IMPROVED MARKET ACCESS AND SMALLHOLDER DAIRY FARMER PARTICIPATION FOR SUSTAINABLE DAIRY DEVELOPMENT

CFC/FIGMDP/16FT

Asian milk for health and wealth

Participating Countries

Bangladesh, Bhutan, China, India, Indonesia, Iran, DPR Korea, Laos, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, The Philippines, Sri Lanka, Thailand, Vietnam

Smallholder Dairy Lessons Learned

(from FAO case studies and other literature)

Interim Report

Prepared for presentation to

APHCA members at the 31st annual session

29 October to 01 November 2007 at Yangon, Myanmar

Common Fund For Commodities

Food And Agriculture Organisation Of The United Nations

October 2007

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Executive Summary

1. APHCA, the Animal Production and Health Commission for Asia and the Pacific, works with local governments, institutions and farmers to develop strategies to tackle livestock problems. Member countries include: Australia, Bangladesh, Bhutan, China, India, Indonesia, Iran, Laos, Malaysia, Mongolia Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines, Sri Lanka and Thailand.
2. Responding to recent surges in the consumption of milk and dairy products in the Asia-Pacific region, member countries, plus North Korea and Vietnam, have placed priority on dairy development as a means for economic growth, especially for smallholders, and have asked FAO for support for planned small-scale dairy development activities in dairy value chains. To this end FAO and CFC, the Common Fund for Commodities, are collaborating with APHCA on a preparatory project, which aims to develop a strategy to inform countries how to respond to market demand while including smallholders. The regional strategy will have a variety of approaches, along with national action plans, which could include sourcing support from CFC and various development partners for targeted interventions.
3. This interim report, prepared for APHCA members, briefly summarises the preliminary findings of nine ongoing lessons learned studies, which aim to identify factors that have influenced smallholder participation in dairy food chains. The studies are being undertaken by National Consultants with practical field experience from countries where:
   - smallholders have good access to formal markets (China, India, Thailand)
   - smallholders have limited access to formal markets (Bangladesh, Mongolia, Pakistan)
   - smallholders have marginal access to formal markets: (Philippines, Sri Lanka, Vietnam).

4. The studies will be finalised by early November 2007; then used to select three countries for more detailed smallholder dairy value chain case studies to be undertaken from mid-November 2007 to mid-January 2008. These will help in developing the strategy, which will be finalised following a stakeholder workshop scheduled for 05 to 08 February, 2008 at Chiang Mai in Thailand.

A key lesson: "Strategy of including smallholders requires a deliberate and creative development vehicle that would be sensitive to the impact of policies, programmes and activities to smallholders" (Sally Bulatao, the Philippines)

The challenge: the impact of appropriate policies, programmes and activities on smallholders depends on the local context

1. Introduction

The terms of reference for the rapid lessons learned studies and the rationale for selection of the countries are set out in the project inception report1. The overarching project aim is to identify the factors that have been inclusive/or detrimental for smallholder participation in dairy food chains. The studies are being undertaken by National Consultants with practical field experience.

This interim report2 summarises the preliminary study findings, all of which are at various stages of review and finalisation by the FAO Project Management Team. The FAO reviewers have also used other literature, listed under each country review. The preliminary lessons from each country are broken down into different categories affecting the dairy sector and smallholders, namely: (i) Smallholder dairying models (ii) Socio-cultural-environmental (iii) Institutional (iv) Economic (v) Technical (vi) Policy/Legislation and (vii) Documents consulted. The lines between categories are often blurred. General data on milk availability and consumption in the study country may be found in annex 1.

The report is prepared for distribution to participants attending 31st annual APHCA meeting to be held in Chiang Mai from 29 October to 01 November 2007. Feedback from the meeting will also be used to finalise the studies.

The studies will be ready by early November 2007; then used to select three countries for more detailed smallholder dairy value chain case studies to be undertaken from mid-November 2007 to mid-January 2008. These will help in developing the strategy, which will be finalised following a stakeholder workshop scheduled for 05 to 08 February 2008, again at Chiang Mai in Thailand.

[1] *CFC-FAO Asia Dairy Strategy Project (CFC/FIGMDP/16FT) Field Document 1: Inception Report, June 2007.*

2 *Prepared on behalf of the Project Management Team by:*

- *Nancy Morgan (NM), Livestock Policy Officer, FAO RAP, (Lead Technical Officer/Project Coordinator)*
- *Brian Dugdill (BD), FAO Dairy Development Specialist*

2. A Summary of Preliminary Lessons Learned

A critical lesson and challenge: "Strategy of including smallholders requires a deliberate and creative development vehicle that would be sensitive to the impact of policies, programmes and activities to smallholders" (Sally Bulatao, the Philippines)

The challenge: the impact of appropriate policies, programmes and activities on smallholders depends on the local context

In addition to the country specific lessons which are included in this document, 15 key lessons critical to supporting smallholder milk producers in dairy food chains, are drawn from the studies and summarised below

