

An abstract from: Swift, J, Baas, S and Yongong, L (2005): *Pastoral Risk Management in Qinghai Province A Final Report.*

The proposed approach is composed of 5 mutually reinforcing components, each presented as a set of strategies. They are:

GRAZING AND PASTURE RESOURCE MANAGEMENT

Strategy 1: Measuring and monitoring grazing resources

Standing hay at the end of the growing season in September/October is the chief component of winter feed for livestock, and, taken together with estimates of livestock numbers and condition, determines whether the following winter/spring will be easy or difficult for pastoral households. Measuring or estimating this standing crop is an essential part of a risk management strategy.

Recommended actions are:

Introduce pastoral resource assessments

The project developed an innovative approach to resource assessment in pastoral systems (Resource Assessment for Pastoral Systems - RAPS). RAPS software can integrate grassland, livestock and climatic data, can provide accurate forecasting of threats to the herding economy, and can trigger pre-planned reactions. The RAPS system allows standing herbage to be measured and analysed at a great number of sites very quickly.

The project recommended that RAPS should be adopted by the AAHB as a primary tool for information collection and analysis in pastoral risk management. RAPS should be integrated into the Bureau's routine work at provincial and lower levels.

Pasture mapping

The areas of different pasture types and their emplacement are not well known. Mapping the Qinghai grasslands using available remote sensing and GIS technology is urgent and will provide a baseline for use of the pasture probe and other methods to give a more accurate assessment of grassland yields.

Pasture probe

An electronic pasture probe was acquired by the project but arrived too late in 2005 for training in its use by the international consultant. It should be used in conjunction with classic methods of herbage sampling.

Training

The project provided training in the use of RAPS. Further training and practical experience will be needed to make the RAPS system operational. Further training is needed especially in:

- Use of the pasture probe
- Use of RAPS software

Better data on livestock and pasture

Present livestock numbers and grassland component and type are not well known, and existing statistics are very unreliable. The priority is for a detailed and comprehensive census of livestock, taken at regular intervals. The census should be based on a sample household survey, with cross checking of official statistics.

Strategy 2: Managing grasslands

Recommended actions are:

Pasture tenure

The grassland tenure rules arising from the dual responsibility system introduced in 1985, have had a far reaching impact on the herding economy. The grassland tenure system put in place in the early 1990s has many advantages, and some disadvantages.

In the project area, 50 year, non-rolling leases were issued in 1999. They run out in 2049. Some land inheritance, transfers of land and sub-leasing takes place, but it is essentially a closed system. People can leave and sub-let their land to others already in the system, but there can be no new entrants or major changes in and allocation before the leases run out, unless new legislation is passed.

The pasture tenure system and the fencing of pasture which has followed, should be reviewed. The lessons are important not only for the TCP, but also on a much larger scale for the Three River project, and the Qinghai Lake project, in both of which pastoral land tenure should be a central issue. There needs to be a review of experience in operating the 1985 grazing act, the tenure aspects of the 4CM and similar programmes. The functioning of the pasture lease system over the last twenty years and its contribution to risk reduction are key topics.

Reserved grazing areas

At present some households have on their own initiative created small fenced and manured grassland reserves close to their winter house. These should be encouraged, but with care that too large an area is not fenced off.

Improving grassland productivity

Livestock productivity gains will have to come primarily through a mix of activities, only some of which are directly related to tenure. These include: an extension of the areas of pooled and collectively managed winter-spring grazing, within which there should be a place for small fenced household winter grazing reserves; increased haymaking; and use of supplementary feed including concentrates. If small groups organise to pool and jointly manage their winter-spring pastures, fencing costs would be reduced considerably.

Soil degradation

follows a sequence of sedge degradation, rodent burrowing, wind and water erosion, sedge mortality and increased bare ground, root shearing by frost heaving, and continued wind and water erosion.

Grassland seriously degraded by black beach soil formation should be re-vegetated, moderately degraded grassland should be disk-harrowed to loosen soil to allow natural regeneration, and livestock grazing should be controlled on lightly degraded grassland. Black beach rehabilitation using these methods has a productive stand life between five and eight years.

