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The Role of Dairy Development in Counter Narcotics Strategies

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Authorship

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The ideas and opinions expressed are entirely those of the author and do not necessarily reflect the views or opinions of the Food and Agriculture Organization of the United Nations or the Government of Afghanistan.

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List of abbreviations

AALP	Alternative Agricultural Livelihoods Programme (GCP/AFG/036/UK)
AALU	Alternative Agricultural Livelihoods Unit
AREU	Afghanistan Research and Evaluation Unit
AI	Artificial Insemination
AL	Alternative Livelihoods
CBO	Community-based Organization
CN	Counter Narcotics
FAO	Food and Agriculture Organization of the United Nations
MAIL	Ministry of Agriculture, Irrigation and Livestock
NGO	Non-Governmental Organization
PDP	Project Discussion Paper
UN	United Nations
UNODC	United Nations Office on Drugs and Crime
US$	United States dollar
USAID	United States Agency for International Development
VFU	Veterinary Field Unit
WB	The World Bank

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 by contributing to national policy through the development of 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".

AALP is taking a broad strategic approach to alternative livelihoods by considering the rural economy as a whole. AALP is producing a series of PDPs to inform a range of stakeholders at various levels of the outcomes of a number of surveys and analysis of livelihoods systems in Herat and Balkh Provinces carried out during 2006 and 2007.

This PDP reviews the potential of smallholder dairy development as part of a livelihoods package for farmers growing opium poppy and its relevance in delivering effective counter narcotic (CN) interventions and alternative livelihood (AL) strategies in Afghanistan.

The PDP discusses the different approaches to dairy development to challenge both actual and potential opium poppy growing in Herat and Balkh provinces, which would also be relevant to other areas of the country. It analyses the issues likely to be encountered and sets these in context with other international experience of developing smallholder dairy production. It does not repeat the issues covered in AALP PDP 28 Dairy Market Chains.

Objectives

The PDPs intend to stimulate dialogue by sharing knowledge and thereby allow stakeholders to refine and target their approach to designing and implementing rural development activities in a drugs environment.

This PDP synthesises the findings of AALP 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.

Details

Diverse and complex settings

It is widely acknowledged that drug issues in Afghanistan pose serious obstacles to reconstruction, peace and development efforts. Dairy development, as part of a CN strategy and an AL package, would have to deal with household opportunities and constraints that are as diverse as they are complex. For example, both livestock and drug issues are closely linked with the changing status of insecurity, poverty, conflict and disease profiles.

Each of these issues is challenging in its own right, even before the interactions and interrelationships between them are considered. Similarly, production and marketing options for milk and milk products extend across a broad range of animal species, cultural settings and management environments.

To initiate inadequate or inappropriate development measures could unintentionally drive more farmers to opium poppy cultivation and further exacerbate the negative impact of the illicit opium economy on sustainable licit rural development.

Worldwide experience shows that a purely sectoral approach to such complex interactions would be inadequate to tackle the pressing security, socio-political and economic problems that need to be addressed. To develop practical solutions demands an approach that cuts across sectoral boundaries and promotes greater participation of key players at all levels. Therefore, it would not be, for example, the potential profitability of dairy development *per se* that might provide a solution, but rather how a mix of various dairy options might be taken up in a variety of ways by households, currently involved in the illicit opium economy, in different contexts and at varying distances from processing facilities and markets.

The challenge is how to ensure that the government and development agencies can better understand, facilitate and manage their responses to enhance the chances of success of CN and AL strategies. In principle, donors and the government agree that systematic treatment and a common approach throughout Afghanistan's reconstruction, rehabilitation and development programmes would add value. A systematic approach would also reduce the risks, as well as increase the impact of development activities on the illicit opium economy and the achievement of development and security goals, given the difficult conditions prevailing in rural Afghanistan.

The need to unify approaches to agricultural livelihoods, rural finance, off-farm activities, and micro/small enterprise development, as essential components of a wider poverty alleviation programme, has already been specifically identified. All of these areas are relevant to the development of dairy as a component of livelihoods packages within a comprehensive CN strategy.

Recent research (Bird and Buddenberg, (Eds), 2006) shows how diversity in rural household characteristics, assets, and access to markets creates a pattern of dependency on the illicit opium economy, and of decision-making about whether to cultivate opium poppy under varying local circumstances. There is also diversity in households' responses to shocks like the eradication of opium poppy, and to which degree they are able move into licit alternative livelihoods, or remain dependent on opium. The research highlights how households with the least assets and limited access to local resources (land, irrigation water) and market opportunities tend to be the most dependent on opium (Box 1).

BOX 1. Responding to the challenge of diversity in opium poppy cultivation

Diversity and change in patterns of opium poppy cultivation reflect in large part the varying assets and opportunities available to Afghan rural households, which in turn are closely related to geographical location. Households that are smaller, have a higher ratio of able-bodied males to total household size, own significant land, have other assets like livestock, and which are located in areas with a favourable climate, good irrigation water, and access to commodity and labour markets—these have more options and greater flexibility in terms of activities and responding to shocks. For such households, opium poppy cultivation is a means to maximize the returns on their assets, both directly and through mobilizing outside labour on favourable terms through share-cropping part of their land, as well as through providing credit on highly favourable terms to the creditor, and holding opium stocks beyond the harvest period so as to benefit from higher prices.

On the other hand, households with limited human capital (large household size, few able-bodied workers), no or small landholdings, limited other assets, and located in areas with poor irrigation and infrastructure and far from commodity and labour markets, have far fewer options and tend to be more dependent on opium poppy cultivation. For these households, the opium economy provides access not only to income opportunities (primarily through share-cropping and wage labour) but also to critical assets like land and credit, enabling them to make ends meet. Many poorer households carry a heavy burden of opium-related debt, with continuing opium poppy cultivation being necessary to be able to service the debt.

Under these circumstances, eliminating opium from their livelihood options carries grave and counterproductive implications for asset-poor households. Their response is likely to increase their dependence on the opium economy over the medium term (sale of livestock, mortgage or sale of remaining land), and/or could have severe adverse human consequences (marrying off under-age daughters to offset opium debts, reducing food consumption and quality, cutting expenditures on health).

In Nangarhar the emerging pattern is that localities with good land and irrigation resources and access to commodity and labour markets have sustained or largely sustained the elimination of opium poppy cultivation for a second consecutive year, something unprecedented in the history of counter-narcotics efforts in Afghanistan. At the other extreme, in the most remote, resource-poor localities the ban on opium poppy cultivation never really took hold and cultivation increased in the second year. Intermediate areas between these two extremes face great difficulties, with strong pressures to resume opium poppy cultivation but also efforts to continue the ban, and with resource-poor households caught in between and resorting to drastic coping actions like out-migration.