1. Well-known but still important socio-economic-cultural-environment benefits of smallholder dairying are: (i) household nutrition and food security, (ii) incomes, (iii) jobs; all part of mixed and integrated farming systems to spread risks and sustain the environment (all countries).
2. Governments have to be careful about interventions in the sector, including pricing policies (Pakistan, Thailand) and dairy cow loan schemes (Bangladesh, Mongolia, Vietnam)
3. Government investment in large operations do not usually work (Pakistan, Philippines)
4. It is important to carefully target smallholder dairy development interventions (Bangladesh, Mongolia, Philippines, Vietnam)
5. Industry institutions and smallholder groups (associations, cooperative etc) can have a pivotal role in supporting dairy development (India, Philippines)
6. Smallholders need an accessible and affordable complete package of support services (animal health, AI/breeding etc) to produce milk competitively (Bangladesh, India, Mongolia).
7. Technical know-how and skills delivered through practical and accessible vocational and outreach training are equally important (India, Mongolia)
8. Creative and carefully thought out linkages with the private sector (including technical assistance, financial support) can enable smallholders to move up into the marketing chain (Vietnam, Bangladesh, Mongolia, Philippines, Pakistan).
9. School milk programmes, when implemented with a focus on smallholders, can support dairy development (as well as generating long term demand for dairy products) (Mongolia, Philippines, Thailand)
10. Pro-poor, social programmes need to be carefully targeted and are usually only sustainable if linked to remunerative markets (Bangladesh, Mongolia)
11. Graduation from subsistence to commercial smallholder and/or larger-scale milk production level occurs when the right policies and strategies are adopted (Bangladesh, India, Philippines, Thailand)
12. To enhance returns to dairy, selected smallholders close to remunerative markets should go into value addition: ready-to-drink milks and yoghurts, sweetened condensed milk, indigenous products (China, Mongolia, Philippines)
13. Urban populations in countries traditionally seen as non-milk drinkers and/or lactose intolerant are increasing consumption of ready-to-drink processed and cultured milks (Philippines, Sri Lanka, Thailand, Vietnam)
14. Milk quality and attractive product branding/presentation are pre-requisites for persuading modern urban consumers to switch from imports to milk produced by local smallholders (China, India, Mongolia, Philippines)
15. The very recent hike in world milk powder prices offer an unprecedented opportunity for smallholder milk producers in Asia.

3. A review of some of the regional smallholder dairy models

1. Cooperative dairying model (and the more recent cooperative company):
   - Bangladesh: Milk Vita model (Bangladesh: Bangladesh Milk Producers Cooperative Union Limited)
   - India: world renowned Anand pattern model (National Dairy Development Board)
   - Thailand: various milk collecting and processing co-ops
2. Dairy zone model (public-private sector equity partnership):
   - Philippines: National Dairy Authority
3. Dairy park models (collective/community dairy cow keeping in China):
   - Nestle: Heilongjiang Province
   - Dairy parks: Inner Mongolian Autonomous Region
   - Silver Bridge: producer associations
   - New Hope Group: Sichuan Province
4. Contract farming model (private sector-smallholder incentive):
   - Pakistan: Halla (Patoki) model
   - Pakistan: Haleeb Foods Limited
   - Vietnam: Nestle Ha-Tay scheme
5. Dairy chain module model (comprising six cow to consumer modules in Mongolia):
   - (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.
6. Social/community dairying model:
   - Bangladesh: Community Livestock and Dairy Development Project model (Grameen Bank)
   - Bangladesh: Grameen-Danone Foods
7. School milk model:
   - where local school milk programmes feature strongly in the above models (Mongolia, Philippines, Thailand)

4. Study Reviews

4.1 Bangladesh

Study title: Lessons Learned Studies

Consultant: S.A.M. Anwarul Haque, former General Manager, Milk Vita Dairy Coop

Draft-01: *05/10/2007*

Review

I. **Smallholder dairying models:**

- Milk Vita dairy co-operative and its imitators, e.g. BRAC-Arong, Pran etc.
- CLDDP (Community Livestock and Dairy Development Project)
- Grameen-Danone Foods social dairy

II. **Socio-cultural-environmental:**

- Strong tradition of dairying dominated by trader-middlemen; importance of traditional/indigenous milk products; informal market dominates formal market.
- Nearly all local milk producer by smallholders milk
- Dairying has important family role, especially for regular nutrition, incomes and jobs, in integrating farming systems (crop-fish-livestock) to optimise use of available resources, including feed/fodder, land, water etc.
- Increasing awareness by Government, NGOs and private sector about the significant the economic and environmental benefits of sustainable social dairying in rural areas.
- School milk feeding schemes based on imported pre-packed milk seen as counter-productive to smallholder dairy development.
- Livestock and dairying enhances the capacity of poor rural people to cope with the annual monsoon floods (floods wash crops and fish away – livestock are kept at home and continue to produce food for home consumption & sale)

III. **Institutional:**

- Strong involvement of government and development partners/projects initially; first dairy coop in 1973 (Milk Vita - adapted from Anand pattern coop in India); Govt. loan scheme in late-1990s to promote larger scale dairy farming largely unsuccessful due to poor services and market access; support now limited with shift to private sector and NGOs.
- Other examples are the Grameen Bank CLDDP (Community Livestock and Dairy Development Project model, which organises very poor, landless village group members (7,000) and involves flexible marketing; CLDDP adapted for use in Nepal and the local Grameen-Danone Foods social venture (milk collected for processing into sweet yoghurt); also private entrepreneur models with limited value addition for smallholders.
- Insurance scheme plays a vital role in CLDDP model - since smallholder dairy producers are prone to higher financial risk.

