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List of abbreviations

AALP	Alternative Agricultural Livelihoods Programme
AI	Artificial Insemination
AIRES	Agriculture, Rural Investment and Enterprise Strengthening
AL	Alternative Livelihoods
AVA	Afghan Veterinary Association
CN	Counter Narcotics
CTA	Chief Technical Advisor
DCA	Dutch Committee for Afghanistan
DFID	Department for International Development (UK)
FAO	Food and Agriculture Organization of the United Nations
MAIL	Ministry of Agriculture, Irrigation and Livestock
MCC	Milk Collection Centre
MPCS	Milk Producer Cooperative Societies
NGO	Non-Governmental Organization
PDP	Project Discussion Paper
SME	Small and medium scale enterprise
UN	United Nations
USAID	United States Agency for International Development
VFU	Veterinary Field Units

Specialized terminology

Amul	Brand name for dairy cooperative movement formed in 1946 in Gujarat, India managed by an apex organisation, the Gujarat Co-operative Milk Marketing Federation Ltd, which is owned jointly by 2.41 million milk producers
Cooperative unions	Associations of MCC cooperatives registered at Dept. of Agriculture. The union responsible, the Balkh Livestock Development Union was previously known as the Balkh Livestock Development Association and Balkh Livestock Development Centre
Green markets	Include open-air, municipal and commodity wholesale markets
Fresh products include:	Bulk packaged, traditional dairy products—milk, cream and yogurt; also current Balkh Dairy products made from boiled milk
kaimak	cream repeatedly skimmed from surface of raw milk as it comes to a boil
dogh	yogurt drink
chaka	(known as quark in Europe) soft, cheese-like product made from yogurt
paneer	unfermented soft white cheese
quroot	a hard, dried cheese-like product made from yogurt, flour and salt
MCC cooperatives	Cooperatives formed around MCCs and registered at the Department of Agriculture. They are also known as primary cooperatives and Milk Producer Cooperative Societies (MPCS)
UHT	Ultra-high temperature sterilization of food before packaging
Window shops	Retail outlets operated by commission agents for Balkh Dairy

Introduction

Background

This Project Discussion Paper (PDP) has been prepared under the Alternative Agricultural Livelihoods Programme (AALP) as part of its contribution to reducing illicit opium poppy cultivation in Afghanistan. It aims to contribute to national policy through helping to develop nationally owned, alternative livelihood strategies and action plans.

The challenge being faced was summarised in 2004 by the World Bank as follows: “the opium economy is Afghanistan’s leading economic activity, supporting powerful warlords and a drug industry which has a strong interest in preventing the emergence of an effective, accountable state... no single approach is likely to be effective and sustainable ... a combination of different measures, well-designed and well-sequenced, will be essential to have any hope of success”.

The AALP takes a broad strategic approach to alternative livelihoods by considering the rural economy as a whole. Amongst other work, the AALP is producing a series of PDPs¹ to inform a range of stakeholders at different levels of the outcomes of surveys and analysis carried out during 2006 and 2007 in Herat, Balkh, Bamyan and Kabul Provinces.

This PDP reviews the role of dairy market chains in contributing to effective counter narcotic (CN) interventions and alternative livelihood (AL) strategies in Afghanistan. It should be read alongside AALP PDP 29 “The Role of Dairy Development in Counter Narcotic Strategies”. This PDP discusses:

- Key constraints to commercial milk production and ways to address them;
- Different approaches to the organisation of dairy market chains as models for large scale, accelerated development.
- Roles of various participants in dairy market chains;
- Various ways to organise dairy market chains and improve efficiency including whether cooperatives are appropriate organisations for managing Milk Collection Centres (MCCs) and processing plants; and
- Policies to improve farmer’s access to dairy marketing opportunities

Objectives

This PDP synthesises the findings of AALP’s consultancy reports and analysis and, to set these in context, amalgamates them with selective editing of the key findings of original sources as listed in the references in **Annex A**.

The immediate target audience includes technical personnel, policy advisors and programme and project staff from within government, donor and UN organisations, NGOs and the private sector.

AALP has selected areas for pilot schemes in Balkh and Herat Provinces. The main target groups and ultimate beneficiaries include small farmers, landless labourers and vulnerable groups, including those involved in opium poppy cultivation, together with rural traders, small entrepreneurs, local leaders and CBOs, who can gain new opportunity and choice.

¹ These can be found on the programme website at www.FAO-AALP.org

Details

Background to dairy production

Milk in Afghanistan is produced on farms of all sizes and by peoples from many different cultural settings—pastoralists, agro-pastoralists, sedentary smallholders, landless farmers and sharecroppers. Most dairy farmers operate diversified subsistence or mixed farming systems which spread risk over multiple products.

Milk is not a primary product on most farms but provides some staple food and supplements income from other on- and off-farm sources. Consequently, it helps to reduce the need for credit from moneylenders, shopkeepers or opium traders. There is a long tradition of informal contracts among landowners, dairy farmers and forage producers who often divide milk on a sharecropping basis. Land for forage production is desirable, but not necessarily required.

