

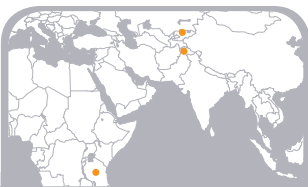
research evidence for policy



Pastoralists in upland pastures. Photo: Wajid Rashid

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Sustaining mobile pastoralists in the mountains of northern Pakistan



Case studies featured here were conducted in: Pakistan, Tanzania and Kyrgyzstan

Policy message

- Mobile pastoralists in the Khyber Pakhtunkhwa province herd over 1 million animals and generate more than 68 million USD a year for the province. They provide food security and essential ecosystem services, and uphold the national cultural legacy.
- Pastoralists have little access to basic services, and it is becoming harder for them to follow their traditional seasonal migration routes. They are becoming further marginalised and less able to provide these products and services.
- Ways to empower the pastoralists include investing in social and veterinary services, securing transhumance routes, improving marketing facilities, promoting afforestation with fodder trees, and designing payments for ecosystem services.

- For centuries, landless mobile pastoralists have produced milk, meat, wool, maintained biodiversity, and conserved the soil in Khyber Pakhtunkhwa (formerly the North-West Frontier Province), in northern Pakistan. But the provision of these goods and services is at risk as the pastoralists are becoming marginalised. They have weak bargaining power at markets, their mobility is limited by tree plantings that obstruct transhumance routes, and crops are encroaching on their traditional pastures. This issue of *evidence for policy* analyses the reasons for these trends and discusses ways to overcome them.

Mobile pastoralism

- According to an ongoing NCCR North-South research project, there are 7,400 pastoralist households (50,000 people) in Khyber Pakhtunkhwa province, rearing about 1 million sheep and goats. Considering their animals' average prolificacy and mortality rates (89% and 30% respectively), the landless mobile pastoralists market about 623,000 sheep and goats every year. Each animal is worth approximately 10,000 rupees, meaning that these pastoralists contribute at least 6.2 billion rupees (68 million USD) per year to the province's economy – not counting the cattle and buffaloes that many pastoralists also keep.
- These people do not own land, so mobile pastoralism is central to their livelihoods. They move their animals following a traditional annual cycle

and covering significant distances. In winter they pasture their animals on lowland scrub lands (400 to 1,000 m above sea level) in the vicinity of Haripur, Attock, Peshawar, Buner, Malakand, and Mardan. In summer, they graze alpine pastures in the uplands in Kalam, Chitral, Upper Dir, Kohistan, Naran, Chohr, and Kaghan (3,000 to 4,500 m) (see map, page 3). Each spring and autumn they herd their animals between these locations. Each of these transhumance periods lasts for two months.

Nomadic pastoralism is a rational form of land use in drylands, since it converts vegetation found in areas otherwise unsuitable for agriculture into high-quality meat, milk, wool, and fuel. Moreover, adequate grazing regimes can perform essential ecosystem services such as maintaining

Featured case studies

A study in **Pakistan** shows that promoting indigenous fodder tree species for afforestation has a high potential for sustaining the pastoral system threatened by shrinking grazing areas (Rahim et al. 2011).

Another, ongoing, research project in **Pakistan** shows that payment for avoiding emissions by not converting pastureland into cropland could compensate farmers for their loss of cash crop income and offer a solution to more sustainable forms of land management by maintaining less erosion-prone pastures.

In **Tanzania**, farming is encroaching on pastures, resulting in a loss of grazing for both livestock and wildlife. Nelson et al. (2010) show the viability of payments for ecosystem services to address this problem and increase the sustainability of pastoralism when threatened by cultivation. Under certain conditions, payments for ecosystem services can promote community-based conservation, reducing stress on the environment while improving pastoralists' livelihoods. Such forms of payments for ecosystem services could channel resources to reward herders for landscaping services as well.

A study in **Kyrgyzstan** tested the integration of human and animal disease monitoring among nomadic pastoralists. The "one health" approach facilitates cooperation between public health and veterinary services, making surveillance more effective. This would also rationalise the scarce resources available in these environments (Zinsstag et al. 2009).

- and developing the plant and animal variety and avoiding erosion that would be caused by cropping.
- Additionally, mobile pastoralism upholds cultural values and lifestyles that preserve traditional knowledge. Pastoralists are custodians of indigenous breeds of cattle, buffaloes, sheep, and goats. These are precious genetic resources well adapted to the rough conditions of their mountain home.

Factors marginalising pastoralists

- Four issues are marginalising the pastoralists. We deal with each in turn.

Weak bargaining power at markets.

- Local markets lack facilities such as pens, sheds, shade, fodder, and water. That forces pastoralists to sell their livestock the day they arrive at the market, since they cannot keep their animals there overnight, and many animals are too weak to travel back without adequate feed and water.
- Traders often wait until the pastoralists are compelled to sell at a loss. Although the government regulates prices for meat and livestock, animals are never sold on the basis of quality and weight; instead, traders bargain to buy a group of animals.

Faster migrations resulting in land degradation.