IV. **Economic:**

- The success of Milk Vita coop prompted strong investment by others; currently 14 dairy companies supporting nearly 300,000 smallholders using parts of the model.
- Condensed milk produced from imported milk powder and vegetable fat is cheaper than fresh milk; difficult to compete, but Milk Vita puts emphasis on standards/product quality.
- Opportunities for import substitution; strong interest in investing in dairy sector, favourable investment climate, and high import tariffs (45%) fostering foreign investment.

V. **Technical:**

- Milk processing technologies available at plant level in about 20 districts (of 64), supported by local production of small-scale equipment, especially for milk collection.

- Both Milk Vita and CLDDP are complete cow to consumer models, which provide assured market for surplus milk plus the added value of ownership dividends for 150,000+ smallholders organised into 1,500+ village coops/groups.

VI. Policy/Legislation:

- None – recent National Livestock Policy (2006) advocates early adoption and scaling up smallholder dairying through Milk Vita and CLDDP models, as does the PRSP-II (2005).
- Need policy to have an actionable strategic plan, so formulate national dairy policy, which should address, inter alia: (i) sets policy or develops a national plan (ii) enhances productions services (feed/breed/health etc) and credit dairy animals (iii) provides training to build skills.
- New opportunities resulting from (i) high global prices (ii) recent Government/NGO realisation that smallholder dairying has significant social as well as economical benefits (nutrition/income/jobs etc)

VII. Documents consulted:

- FAO lessons learned case study (Draft 01: October 2007)
- Terminal Report, Grameen Bank/UNDP/FAO BGD/98/009 CLDDP (FAO, September 2007)
- FAO Dairy Development Activities in Bangladesh, Technical Mission Report (FAO, September 2007)
- Employment generation through small-scale dairy processing and marketing: experiences form Bangladesh, Ghana and Kenya (FAO/ILRI, 2004)
- Smallholder dairy production and marketing systems in Bangladesh (ILRI)

4.2 China

Study title: Linking markets to smallholder dairy farmers in China: quality as a new driver

Consultants: Kevin Chen, Hu Song (Beijing Project Office, China Canada Small Farmer Adapting to Global Markets Project), Dinghuan Hu (Researcher, Agricultural Economics Research Institute, Chinese Academy of Agriculture Science, Beijing)

Draft-01: submitted Aug 2007

Review:

I. **Smallholder dairying models:**
   - Nestle (Heilongjiang Province)
   - Dairy parks (Inner Mongolian Autonomous Region)
   - Silver Bridge (producer associations)
   - New Hope Group (Sichuan Province)

II. **Socio-cultural-environmental:**
   - No strong tradition of milk and dairy products consumption, except northern provinces, but changing rapidly –formal market growing at 20% annually
   - Supply-demand imbalance between provinces; huge imports
   - Two thirds of milk entering formal market produced by smallholders (up to 20 milk cows).
   - Working through community important

III. **Institutional**
   - Government support for industry with support from some local governments in regions near population centres, provision of technical assistance and financial incentives to develop both production and processing.
   - Institutional arrangements: “third party milk collection stations” (IMAR) who are paid management fees by the processors on the basis of quality grades of raw milk; problems when stations do not pass on price premiums to farmers.

IV. **Economic:**
   - Limited domestic milk supplies (until recently) was driving consolidation in the processing sector with firms investing in Inner Mongolia/Heilongjiang to increase access to milk supplies resulted in growing competition among processors, but not increased producer prices.
   - Interesting developments in processing/marketing: 15,000 operations in 2005 with the number of large companies reducing from 23 in 1998 to 9 in 2005, while SMEs increased from 372 to 681; all nine largest companies made a profit in 2005 and all companies in red are small and medium sized.
   - In urban areas, supermarkets (and processed products) taking increasing share of market.
   - Dairy processors tend to price raw milk according to demand and supply but it is not quality based (this transfers market risks back to farmers).
   - Analysis shows that most profitable dairy farmer are ones with a size of 11-50 cows, then 50-cows (due to more commercial feed used by larger operations and different accounting of labour); yields of small producers = 2.2 mt/yr, above 50 cows = over 3.5 mt/yr.
   - Anticipated that small dairy farmers will continue to be an important component of China’s dairy system in the future, unless quality standards drive up cost of production.