Those engaged in commercial milk production generate weekly cash flows for farmers, processors, wholesalers and distributors. This pays for: micro-credit providers; investment in production inputs; installing modern management practices and capital equipment, including short-term investments in feed, medium-term investments in breeding and long-term investments in equipment and infrastructure.

Background to dairy marketing

Study of opportunities to rebuild Afghanistan's livestock sector concludes that sizeable domestic, regional and international markets exist for processed dairy products. Some products, such as yoghurt from Ghazni, enjoy a nationwide reputation (Halbach, 2005). Market surveys for dairy products have revealed a large local market for fresh products reflecting consumer demand for fresh milk and yogurt. However, the slow pace of livestock recovery and the lack of modern processing and marketing arrangements mean that demand still far outstrips supply.

Most milk is imported from Pakistan in either powdered or UHT form and sold at inflated prices. Current imports also include substantial amounts of cheese and quark (dried yoghurt). Lack of any systematic study means there is limited knowledge of the extent to which local markets are supplied with pastoral products in Afghanistan.

Daily production and trade activities work through finance from suppliers credit, the *hawala*² system, and the capital of livestock raisers/producers and entrepreneurs. Supply chain structures and the relationships between traders and buyers in the wholesale and retail markets are simple. Farmers trade mainly through middlemen to sell their livestock products.

However, some farmers sell milk and processed products directly to consumers and retailers in rural areas. Others sell to wholesalers who supply urban retail shops. Private milk traders buy raw milk from dairy farmers and sell it to private processors. Some processors produce their own milk and operate their own retail shops (Bash, 2007).

The fact that most of the traded fresh milk flows through informal market channels reflects tradition, culture and the absence of formal marketing channels in remote and poor areas, as well as the unwillingness of consumers to pay the extra costs of improved processing and packaging. The predominance of informal marketing need not be an obstacle to dairy sector development.

² A system for remitting money, primarily amongst Muslims, in which a financial obligation between two parties is settled by transferring it to a third party, when money owed by a debtor to a creditor is paid by a person who owes the debtor money. *Hawala* transactions are usually based on trust and leave no written record.

However, the value adding of milk processing into cheese, yogurt, curd, butter and ghee is frequently done on farm and marketed directly to local consumers in the village or in nearby towns. Seasonality in production and processing means some processors will store processed milk products such as butter until Ramadan³, when prices rise.

Livestock traders source largely from a range of traditional suppliers. The international import trade may source from a designated factory through middle men connected to a range of domestic wholesale traders who on-sell to others in the chain. The export trade, whilst historically important, is currently virtually non-existent.

Production for sale and the selling of milk and dairy products was once common in the Kabul region and in northern Afghanistan. Animals and their dairy products are walked or trucked to markets either directly by producers or through a variety of traders. There are no modern sale yards, chilling or freezing rooms, dairy factories, and few refrigerated transport or storage possibilities in wholesale and retail markets.

Investments in collection, processing and packaging, and a cold transportation chain are potentially profitable, but are logistically challenging (Halbach, 2005). Refrigeration is needed at several levels of dairy market chains, including in trucks to carry milk from MCCs and to deliver products to retail shops. A network of micro, SME and commercial credit providers could finance new technologies and management practices.

In eastern and southern Afghanistan, milk production is mainly for home consumption. Amongst the Pashtun, sales of fresh dairy products were considered shameful and any surplus was freely distributed to relatives or needy people, but processed products, such as butter, cheese and *qurut*, were sold.

At times, farm-gate prices can be higher than those in the formal sector; and informal small-scale credit provided by middlemen, even at high interest rates, can be crucial in areas where formal credit sources are not available.

Reviving modern dairy market chains

The various approaches to re-establishing the formal collection, processing and commercial distribution of milk and milk products, include: FAO's vertical integration strategy with schemes for Kabul and Mazaar-e-Sharif, started in 2002; the World Bank's AMUL-type approach based on experience in India (which is currently being re-designed); the joint partnership approach with Mercy Corps in Kandahar and Land O'Lakes with USARC and the Aga Khan Foundation joint project in Pul-e-Khumri in northern Afghanistan; and, dairy development experiences in other developing countries.

The Ministry of Agriculture, Irrigation and Livestock (MAIL) is helping to establish agricultural cooperatives as a way to increase milk production and processing. Some donors and NGOs are undertaking dairy programmes to increase the incomes of poor farmers, particularly women.

Experiences with pilot milk-marketing schemes in Kandahar and Kabul show that: (i) many farmers have a strong interest in increasing milk production and in selling the milk; and (ii) that there is substantial demand from consumers for milk and milk products. Even in Kandahar, the social taboo of selling milk seems to be less important than it used to be.

³ The timing of Ramadan is fixed in the lunar and not the solar calendar. Thus, the timing drops back every year by some 11 days in the Gregorian calendar. This has major significance for sequencing and managing any marketing plan built on seasonal livestock production, processing and marketing systems that try to take advantage of the short, but potentially lucrative, Ramadan market opportunity (Spooner & Walsh, 1991)

Issues emerging

The primary challenges

There are numerous challenges to the future of dairy production in Afghanistan, some of which are discussed here and others in AALP PDP 29 on the Role of Dairy Development as Part of Livelihood Package in CN strategies. The key issues related to developing dairy production and market chains are discussed below.

