus for the construction of a modern pastoral identity. As European consumer fears about the industrialisation of livestock production, and the use of growth hormones and feed supplements of doubtful origin grow, as well as concerns about animal welfare, mobile pastoralists can position themselves as producers for a more natural and organic market. The increase in protected areas and ecotourism suggests new economic niches for mobile pastoralist in Europe, but only if they themselves are given the opportunity to collaborate on an equal footing with environmental experts in developing appropriate co-management institutions for the future.

Source: Southern Europe regional study.

It may be time to turn the tables on those who are pessimistic about the future of nomadic pastoralism. It is commonly agreed that the modern world is risky, fragmented and changing, and that things we have long taken for granted, ways of living, institutional frameworks and rules, are no longer a good guide to sustainability and survival. We may need lessons and ideas about how to live with risk, how to adapt to rapidly changing circumstances, how to be flexible, alert and adaptive. Although clearly we are not all, or even very many of us, going to become nomadic herders, pastoralists may in their livelihood systems, their value systems and their goals, have important lessons about the sustainability of our livelihoods, about our values and our ability to achieve our own goals.

6. IMPLICATIONS FOR DECISION MAKERS

This then is the argument:

- Nomadic pastoralism has a future. Already in some areas (parts of Europe and central Asia, for example), more people are taking it up.
- The extensive animal based livelihoods of the foreseeable future will have a recognisable 'pastoral' not a 'ranching' structure.
- Governments and donors need to develop an overflow channel allowing people to leave pastoralism, in order to reduce overall pastoral populations and allow better ratios of people to natural resources.
- Land use planning should re-evaluate the place of pastoralism, protect pastoral land from damaging encroachment by farmers and nature conservationists, provide for capital investment and, where it would be the highest value use, return land to pastoralism. Herders' associations may have an important role as leaseholders of natural resources. To be successful, customary and formal authority must overlap and work in mutual support.
- Policies should establish clear tenure systems which include corporate long term renewable leases for major resources, and private individual ownership of point resources where appropriate. Corporate leases should recognise the importance of, and make provision for, essential mobility of people and animals, for example in response to an exceptionally harsh year.
- Policies should promote methods to raise animal productivity in ways that are locally feasible without expensive inputs.
- Policies should support development of market infrastructure, the identification of market niches for pastoral producers, and the reorientation of production towards such specialised markets, as well as development of local processing. Macroeconomic policy reform and revision of international trade rules should reduce non-tariff obstacles to marketing pastoralist products in northern markets, and end dumping of subsidised northern animal products in southern markets. Mobile pastoralism should be positioned to respond to two new markets: newly urbanising southern populations whose demand for animal products is likely to rise rapidly, and health and animal welfare-conscious northern consumers alienated by intense production methods.
- Policies need to stress the importance of education for nomadic pastoralists, encourage experimentation with a mix of fixed, mobile and radio facilities, and create a school culture which respects and values nomadic pastoral livelihoods.
- Community-based human and animal health workers, as well as traditional birth attendants, can provide services and drugs cost-effectively to remote pastoral communities. Successful approaches have combined mobile camps to provide initial training and motivation, and community workers who remain after the mobile camp leaves. Such workers refer cases they can't help to better-equipped fixed facilities.
- New policies are urgently needed to adapt financial products to the conditions of

nomadic pastoralism, especially mobility. Financial services may in some cases be managed through herder groups. Savings and loans, credit, insurance and hire purchase may all have a role to play.

- Governments need to adopt policies which encourage pastoral risk management strategies, including drought contingency planning and conflict management.
- New systems of pastoral governance are needed, which combine: the flexibility to track dynamic changes in the environment, such as drought; subsidiarity, so that administrative tasks are carried out as near to the level of beneficiaries as is compatible with efficiency and accountability; and low transaction costs. This means a retreat from formal state administration, and a substantially extended role for customary institutions and mixed customary/formal ones, operating often through local associations or groups of pastoral households.