V. **Technical:**
   - Raw milk quality a major problem; quantity-based approach should shift to quality-based system
   - Large, highly competitive dairy equipment manufacturing sector

VI. **Policy/Legislation:**
   - Dairy less regulated than other sectors

- Policy biased towards large-scale milk processors, needs to be adapted to promote smallholders

VII. Documents consulted:

- FAO lessons learned case study (Draft-01: August 2007)
- China - dairy opportunities unlimited; dairy production, consumption and trade, trends, players and outlook 2008. 3A Business Consulting and Shainwright Consulting and Research , February 2006
- China's Dairy Market: Survey Results for Consumer Demand and Supply Characteristics (USDA)
- China: Building Supply Chains in the Dairy Industry: The New Hope Group (author and date unknown)

4.3 India

Study title: Lessons Learned Studies: India
Consultant: Aminesh Banerjee, formerly with OFP-NDDB and Chairman Indian Dairy Association
Draft-01: submitted Aug 2007
Review

I. **Smallholder dairying models:**
- Four types of supply chains (models), three in the organised sector: (i) government (ii) co-operative (iii) private/multinational and (iv) the traditional or informal sector.
- World-renowned Anand Pattern, vertically integrated dairy cooperatives (based in Gujarat) provides cooperative members with social benefits (out of surplus generated by milk cooperatives); Anand model is using milk as a tool for socio-economic development.
- Co-operative dairy company – a recent adaptation of the Anand model registered under the Company's Act, rather than the Co-operative Act
- Huge scope to involve 39 million smallholders not supplying coops

II. **Socio-cultural-environmental:**
- Cows and milk culturally significant – milk a symbol of purity and motherhood
- Huge importance of traditional/indigenous milk products.
- Because of huge population dairying in India should be socially-oriented, labour-driven, low-input-output ratio through sustaining and adapting coops to a competitive environment through commitment at highest level

III. **Institutional:**
- Numerous organisations supporting dairy development through cooperative structures, but nothing for private or informal sectors.
- Committed long term and politically connected leadership of dairy co-op movement greatly facilitated smallholder involvement
- Opportunities to link producers into multi-supply chains (for flexibility purposes).

IV. **Economic:**
- Seasonality issues; outside coops, no fixed producer prices and prices vary up to 30 (high) v. 70 (low)
- Ghee, milk powder, and especially skimmed milk powder, are major price drivers - implying that higher world prices could have a significant impact on local prices.
- Highly organised cooperative milksheds and the federated national milk grid with and feeder-balancing dairies work well to balance supply with demand.
- Asia is an example of a region where dairying can continue to survive profitably as a labour-driven smallholder enterprise having a low input-output cost ratio and adoption of low cost home grown technologies with large social/multiplier benefits.

V. **Technical:**
- Coops are successful providers of fair-cost inputs and services for smallholder milk producers.
- Availability of modern processing infrastructure, first-rate technical know-how and skilled workforce has shaped a hugely efficient cooperative milk collection-processing-marketing system.
- And a huge, highly competitive dairy equipment manufacturing sector
- Dairy development strategy should: (i) enhance productivity, (ii) enforce environmental regulations, (iii) improve service delivery (iv) promote women (v) narrower technology gap

VI. **Policy/Legislation:**
- Milk and Milk Products Orders: restricted entry of new entrepreneurs into milksheds reserved for existing dairy coops; now modified, which resulted in more private sector investment.

- Cooperative systems (laws and regulations) in developing countries subject to governance problems; in India, experimenting with a cooperative company model to remove local government influence.
- Long-term nature (30+ years) of external development and technical assistance programmes and food aid/milk powder monetisation programmes played a significant role both as a catalyst for local production and in stimulating consumption
- New policy/strategy measure should address (i) improving rural infrastructure (ii) affordable disease control (iii) appropriate technology and R&D (iv) creating a favourable investment framework (v) clean milk (vi) smallholder-friendly quality/safety standards.

VII. Documents consulted:

- FAO lessons learned case study (Draft-01: August 2007)
- Equitable Intensification of Market-Oriented Smallholder Dairy and Poultry Production in India through Contract Farming: A Synthesis. Final Research Report. Project on Contract Farming of Milk and Poultry in India: Partnerships to promote the environmentally friendly and equitable intensification of smallholder market-oriented livestock production (FAO-IFPRI, August 2007).
- Milk Production, Marketing and Consumption Patterns at Peru-Urban Dairy Farms in the Mountains

4.4 Mongolia

Study title: Lessons Learned Study

Consultant: Mrs. Tsetsgee Ser-Od, Coordinator, National Dairy Programme, Food Division, Ministry of Food and Agriculture

Draft-01: submitted 05/10/2007

Review

I. **Smallholder dairying models:**
   - Suun Sanaa (Milk Vision) sector wide model - inclusive of different types of smallholders (nomads and peri-urban households) linked to small and large scale processors, (sub) model for each link cow-consumer dairy food chain and includes: (i) milk producer groups, (ii) dairy service centres (run by private sector, (iii) milk collection packages, (iv) milk cooling centres, (v) milk processing units and (vi) dairy sales centres, supported by generic milk branding and advertising and school milk programmes).