Which dairy chains, which markets?

Many countries have tried developing western-style collection, processing, and distribution systems, with pasteurised products, funded by development aid. There is growing evidence that this approach might be counter productive if implemented in isolation. In these circumstances, pasteurization and packing costs, which nearly double the price of milk to consumers, will create great pressure for a reduction in farm-gate prices and limit access by the urban poor.

If the formal sector had an exclusive right to distribute milk and milk products, this would adversely affect direct sales by farmers, small traders and other intermediaries involved in the informal distribution system. A formal collection system, while achieving an economy of scale is also often accompanied by the need to install on-farm cooling equipment which itself only usually becomes profitable at a production level of 100 litres or more per day. Such requirements, in situations where milk is boiled before consumption, are unnecessary, as boiling obviates the need for pasteurization.

The FAO livestock and dairy projects, as with many other donor initiatives, have focused upon developing dairy supplies for urban markets, based on cow's milk. However, this approach limits the opportunities to manage dairy opportunities effectively within a CN and AL framework. Here, to be successful, a multi-faceted strategy would be required to challenge the dominance of the illicit opium production and trade which exists in many areas. Such an approach would need to address the non-commercial sectors for dairy products and the role of all livestock types found in local livestock herds. The role of dairy development in the lives of pastoralists, agro-pastoralists, smallholders, migrant labourers and sharecroppers would be equally important in market chain planning and development.

The packaged fresh milk products made in Balkh and Guzargah dairies will take market share from bulk products sold in green markets and by farmers and street vendors. They are unlikely to compete directly with UHT or other imports because of differences in flavour, storage requirements and prices. Packaged fresh products will create a new, commercial market for fresh products previously bartered, gifted, or consumed by farm households. They fit a market niche of consumers who prefer the taste and cooking characteristics of fresh dairy products and consumers who want high quality products, but are unwilling to pay the high prices of imports. Most consumers are unfamiliar with packaged fresh products, but their attitudes and behaviour provide useful insights. Even consumers without product knowledge have packaging preferences and recognise quality differences between bulk and packaged products. Their price expectations are important.

High quality products should command higher prices. If modern processing methods improve quality without a corresponding rise in prices, they merely increase costs. If consumers are unwilling to pay higher prices for packaged fresh products than for bulk products, processors can either rely on economies of scale to be competitive, or raise prices by targeting the most attractive market segments.

Afghanistan's modern dairy sector can satisfy only a small proportion of consumer demand. To ensure sustainability, modern processors need to focus on consumers willing to pay higher prices for freshness, safety, convenience and reliability. Marketing and promotion programmes to increase prices are as important to the success of fresh products as the processing itself.

Tackling dairy demand, but at what expense

Some survey data suggest that given the shortfalls in milk availability at household level, there are fears that milk collection schemes run the risk of diverting and impoverishing an already poor diet. Thus, any collection of milk should take care that the milk obtained is surplus to the dietary needs of the producers and their families. Otherwise, such programmes will affect, adversely, people's health.

Similarly, there are questions about the effects on young calves of household and commercial demands for milk, as the stunted appearance of many calves suggests that they receive so little milk that their adult size, milk yield potential and market value is reduced (Thompson, E., 2006).

The adoption of production technologies, like artificial insemination (AI) and intermediate technologies, such as crossbred cows, in mixed crop–livestock farming systems requires support from a well-trained and well-resourced extension service to improve technology transfer and to make such investments profitable. The innovative approaches to collaboration and partnering that are needed to address the management of such systems will be complex and expensive.

Informal to formal: hygiene issues

Current market chain handling methods generally fail to maintain proper health conditions to attract price premiums. For example, many trucks have no tier or compartment separations; distressed animals are often mistreated and, in sale yards, rarely have access to shade, water or fodder. Finally, packaging of dairy products is limited or inadequate by modern standards. Similarly, there is little control of environment health to protect people against the health risks of effluent and chemical use in the processing of dairy products. Also, animal and dairy processing is largely traditional, which presents a number of occupational health and safety issues which need to be addressed if modern standards are to be achieved.

National capacity for improving animal health and quarantine is weak. Overall, control of disease epidemics remains a low national priority. This results in significant lost production, with smallholders bearing the brunt of these losses and the investment risks.

For example, there is an absence of cross border quarantine and animal health inspection, and no facilities to hold, safely treat or destroy infected livestock or animal products. Similarly, there are few services for the inspection or hygiene review of premises processing and selling dairy products to restaurants or other public premises for the sale of food products.

The development of any approach entailing quality assurance for animal and human health is either not recognised, or not appreciated. Most transactions are almost entirely without documentation, identification or the means to trace animals and their products from a farm or pastoral setting to market.