WINTER FEED

Strategy 3: Feed and fodder

Growing and conserving hay and other fodders and concentrates is a key risk management activity for households.

Recommended actions are:

Hay

Hay should be a part of the normal feeding routine, and households should aim to incorporate hay growing, making and storage into their seasonal cycle. Government should promote this idea through all the extension outlets available to it.

Oats production

Oats are the most suitable fodder. Government strategy is to encourage the growing of oats in walled sheep pens. The target figure is one third of a hectare (five *mu*) per household, but this is rarely attained. Most sheep pens are too small - a little over half a *mu*. At present the contribution of sown fodder to the overall feed availability in the project area is very small. Herders have no experience of cultivation or haymaking and a considerable effort in demonstration and training will be needed before they become competent.

Manure application

In the project area some herders have started to enclose (with wire netting) small private grassland reserves close to their winter camps; they manure the natural pasture inside the pens, and are getting good yields. This should be encouraged.

Feed concentrates

Concentrates are available in market places and are part of most herder's winter routine feeding systems. Herders should be encouraged to continue purchasing fodder concentrates in accordance with the annual winter risk forecasting system proposed in strategy 7.

Strategy 4: Fodder markets, fodder banks and emergency fodder funds

Hay and fodder production should be encouraged at the level of individual households.

Recommended actions are:

Under normal weather conditions, central or local government should not hold emergency fodder stocks. Hay is a bulky fodder of relatively low feed value; it is expensive to transport and store and it is not cost-effective to transport it over large distances. Households should produce and hold their own private hay reserves if the hay is produced locally.

Emergency fodder stocks

Emergency fodder stocks may be constituted by local government at a higher level in the administration (county or prefecture) as part of a risk management strategy. They should contain high nutritive value feeds, such as bran and concentrates. Rules for management, release and turnover of government emergency stocks need to be established. Management of such emergency reserves to make them sustainable is complex.

Buying and storing extra concentrates for winter to form a county or prefecture fodder reserve should only be undertaken if the autumn pastoral risk forecast is pessimistic about the prospects for the coming winter-spring period.

Emergency cash fund

The best option for reacting to emergency animal feed needs would be to have an emergency cash fund at county headquarters as a part of a coherent risk management system. Herders could draw on such a fund for loans for advance purchases if the risk forecast signals a severe risk of feed shortages in the following three to five months. County-level authorities should be able to call on the same fund to constitute a publicly-managed county level emergency stock.

LIVESTOCK PRODUCTION, BREEDING AND HEALTH

Strategy 5: Animal production and breeding

Recommended actions are:

Piloting ‘improved’ yak and sheep varieties :‘Improved’ yak and sheep varieties have been introduced but their performance is not yet known. Experiments started by the project should be continued since the initial signs are hopeful. Genetically ‘improved’ stock are often more at risk in extreme environments than the native breeds. Any programme to change the genetic makeup of local yak or sheep must be extremely closely monitored for any indication that risk to herders is being increased.

Creating ‘elite’ herds and flocks: The creation of ‘elite’ herds and flocks of genetically superior animals as the basis for spreading access to these genetic resources more widely needs to be supported by appropriate institutions. The tasks include setting standards,

certification and record keeping, compiling breeding plans, deciding which bulls to castrate, measuring the productivity performance of offspring, planning culling rates for each generation, making criteria for breeding stock selection. Systems appropriate to Qinghai need to be developed.

Develop multipurpose indicators of animal resilience: Better indicators of animal condition and resilience are needed as part of the winter risk forecast, and as a guide to which animals should be sold or culled if necessary. There is a need to develop more accurate, probably multipurpose, indicators of resilience.

Yak and sheep body condition measurements: The methodologies developed by the TCP project for estimating yak and sheep body condition provide a useful guide to rapid methods for the autumn pastoral risk assessment and should be adopted as a part of that assessment. It is recommended that these methods be adopted as the standard methods for use in Qinghai.

