
**Improved Market Access and Smallholder Dairy Farmer Participation
for Sustainable Dairy Development**

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Session 2 Paper: Selected smallholder dairying experiences from Bangladesh and Mongolia

Tsetsgee Ser-Od, Mongolia

Md. Mustafa Hussain, Bangladesh

Brian Dugdill, Dairy Development Specialist

Introduction (slides 1 and 2)

1. FAO recently completed two smallholder-based dairy development projects in Bangladesh and Mongolia. At first glance the countries and the projects are vastly different and could not be further apart from, for example, a population density or climate standpoint. In fact there are many similarities from a smallholder dairying perspective.

2. This paper and the accompanying PowerPoint presentation (annex 1) are prepared for the Asia-Pacific Regional Smallholder Dairy Strategy Workshop to be held in Chiang Mai, Thailand from 25 to 29 February 2008 under the above-mentioned APHCA/CFC/FAO project. Smallholder dairying in the two countries is compared and contrasted with a focus on two quite different, but innovative models. Both models have been developed and adapted to produce quality milk from available local resources, at a profit for smallholders and, at affordable prices for urban consumers, including lower-income families. The paper also draws on the lessons learned studies carried out by national experts under the project in the two countries¹ and the Terminal Reports for the two FAO projects². More detailed information about the project and the workshop may be found in Opening Session paper: The Project, the Context and the Workshop and the background APHCA Brief on Smallholder Dairy Development.

Milk Production (slides 3 to 5)

3. Some basic comparative facts and figures for the two countries and the farming and dairy production systems are summarized in table 1. In Bangladesh, where land is a serious constraint, smallholders stall feed their cows (and buffaloes) at home. In Mongolia, where land is plentiful, nearly all the animals milked (cows, yaks, horses, camels, goats and sheep) graze the steppe and are constantly on the move, even in winter. The key constraints to improving productively and profitability are the same, namely: (i) enhanced feeding (ii) shortage of improved stock and (iii) insufficient knowledge for raising management skills.

¹ Lessons Learned Study. Bangladesh: smallholder milk producers, nutrition, incomes and jobs. S.A.M. Anwarul Haque, former General Manager, Bangladesh Milk Producers' Cooperative Limited (Mil Vita)

Lessons Learned Study. Mongolia: small milk producers – the key to dairy industry revival. Tsetsgee Ser-Od, Director, National Dairy Programme (October 2007)

² Terminal Report. Grameen Bank/UNDP/FAO Community Livestock and Dairy Development Project (BGD/98/009), Bangladesh (September 2007)

Terminal Report. Mongolia/Japan/FAO project: Increasing the supply of dairy products to urban centres in Mongolia by reducing post-harvest losses and restocking (GCSP/MON/001/JPN), (August 2007).

Table 1: Selected comparative facts and figures

Item	Bangladesh	Mongolia
1. Basic data		
Population	140 million	2,5 million
Population density	1,000 per km ²	1.6 per km ²
Poverty & nutrition	48% - below MDG income poverty line (\$1/day) 30% - under-nourished + 30% - real unemployment	30% - below MDG1 income poverty line (\$ 1/day) 20% - under-nourished + 30% - real unemployment?
Climate	Hot, humid, tropical	Cold, semi-arid, extreme continental
Natural disaster risk	High: prone to regular flooding and tsunamis	Medium: prone to periodic dzuds & droughts
Topography & soil	Flat, alluvial, very fertile, abundant water 3 rice crops/yr	Undulating steppe, mountains rising above 4,000m, poor soils, frequent droughts; short 90 day growing season
GDP	USD 423 (2006)	+ USD 723 (2006) Growing rapidly (mining, tourism) – 14% pa
Agriculture	Crop-based 21% of GDP (livestock 6% - when manure, hides & skins etc counted) Agri exports Employment : 52%	Livestock-based 22% of GDP (livestock 81%) Agri exports : 20-30% Employment : 40%
Farming systems	Mainly subsistence Paddy (rice) Crop-vegetables Paddy-livestock Paddy-fish-livestock Small scale dairy	Mainly subsistence Nomadic herding Crop (wheat/vegetables) Crop-livestock More intensive dairy (recent)
2. Milk production		
Milk availability	19 kg per capita Imports - ? per capita 50% formal market	134 kg per capita (rural 200 kg / urban 50 kg) Imports - 20 kg per capita Imports - 50% formal (urban) processed milk market
Milk animal	Cattle, buffaloes (22 million)	Total – 40.1 million Cattle, yaks, horse, camels, goats, sheep
Smallholder families with milk animals	15 million households	85,000 households
Ave. milk production (cow)	200-300 per 180 day lactation Good milk yield for improved cattle (10-25 kg)	5-8 kg. day Improving with AI & on specialized dairy farms
Services	Vet. /Breeding (AI): poor coverage - delivered mainly by Government. Where dairies have set up their own support services systems coverage good. Credit: readily available (20% pa interest).	Vet. /Breeding: good coverage - delivered by private sector vets & AI technicians. Dairy cow genetic Credit expensive (+30% interest pa) & difficult to get
3. Producer Organisations		
Type	2-tier dairy cooperative (150,000 families in 1,200 village coops) CLDDP women's groups (8,000 families in ??? Village Groups)	Dairy herder dairy groups (20-40 families) Single-tier dairy cooperative (40 families)
4. Markets access		
Market type	Huge Mainly informal Low rural & urban purchasing power. Milk producers relatively close to urban markets	Small Rural areas inform, urban increasingly formal Rapidly increasing urban purchasing power Milk producers widely & sparsely dispersed
Dairy enterprises	Since mid-1990s, more than 20 investors set up dairy companies, of which 75% use local milk	12 milk processors; 2 with business models based on recombining veg. oil & SMP