Improving hygiene standards in modern dairy production involves substantial costs to milk producers, processors, wholesalers and retailers at all stages in the market chain. The perception is often that pastoral societies have virtually no outgoings for hygiene management, as they are seen as taking no special precautions. Therefore, since their principal consumers also seem to attach no importance to this, they can compete effectively with packaged products from intensive systems and see no need to adopt additional technologies that increase costs

without also increasing market price. If pastoralists had to operate with strict and enforceable regulations for dairy hygiene their production systems would be threatened. Almost by definition, pastoralists are remote from such regimes (Blench, 2001).

However, this view may well obscure a parallel reality, spawn a prejudice and promote an urban or modernist bias. Pastoralists and farm producers often consume fresh milk directly. If the fresh milk is to be stored short term, it can be boiled, fermented, processed and stored as a different product. Some cultures use natural locally available antibiotics, such as ash or herbs. Unadulterated milk also contains natural therapeutic agents. Thus, in these traditional circumstances, hygiene management is about the result of competition between favourable and unfavourable biotic agents.

The challenge of globalisation

Many livestock owners in Afghanistan are still struggling to restock their herds but have little access to formal credit. They are re-emerging into a world now transformed by the World Trade Organisation (WTO) with cross-border relations dominated by increased competition from cheap imports of live animals, frozen meat, eggs, wool and fresh and powdered milk which, not infrequently, expose smallholders to unfair and unequal market regimes. These imports may be difficult to displace in the absence of dramatic improvements in the productivity of livestock raised in Afghanistan. A gradual recovery of the national herd, though desirable from a livelihoods perspective, will not, on its own, bring about the improvements in productivity that are required to compete efficiently and effectively (Thomson, 2006).

Farmers in Afghanistan will face difficulties from imports, particularly from India and Pakistan, whose milk producers are more competitive. Part of the efforts to develop local dairy market chains should be to install, update and implement a legal and regulatory framework for the dairy sector to keep abreast of change in national, or external economic regimes and WTO regulations.

Some challenges for organising dairy market chains

Fresh milk is highly perishable and needs to be collected daily, whether for direct marketing or for processing and onward market delivery. This, and the fact that small producers have little individual leverage and no market influence, makes dairy production very suitable for cooperative marketing to help small producers organise and empower themselves.

Most cooperatives also provide livestock support services, such as health and breeding. However, political interference and inappropriate policies can result if milk is regarded as a staple and strategically important product and because of the large numbers of small livestock owners involved. These effects can range from distorting price controls, inappropriate subsidies or cross subsidies of services through the price of the milk (artificial insemination and health services), monopoly powers (cooperatives, processors and marketing) and excessive food safety regulations. As is the case in Afghanistan, the sector can also suffer from the dumping of surplus dairy products from other countries.

However, experience from the Land O'Lakes project highlights a common problem in Afghanistan that, even though the cash benefits to women become obvious when neighbours observe milk collectors paying women, the fundamental obstacle to expanding such programmes is how to locate literate women whose husbands or fathers will permit their involvement in a commercial activity (University of Florida, 2006).

Public and private services

Milk production takes place in a large number of small holdings scattered throughout the country. This makes access and links for technology transfer, credit and extension support difficult. Institutional credit services at the farm level of adequate quality and appropriate for dairy production are extremely hard to access. This is a major constraint to realising the potential of smallholder dairy production as AALP surveys have also established (FAO/Ekin, 2006, FAO/Adolph, 2006).

The reduction of risks and the opening up of choice for producers, processors and traders clearly requires a range of livestock services which, usually, are organised and financed by the public sector. Such services include policy, research and development, technology assessments, notifiable disease control, quarantine at national borders (land, air and water), regulation (registration / certification of premises, inspection), statistics, impact assessments, training and international agreements and coordination.

Increasing milk production would also require substantial efforts to improve veterinary services, feed supplies, training, and facilitating decisions to ensure a rational allocation of land to fodder production. These are all areas potentially open to private sector involvement. Each opportunity would benefit from a business and competitive analysis to ensure success and sustainability. Examples include the many veterinarians and paravets who, even as employees of NGOs and public agencies, already maintain their own private practices. They are forming a national Afghan Veterinary Association (AVA) to promote technology transfer and policies favouring its members. They also market most legally imported veterinary supplies in Afghanistan.

NGO activities, largely confined to donor supported approaches, are dependent on external funding and restricted to initiatives for animal health, dairy and poultry. While NGOs have created demand for services, their potential has yet to be fully explored with stakeholders. The Dutch Committee for Afghanistan (DCA) is training paravets and helping them establish Veterinary Field Units (VFUs). This evolving network of VFUs is an example of success in the rehabilitation of horizontal organisation in the livestock sector.

A national network of those participating and contributing to locally appropriate systems for pastoralist, agro-pastoralist and smallholder circumstances would be required to achieve success and sustainability. These sometimes separate operations will merge in various forms of local and national partnering and cooperation.

Eventually, the aim of these networks and chains would be to produce a self-sustaining turnover of knowledge and skills matched to need, experience and capability tuned to the tasks in hand and the capacity to organise dairy production, financing, and marketing systems which are responsive to a rapidly changing environment.