- There are few suitable places where animals can rest and graze during the annual spring and autumn migrations. The pastoralists are forced to move faster each year because of the increasing number of obstacles in their way. During the early 1980s, projects planted large areas of pine and eucalyptus as monocultures to combat deforestation and hillside degradation. But animals cannot browse such trees, and areas planted with seedlings are fenced with barbed wire.

- A shift from staple to cash crops along the migration routes has upset

the traditional relationship between the herders and sedentary farmers. The pastoralists used to find freshly harvested fields of annual crops where their animals could graze on the stubble. The herders timed their movements towards the uplands to follow the harvest of these crops. The farmers let herders graze so their fields would be fertilised by the animals' manure. But with the shift to cash crops, farmers want to avoid trampling, so no longer allow herders onto their fields. Left without a way to feed their animals, the pastoralists have to move their herds more quickly and to use hazardous routes along mountain ridges or roads carrying heavy traffic, putting the lives of herders and animals at risk. The herd arrives sooner than before in the upland pastures. That damages the pasture as animals stay longer, grazing on shoots and impeding further growth of grasses throughout the season.

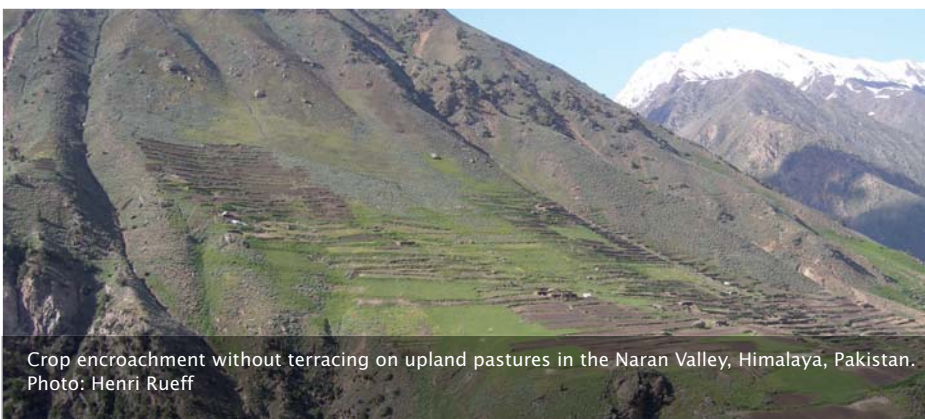
Loss of pastures due to crop encroachment.

Since the 1980s, the pastoralists have been encouraged to grow off-season vegetables on alpine pastures as a way to boost their incomes. Ongoing research shows that 337 ha of pasture in the Jorian valley, an upper tributary valley to the Naran valley north of Kaghan (see map, next page), have been converted into crop fields. While this is only 3.1% of the 10,600 ha in the valley, it is the most fertile area. Its conversion forces herders to let their animals graze at higher elevations and on steeper slopes that have less vegetation and are more susceptible to erosion.

In addition, cultivating steep, unterraced slopes causes erosion. Yields decline rapidly, requiring ever-growing amounts of fertiliser. Once-productive fields are abandoned, and new ones are tilled. The abandoned land is lost to both crops and grazing. Landowners prefer to lease their land for cropping because they can demand a higher rent or part of the harvest. This has reduced the availability of key grazing sites in the uplands.

Lack of veterinary services.

Veterinary services are often unavailable because of the remoteness of the pastoralists' summer grazing sites and their frequent movements. Unhealthy animals are a major threat to the livestock throughout the area since transhumant animals tend to spread diseases during their journey.



Crop encroachment without terracing on upland pastures in the Naran Valley, Himalaya, Pakistan.
Photo: Henri Rueff

Protecting pastoralists

Here are five ways to address these issues:

Market support services. Taxes collected at the entrances to local livestock markets amount to approximately 300 million rupees (3.5 million USD) (Rahim and Beg 2011). Part of this money could be used to build market facilities for pastoralists and their animals. Investing in watering, shelter, and animal unloading facilities would reduce livestock mortality and increase the pastoralists' bargaining power. If herders are no longer forced to sell weak animals at the end of the day, they would tend to get better prices. Better selling conditions at markets would also make them better able to supply more and healthier animals.

Payments for ecosystem goods and services. A scheme to pay for ecosystem services would provide an alternative to cultivation on alpine pastures. Preventing the conversion of pastures to cropland would avoid the emission of 44.8 tons of CO₂ equivalent per ha. This is worth an average of 650 to 900 USD, depending on the current price of carbon credits. Further studies are needed to predict how much herders would earn through such a payment scheme. Other forms of payment for environmental services could be envisaged to reward herders for their landscaping services and for maintaining indigenous breeds. Another recent study shows the viability of payment for ecosystem services to address problems resulting from encroachment on pastures and loss of grazing land in Tanzania (see "Featured case studies").

Appropriate afforestation. A third approach is to invest in planting local fodder tree species instead of monoculture pine and eucalyptus. Small-scale afforestation projects using indigenous fodder trees and shrubs can provide feed to animals at resting places along the transhumance routes. In addition, such measures can also produce fruit, help conserve soil, and reduce tensions with sedentary farmers by reducing competition over feed.