Mongolia (slides 6 and 7)

4. Because of the harsh environment and vast grasslands (only one percent of the country is settled or cropped) livestock are hugely important in what was, until very recently, a predominantly nomadic culture. Milk is sacred and milk and dairy products are staple foods and produced in great abundance from 40 million cattle, yaks, camels, horses, goats and sheep. Prior to 1990 during the socialist period, Mongolia used to be self-sufficient in milk. Under the socialist system the country had 42 collective dairy farms with improved dairy animals, state-run milk and butter collection networks, and a large state-run processing plant in Ulaanbaatar, the capital. The state system produced enough processed milk and dairy products for the entire urban population, even though 80 percent of the milk is produced in the short June-August growing period.

5. During the rapid transition to the market-based economy in the 1990s the dairy industry, like other food industries collapsed. By 2002 most of the processed milk sold in urban areas was imported. The industry was characterised by obsolete infrastructure and technologies, a chronic shortage of trained people and consumer concern about the quality and safety of Mongolian milk and dairy products. Like other countries in the East Asia region, Mongolia is rapidly urbanising and domestic products need to be tailored to modern market tastes. In 2002 Mongolia turned to the Government of Japan and FAO for support to revive the dairy sector. Accordingly, a project was developed: *Increasing the supply of dairy products in Mongolia by reducing post-harvest losses and re-stocking* with a budget of US\$ 2 million, provided by the Government of Japan from its Kennedy Round II facility. The project started in October 2004 and was completed on schedule and on budget in September 2007. Following intensive stakeholder consultations a strategy was developed to re-build and modernise the dairy sector using a sector-wide, cow to consumer approach involving public and private sector partnerships. Previous attempts to revive the sector under the *white revolution* programme had failed, largely due to resource constraints

The Mongolia dairy food chain model (slides 8 to 15)

6. The modern dairy food chain model evolved from the lessons learned during the dairy food security project, and is inclusive of all milk producers, irrespective of type and size (nomads, peri-urban households, small dairy farms etc). The model links producers to small, medium and large scale processors through six flexible modules, one for each link in the cow-consumer dairy food chain, each capable of being adapted to the local situation and each of which must be profitable. The modules include: (i) milk producer organisations, (ii) dairy service centres, operated on a full cost recovery basis by private vets., (iii) milk collection units, (iv) milk cooling centres, (v) milk processing units and (vi) “One-Stop” milk sales centres.

7. While the basic model centres on liquid milk, for more remote areas the model is adapted for primary processing out on the steppe for conservation and reduced transport costs, e.g. cheese production. The market in Mongolia and the region is for processed cheese, mainly for fast food outlets. Yak cheese is produced by herder groups, matured and collected. Best quality is sold vacuum packed as natural cheese, the remainder is converted into processed cheese, which has a longer shelf-life and is easier to store and transport.