There is a clear commensurate response in the design and implementation of counter-narcotics strategy to the diversity found in Afghan rural households, in their involvement in the opium economy, and in their responses to counter-narcotics measures.

Fundamentally, there is a need to work with the diversity that exists in rural Afghanistan rather than ignoring it, and to make use of the knowledge that has been gained about opium poppy cultivation and the factors that contribute to households' decisions in this regard. This would imply a more differentiated approach by locality (e.g. district), continuing field research to further build the evidence base and capture the ongoing evolution of the opium economy in rural areas, and avoiding a static mind-set and mechanical application of counter-narcotics instruments.

The implication for alternative livelihoods programs (and for "mainstreaming" of the counter-narcotics dimension in development activities) is that they need to target the asset-poor households and localities with limited resources, and to begin to address the shortcomings that make these households and areas highly dependent on opium in the first place (in particular, lack of access to land and credit, lack of alternative income-generation opportunities, and distance from markets).

Bird, W. and Buddenberg, D. (Eds) 2006. Afghanistan's Drug Industry: Structure, Functioning, Dynamics, and Implications for Counter-Narcotics Policy. United Nations Office on Drugs and Crime and the World Bank. Summary of Chapter 3 by Mansfield, D. Responding to the Challenge of Diversity in Opium Poppy Cultivation in Afghanistan.

Background to opium production

Illicit opium poppy production in Afghanistan has widespread international and national social, political and economic significance. The opium economy accounts for about one-third of all national economic activity and supplies 92% of the worldwide heroin trade. Nevertheless, most farmers in Afghanistan do not grow opium and most Afghans are not involved in the drug industry.

According to UNODC, opium occupies less than 4% of the total cultivated area (6 to 7% of the irrigated area) in Afghanistan. The major opium poppy growing areas remain concentrated in Helmand and a few other insecure and insurgency-effected provinces in the south and east. Elsewhere, the production patterns are variable—the area under opium poppy increasing in some provinces and reducing in others.

The opium industry engages 4 million people or 17% of the population and indirectly supports 870,000 jobs in the rural non-farm economy. Some 13% of the population (30 to 35% of farmers) are involved in its cultivation on farms that are, as with dairy, of all sizes and involve better-off and poor households, landlords and landless farmers and sharecroppers.

Opium poppy cultivation is commonly supported by access to effective credit and inputs; informal extension advice; and easy marketing. Opium traders frequently provide support to landless farmers to access land through renting or sharecropping. The returns to illicit opium poppy cultivation, which far outweigh those from other field crops, are obtained far faster when compared to tree crops which, however, might be competitive if there were reliable irrigation and markets.

Corruption of local officials also influences whether farmers cultivate opium poppy, with government officials taking bribes not to eradicate the poppies of large farmers, or to 'eradicate' them after harvest. Some villages may be targeted for government eradication programmes, while others may not. Consequently, many perceive eradication as arbitrary and unfair. AALP and other surveys have found that only some farmers are deterred by eradication programmes. Others are deterred by potential opium poppy crop failures or their religious view on the illicit and immoral nature of the crop. Others are attracted to the benefits of licit crop and livestock production, recognising, for example, the regular income streams and credit access of dairy farmers in some areas.

Illicit opium poppy cultivation provides an important source of income for local youth, migrant labourers and women and reduces the pressure to migrate to cities or abroad. However, it does cause other social problems, such as school absenteeism, drug abuse and addiction.

Farmers who are able to store opium until prices increase can use the profits for other crops and livestock activities. However, most farmers sell opium immediately after harvest to pay debts, frequently becoming caught in a cycle of debt, low farm-gate prices and continued opium production.

Since 2004, various AREU studies have illuminated the role of the opium transit trade and trading networks in shifting production to other provinces. They point to the importance of traditional informal networks in developing the opium trade, how virtually all of the traffickers have a background in the livestock trade and how patterns and practices in the opium trade have considerable similarities to other informal markets in Afghanistan. The linkage between the trading of opium and livestock may have implications for dairy development options.

Background to the dairy sector

Cattle, horses, camels, donkeys and small ruminants continue to play an important role in traditional Afghan farming and cultural systems. There are widespread traditions of family production and local trade in milk and milk products. There is potential for commercial milk and dairy development for all types of animals, including camels.

Livestock in Afghanistan are managed within nomadic, transhumant[1], agro-pastoral and sedentary on-farm systems. Each has its own unique lifestyle and each defines important features of the lives of those involved, particularly, of women and children. As elsewhere, nomadic pastoralism is on the decline in Afghanistan, but semi-sedentary and transhumant systems remain widespread.

Sheep and goats dominate the breeds in the pastoralist systems. Camels are mostly associated with nomads whose numbers have declined sharply in recent years. Yaks frequent a few very high places in north-east Afghanistan, but are less important than they are in the Eastern Himalayas. Many differences in migration patterns and livelihood strategies are apparent among the various regions.

The majority of households, both rich and poor, have diverse income sources combining farm and non-farm activities. Frequently, pastoralists' income from livestock production is supplemented by paid work for harvesting and casual labour. More recently, diversification of household income has supported a less migratory lifestyle.

Political instability, extended periods of conflict and drought over recent decades have affected the irrigated, rainfed and livestock sectors alike and have seriously depleted livestock numbers throughout Afghanistan. This situation has resulted in the development of coping strategies in which households have sold their livestock to buy food and to finance their survival strategies in the face of chronically adverse conditions.

Destruction of irrigation and other infrastructure has meant some land previously used to support livestock has been diverted into basic food or illicit opium production, leading to shortfalls in winter feed supplies. This, in turn, has affected the health of the livestock offspring, disrupted lactation cycles, and delayed the reproduction of milk animals as cattle usually calve or are used to provide traction in the spring. The loss of lactating cows has also contributed to nutritional problems, particularly in children, increased food insecurity, and has led to a decline in the value of human labour and animal traction.

Animal health and breeding services, as well as the processing and marketing of livestock products, have also collapsed and, generally, remain poor with frequent disease epidemics. However, various efforts, supported by international agencies, are underway to re-develop the animal health capabilities and services through the re-establishment of VFUs. Similarly, other projects, implemented by FAO and other agencies, have started to re-establish the formal dairy sector with milk collection centres, dairy processing and marketing.

Role of Livestock

The AALP and other surveys confirm the multi-faceted role livestock play in rural livelihood strategies. This includes contributions to food security, the supply of protein-rich foods and micro-nutrients, the income generated from sales of surplus edible and non-edible products, the maintenance of wealth and social expenditure, and the provision of traction power and manure, as well as serving as a readily convertible asset during times of need (Thompson, 2006).