Grazing places along migration routes. Providing places along the seasonal migration routes between lowlands and uplands where animals can rest, graze, and drink would improve their health and condition, and enable them to arrive later at the upland pastures, so avoiding their overgrazing and degradation. To do this, it may be necessary to clarify the ownership of the proposed locations,

as tribal and federal land tenure systems often overlap.

Veterinary services at these intermediate locations could enable animals to be dewormed and vaccinated. These services could also aim towards the implementation of a "one health" approach, which combines human and

animal health care, by preventing outbreaks of livestock diseases from infecting humans. Integrated surveillance systems are not only more cost-effective than separated disease surveillance for humans and animals, but have substantial potential in addressing regular and rising diseases (see "Featured case studies").

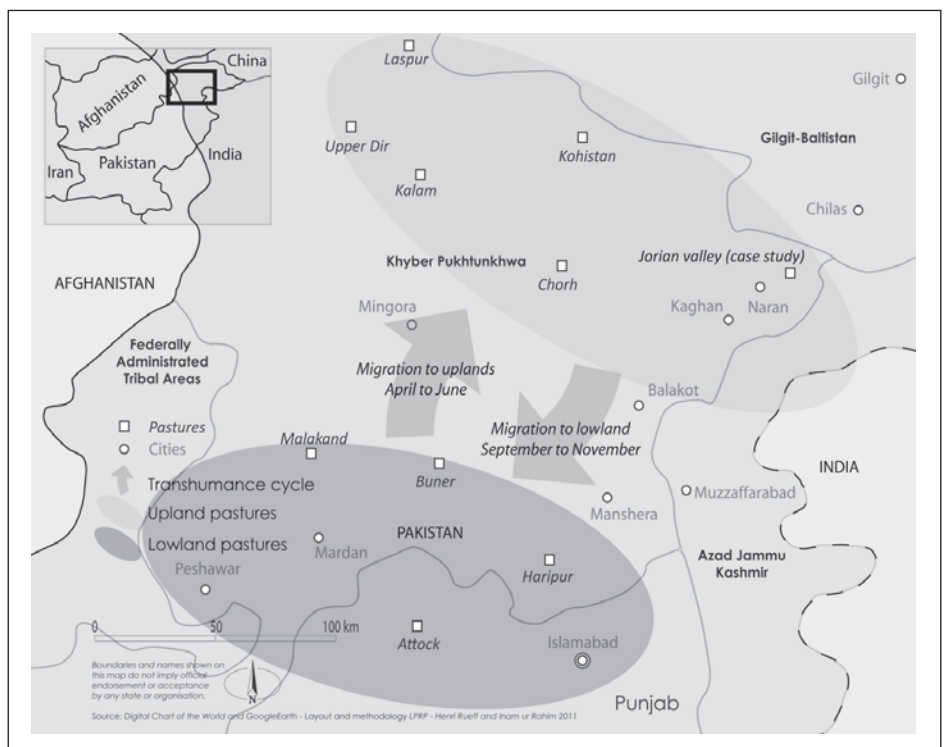


With fewer traditional routes to follow, pastoralists are forced to follow major roads and mountain ridges. Balakot-Kaghan road, Hindu Kush, Pakistan. Photo: Inam-ur-Rahim

Definitions

Transhumance: seasonal movement of herders with their livestock between summer and winter pastures, often between alpine pastures (upland) in summer and pastures, valley or plain areas in winter (lowland).

Payment for ecosystem services (PES): PES is a scheme that remunerates the suppliers of ecological services. It uses market mechanisms to stimulate land users to conserve ecosystem services. PES schemes benefit both suppliers and buyers, and can be implemented on a voluntary basis. Their main advantage is that they allow land users to renounce a form of land use (such as ploughing up pastureland) that would harm the environment. PES can enhance management, promote rural development, and alleviate poverty. However, polluters should not be rewarded for polluting less by means of PES.



Map of upland and lowland pastures and pastoralists' transhumance cycle (Source: Digital Chart of the World. Map details: Henri Rueff)



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Policy implications of NCCR North-South research

Overcoming the marginalisation of pastoralists requires cooperation between policymakers, local governments, civil society, and pastoralists. Developing and implementing appropriate policies depends on a better understanding of mobile pastoral economies and an appreciation of the value of their services.

Addressing the overlaps among different land tenure systems such as federal and tribal systems can make it possible to identify appropriate grazing areas and agreed water points and resting places. This will make it easier for pastoralists to move their animals.

A proper assessment of the direct and indirect value of the pastoral systems in Khyber Pakhtunkhwa will provide the rationale for creating the necessary support services for pastoralists, securing their transhumance routes, and conserving alpine pastures.

Environmental services are increasingly being valued worldwide. Maintaining them through payments for ecosystem services can create significant economic opportunities at local, regional, and even national levels.

To develop the full potential of these measures, policy changes in education, health, and veterinary services are required that consider pastoralists.

Finally, preventing the marginalisation of the weakest social groups will limit the chances for insurgent groups to find recruits.

Further reading

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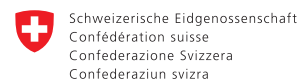
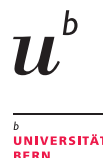
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