Training: Training courses on how to manage breed improvement are essential. Themes would include: how to select the best breeding stock, how to organize breeding plans, how to raise breeding stock; how to increase the offtake rate, how to evaluate body condition before winter in order to eliminate weak and sick animals in order to reduce grazing pressure.

Strategy 6: Animal health

Recommended actions are:

Better veterinary care: Veterinary care should be strengthened. The role of herder technicians, acting in the context of herder associations, is crucial. However there may be situations where the veterinary health care system, designed in the collective period when most livestock belonged to the collective, is not fully adapted to the new situation created by the household responsibility system.

Disease monitoring and livestock census: At present there is a largely passive system for disease reporting relying on herder technicians and anecdotal reports from herders. Field surveys are currently mainly on an *ad hoc* basis. Accurate and reliable livestock population figures will be an essential input into RAPS and the risk early warning system. A comprehensive livestock census for Qinghai should be carried out as soon as possible. Provision should be made for such a census to take place at regular intervals (between 5 and 10 years), with a regular update.

Upgrading the skills of herder technicians: Upgrading the skills of herder veterinary technicians would be a cost-effective way of extending good quality animal health care to herders. This requires more training, including training in disaster early warning and reaction, better equipment, more extension, better salaries and conditions of service, and greater recognition by government and the community.

Adapting vaccinations to real stock numbers: Vaccination is not yet reaching enough animals to guarantee herd immunity, mainly because herders under-report their herd size, and because the herder technicians lack transport, equipment, and motivation to reach all the animals. The success of vaccination in keeping major disease threats at bay in recent years has also led

some herders to doubt the importance of vaccination. To correct for under-reporting of herd size, vaccine supplies should be increased by 20-40 percent over the number of livestock officially enumerated.

Timing of parasite control: At present parasite control takes place twice every year – in spring and autumn. This could be replaced in most areas with a single campaign in January, using Ivermectin. A second campaign could be organised only in especially badly infested places in March or April. It is believed this would be a more cost-effective strategy.

More active role for herders' associations and family enterprises: Animal health services can be greatly facilitated by herder associations which encourage herders to find joint solutions to their problems. Upgrading of veterinary services should be planned with this in mind. The AAHB should investigate the degree to which the development of family-based livestock holdings requires different models of disease control and animal breeding from the previous more centralised methods. New types of disease control and veterinary service may need to be established.

Herder technicians and veterinary staff involvement in early warning and rapid reaction: Herder technicians and veterinary staff generally have a critical role to play in planning for and reacting to pastoral risk: in designing and implementing risk prevention and risk management strategies, compiling the annual winter preparedness and risk forecast, contributing to the early warning and rapid reaction system. They must be closely involved in these activities from the start.

ENCOURAGING HERDER RESILIENCE TO PASTORAL RISK

Strategy 7: Early warning and rapid reaction system for PRM

The main thrust of pastoral risk management is to reduce herder vulnerability and manage long term threats to stability and growth of pastoral communities. However it should also be able to counter sudden severe threats to livelihoods. In Qinghai such threats are usually caused by environmental factors such as drought or snow disaster. Emergency measures to counter this will be much more efficient if they have been planned well in advance.

Recommended actions are:

Develop locally adapted risk assessment and management plans: Government should develop and standardise the methodology used draft, implement and evaluate the winter preparation and risk forecast for Henan and Zeku counties for winter 2004/5, and extend coverage to the entire province by 2010.

Forecast risk of winter-spring feed shortage and other over-winter risk: Using established methodologies (and RAPS when operational) the government should develop a province-wide system to assess adequacy of grazing and feed reserves for forthcoming winter.