Most farmers keep a range of livestock species as a buffer to reduce the impact of shocks and risks, such as disease outbreaks and drought when arable production suffers. In many cases, livestock provide the only cash income for a household, using marginal land capable of supporting only extensive grazing.

[1] Transhumance is defined as "a type of pastoralism in which pastoralists regularly graze their herds in two or more geographically separated grazing orbits within a year" (FAO 1992). This animal husbandry system takes advantage of the temporal and spatial variability associated with typically altering rainy and dry seasons.

Dairy products are important in local diets. Milk provides a variety of nutritious fresh products for immediate consumption, as well as storable processed products for later use. These are mainly produced at home and marketed by women. Smallholder dairy production systems can be a good choice for a pro-poor approach to rural development as they are relatively intensive with year-round labour needs and provide regular food and income with products that can easily be substituted between home use and market trade. The production characteristics of using crop residues, fodder-crop rotation and producing organic fertilizer ensure integration and synergy with other elements of arable and agro-pastoral systems.

Under favourable conditions, smallholder dairy development involves more than milk production. It embraces entire market chains which incorporate a variety of on- and off-farm employment opportunities, including forage and seed production, feed milling, animal health services, milk production and collection, dairy processing and marketing.

Some transactions in dairy market chains are internalized and do not involve payments by one party to another. Farmers may produce their own seed, forage and milk, for example, or dairy processing plants may operate their own retail outlets. In efficient market chains, many transactions occur in competitive markets.

Livestock and dairy production

Livestock numbers in Afghanistan in 2003 were estimated at: 3.72 million cattle, 8.76 million sheep, 7.28 million goats, 1.59 million donkeys, 141,000 horses and 175,000 camels (FAO, 2003). A third of small ruminants and more than half of the horses and camels are kept by nomadic and/or transhumant livestock owners who own about 22% of the national herd.

Not all households keep livestock. Overall, about 74% of all households have cattle, but only 50% keep cows able to produce milk and offspring: the rest keep oxen for use only as draught animals. Table 1 shows dairy producer data at a regional level, indicating a low national average of only some 0.4 milking cows per household.

Table 1. *Number of cows and milking cows per household*

REGION	Range of cows/HH	Average total cows/HH	Average milking cows/HH
Central	0.3 – 0.8	0.4	0.2
East	1.3 – 0.9	1.8	1.1
North	0.1 – 0.4	0.2	0.1
North-east	0.7 – 1.1	0.9	0.5
South	0.4 – 2.4	1	0.6
South-west	0.3 – 1.0	0.6	0.4
West	0.1 – 0.5	0.3	0.2
West-central	0.6 – 0.6	0.6	0.4
National	0.1 – 2.4	0.7	0.4

Source: *FAO livestock census 2002-03*

FAO estimates that the annual production of milking cows ranges between 500 and 1,500 litres (Thieme, 1996). Farmers participating in the milk collection scheme in Kabul deliver an average of 3 to 5 litres/day. Assuming an average of 1,000 litres/year and a national herd of 1.26 million milking cows, total milk production in Afghanistan would be around 1.3 million tonnes/year; equivalent to an average milk availability of just above one litre/day/household.

Sheep and goats in the pastoralist system generally produce less milk and offspring than their modern counterparts, but are far better adapted to local climatic conditions and are more tolerant of local pests and diseases. Goats generally produce more milk and have a longer lactation period than sheep, but sheep milk has a higher fat and total solid content. Sheep produce about 40 to 60 kg and goats up to 100 kg of milk per lactation. In some areas, these small ruminants are important sources of milk during the dry season and droughts.

The camel production system is extensive with herds usually supported exclusively on natural graze, mostly consisting of tree vegetation including *Acacia nilotica, Prosopis cineraria, Capparis decidua, Balanites aegyptiaca, Zizyphus glabrata, Acacia leucophloea* and *Acacia senegal*. Camels have a very efficient feed conversion rate and require only 1.9 kg of dry matter to produce 1 litre of milk, compared with 9.1 kg for cows (Stiles, 1983). Camels milked two or three times daily produce an average daily milk yield of around 2 kg. Income from milk sales can be substantial and exceed the returns from sales of young male stock. Camel's milk is also thought to have therapeutic value in the treatment of tuberculosis, jaundice, cancer, Type 1 diabetes and anaemia (Mehari et al, 2006, Agrawal et al, 2003).

There is little intensive livestock rearing in Afghanistan. Recently established operations, attuned to supply chains or marketing approaches, are largely donor driven and financed.

Restocking issues

FAO surveys indicate low reproduction rates. Therefore, restocking depleted herds will take time. Dairy production normally requires high quality support services, as dairy breeds are generally more costly and more vulnerable to disease and health problems than other cattle. Imports from Pakistan have helped re-establish a supply of animals used for cultivation. However, imported breeds are generally considered not fit for the environmental conditions of the Afghan highlands. Restocking is also constrained by various structural factors, such as poor veterinary services, iodine deficiencies resulting in abortion, pastureland degradation, and the competition between livestock fodder and staple food production on irrigated land.

By 2002, Rinderpest had been eradicated from Afghanistan following a sustained effort to create a network of district VFUs instrumental in delivering veterinary services across the country. Although closure of this programme in 2002 and uncontrolled imports of livestock from Pakistan and other countries led to the re-emergence of Rinderpest, a recent survey by FAO indicated that incidence of Rinderpest is now rare.

Introductions of pure exotic breeds have almost universally failed. A combination of selection from local breeds and cross-breeding with exotic breeds would be more appropriate, leaving it to individual smallholders to decide what they prefer.

Artificial insemination (AI) systems have high costs and a need for producer skills, good communications and infrastructure to maintain and manage the liquid nitrogen used to store semen. However, many AI systems have proven unsustainable without being subsidised and have collapsed when subsidies were removed. Where AI is introduced, success is usually achieved if the supply chain is privatized. Where appropriate conditions do not exist, bull camps or the use of fresh semen have worked, as in India.

Rangeland, pasture and fodder

Production conditions in Afghanistan have changed substantially over recent decades. Production of milk is determined by the quantity and quality of grazing and fodder available through the seasons and reproductive cycles of dairy animals. Lack of winter feeding is one of the main constraints on livestock production. Considerable scope exists for increased production and improved animal health through increasing the quantity and quality of winter feed intake.