8. In addition to the sector-wide strategy, both models are supported by innovative marketing and capacity building features including:

- Public-private sector partnerships and investments in the modules.
- A dairy cow genetic breed improvement scheme, using imported semen from young tested Simmental bulls.

- Generic milk branding, labelling and advertising (the first generic branding and advertising campaign in Mongolia).
- Retail outlets where processors join to sell their products, including certified raw chilled milk and traditional products at “one-stop” milk sales centres,
- An innovative public-private sector partnership school lunch programme based on local milk, supplied by local milk producers and dairy enterprises.
- Working with the food standards and inspection authorities to set realistic but safe standards and to train and certify milk inspectors, dairy operators and traders.
- A permanent and commercial National Dairy Training Centre at the Food Technology College in Ulaanbaatar, which provides practical, vocational and outreach/field training for each of the modules.
- Forming a Dairy Steering Group under the Mongolian Food Processors Association to and to represent and promote the dairy industry.

9. The two models are now mainstreamed into the 10-year National Dairy Programme for the period 2007-2016. The target is to produce and process at least 90 percent of the milk sold in the formal market locally by 2010, up from 2.5 percent in 2003.

10 At 134 kg per person per year, milk availability in Mongolia is high by Asian standards; even so, with just 2.5 million people, half of who live in urban areas, the market is very small relative to the country’s potential and comparative advantage for producing ‘clean’ milk. With its huge milking herds and vast grasslands, Mongolia has a clear international comparative advantage for producing and exporting clean milk to ecologically-conscious markets; hardly any pesticides or animal drugs and no milk-stimulating hormones are used. Having substituted the vast majority of imports with domestic milk, the next step is to look to exporting quality, niche products to the rapidly growing markets of milk-deficit countries in the region to continue to grow the dairy industry. Processed cheese will be one of these products.

11. Initial results have been encouraging. By the end of 2007, sixteen commercial modules/units are in operation. The project shared the investment risks with its partners by contributing up-to-date know-how and limited equipment (approx. USD 350,000). The partners invested about USD 1.3 million in equipment and buildings. The quantity of domestic milk entering the formal market in 2007 was 16 million litres, up from 2.5 million litres in 2003. This is expected to increase to 24 million litres in 2008. Under the National Dairy Programme private investors, including the two companies reconstituting imported FCMP, are expected to invest upwards of USD 10 million in the modules in 2008 and 2009.

Bangladesh (slides 16 and 17)

12. Prior to 1970 there was no organised dairying in Bangladesh. Acute scarcity of milk following independence from Pakistan in 1971 prompted the Government to plan a dairy project modelled on the world-renowned Indian Anand pattern dairy cooperative. Set up with support from FAO, UNDP and DANIDA, the Bangladesh Milk Producers’ Cooperative Union Limited (Milk Vita) today collects milk from over 150,000 smallholder milk producers through a network of 1,200 village cooperatives. Milk Vita almost collapsed in the early 1980s because it could not compete with imported subsidized milk powder, donated and commercial, mainly from the European Union. By the early 1990s the business had been turned around when Government withdrew from day-to day management and allowed Milk Vita to recruit professional managers. At the same time milk powder stocks around the world started to drop as western Governments began to withdraw subsidies to their dairy farmers and exporters. A number of private sector investors and NGOs

copied parts of the Milk Vita model and by 2005, there were 20 or so dairy enterprises, including three large companies producing sweetened condensed milk from imported skimmed milk powder and vegetable oil. Milk Vita recently invested more than USD 10 million in an expansion programme, which is facing teething problems related mainly to inappropriate equipment selection.

13. FAO and UNDP also provided support to set up a vocational Dairy Training Centre to support the dairy expansion programme and to prepare an updated National Livestock Policy (NLP) in 2006. The National Strategy for Accelerated Poverty Reduction (NSAPR), published in October 2005, sets out ways and means for achieving the Millennium Development Goals (MDG) of halving poverty and under-nutrition by 2015. It indicates that while the livestock sector as a whole grew 2.6 percent per annum since the 1970s, poultry and milk production grew at around 10 percent per annum, reflecting the significant support for the two sectors. Not surprisingly both the NLP and NSAPR single out smallholder dairying for early adoption and replication. While milk production by smallholders is now generally recognised in Government development strategy, the absence of a comprehensive national dairy programme is thought by dairy sector insiders to have limited growth.