Lessons from national experience

Bash, 2007, has drawn together the experience from national efforts to revive the modern dairy sector in Afghanistan as follows.

FAO Dairy Programme

The objective of the FAO dairy programme is to integrate vertically and unify the incentives of: dairy farmers; MCCs; and processing plants, as well as to provide some measure of quality control. FAO's dairy market chain is complex, comprising inputs for milk production (forage seed, feed concentrate, veterinary services and training in good milking practices), MCCs, a basic processing plant and retail outlets.

Since the facilities of the current dairy in Balkh were unsuitable, Land O'Lakes has built a new processing plant close to three of Balkh Dairy's four MCCs, which will reduce the time

required to transport milk from the MCCs and thus improve product quality. The facility was completed in July 2007 on land purchased by the cooperative union.

The new Balkh Dairy plant faces many challenges. The farmers supplying MCCs have limited knowledge of modern dairy management practices and the MCC quality controls are lax. Access to forage, seed, fertilizer, animal health services, credit and other inputs is unreliable. The risk of milk-borne diseases could threaten the dairy's reputation for quality products. When donor support for the dairy programme ends in March 2008, FAO intends to turn the market chain over to the cooperative union, whose business management skills are still extremely weak. Farmers risk losing their primary commercial market for raw milk if the new dairy proves to be unprofitable.

However, this approach can be viable, sustainable and replicated in other areas. Its success (or failure) will have a strong influence on dairy development policy. This system is believed to be inappropriate, however, for accelerated, large-scale development.

The partnership of FAO and Land O'Lakes in Balkh Province is an example of successful donor cooperation. The Herat Ice Cream Company is another important partner for FAO.

USAID/Land O'Lakes' Dairy Project

The USAID-funded Land O'Lakes project⁴ built two MCCs in Parwan and has provided small scale processing equipment and training. However, the cooperative responsible for these MCCs was unsuccessful in marketing products to retail shops in nearby urban centres.

The project also established the large-scale Mountain Pastures fruit juice and dairy plant in Kunduz and trained local farmers to produce high quality milk for its future MCCs. The plant is scheduled to begin making juice drinks and UHT milk in 2007. This dairy plant will have transport cost advantages to compete directly with imported dairy products in its target market of Kabul. It is unlikely to compete with fresh milk available in the local market where consumers prefer the taste of fresh products and are unlikely to pay the higher price of UHT milk. They might switch to Mountain Pastures products, however, if the fresh products from other sources are of poor quality, unavailable or unsafe.

World Bank Dairy Programme

The original design of the World Bank's Emergency Horticulture and Livestock Project embraced an ambitious community-driven Indian style AMUL-type system with village milk producer associations and a Regional Milk Union to operate a medium-scale processing plant. The Regional Milk Union will supply production inputs to farmers and is planning to buy raw milk from village producer associations embracing 15,000 farmers. The Union will operate a processing plant with a planned capacity of 50,000 litres per day. The project has yet to begin and the World Bank is in the process of reconsidering these plans, re-assessing the appropriateness of the AMUL model in Afghanistan and redesigning the project (Bash, 2007).

Local processing plants tend to become natural monopoly buyers of raw milk and monopoly suppliers of production inputs within their areas. The vertically integrated dairy market chain, as originally planned by the World Bank, would have institutionalised farmers' exposure to this monopoly power and to a National Dairy Board dominated by private processors and government officials. The absence of market competition would have fostered inefficiency and opportunistic behaviour. Unless democratic principles and procedures are established in village associations—an unprecedented social development in Afghanistan, secretaries of village associations would be likely to represent the interests of Regional Milk Unions and the Dairy Board, rather than those of dairy farmers.

⁴ Dairy Industry Revitalization Project for Afghanistan (DIRPA)

The World Bank is reconsidering its strategy, aiming to involve a less centralized form of dairy chain development, encouraging multiple small processing plants and relying more on private investment in input supplies and processing and on competitive market forces.

Competitive dairy market chains

In competitive dairy market chains, farmers and processors have different incentives. Farmers want high prices for raw milk and low quality requirements, while processors want low prices and high quality standards. Some farmers organise around MCCs to bargain collectively with processing plants. The strict quality requirements of processing plants and their competitive relationship with MCCs suggest they should be private businesses.

Farmers and input suppliers also have different incentives in competitive markets. The diversity of dairy production inputs, as well as Afghanistan's long commercial trading tradition, suggest that inputs and services should be provided by private traders operating in competitive markets.

MCC management and collective bargaining with processors and input suppliers would be appropriate roles for village associations, which should be democratic organizations operating on cooperative principles. The current roles played by women in extension services, milk production and collection suggest they could play major roles in village milk producer associations. To operate like cooperatives, village associations should be small. Their members will require training and practice in collective bargaining and democratic decision making.

Other approaches

Another approach would be to identify partially developed market chains and provide the elements that private companies and other donor programmes do not make available.