Rangelands cover around 45% of the country's land area. However, other areas, often thought of as barren wasteland, are also used by pastoralists, particularly for winter grazing. These extend considerably the total grazing area to an estimated 70 to 85% of the total land area. The vast majority of the grazing lands has low precipitation and cold winters and is characterised by *Artemisia* steppe as the main grazing vegetation type. The most important fodder crops are Lucerne (*Medicago sativa*), Shaftal or clover (*Trifolium resupinatum*) and Berseem (*Trifolium alexandrinum*) in hotter areas. All three fodder crops are mostly used to feed cattle with Lucerne yielding 7 to 9 tonnes/ha and Shaftal, 2.5 to 3.5 tonnes/ha as a second crop.

Land tenure and use

Very little data are available on how pastoralists actually utilize pastures and grasslands. Mobility is an ecological and economic necessity and the primary response of pastoralists to variable rainfall and drought. They utilise scarce rangeland vegetation and follow seasonal forage availability which ebbs and flows with changing precipitation and temperature. Both nomadic and transhumant systems are employed to make the best use of available pastures and rangeland resources.

There is little use of fencing in grazing management to raise livestock or manage rangelands or pastures and an almost complete absence of non-traditional approaches to livestock breeding, introduction of new genes, comparisons between local and imported animals or recording or performance assessments of herds or stud stock. There is little knowledge of how current stud stock are managed and traded.

It is a common perception that the rangelands are extensively over-grazed. However, according to de Frauke (2005), there is no evidence to corroborate this. Nonetheless, the widespread deficits in the supply of feeds and fodder must act to encourage overgrazing and denudation of rangelands. The permanent use of local rangeland by sedentary herding is likely to contribute to more overgrazing damage than seasonal pastoralism. Where the two systems overlap, competition and conflict for water, land, grazing and browse resources can occur. Some evidence suggests traditional grazing patterns in high, medium and low altitude lands have been so interrupted that they may no longer be sustainable. Various surveys also support the view that grazing and fodder production land is being lost to urban and peri-urban private land developments and that fodder and pastureland is being taken up and damaged by irrigation and rainfed cropping.

This loss occurs as farmers plough up grazing land to produce rainfed wheat as income from livestock was drastically reduced by recent drought. Allocating land for fodder production may have some scope, but if the economic return to cultivating fodder for milk production is lower than that for other crops, farmers are unlikely to be convinced.

Ploughing of sub-marginal land to grow cereals or other crops such as cumin is widespread where the topography allows the use of tractors. In the Northern Plains, in the Herat region and in parts of the Central Highlands, this mechanised exploitation of the rangeland for rainfed arable cultivation is usually by speculators looking for a quick return, rather than by traditional farmers. Such cultivation on the rainfed *Artemisia* steppe often fails to produce a crop, destroys local vegetation and *Artemisia* and leaves land bare and exposed to erosion risks (Thieme, 2000).

Apart from pastoralism, the uses of most dry rangelands include fuel wood and medicinal plant collection, mining and recreation. These activities can all impinge on grazing and browse resources for livestock. Uprooting shrubs (notably *Artemisia)* for fuel is a serious and widespread problem. This issue is less about villagers finding fuel to cook their food, but more about the organised purchase of shrubs from remote areas by traders to supply urban markets. Many range plants, destroyed in this way, have medicinal and industrial value. By tapping indigenous and traditional knowledge, business people often seek ways to commercialise the cultivation and extraction of rangeland vegetation.

Marginal lands, once used exclusively by pastoralists, are increasingly recognised internationally as reserves of biodiversity. Their prior inaccessibility has allowed species, which have been eliminated elsewhere by agriculture and settlement to survive. There is some international pressure to declare large regions protected areas, both because of pressure from conservationists and the potential income from tourism.

The uncertainties about access and tenure rights have made it difficult for pastoralists to lodge effective land claims (Blench 2001). The Ministry of Justice has established a commission to

review land policy and the issues affecting land tenure insecurity. Local negotiation processes for grazing rights are one solution, but need a legal framework that is clear and unambiguous regarding residential users' rights (de Frauke, 2005). Activities, currently being piloted in Bamyan province by FAO, aim at identifying constraints and opportunities for community based pasture management systems and the potential for their widespread application to rangeland areas in Afghanistan (FAO/Wily 2007).

To date, little comparative analysis is available on the economics of fodder crop cultivation (as this varies among agro-ecological zones), or to illuminate the options and choices faced by the nomadic, transhumant, refugee and sedentary peoples and the production and risk environments each face.

Role of women

Women continue to have responsibility for the health of livestock in settled farming areas and for young stock in settled, transhumant and nomadic communities. This extends to the birth and care of young animals and dairy production and processing. Milk production gives many village women part-time opportunities to generate income. Some have specialized veterinary skills and have been engaged in projects that have established paravets at a local level. In some projects, female extension workers teach hygiene and good milking practices to village women.

Dairy products, especially *qurut* (dried yoghurt), are some of the few items that women can sell and use the income for themselves and their children. Women receive most of the payments from milk collectors. They use the income for household expenses including food, education and investments in cows, feed and animal health services. Compared to men, who can work outside the village and migrate to find work, agriculture at home represents one of the few financially profitable activities available to women.

Efforts to support this sector would need to improve women's asset owning portfolio and increase their access to credit. This, in turn, would help women cope better with shocks and to capitalise on the few assets they do have (Grace, 2005).

Issues emerging

Primary challenges

There are numerous challenges to the development of dairy in Afghanistan. Some issues are discussed here and others in PDP 28 on Diary Market Chains in CN strategies. Several factors have contributed to the low adoption of dairy improvement programmes elsewhere (FAO, 2006) including:

- the low overall impact on household income;
- the risk associated with specialization in modern, rather than traditional dairy;
- the higher requirement for working capital; and
- the complexity of the dairy production and marketing systems.

Significance of governance

The success of dairy as part of an AL package under a CN strategy will be influenced by attempts to establish viable state institutions for effective governance. Without these, outcomes will be subject to the uncertain alliances and allegiances (both licit and illicit) of local communities, their leaders and the private sector. Thus, even though there are various national strategies and policies in place, the capacity for coherent action at the local level is severely limited by such factors as:

- the weaknesses in the current provincial/district and village development planning and implementation mechanisms;
- the disparity in the economic incentives offered by traditional licit farm incomes and those that are available from illicit opium poppy cultivation;
- the ability of those involved in the illicit opium economy to provide farmers with effective support services for seed, inputs, credit and marketing, while these same services are weak or even non-existent for licit agricultural enterprises.
- the dearth of support to migrant labourers in situations where this form of economic response leads to substantial levels of remittances to rural areas that are often an economically competitive alternative to opium poppy cultivation; and
- the lack of security and good governance in many areas of the country.