The Grameen CLDDP (Community Livestock & Dairy Development Project) model (slides 18 to 23)

14. One of the NGOs to adapt parts of the Milk Vita Cooperative dairy model was the Grameen Motsho (Fish) Foundation. The Foundation is a non-profit organisation under the Grameen Bank, world renowned for its highly innovative and successful micro-credit programme for very poor people. The Foundation was set up in 1986 and by the 1998 was farming over 1,000 small ponds in partnership with 3,000 poor families in the north-west of the country. It works through a grass roots Village Group-Village Centre structure, supported by service units. The profits from fish sales are shared 50:50 by the Foundation and the VGMs (Village Group Members). By the late 1990s, earnings per VGM had levelled off at around USD 70 per year. The Foundation was looking for ways and means to: (i) increase pond operator earnings, (ii) raise the productivity of its fish ponds and (iii) improve the nutritional status of VGMs and their families, while involving more direct women beneficiaries, as over 90 percent of the VGMs were men. The solution was to add livestock to the fish farming system in order: (i) to make available food for home consumption and sale (ii) to provide dung to fertilise fish ponds to improve productivity and (iii) to shift the focus to women. The Foundation turned to FAO and UNDP for support in 1998 and the project started in 1999. It was completed in 2006. The budget was USD 3.43 million, provided by the Foundation and UNDP, including USD 0.82 million for the revolving community micro-credit scheme.

15. The Grameen CLDDP model is profitable dairy chain model that is part of an integrated, community-owned crop-fish-livestock farming system. Over 8,000 very poor landless and assetless VGMs belong to five-person groups. Following training and build up of savings, the VGMs access small commercial loans for livestock and other income generating activities. Loans may be accessed for in-calf heifers, in-calf cows, store cattle for fattening, goats, pigs, poultry, ducks crops/fodder, milkshaws, and bio-digesters and more recently, vegetables, fishing gear, social forestry. More than seventy percent of the loans are now for dairy cows because they return the most in terms of profits, nutrition, asset accumulation and social standing. The loans include compulsory animal insurance and feed, component. The feed is produced by their own feed mills.

16. VGMs have access, at full cost, to all the inputs and services needed to produce and market milk, e.g. feed, AI, animal health, credit etc. They supply milk surplus to their household requirements to community-owned milk collection centres for primary processing at community-owned dairy enterprises. Because of its reliable quality, chilled milk is sold at a premium price to established dairies such as Milk Vita, Bikrampur Dairy and Grameen-Danone Foods for further processing and marketing. Some milk is processed and marketed locally using a low-cost, locally

fabricated in-pouch filling-pasteurising-cooling system. This equipment was also exported to Mongolia for used by small and medium-scale dairy enterprises.

17. The community-owned feed mill enterprises provide quality dairy rations, compounded from locally available agro by-products, for the VGM-owners who either have insufficient land or no land at all to grow their own feed and fodder. Once smallholders have four or five cattle, they have enough dung to take out a loan for a bio-digester to produce gas for cooking and lighting. The spent slurry from the bio-digester is then used to fertilise and increase the productivity of fish ponds. Every two or three years the ponds are emptied, the slurry dried and used as crop fertiliser. In this way smallholder dairying has become an important component of an integrated and environmentally sustainable poor peoples' farming system.

18. The VGM-smallholder milk producers own 70 percent of the community feed mills and dairy enterprises (Grameen owns the other 30 percent) and thus share the profits of the enterprises. While in some ways it is a social dairying model, it is commercial in operation.

19. Some of the benefits³ for smallholders include:

- Nutrition: e.g. pre-project no households consumed milk, now all 6,000 households with cows consume between 0.2 and one litre daily.
- Earnings: e.g. average earnings from fish and milk increased from 19 to 125 US cents a day, enabling purchase of other essentials such as food, schooling, clothes etc.
- Household accumulation of physical assets: up 145 percent and include tube wells for safe water, bio-digesters for clean cooking and lighting, sanitary latrines etc.

20. So far these benefits have resulted in the graduation of over 5,000 smallholder households out of poverty. The model is being adapted and scaled up across the country and in Nepal, e.g.