II. **Socio-cultural-environmental:**
   - Milk is sacred and important part of heritage
   - High per capita consumption (134 kg/yr)
   - Huge importance of traditional dairy products (100+ varieties)
   - Vast livestock and steppe-grassland resources enable low-cost production of clean milk

III. **Institutional:**
   - Collective farms in socialist era depressed milk production; abrupt change to market economy destroyed formal dairy industry and Mongolia went from being self-sufficient in processed milk (1990) to importing 95% of processed milk and dairy products by 2003
   - Smallholders (sedentary and nomadic) still dominate milk production, but larger producers emerging close to urban markets; herding groups based on family units also emerging but poor milk quality, highly dispersed producers, very seasonal milk production, lack of feeds and fodder limiting progress.
   - Sector wide, integrated industry re-building strategy aimed at ensuring each link in the dairy chain is profitable is encouraging private sector investment
   - Setting up milk processors' association to promote local milk and generic milk marketing campaign to differentiate local from imported milk useful in promoting domestic milk consumption and production
   - Promoting school milk using local milk has dual impact of improving nutrition and providing a market for local milk producers, not imported milk.

IV. **Economic:**
   - Milk production costs and farm-gate prices (12-15 US cents/l) competitive with imports, especially with increase in imported with LME cost of FMP (40-50 US cents/l).
   - Continuing importance and high profitability of traditional products.

V. **Technical:**
   - Focus on milk quality and safety and generic branding helped to re-build consumer confidence in local milk

VI. **Policy/Legislation:**
   - Updating domestic and import tax legislation promoted domestic milk processing, e.g. VAT can be offset against cost of procuring domestic milk.
   - Dairy development policy/strategy should address: (i) mainstreaming recent lessons learned into National Dairy Programme (ii) especially focus on innovation, milk quality and training (iii) expand Suun Sanaa model piloted in central aimags (provinces) to all aimags where market and production justify (iv) expand private-public sector partnerships for school milk at small and large urban levels (v) continue with supporting tax environment to replace imports with local milk
   - Due to high consumption levels by Asian standards the future dairy policy strategy should also start to build export markets, which means (i) meeting international standards (ii)

promoting joint-venture with international companies (iii) exporting to near-by milk-deficit countries (iv) promoting the comparative advantage of Mongolian milk, which is low cost "green milk" – milk without growth hormones, pesticides and anti-biotics.

VII. Documents consulted:

- FAO lessons learned case study (Draft-01: 05/10/2007)
- Terminal Report GCSP/MON/001/JPN Dairy Food Security Project (up-dated version, FAO, August 2007)
- Mongolia: milk production, processing consumption and outlook to 2010. Paper presented to 27th IDF World Dairy Summit 2006 (Government of Mongolia and FAO, October 2007)

4.5 Pakistan

Study title: Analysis of milk marketing chain

Consultant: Ms. Umm E. Zia

Draft-01: submitted 10/08/2007

Review:

I. **Smallholder dairying models:**
   - Only two current initiatives covered in study: (i) Poverty reduction: public-private sector partnership promoting village milk producer groups (NWFP) (ii) Nestle/Engro/UNDP community empowerment (currently being piloted)
   - Not mentioned: (i) Halla model (ii) Haleeb Food model: private sector-smallholder model that cuts out large milk contractors and focus on milk quality.

II. **Socio-cultural-environmental:**
   - Milk consumption is very important (the highest in Asia); Pakistan is the fourth largest milk producer in the world and its contribution to GDP surpasses all major crops with about 50 percent of the value added in the agriculture sector supported by livestock.

III. **Institutional:**
   - Previous Government support focused on medium/larger producers and supporting the development of modern processing facilities; now recognising importance of the social impact of dairying and has created the National Dairy Development Board, Livestock & Dairy Development Board and the Dairy Pakistan Company.
   - Development projects focused on dairy farmer groups in selected villages with small milk collection centres equipped with a farm cooling tanks has been successful. Conditions facilitating success include: (i) producers are required to sell share of milk to collection centre, (ii) membership fees required, (iii) services provided. Strategic support, through the financing of milk cooling tanks (ave. cost USD 5,000), seems a cost effective way of supporting smallholder organizations.
   - Development projects were initially focused in zones dominated by large dairy companies (Nestle and Engro); biased against and very limited support for smallholders. An on-going FAO TCP project is providing support to enhance private-public partnerships; too soon to assess impact.
   - Smallholders are limited by the lack of any formal or even informal farmers' organizations, such as milk producers associations or coops; due to absence of such groupings, farmers are unable to bargain collectively with collectors and processors.
   - Opportunities for upgrading supply chains and the role of smallholders through increased linkages with private sector engaged in milk collection/processing through facilitating investments and technical support.

IV. **Economic:**
   - Inclusion of smallholders was supported by the Haleeb Food policy of excluding big milk contractors from the supply chain in the late 1990s; these big contractors used market power to increase their returns from processors while offering low prices to producers.
   - Prices to Haleeb suppliers increased through a strict and stringent quality policy; transparency in this policy and remunerative prices for high quality milk led to less adulteration for producers/suppliers and strong consumer confidence in locally processed products.