Supporting pastoralist and mixed farmers alike

Among donors, there tends to be a pre-occupation with modern dairy production for urban markets focused on cow's milk. The forms of market chain associated with cows could, if developed in isolation, deliver development at the expense of other equally relevant dairy strategy options for Afghanistan and undermine the full potential of dairy opportunities to deliver effective CN and AL outcomes. Success requires a multi-faceted strategy to challenge illicit opium production and trade. Thus, the non-commercial dairy sectors and all livestock types should be included in plans and cover measures identified in previous studies (Blench, 2001; DCA, 1999; Degen, 2005; de Weijer, 2006; FAO, 1997). First, government and donor policies need to embrace three groups for dairy development:

- pastoralists (including nomadic, transhumant and sedentary) where milk production from sheep, goats, horses and camels is relevant and potentially as important as cow's milk may be in other contexts[2];
- rural smallholders and subsistence producers (including farm, village, agro-pastoral and transhumant systems); and
- peri-urban producers and consumers (including demand for traditional and modern dairy products).

These groups are linked in various important ways; the most obvious being in managing and improving facilities for animal health and, particularly, the control of epidemic disease. These are risks which affect all animals—no matter their context. There are other cross cutting structural, technical and business development issues that reinforce the need for the three groups not to be dealt with in isolation. The links emphasise the need for a common framework of policy and investment planning and scheduling for relevant infrastructure and appropriate capacity building.

The approaches to stabilising food security, improving nutrition, reducing poverty and rationalising environmental management and the conservation of natural resources are different for each group. They are also linked, as often people compete seasonally for use of the same landscapes and resources.

[2] The national output of livestock products in 1998 was reported by FAO to include 300,000 tons of cow milk, 201,000 tons of sheep milk and 41,000 tons of goat milk, indicating their relative importance at that stage.

Literacy, culture and new media

As a participant in the Land O'Lakes project noted ..."When the women in our project are paid by the milk collector, they are often observed by neighbours who want to become involved in the program. The greatest obstacle to program expansion at this time is locating literate women farmers whose husbands or fathers will permit their involvement." (University of Florida, 2006).

Much attention has been given in recent years to the indigenous knowledge that is rooted in the culture and experience of pastoralists. However, this is rarely backed up by detailed field research to determine how such knowledge can be used effectively to solve problems of those who imparted the indigenous knowledge in the first place.

Attitudes towards pastoralists are changing in policy, planning, education, publicity and research. Technological change is also creating new forms of media that could be used to offset the isolation of pastoralists. Given the inaccessible regions pastoralists live in, as well as the poor representation of their affairs within structured national governance, they are largely disenfranchised from the information-rich environment in which so many others are increasingly operating. This situation constrains the capacity of pastoralists, for example, to deal with modern livestock markets, to gain access to effective animal health facilities or to articulate their opposition to land expropriation.

Relative profitability of dairy and poppy production

Table 2 compares the profitability of opium and dairy production. The opium figures are drawn from United Nations Office of Drugs and Crime surveys (UNODC, 2004 to 2007) and assume 2.25 jeribs of poppy cultivated per household.

Dairy income is derived from sales of milk, calves and dung. The analysis assumes commercial smallholder dairy production in northern Afghanistan where both traditional and non-traditional households own 1.25 cows. The modernizing farm (producing six litres per cow per day during a 225 day lactation period) results from two generations of crossbreeding indigenous breeds with genetically superior bulls. Their milk is sold to a processing plant, whilst traditional farms (producing four litres per cow per day during a 180 day lactation period) sell directly to urban consumers.

Most feed comes from crop residues with a small portion of forage crops and a minor portion of feed coming from grazing. The modernizing farms feed hay, grain straw, straw treated with urea and a small amount of feed concentrate—0.5 kg/litre of milk production, while traditional farms feed only straw and small amounts of green fodder. All labour on dairy farms is provided by household members at zero cost. By contrast much labour for opium poppy cultivation is paid in cash.

Table 2. *Comparison of dairy and opium profitability (US$ per household)*

System measure	Traditional Dairy	Modernizing Dairy	Opium Production
Total income	$452	$1,030	$5,715
Total costs	$200	$445	$3,587
Costs as % of income	44%	43%	63%
Gross profit	$252	$585	$2,128
Profit as % of income	56%	57%	37%

The costs, income and profits of modernizing dairy farms are more than twice as high as those of traditional farms, but overall profitability, measured as a percentage of income, is almost identical. Opium costs and income are more than five times higher than those of traditional dairy farms and more than five times higher than modernizing dairy farms. Opium profits are more than eight times higher than traditional dairy farms and over three times higher

than modernizing dairy farms. However, the costs of opium cultivation comprise a higher proportion of income than those of milk production.

Expanding dairy production and management horizons

Studies have highlighted numerous ways in which dairy potential could be improved and where the training of male and female extension agents, focused research and targeted programme and project planning could contribute to smallholder dairy development.

Breeding policy

If improved genetic potential is to be explored then farmers need to know which breeds are best suited to their local production and market environments; where to source new breeding stock; how to conserve local genes; and how to determine if AI is appropriate.

Production policy

There is a need to overcome the tendency among donors to ignore the local role of 'minor' species (camels, donkeys and yaks) in favour of cattle, sheep and goats. There is also clearly opportunity to promote the fattening of male lambs as a separate entrepreneurial activity and scope to improve the basic technology of traditional approaches to milk processing to meet international quality standards and increase production, as well as promoting new technologies (including mobile and centrally located mechanized milking stations); whilst also encouraging the use of performance and breeding records.

Health policy and practice

The government needs to identify and set national priorities to coordinate efforts to control epidemic diseases, while at the same time, driving forward the expansion of private and public sector roles. Cross sectoral policy should focus government's role on preventive veterinary care through a national programme for prevention and control of animal epidemics, the creation of disease-free zones and the encouragement of private sector services to reduce the production losses and investment risks of livestock keepers, improve output and facilitate engagement with markets.

Both private and public sectors actors need to identify appropriate and profitable approaches to animal hygiene in different situations and improve linkages with existing veterinary service delivery, practice and extension. Although some work to train basic veterinary workers is underway, the participation of pastoralist communities would be required to establish fixed and/or mobile veterinary field units successfully in remote pastoralist areas, train pastoralist para-vets and encourage the participation of pastoralists in disease identification, monitoring, control and prevention and in improved dairy management.

Feeding policy

There is still much to learn about the most appropriate seasonal feeding regimes in different areas and how to manage a sustainable supply of grazing, browsing, fodder and forage, whilst also ensuring the conservation of surpluses and rangelands.