Finally, these strategies could be combined, with some elements of the market chains being privatized, whilst maintaining public or cooperative ownership over others. Eventually, the demand for high quality, fresh products in urban markets will attract credit and private investment in dairy processing, increase the demand and price for raw milk, increase the demand for production inputs and attract traders who would compete to supply dairy farmers.

Lessons from international experience

International experience has rarely found farmer associations (village producer associations, milk cooperatives and unions) and public sector agencies to be competitive with private companies.

Cooperatives are usually transitional organisations in inefficient markets and play an important role in supplying inputs and services to farmers when private suppliers are scarce. At this stage of dairy development in Afghanistan, many of the products and services dairy farmers need are unavailable or expensive. Until market conditions improve and attract private suppliers, cooperatives can play important roles in supplying them. Cooperatives are also potentially valuable for advocating public policies favouring their members and for negotiating with monopolies. Sometimes they can be effective channels for public or NGO resources, or can access resources unavailable to individual farmers. However, cooperatives are not the most efficient type of organization for building a modern dairy sector. In the long run, most cannot compete with private businesses, which tend to adapt faster to changing market conditions. Frequently, private companies operate processing plants more efficiently than cooperatives or public agencies.

A key role for public agencies is to provide information through extension, research and demonstrations. Their intervention is also sometimes needed to reduce opportunistic behaviour and stimulate competitive market conditions (Bash, 2007).

The experiences of successful smallholder dairy development in East Africa, Pakistan and India, have identified various lessons on how to improve policy outcomes (FAO, 2005, Leksmono, et al, 2006):

Collaboration: Good collaboration is crucial to success in evolving an industry and ensuring appropriate policy change at each stage. Success rests on the commitment to and challenges of previous years of collaboration. Establishing effective working partnerships takes time and effort and relies on the partners building mutual understanding and trust. Collaboration in research provides the means to open up and develop the skills for establishing and managing links among organisations and to allow stakeholders to participate. Both aspects improve the relevance of findings and enhance communication which, otherwise, would not have occurred.

Research feeding into policy: Wide-ranging, thorough, robust and relevant evidence can be highly influential in initiating policy change. Well regarded research institutions cooperating effectively add to the credibility of evidence and to building reputation. Thus, well-managed R&D projects, aimed at influencing policy through advocacy, have an important role to play.

Respected forums: Staffing of successful programmes needs to allow every opportunity for the appropriate people to take part in meetings to communicate research findings. Key stakeholders, or their representatives, should be able to provide continuous communication of evidence and responses to it. Such forums build the means to establish respect and the reputation necessary for further cooperation. Farmers who have been empowered to speak for themselves are a compelling factor in efforts to modify opinions and build support for policy change.

Working with Civil Society Organisations (CSOs): Links with CSOs to build capacity for advocacy for policy change are also important; opening up more routes to influence and provide further links to grassroots organisations. Although many different types of organisations are frequently involved, it is shared vision that enables effective collaboration. The successful establishment of such links among organisations requires a considerable commitment of both time and energy.

Multiple approaches: Successful advocacy and institution building requires one or other of the organisations to be able to work simultaneously with stakeholders, from smallholders to traders to policy makers. This approach opens up many channels for assessing progress and influencing the direction of research and debate. Different channels become effective at different times, and a variety of communication methods is needed to be effective with different players. Such integrated activity is essential to move policy change and industry evolution forward.

Importance of individuals and timing: Ultimately, it is the quality of certain individuals and the crucial roles they can play as proponents and opponents of change that determines the direction and success of change. Well-placed individuals can act as policy champions who, when they are able to draw on broader collaborative networks, can feed important information into decision-making processes in timely ways. As a result, they can be hugely influential.

Conversely, similarly influential people can block change, necessitating new approaches to convince or circumvent them. The existence of such conditions means that such people can take advantage of changing political context.

External factors: External support often proves useful to tap into the resources and influence of international agencies which can give practical support to local stakeholders.

Focus on incentives: The response of politicians is often as dependent on the potential for personal political gain as much as it is on any potential benefits for local people. Where such processes can demonstrate the 'popular interest' and 'popular value' of changes this will usually prove influential with politicians. Some processes mean that their proponents can be

seen as pioneers of new approaches for a dairy industry, rather than appearing to side with the formal sector. Assessing how a policy change may affect key people's personal interests, and adapting a strategy to account for this, is therefore important.

Possible futures

Various studies have identified ways in which further initiatives could take the development of the dairy sector forward and which are drawn on this review (Bash, 2007; Blench, 2001; FAO, 1997; de Weijer, 2005; FAO, 2005; FAO/Ekin, 2006; Favre, 2004; Halback, 2005):

Future prospects for dairy

The regional demand for dairy products throughout South and Central Asia is expected to continue expanding with dairy production remaining very competitive and dominated by small-scale producers. This gives good reasons to promote small-scale dairy production and, if needs be, to protect dairy markets from unfair and harmful competition.

However, dairy production also carries significant risks. Livestock are usually owned in small numbers and often comprise a large part, if not all, of a household's assets. Disease outbreaks and livestock deaths can eliminate these assets, suddenly plunging owners into indebtedness and poverty. Therefore, easy-to-access veterinary services of adequate quality are essential. Experience shows that flexible private veterinary services, supported by appropriate public sector services, are highly desirable.