- The new Grameen-Danone Foods⁴ Bogra Dairy started up in 2007 and produces low-cost bio-yoghurts for the poor.
- In five very poor districts in the north-west 10,000 smallholder families will be covered under a USD 15 million programme up to 2010 funded and managed by the NGO, Palli Karma-Sahayak Foundation.

School milk (slide 24)

21. Both countries have school milk programmes. The Bangladesh programme is quite small and operated by an International NGO. Originally the milk was imported, pre-packed in UHT cartons from Thailand. Now imported milk powder is reconstituted in a joint venture with a local dairy. The above-mentioned National Strategy for Accelerated Poverty Reduction includes a plan to promote a School Lunch Programme to improve attendance, reduce incidence of mal-nutrition as

³ Data from baseline survey (1999) and monthly monitoring and evaluation reports (2000-2007)

⁴ Grameen-Danone Foods Limited was set up in 2006 and is in a joint social venture between the Grameen Bank and Danone, a large French multi-national dairy corporation known for its functional bio-yoghurts. Danone recently established a division named Danone.Communities and gained approval from its shareholders to set up a Euro 50 million (USD 70 million) mutual fund to channel investment into not-for-profit social ventures in developing countries. Ninety percent of the fund is to be invested in low risk securities, the remaining ten percent in higher risk social ventures. The first social venture is Grameen-Danone Foods, which produces low-cost, fortified yoghurt for sale in rural communities. A pilot dairy enterprise has been set up in Bogra. The longer-term plan is to set up a further ten rural enterprises in other disadvantaged areas of Bangladesh. The Bogra enterprise started up in February this year and currently purchases about 300 to 400 litres of milk daily from the Grameen/CLDDP Community Dairy enterprise at Nimgatchi, about 50 km away.

well as generating demand for local produce and catering services through backward and forward linkages. Community participation is to be a key driver.

22. In Mongolia the Government launched a school lunch scheme in 2006. The scheme is operated under a public-private sector partnership arrangement with food companies bidding for local school lunch contracts. Following intense lobbying by the Mongolian Food Industry Association and the dairy project the Government now insists that only domestic produce is used. 80 percent of the meals are now provided by dairy enterprises. Different dairy products are provided on alternate days and the scheme boosts cash flow and earnings for the concerned dairies and, in turn, milk producers. The school lunch/milk programme is linked to the generic Mongolia milk advertising campaign. In addition to supplying regular nutrition, the scheme also show-cases Mongolian milk and dairy products to tomorrow's customers. The scheme current covers about 200,000 primary school children across the country.

Dairy development programmes and scaling up the models (slides 25 and 26)

24. The two countries have different approaches to dairy development reflecting, perhaps, the relative importance of milk to the economy and nutrition. Milk is a staple food in Mongolia and so there is now a fully funded National Dairy Programme involving public-private sector partnerships for scaling up the models (see paras 10 and 11). In Bangladesh milk is just one of many foods. There is no specific dairy plan or programme and dairy development is driven largely by the private and NGO sectors (para 13).

Lessons and Conclusions (slides 27 to 29)

25. Milk is nature's most complete food. With appropriate policies, strategies and planning, smallholder dairying can improve the livelihoods and well-being of rural communities and urban consumers alike while making profits for the dairy operators at each stage of the dairy value chain. Smallholder dairying is simple in vision, but relatively complex in implementation.

20. If smallholder dairying works in such harsh and differing environments as Bangladesh and Mongolia, it should work in most between situations where markets demand quality milk and dairy products and smallholders produce milk competitively. In Bangladesh and Mongolia these countries success was achieved by:

- (i) building on existing farming systems and structures, but focussed on the private sector;
- (ii) adapting and tailoring modern dairy technologies and models to the local situation – each situation is unique;
- (iii) adopting a complete cow to consumer strategy and intervening at each stage of the dairy food chain to ensure that each stage maintains milk quality and is profitable;
- (iv) having a project to demonstrate and fine tune the model to minimise the initial risks associated with innovation and start-up;
- (v) using the success to influence policy making and to plan sustainable scaling up through national programmes.

21. In these processes, committed people and enterprises (stakeholders) are more important than geography, climate or politics.

22. Smallholder dairying is now recognized as one of the key tools for helping both Bangladesh and Mongolia achieve their World Food Summit (1996) and Millennium Development Goal (2000) targets of halving under-nutrition and poverty by the year 2015.