This context is wider than the usual extension or research framework for supplementary feeding or for the training of farmers to reduce seasonal fluctuations in milk production by improving their use of forage crops, feed concentrate, crop residues and by-products of food processing. This will require that the parties use participatory and collaborative approaches to, for example:

- Undertake technical assessment of the range lands and develop a consensus on recommendations for rangeland management and rehabilitation; develop a monitoring and early warning system and improve the capacity of the relevant institutions to manage emergency responses;
- Develop action plans to deal with regional fodder shortages and drought;

- Identify food supplements from locally improved conservation management of rangeland, through increased growing of fodder and increased processing of agricultural, industrial and slaughter by-products;
- Research into the potential for rangelands to support rainfed production of fodder crops;
- Develop strategies to link conservation of wild fauna and flora with pastoral production; develop, fund and manage local pilot programmes; and
- Engage all communities in contributing to and agreeing on facilitating and empowering legislative framework at national, provincial and district level to provide legitimacy and endorse local community agreements on joint community-based approaches to natural resource management and rehabilitation.

Experience from AALP surveys

The AALP surveys elicited the opinions of villagers on the key issues that influence their various livelihood strategies. The evidence from these surveys underlines the effectiveness of those promoting opium poppy cultivation; who are capable of achieving the rapid development of new growers, as well as being adept and flexible in response to government initiatives against the illicit opium economy. Dairy initiatives, within a wider package of measures, will only progress when they are able to mobilise and compete with the illicit opium economy on the same terms.

The AALP surveys showed that distance from urban markets and their accessibility through transport infrastructure were significant in determining the degree of trade in milk and milk products outside the villages.

Four categories of action/interventions found the surveys are listed in Table 3.

Table 3. *Key development needs arising from the AALP surveys*

Intervention	Description	Key issues	Who involved
Credit	Short /long-term loans for pastoral, agro-pastoral and smallholder dairy and processing enterprises	Effective identification of needs and design of good customer service packages; responsive feedback/ learning between client-lender; coordination between lenders; monitoring of client take-up decisions.	Lead agency: MOF-WB. Stakeholders: Farmers; Community and Religious Leaders; Donors; Micro-credit Agencies; NGOs; Civil Society
Training	Skills training for dairy production, processing and marketing, particularly for women	Effective identification of needs and design of good training packages; responsive feedback/ learning between trainers-artisans; coordination between training support and marketing agencies; monitoring of client take-up decisions.	Lead agency: MAIL-Donors. Stakeholders: Farmers; Business, community and religious leaders; Donors; Local and Provincial Govt; NGOs; Civil Society
Input supply	Participatory selection, bulk purchase, Integrated Nutrient Management to reduce dependency on external inputs	Effective identification of input needs and design of good input packages; responsive feedback/ learning between supplier-farmers; coordination between suppliers, processors and marketing agencies; monitoring of farmer take-up decisions and success scenarios.	Lead agency: MAIL-Private Sector Stakeholders: Farmers; Business, community and religious leaders; Donors; Local and Provincial Govt; NGOs; Civil Society
Market support	Storage, refrigeration processing (including quality, packaging), transport and marketing)	Effective identification of needs and design of good packages; Responsive feedback/ learning between farmers-wholesale/retail outlets-consumers; Coordination between outlets-agencies-consumers; monitoring of farmer-business take-up decisions and success scenarios.	Lead agency: MOF-WB, FAO Stakeholders: Business, community and religious leaders; Donors; Local and Provincial Govt; NGOs; Civil Society

It is significant that lines of formal credit appropriate to livestock and dairy production are generally not available but would be needed to help kick-start many development initiatives. To increase output and farm incomes, farm credit has to be accessible, with procedures, interest rates and collateral security requirements designed specifically to suit the needs of dairy farmers and to offer livestock owners greater opportunity and choice of crop–livestock farming systems and encourage the adoption of appropriate technologies.

Lessons of international experience

Reviews of dairy research produce some important observations, for example:

> *"Critical to understanding the competitiveness of smallholder dairy production is the appreciation that it is generally a labour-intensive activity, relying on the use of family and hired labour instead of mechanisation. Thus, cows are usually milked by hand, fodder is cultivated and gathered manually and milk may be carried by foot or bicycle to sales points. Clearly, such a system of production relies on the lack of better alternative employment opportunities and on the absence of more valuable agricultural enterprises. This means that other crops and livestock production that are practical and marketable locally do not offer significantly better returns, but also that industrial development has not succeeded in providing adequate numbers of better-paying jobs. In such circumstances, the opportunity costs of farmer labour are low, which is generally reflected in low observed casual wage rates in rural areas."* (Staal, 2002).

Thus, the competitiveness of smallholder dairy production is partially dependent on low opportunity costs for labour which, in the face of options for opium poppy production and migrant wage earning, may not favour all households which might consider dairy a viable option. In these circumstances, smaller dairy units would be more competitive and successful than larger ones and success would depend, in part, on how smallholders capture value from non-dairy outputs, such as manure and savings. Where the primary constraints to livelihoods are small farm sizes and poor soil fertility, the manure value to a mixed dairy/crop farmer may be as much as 30% of the value of milk produced. The importance of savings comes from the liquid contingency fund available to deal with shocks and to pay for one-off or periodic social expenses.

Possible futures

Risk and farmers' choices between dairy and poppy

AALP research into factors that affect farmer choices to produce milk or cultivate opium poppy produced 26 financial, social and production risk factors as shown in Table 4. The ratings are set between a lowest risk rating of 1 to the highest risk rating of 5.

Table 4. *Factors affecting farmers' decisions to produce dairy products or to cultivate opium poppy*

Factors affecting farmers' decisions	Opium rating		Dairy rating	
Financial returns				
Income/jerib	excellent	5	moderate	3
Cash flow	Poor	2	excellent	5
Production costs	High	4	moderate	3
Scale economies in production	Low	4	Low	4
Access to credit	High	4	moderate	3
Labour costs	High	2	Low	5
Capital investment required	High	2	moderate	3
Lag between investment and production	moderate	3	long	2
Opportunities for off-farm income	moderate	3	good	4
Subtotal		29		32

Factors affecting farmers' decisions	Opium rating		Dairy rating	
Production risks				
Investment size	High	2	moderate	3
Eradication, crop loss, cow mortality risks	High	1	moderate	3
Efficient, competitive markets	Low	2	Low	2
Potential failure in market chain	Low	4	high	2
Perishability	Low	5	high	1
Price variation	High	2	Low	4
Compatibility with diversified farm systems	moderate	3	Very high	5
Subtotal		19		20
Social factors				
Increased social interactions	Low	2	high	4
Incentives to invest in community infrastructure	very low	1	high	4
Rural-urban linkages	Poor	1	good	5
Geographic limitations	High	2	high	2
Usefulness of market chain for other products	very low	1	Very high	5
Reduced ethnic rivalries	High	2	Low	4
Community approval	Poor	2	good	4
Impact on health and nutrition	moderate	3	very good	4
Impact on youth	Poor	2	good	4
Revenue for women	moderate	3	very good	5
Subtotal		19		41
TOTAL		67		93

Overall, the total sum of these un-weighted ratings is higher for dairy than for opium production, indicating dairy to be a favourable option; primarily influenced by the social factors affecting farmers' choices.