V. **Technical:**
   - Processors do not provide any technical or other assistance to farmers, thus limiting growth of small subsistence farmers, not allowing them to rise up through the supply chain.

VI. **Policy/Legislation:**
   - Smallholders dominate production but are not encouraged; policies and strategies favour large-scale milk processors

- Fixed dairy prices in a context of liberalized inputs create an environment for disinvestment by producers in the sector, but created private sector interest in investment in processing. This is particularly true since the same pricing regulations do not apply to packed and loose milk. A case study undertaken on Haleeb Foods indicates that there are no policies to regulate milk prices at the farm level; however, it appears that local/city governments have officially fixed rates on selected retail prices which are put in place to avoid adulteration by retailers.
- Dairy development policy/strategy should address: (i) re-focusing on milk production and smallholders (ii) skills and services (iii) producer groups (iv) cold chains (v) promoting milk quality to reduce adulteration (vi) appropriate and affordable equipment – improved fabrication and maintenance base (vii) lack of no market information (vii) learn and apply lessons from countries with similar socio-economic-politico profiles

VII. Documents consulted:

- FAO lessons learned case study (Draft-01: 10/08/2007
- Pakistan: A case study of milk production and marketing by small and medium scale contract farmers of Haleeb Foods Ltd. (date?)
- Various reports for FAO Technical Co-operation (TCP) Project Support to Livestock Policy (FAO, 2004)
- Various reports for FAO TCP project: Up-scaling the Dairy Industry in Pakistan (FAO-TCP/PAK/3004A, 2006-07)

4.6 The Philippines

Study title: The Philippines: Enterprise-driven dairy development

Consultant: Sally Butalao, former Administrator, National Dairy Association

Final version: submitted September 2007

Review:

I. Smallholder dairying models:

- Island-based Dairy Zone/Dairy Module (a public-private sector equity partnership, including school milk schemes)
- Example of dairy enterprise which allows smallholders to invest in animals and then the company manages the animals while providing returns to absentee owners.

II. Socio-cultural-environmental:

- Nearly all milk and dairy products imported; even so there is a strong tradition of dairying dominated by trader-middlemen dealing in traditional/indigenous milk products.
- Traditional products are most profitable/add most value to milk for smallholders
- School milk programmes important, but often cause difficulties in school holidays

III. Institutional:

- Critical role played by bodies that represent the sector; strong and focused government involvement in the dairy sector through; (i) Medium-Term Development Plan for Dairy: 1989-1993), (ii) Dairy Industry Development Model - dairy zone model which now involves 15 dairy zones, (iii) Dairy Road Map (2004-7); the model is zero-base approach, i.e. only supports dairy in areas found suitable based on pre-determined parameters which include, inter alia, access to markets and viable production units.
- Clear designation of support to industry and suitable dairy areas matched with trained dairy technicians.
- Need collaborative efforts among national/local government and dairy enterprises; start small, with provincial government active partners, give up traditional ways of distributing animals; programme counterparts, land, sponsorship of milk feeding programs, working capital loans, etc.
- Study gives examples where government involvement in the creation of big commercial farms were not sustainable (unable to amortize loans, ran out of funds to cover overheads).
- School milk programmes support local production (40% in certain areas), smallholders dairies are given priority as suppliers of government and community-sponsored schemes); need to ensure that ratio of milk going to milk feeding is no more than 40% (to maintain commercial markets); schemes have to be institutionalised and not negotiated every year.

IV. Economic:

- Dairy entrepreneurs: business skills/value-addition, enforcing product standards.
- Financing packages to reflect dairy production cycle.
- Commercial success of island dairies (locally produced products are cheaper).
- Collaboration between big and small (Mindanao a good example); in dairy zones with big/small, smallholders remain.
- By developing commercial farm modules, NDA (National Dairy Authority) supports scaling up.
- Focus on local retail markets which are more stable than institutional markets; value addition of evaporated/condensed milk and other local products.

V. Technical:

- Biggest obstacle to dairy development is shortage of dairy animals; public-private partnerships needed. Example of NDA collaboration with privately owned cattle breeding farms linking suitable financing scheme for dairy animal procurement - commercial financing-repayment in money linked to a cycle that corresponds to the productivity of the dairy animal.

- Quality assurance received a boost with introduction of milk payment based on quality in some zones.
- Technological breakthrough in appropriate technology (longer shelf life through water retort facility); funding with payback by dairy federation which runs the place.
- Use of smaller processing facilities (regional dairy equipment).
- Technical support and training from commercial “technical cooperative” for upgrading milk quality and product development.
- Assistance needs to extend beyond the farm for: (i) quality control, (ii) product development, (iii) packaging, (iv) market positioning and (v) enterprise management.