Winter preparedness and risk forecast bulletins: Winter preparedness reports should be based on comprehensive monitoring by herder groups and local animal technicians of a set of key indicators including, at the household level: livestock condition and health, state of pastures, household feed reserves, state of household winter preparations, likely household winter off-

take of livestock. The winter preparedness reports should be prepared at township/county level initially and completed and submitted upwards to the Qinghai Bureau of Animal Husbandry according to a strict annual schedule between September and November. Winter preparedness reports should also contain a long distance weather forecast and a set of early warning signals. On the basis of this information county authorities will declare a particular warning stage for their area. These warning stages (normal, alert, alarm, emergency) will trigger a set of activities appropriate to the stage.

Adjusting the livestock-feed balance: If the livestock population significantly exceeds the total feed available for the following winter-spring period, herders and local authorities should agree on a course of action, essentially to buy in more feed or reduce animal numbers.

Emergency responses: A set of appropriate responses, planned in detail in advance and triggered by the early warning stages, should be developed. Responses will be defined in advance of specific threats and will include emergency plans to (i) encourage higher levels of sales of animals by herders by subsidising livestock traders costs or supplementing the sales price directly, (ii) reduce the price of formulated feeds and concentrates; (iii) trigger the opening of a local disaster emergency fund.

Strategy 8: Improved housing and infrastructure

Government should extend the 4CM programme and subsidise up to 100 percent of the cost for poor herding households, starting with the construction of winter barns. The target should be to have all households possessing a winter barn by the year 2010.

Strategy 9: Promoting herder cooperation

Present formal institutions are inadequate to address the full variety of tasks related to PRM. Community organisations are well placed to complement government and individual responsibilities for PRM at local level, since they are closest to the herders or even composed of herders, and can pool resources and capture economies of scale. Some formal herder's cooperatives have been launched in Qinghai during the last few years. In addition, the TCP found a range of informal herder's neighbourhood groups operating on collaborative basis. With further support and capacity building they have good basic potentials for launching voluntary and trust-based cooperative development among herders.

Recommended actions are:

Raise awareness: Cooperative development in project areas is at an early stage and it needs significant further efforts and support from provincial and local governments to achieve the targeted objectives.

Promote demonstrations of collaborative actions: Some newly established organizations have potentials as demonstration sites for promoting collaborative actions, but they need further institutional strengthening.

Define responsibilities/tasks of local stakeholder groups in PRM: Provincial and local government need explicitly to create a dialogue around PRM with herder organizations.

Recognize importance of informal groups and their comparative advantages: Government at all levels needs to recognise that existing informal groups can provide the basis for expanded collective action and for the formalisation of community organisations.

Training and capacity building: Tailored capacity building and training processes for community organizations to empower them as partners in economic development and PRM need to be designed and implemented.

POLICY AND INSTITUTIONAL FRAMEWORKS FOR PASTORAL RISK MANAGEMENT

Strategy 10: Mainstreaming pastoral risk management within a reshaped pastoral economy

If it is to become sustainable and part of the mainstream, pastoral risk management has to be incorporated into the mainstream of government development strategy and relevant programmes.

Recommended actions to achieve this are:

- integrate pastoral risk management into the provincial 11th five year plan;
- integrate into the DAAH 11th five year plan and link the pastoral risk management initiatives into the governmental regional and sectoral development programs;
- take advantage of a likely growth in demand for livestock products arising from increased population growth and urbanisation, the new market opportunities created by the Qinghai - Lhasa railway and new roads;
- scaling up the TCP and integration into the Three River conservation programme via DAAH; identify funds from 3R Program for construction of PRM long term risk avoidance infrastructure
- integrate into on-going pastoral development projects and programmes
- integrate PRM with the national poverty reduction programme.
- link into the ‘national natural disaster management strategy’
- ensure that herders’ interests are not ignored in the two major environmental programmes (Three Rivers, Qinghai lake) which requires:
 - new models of herder-friendly nature reserves in 3R region, in which herders are partners in ecological regeneration, not enemies;
 - agree voluntary resettlement of herders living in the core zone of 3R with full compensation;
 - develop new models of sustainable pastoral livelihoods in Qinghai;
 - develop alternative livelihoods for herders who wish to leave pastoralism.