As discussed above the income and profits from dairy production, even on modernizing farms, are considerably lower than those from opium poppy cultivation. However, the daily milk income has important benefits for rural consumption patterns and access to credit. The costs of opium poppy cultivation, particularly labour, are much higher than those of dairy production. The capital investment required for opium poppy cultivation is higher than the cost of cows and barns, but the opium poppy growing season is shorter than the time required for calves to grow, breed and begin producing milk. Opium traders provide cash advances to approximately one-third of opium poppy farmers, but credit from micro-credit institutions is also available to many dairy farmers. Both opium and milk production are scale neutral: both large and small farms can produce them efficiently.

Compared to dairy production, the high seasonal labour requirements of opium production reduce its compatibility with diversified farming systems. Both milk and opium production require substantial investments, but the higher cost of opium production make the risks associated with opium poppy eradication or crop loss higher than the risk of losing cows. Dairy prices vary seasonally, but opium prices vary unpredictably from one year to another (and are currently falling). Both products tend to be sold in non-competitive markets—opium is sold illicitly to traders and milk to processing plants with geographic monopolies. Opium production is threatened by interdiction, while dairy market chains are threatened by the failure of any of their critical elements, including cold chains for perishable fresh dairy products.

Both milk and opium production have geographic limitations. Opium poppy cultivation has few rural-urban linkages as the number of transactions between opium producers, traders and consumers is relatively small. In general, opium poppies are grown in isolation and opium market chains are only useful for illicit products. Most commercial milk is produced close to processing plants and urban markets. The frequent transactions within dairy market chains strengthen rural-urban linkages and provide incentives to invest in infrastructure, including roads, communications systems and education, and the cold chains for dairy markets are valuable for other perishable products.

Although farmers respect wealth, many condemn opium production on moral or religious grounds. Growing and trading opium increases ethnic rivalries that can constrain licit rural enterprise development, but smallholder dairy programmes demonstrate that, by focusing on the financial and technical issues, they can minimize these rivalries.

Income from both dairy and opium production can contribute to household health and nutrition, but the dairy products themselves are valued particularly for their direct contribution to health and nutrition. Some youth benefit from off-farm employment in opium poppy cultivation, but others become opium addicts. Young men can also find employment in milk collection, processing and other elements of dairy market chains. The wages women earn as labourers in opium poppy fields are often important sources of household income, but the predictable, year-round cash income from milk sales provides even greater benefits.

Strategic approaches

Experience of sustainable development shows, and the diversity of situations emphasises, that there can be no simple blueprints for measures to embed dairy initiatives into AL packages for CN strategies. Solutions will have to be tuned to local realities and set in the contexts of specific situations. Consequently, reaching solutions will require close cooperation and mutual effort among development stakeholders. The conclusions of recent research (Bird and Buddenberg, 2006) highlight two key initiatives to guide how dairy might appear as part of an AL package in a CN strategy:

1. Ensure that the counter-narcotics dimension is mainstreamed in national development programmes, rather than relying primarily on specialized alternative livelihood projects; and,
2. As the critical adverse development impacts of actions against opium production are on poor farmers and rural wage labourers, targeting these specific groups should be the focus of alternative livelihoods programmes.

The following approach would set the vision of how dairy development might be encouraged as part of CN strategies:

- include dairy assessments as part of the situation analysis for each new CN strategy, policy, programme and project with specific emphasis on the relevance to, and role of, poor farmers and rural wage labourers;
- where appropriate, generate and disseminate dairy data derived through focused monitoring and evaluation mechanisms and forums; and
- define the implementation and monitoring requirements of dairy development in contractual and other CN agreements with co-operating agencies and businesses as well as with local leaders and villagers.

If the dairy option already existed or showed clear promise, there could be two different strategic situations in which dairy development might be considered as part of an AL package:

- How dairy development could help wean farmers off opium poppy production.
- How dairy development might best be organised to inoculate farmers against the temptation to grow opium poppy.

These two situations could involve quite different approaches and needs. For example, the intention to wean farmers off opium poppy production might warrant some form of amnesty where opium poppy production could be temporarily sanctioned, as long as farmers agreed to invest their opium proceeds in improving livestock and dairy capacity. The result would be to divert the value and profitability of opium poppy growing into helping to finance livestock and dairy improvements within a licit rural economy.

Such an approach could involve an in-kind credit and trading scheme which exchanged opium harvests for payments in livestock. Politically, this would be a much more popular approach and would save the costs of the current unsuccessful, uncertain and unpopular opium poppy eradication schemes.

Obviously, where there was no existing opium production and the idea is to inoculate, then the schemes would focus entirely around in-kind credit options to encourage dairy farmers and livestock keepers to take advantage of opportunities in local and other markets. Here, the aim would be to help ensure that local licit rural economies thrived so that the need to consider illicit forms of income generation would be eliminated.

Moving forward

The gaps and shortfalls which policy development could address have been identified (Blench, 2001; FAO, 2005; Halbach, 2005), as discussed below: To achieve mainstreaming and targeted dairy development goals, action will be needed in four areas:

1. Policy and operations:

Drought-response policies, strategies and mechanisms need to be designed and established locally to involve the livestock keepers themselves. A crucial element is the co-ordination required to protect against epidemic diseases and in locating water points and emergency water sources. The same participatory design and decision making process should also determine the quality and type of services to be made available to livestock keepers; which will need to balance the role of public services with services better delivered through the private sector.

Locally, the capacity of the *Kuchi* and other relevant *shuras*[3] should be developed to take up local responsibility and the leadership of pastoralist interests in relation to the concerns of others in the grazing areas of the country. The public sector should investigate further how the organisation of production might be modified through new forms of cooperation within livestock farming and marketing systems to improve animal quality; overcome holding size limitations; enable better utilisation of resources, and speed up the recovery of rangeland, fodder and dairy development.