VI. Policy/Legislation:

- National Dairy Act (1995): promotion of smallholder dairying is foreseen by law and by plan
- Labelling: stop unfair labelling of milk products.
- Dairy development policy/strategy related to smallholders should address, inter alia: (i) ensuring small producers maintain a competitive edge based on low overhead incurred per farm, not on handouts (ii) benefit from opportunities to link with bigger private commercial farms (iii) go through simply chains (liquid milk) but the value-addition generates higher returns (and generates rural employment); this is particularly true for indigenous products.

VII. Documents consulted:

- FAO lessons learned case study (September 2007)

4.7 Sri Lanka

Study title: Lessons learned studies – Sri Lanka
Consultant: N.F.C. Ranaweera, Policy Consultant
Draft-01: 04/10/2007
Review:

I. **Smallholder dairying models:**
   - Not included in first study draft, but appear to be largely un-organised

II. **Socio-cultural-environmental:**
   - Milk consumption: complex, diversified, declining market; import-based (75-80%); milk-powder –oriented; domestic production (15-20%) evenly split between formal/informal markets;
   - Low appreciation for milk in Sri Lanka (compared with other Indian sub-continent countries) is reflected in a lower milk price/wage ratio (meaning that there would be a quicker exodus out of the industry if prices change?).

III. **Institutional:**
   - The insurance market in Sri Lanka is accessible for smallholders; consequently cattle have monetary insurance function.
   - Constraints on land lead to linking dairy production with complementary land uses (such as coconut production) and are viable as long as wages stay stable; the specific production environment (depending on outlet for beef, land availability and opportunity cost of labour) results in a different production system (mixed plantation/dairy system).

IV. **Economic:**
   - A separate case study of smallholder dairy in the coconut triangle showed that smallholder cattle herds averaged 4.8 animals with 1.9 dairy cows; most of the milk produced is marketed in nearly Colombo since Sri Lanka has no tradition of milk consumption; proximity to Colombia facilitated adequate milk marketing arrangements and competitive markets for live animals (the latter is an important economic opportunity for smallholders).
   - This case study indicates that interaction between output markets, the scarcity and values of production factors, and smallholders' choices for production technology affect production systems and the development/expansion of smallholder dairy operations.
   - Restricted land holdings, high opportunity cost for labour in peri-urban areas, developed markets for meat and milk, support dual production system of milk and meat which is complementary to coconut production (input of labour for the dairy component is kept minimal).

V. **Technical:**
   - Milk quality: 'Where reasonably fixed quality standards are applied, farmers are able to meet them"
   - Main constraints: (i) animal feeding (land ownership issues), (i) lack of services and milk marketing (iii) very limited opportunities for training and skills development training – "Many in he sector see a lack of small-scale processing as constraining farmer's opportunities for obtaining higher prices for their milk – can be overcome by forming groups"

VI. **Policy/Legislation:**
   - Until recently, Government focused on food security/provision of cheap food to urban consumers; now, apparently there is a major emphasis on dairy production with targeted self-sufficiency of 50% by 2015 (not clear from when).
   - Smallholder dairy development has been constrained by pricing policies which fix retail prices of milk powder (with real prices declining over the past 10 years). It also seems to be constrained by the monopoly power by Milco (this is despite competition from other private companies, confusing).

- Recent policy changes (in 10 year development framework): (i) may allow unused land to be used by private sector to promote superior planting materials for feeds and fodder (ii) promotion of private and corporate sector for organized programmes for livestock development will be actively encouraged.
- Government price setting for milk powder indirectly controls producer prices and seen as counter-productive to dairy development and improving farm productivity
- Growth of domestic informal market is expected due to recent doubling of international milk powder prices
- Dairy development policy/strategy should address: (i) sector-conducive fiscal and import policies (ii) promote liquid milk markets (ii) remove price controls (iii) transform subsistence farming (iv) promote medium to large scale dairy farming (v) improve animal feeding and (vi) commence dairy cow upgrading; (vii) involve dairy farmers in processing.

VII. Documents consulted:

- FAO lessons learned case study (Draft-01: 04/10/2007)
- Smallholder dairy production and markets: A comparison of production systems in Zambia, Kenya and Sri Lanka (ILRI)
- Economics of small scale dairy farming in Sri Lanka: A Case Study from Coconut Cattle Salvo Pastoral Systems.
- Import surge of milk and milk products: Sri Lanka – Case Study (unattributed and undated)

4.8 Thailand

Study title:

Consultant: Ms. Pensri Jungsiriwat, Chief, Milk & Meat, Department of Livestock Development, Ministry of Agriculture and Cooperatives

Draft-01: submitted 05/10/2007

Review:

I. **Smallholder dairying models:**
- Co-operative based milk collection feeding milk to large-scale processors
- Mai-sai model (Chiang Rai Province); small-scale integrated model for rural areas; not clear if public or private sector

II. **Socio-cultural-environmental:**
- The long term development of the industry is constrained by cultural preferences, which used to be for evaporated and sweetened condensed milks; Thai's are not traditionally fresh milk drinkers, but ready-to-drink fresh and cultured milks are fastest growing market segment; Government dairy support programmes seem to have been instrumental in changing preferences.
- Thailand is one largest imported of SMP and WMP in the world (USD 540 million in 2006, but some re-processed/exported); split between domestic production and imports and formal/informal not clear; consumers perceive domestic milk to be of lower quality than imported
- Smallholders dominate milk production (70% of producers less than 10 milking cows), but widely dispersed; dairy farming said to be decreasing (at 10% pa) due to high energy/fuel costs