Strategy 11: Financing pastoral risk management

The best risk reduction strategy in the long term is equitably-distributed economic growth. The prospects for sustained growth in the livestock sector are good, but will require careful

planning by the livestock authorities. Well-designed growth in the livestock economy will reduce pastoral risk substantially but requires support from government and the scientific institutions.

Recommended actions are:

1. Government financing: Three categories of provincial government expenditure are particularly important in the context of pastoral risk management. First, further investment in risk mitigation infrastructure (eg winter barns, fodder stores, communications systems, roads and tracks linking remote and vulnerable areas to larger population centres and markets). This process has started through the Four Counter-measures policy, but because the 4CM policy required matching funding from herders for capital items such as winter barns, poorer herders, unable to provide the matching funds, did not benefit to the same degree. Government needs to redefine the 4CM policy and include within it a subsidy element for poor herder households.

The second category of government investment in the pastoral economy concerns the role of subsidies more generally. Subsidy payments to farmers should include an element for supporting the maintenance of particular types of natural resource and characteristics of landscape. If the government wants to protect the watershed areas in order to secure downstream land uses, and protect towns from flooding, it is right that upstream land users and especially herders should be subsidised to achieve this.

The third category of essential government expenditure on risk management concerns disaster mitigation and emergency needs. Government needs to explore the best way of creating and managing emergency funds for natural disaster relief.

2. Private finance Investment in risk management activities should not only be the responsibility of government. There is an urgent need for private financial initiatives in the risk management field. Government should create an economic and legal environment and institutional support conducive to the growth of micro-finance initiatives, private financial institutions and financial incentives for risk management. Government should also be ready to guarantee rural disaster insurance schemes in the early stages when they are most vulnerable.

Government needs to explore the best way of creating and managing emergency funds for natural disaster relief, including stand-by funds which can be accessed rapidly in an emergency.

Government should investigate the potential for implementing an index insurance scheme; some financial support in the form of a back-stop guarantee may be needed to get such a scheme off the ground.

Strategy 12: Improving governance for pastoral risk management

Present formal institutions are sometimes inadequate to the task of preparing for and managing pastoral risk. Community groups also have an essential role to play, in ways that should complement government's, but are also often ill-equipped. A review of the ability of

government and communities to respond rapidly and efficiently, and in a co-ordinated manner, is needed.

Recommended actions are:

Strengthen governmental functions and capacity in PRM: There is a need to review government's ability to respond rapidly and efficiently to pastoral risks and to formulate plans for institutional capacity building for PRM through staff training and improvement of the institutional facilities.

Build up partnerships between government organizations and herder and community organizations: Provincial and local government need explicitly to create a dialogue with herder community organisations and also with informal neighbourhood groups and others to agree on a PRM strategy initially at county and province level. It should be recognized that the community associations are better equipped to manage some aspects of PRM than government.

Strengthen stakeholder coordination: Co-ordination and information exchange between government agencies in the field of PRM needs to be improved both vertically and horizontally. The existing Pastoral Emergency Coordination Committee at county, prefecture and provincial level should be the coordination body. The mandates of the committee should be extended to coordinate between all related stakeholders and all issues related to PRM and emergency response.

Bottom-up risk management planning: To address the demands of herders and communities, a bottom-up risk management planning mechanism should be introduced. Herders' representatives, community leaders and representatives of herder's cooperatives should be involved in the risk management planning process. Government should require that all proposals for major project funding that involve herders in any way should be accompanied by a risk impact assessment.

Strengthen the pastoral extension service: In the much changed atmosphere of China's economic boom, the concern with very large environmental conservation programmes, and new attitudes towards herders, there should be comprehensive review of requirements for a pastoral extension service.

PRM fund management: PRM funds should be established at county, prefecture and provincial levels as part of governmental annual public budget for supporting local PRM actions. Budgeting process and allocation and channels for governmental PRM funds must be operated in a transparent way. An independent fund auditing and monitoring mechanism should be established to ensure that the funds will be provided to the planned target communities and herders.