2. Strategies and business plans:

Strategies need to disaggregate issues to clarify the approaches to opium poppy control and dairy management, including their key actions, activities, resourcing, programming, risk assessment and monitoring and evaluation. Surveys, situation analyses, profiles and other basic documents and reviews should contain information and discussion on opium poppy reduction and dairy development. Data should be disaggregated to allow easy assessments of opium poppy and dairy issues as part of standard reporting requirements.

3. Formulate, implement, monitor and evaluate programmes and projects:

The design of policy, projects and advice can be poor if it ignores the multi-faceted character of household risk and the family decision-making environment within which assessments are made. Also, if the viability of production systems is assessed only over short time periods, the results will inevitably be biased in favour of introduced new livestock breeds. Similarly, gaps in the knowledge of the value and importance of rangeland biodiversity and its potential role in increasing rangeland productivity in uncertain environments can also mislead policy and distort how programmes are designed and delivered.

[3] Shura is an Arabic word for 'consultation' or 'council' dating to pre-Islamic times and is believed to be the method by which Arabian tribes once selected leaders and made major decisions. It is presented in the Quran as a principle, and not a system, of governance with the 'shura framework' stressing popular consent, collective deliberation and shared responsibility, personal freedom, justice, equality, and dignity of the human individual.

A shortlist of key questions would help ensure that opium poppy and dairy needs are included effectively. Clearly, assistance will be needed to support any government- or community-led approach by addressing local capacities to monitor progress; including long term help to assist line ministries and local organisations to formulate and utilise relevant and reliable indicators and targets.

4. Staffing policy and management:

Drug and dairy awareness can be improved through the training of target groups of villagers, government counterparts at district/provincial level, and project staff. Also, as appropriate, drug and dairy focal points could be established in relevant agencies, organisations, NGOs and businesses.

Investing soundly

Generally, sound investments should include the following:

a) Assess market demand

Initiatives to promote dairying should first undertake a detailed assessment of the extent and nature of market demand. Typical questions would include:

- Do local consumers want pasteurized milk, and can they afford it?
- If not, what are the best ways to enhance the nutritional, employment and income generating role of milk and milk products?
- What opportunities are there to produce niche dairy products, such as *Dhuhr*[4], for local sale or export?
- What minimum safety and quality standards need to be met?

b) Install private sector supply chain infrastructure

The promotion of private sector development of the supply chain infrastructure required for efficient production and marketing would include suitable transportation, communication and new media systems, as well as considering appropriate means of installing food testing and certification facilities, refrigeration and cold chain infrastructure.

c) Balance appropriate public and private services

In many instances public sector involvement is best restricted to limited-term co-financing arrangements that encourage private sector investment. A direct government role is appropriate in some areas, such as auditing of certification systems and management of quarantine procedures and epidemic risks.

Government, multi-lateral agencies and NGOs should focus more on information dissemination and support livestock owners to access improved information sources. This would involve: more translation/synthesis of materials; greater use of radio, mobile phones, internet, and digital media; paying more attention to style, cultural setting and quality of visual material; developing collections of relevant materials and installing quality filters to exclude less relevant information; and improving feedback mechanisms and forums among pastoralists, livestock producers and agencies, government, NGOs and the private sector. Furthermore, international agencies could also promote the use of improved technologies for modelling climatic change and to make the results of such models quickly available for rangeland, drought management and dairy developments.

[4] "Dhuhr" is a popular 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. Its sour taste suits local cuisine and it does not require much milk as it is diluted with water.

d) Establish financial markets and risk management mechanisms

The establishment of effective financial markets and risk management mechanisms is largely the role of the private sector with the required private investment being initiated through limited-term co-financing schemes.

e) Provide technical assistance

Currently, most Afghan farmers are unwilling to pay for technical information, so private farm consulting services are not generally viable. However, processing plants have strong incentives to provide training and to promote improved management to increase milk quality and yield and may be willing to support extension agents and pay them commission for selling dairy production inputs.

Extension services should extend to pastoralists, but only after participatory research into the animal husbandry techniques practiced by pastoralists to determine appropriate adaptations to extension packages to make service compatible and relevant to pastoralists, agro-pastoralists and smallholder mixed farmers alike.

Many agricultural extension staff do not have direct experience of livestock and dairy farming and would require training in specific areas, such as fodder production, animal feeding and husbandry, calf rearing, and dairy hygiene. Health and breeding services are specialised subjects best dealt with by professionals. Specialised extension staff, dealing with a CN strategy, could assist producers to address other issues, such as drug abuse/addiction, social change, gender roles, resource tenure and access and control over resources.

Differing approaches and assistance are likely to be needed to ensure that both male and female farmers and workers (whether pastoralist, agro-pastoralist or smallholder), obtain good quality training and assistance in areas relating to the expansion of smallholder dairy production and the improvement of management.

Conclusions

The AALP and other reviews, surveys and analysis show that the specific roles for dairy and livestock in CN and AL policies, strategies, programmes and projects are not well understood. This suggests caution prior to committing to major investments and initiatives. Nevertheless, livestock are important in household livelihood strategies addressing short, medium and long term needs. Thus, appropriate interventions to improve dairy production could have a considerable impact. In particular, the role of the state in providing animal health services is vital. Furthermore, women's skills and experience make them a prime target group for training as 'paravets'.

Faced with similar development constraints as the licit rural economy; the illicit opium economy is clearly capable, adept, flexible and effective at introducing and supporting opium poppy cultivation, opium processing and trade. In a short space of time, a thriving and profitable international business has been established which, if it was not illicit, would have been hailed as a major success. A key test for international development cooperation is how to compete with or take advantage of the illicit opium economy, without undermining the capacities for success that underlie the existing rural economy, which frequently remains heavily dependent on illicit opium poppy cultivation.

There is clearly an immediate need for coordination and action in the provision of public planning, policy and services across a range of issues with a consistency of approach under a common government umbrella. Mainstreaming livestock, together with CN issues in development programmes would seem to be an obvious route through which the effectiveness of CN strategies could be enhanced.

The key to rebuilding the dairy sector and assisting the support structures that underpin household survival strategies lies in interventions that lead to better resource utilisation and management within a complex web of household activities. As the most significant expense for animal production is feeding, potential efficiency gains lie in improving access to and the capacity of rangeland graze and browse and on improving the local production of forage and fodder. The improved nutrition and management of livestock is affected by a diverse set of environmental conditions as well as uncertainties about finance and the allocation of resources. Improved land use practices and improved forage production and storage, linked to new processing capacity will lead to an increase in milk production and dairy products, thereby increasing human and livestock health and reducing reliance on illicit opium poppy cultivation.

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