To improve productivity and international competition, farmer organisations in Afghanistan need to organise the fragmented production and market chains into a coherent and integrated sector where producers' interests are well represented.

Current production levels suggest there are considerable gains in productivity to be made through improved dairy management, whether the target is the pastoralist, the agro-pastoralist or the smallholder mixed farm sector.

With few exceptions⁵, Afghanistan's dairy sector has not attracted large scale private investment in either milk production or processing. Current political conditions in the country raise investment risks; markets are undeveloped and the transactions in dairy market chains are complex (Bash, 2007).

Dairy transportation, cold storage, processing and marketing facilities are expensive. The close proximity of peri-urban farmers to large urban markets can reduce these costs. While this infrastructure is also useful for other farm products and services, nonetheless, it can only benefit a small proportion of livestock keepers.

As modern dairy production and processing methods increase costs, there is usually a requirement for a corresponding increase in prices. The modern dairy sector in Afghanistan will likely only ever satisfy a small proportion of total consumer demand with major urban centres as the primary markets for processed dairy products. Potential urban consumers have poor access to fresh products directly from farmers and are more likely to pay higher prices for processed products.

Marketing plans for processing plants should focus on these consumers and should develop from specific consumer surveys. Thus, processors will likely focus on those products they can produce efficiently and market profitably and will target those consumers who are willing to pay higher prices for freshness, safety, convenience and reliability in their processed raw milk and milk products.

⁵ Exceptions include the Mountain Pastures dairy plant in Kunduz and the Herat Ice Cream Company in Herat

The potential for dairy development implies taking a market share from raw milk suppliers instead of competing with imports and to protect the market share by improving hygiene, tightening quality controls and providing reliable markets for high quality fresh processed milk. It also suggests that processing plants need to be reliable buyers of raw milk and pay attractive prices to motivate farmers to invest in new management practices. Unlike current practice, milk should be collected twice a day to stimulate investment in more cows and improved management, resulting in higher and better quality milk production.

The organisation of dairy developments

Smallholder milk production has large commercial potential, even in remote rural areas. However, markets and distribution systems need to be clearly defined before government agencies, donors or NGOs encourage farmer groups or private investors to set up MCCs.

The complexity of dairy production requirements and Afghanistan's trading traditions, suggest that production inputs and services should be provided by private traders operating in competitive markets, rather than by farmer organisations.

Some stages of dairy market chains, including MCCs and processing plants, are potentially natural monopolies, requiring vertical integration or government regulation. Competitive conditions should be encouraged in the relationship between MCCs and processing plants. In competitive dairy market chains, the role of MCCs in collective bargaining with processors and input suppliers suggests they should be managed by farmer organisations, like cooperatives, but strictly as commercial businesses. To avoid conflicts of interest, MCC managers should not supply their own milk to the units they manage.

The strict quality requirements of processing plants and their competitive relationship with MCCs imply that they should be operated privately, rather than by farmer organisations. However, if processing plants are operated by farmer organisations, they should be managed strictly as private businesses. The competitive nature of the relationship between MCCs and processing plants also suggests that they should be owned and managed separately. This would reduce conflicts of interest and improve efficiency. The same is true for transactions between farmers and input suppliers.

A dairy association can promote the common interests of its members. A national association of cooperative unions should have common interests and can distribute technical information to its members, define minimum product quality standards and advocate for public policies to increase competitiveness. It may even be able to improve access to credit and provide limited technical training for its members.

Members of a national association that includes cooperative unions, dairy processors and public sector representatives are bound to have conflicting interests. Private processors and dairy farmers will disagree on milk prices, standards and policies. The potential short term impacts of either type of association are limited. Neither is likely to have enough resources to provide many services. Until a critical mass of processors with common interests develops, the formation of a national dairy association would be premature.

Public and private sector roles

Private sector

The private sector should be encouraged to invest in areas where public sector involvement would not be appropriate. The obvious parts of the dairy market chains in which to encourage competitive private sector involvement include veterinary services (such as vaccinations and AI services), feed mills, forage seed processing, extension and MCCs. Government and aid programmes could contract private veterinarians and paravets for public vaccination programmes and other health services.

Public services

As government interference can constrain the building of organisational capacity, government roles should be limited to supporting access to market information, monitoring and regulation and services that complement private sector roles in dairy market chains; for example, encouraging food aid programmes to use locally available dairy products. The government's capacity to deal with dairy needs and pastoralist interests should come under a unified umbrella of policies, coordinated programmes and budgets.

Afghanistan's scientific manpower and research infrastructure for dairy development will remain limited in, at least, the medium term. Thus, only a small set of focused action research priorities and projects should be selected with substantial user participation and the engagement of the private sector. The aim would be to speed up the integration of the sector into the regional dairy industry and to identify specific areas of comparative cost, product and quality advantages and unique selling points.

The government should focus on reforms to the legal and regulatory framework to enable smallholders to better manage and develop their assets and business interests. It should provide guidance, through an evolving and responsive policy environment, on the best ways to integrate production, processing, value addition and marketing of milk and milk products in domestic, as well as regional markets, converting Afghanistan's potential comparative advantages into systems that are regionally competitive.

This will require determining the opportunities and constraints to add value to, and market, milk and milk products. The specific mechanisms needed to access potential regional, national or international markets profitably, including the type and level of investment required to attain international hygiene, sanitation and safety standards, should be determined. The focus, initially on import substitution, with a vision of export marketing in the future, can also investigate production of niche products with potential, either unusual species or breeds, or milk and milk products, such as fizzy *Dhuhr*⁶, as discussed below.

To stimulate dairy development in areas where substantial seasonal milk surplus exists, the government should support dairy development through investing in infrastructure, particularly roads and electricity supply and distribution systems.

Supporting the role of women

A variety of measures to improve dairy production and market chains has been identified in previous studies (Blench, 2001; DCA, 1999; FAO, 1997; Grace, 2005).

Such measures, in programme design, should start with improving the understanding of the role of women, as providers of resources; to emphasise the importance of women's agricultural activities to both men and women through extension work.

The incorporation of women into agricultural training is already recognised as important, particularly as basic veterinary workers. Within this training there would be much to gain from providing adult literacy classes to enable women to read labels on inputs, to read contracts, and to earn them more respect within the community.

Where the transfers to women involve choice, there are many benefits to providing livestock, rather than cash, as payment for work. These benefits include the livestock offspring and products generated for later consumption, as well as income from the sale of animals and their produce.

⁶ *Dhuhr* is a popular household fizzy drink produced in small quantities from fermented yoghurt, water and mint flavouring. It is produced industrially in Iran where, bottled, it competes well with other fizzy drinks for price and sales. Its sour taste suits local cuisine. It does not require much milk as it is diluted in water.

Similarly, resource support schemes can provide women with credit and support to purchase fodder if they do not own land; to hire shepherds if they lack mobility; or to enable group rental or purchase of land for cultivating crops, building animal shelters and keeping livestock. Finally, there is a widespread need to: establish a legal rights outreach programme that educates women and men about inheritance rights at the village level; and to provide training for elders to adjudicate on inheritance claims cases.

Supporting pastoralists and mixed farmers alike

The pre-occupation with modern dairy production and its associated forms of dairy market chain would, if developed in isolation, deliver only one aspect of livestock development at the expense of other, equally relevant, dairy strategy options for Afghanistan. Support to pastoralists requires equal attention and a variety of measures to ensure its proper contribution to satisfying the demand for dairy products and developing dairy potential. The sorts of measures needed, as identified in previous studies (Blench, 2001; DCA, 1999; Degen, 2005; de Weijer, 2006; FAO, 1997), are discussed further in AALP PDP 29 on the role of dairy development in CN strategies.

Enhancing marketing, incomes and livelihoods

The marketing systems and marketability of dairy products can continue to be improved through feasibility studies and market assessments for adding value to milk and dairy products in the different geographical and cultural zones of Afghanistan. The search for new markets and niche products should continue. The business potential for *Dhuhr* has been noted and a feasibility study/project design recommended (Favre, 2004).

The value chain financing system under the USAID-funded Agriculture, Rural Investment and Enterprise Strengthening (AIRES) network of micro, SME and commercial credit providers can be used to finance new technologies and management practices, including the refrigeration needed at several levels of dairy market chains.

The capital requirements for small dairy producers are high. This places particular constraints on women farmers. Credit schemes would need to be long-term to cover breeding and herd development cycles. Ideally, such schemes should be associated with a locally appropriate form of insurance to mitigate the risks of animal losses. This might involve a credit-in-kind system, whereby animals are provided on condition that some of the offspring are passed on to other members of the community.

To encourage greater participation and development progress, pastoralists should be included as a special focus group in the national skills development programme of the Ministry of Labour and Social Affairs and project or locality-based employment centres and financial services designed to include pastoralists. Further support to pastoralists can come from providing advocacy arrangements for increased land security for pastoralists in the Land Commission.

The critical need to solve the issue of livestock feeding could be linked to the rehabilitation of the country's irrigation schemes to stabilise fodder and feed availability.

Conclusions

Afghanistan's dairy sector is strategically important for a number of reasons. Its future development in a challenging CN and AL scenario will involve a wide-ranging and multifaceted set of activities. These will need to focus on production improvement both in rangeland and arable farming areas, and create a portfolio of measures to extend and improve dairy processing and market chains that can bridge a diverse array of subsistence, smallholder, pastoralist and modern systems, cultural contexts and technological and organisational solutions.

Afghanistan has a long way to go just to re-establish its livestock numbers after years of conflict and drought, let alone to develop its nationwide array of small livestock keepers into a coherent and integrated dairy industry able to deal with a highly competitive regional market. This will take many years of patient and persistent efforts to organise and seek collaboration, where there are many roles to be played, and multiple opportunities to be grasped, by the private and public sector alike.

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