III. **Institutional:**
- Smallholder dairying is heavily supported by government interventions and, programmes, which support the development of cooperatives.
- The government role in working with financial institutions to provide credit for farming inputs such as housing and cows may have supported industry development; the enlargement of herds has allowed producers to self-finance investments (46% of farmers have their own sources of capital or investment).
- Success in dairy promotion depends on a critical and timely mix of technical inputs, institutional support (credit, coops, training, milk collection centres, processing, marketing facilities, research and extension
- Other studies indicate that: (i) Government sets producer price (TBT 12.5) and retail price (TBT 25.0), (ii) producer profits are good (<40%) (iii) 80% local milk collected by coops, which are highly fragmented with very few adding value through further processing.

IV. **Economic:**
- Fixed pricing seems to have played a key role in ensuring industry profitability as has the establishment of school milk programmes (see also below).

V. **Technical:**
- It appears that the Government (through breeding facilities) has played a significant role in cross-bred dairy cows distribution (need to check); one source indicates that the government produces approximately 1,000 head of cross-bred cows annually; in addition, there has been a strong commitment to dairy research/development focused on genetic improvements and fodder research.
- Cooperative development was a fundamental factor in smallholder dairy development (cite the case of the Nong Pho Dairy Cooperative in Rachaburi Province).
- The Thai manufacturing sector produces high quality dairy equipment.

VI. **Policy/Legislation:**
- Government legislation has played an important role in supporting dairying, in particular two laws passed in 1983: (i) on local procurement and (ii) on establishing high tariffs on

imported products (lowered in the context of the WTO); in addition, the government promoted a policy of diversification of rice farming to dairy farming in order to reduce paddy farming in certain areas.

- Trade policy initiatives which linked local procurement requirements to the obtaining of import licenses (as well as very high tariffs and TRQs) have supported the industry; the elimination of this programme (2004) could have contributed to the reduction in demand for domestic production.
- More information is needed on the impact or otherwise of Government support for strategy lessons learned, e.g. (i) high producer margins at current prices indicate milk production in Thailand competitive with current high milk powder import prices (ii) role of DPO (Dairy Promotion Organisation) and school milk programme based on domestic milk (iii) opportunities for efficiency gains in milk collection and processing (very few coops currently process milk) etc

VII. Documents consulted:

- FAO lessons learned case study (Draft-01: October, 2007)
- The Thai dairy Sector under liberalised trade conditions (Rabobank, September 2004)
- Terminal Project Statement: training programme fore the small-scale dairy sector (FAO, 2004)
- Thai Dairy Sector: balancing free trade commitments with the need to build an industry (Food and Agribusiness Research Issue 121, June 2004)
- Production and use of dairy products in Thailand (International Journal of Dairy Technology, 2003)
- Dairy development in Thailand and a case study on environmental impacts of peri-urban dairy colonies (ILRI, date?)

4.9 Vietnam

Study title: Lessons Learned Studies – Case of Vietnam

Consultant: Nguyen Anh Phong, Head, Marketing and Commodity Analysis Division, Institute of Policy and Strategy for Agriculture and Rural Development

Draft-01: submitted 17/10/2007

Review:

I. Smallholder dairying models:

- Only one covered: Nestle Ha-Tay Province contract (smallholder) farmer scheme
- Difficulties in managing the scheme caused bottlenecks and delays along the entire dairy chain are well illustrated - more than 50% of producers are in contract violation

II. Socio-cultural-environmental:

- No tradition of milk consumption; urbanisation & increasing living standards/disposable incomes driving recent significant increases, 47% growth year on year in 2003, now slowed.
- Milk production: increased 20-fold since 1990 to 22,000 mt; dominated by smallholders, approx 20,000 with 3-6 dairy animals who produce 95% of local milk, state owned farms 5%; ave. dairy cow production high at 4,700 kg (305 day lactation) compared with: (i) China (3,400 kg) (ii) Indonesia (3,100 kg) and (iii) Thailand (3,200 kg.).
- Processing: dominated by ca 20 private companies; three biggest: (i) VINAMILK (60%), (ii) Dutch Lady (18%) and Nestle/others (22%).

III. Institutional:

- Government recognised the need for "dairy priority zones" and these zones should elaborate a fodder development plans.
- Fodder production on land (and a stable supply of other inputs) linked to dairy production is critical (to minimize risk to new producers).
- There are dangers in moving too fast in linking private sector initiatives with smallholder dairy producers - this includes: (i) contracts for milk which are linked to investment as can be difficult to maintain trust on both sides (ii) the quality requirements (iii) the system of price setting (stable or seasonal fluctuations), (iv) the nature of collection systems sometimes discriminate against smallholder participation (v) the nature of contracts sometimes locks smallholders into a vicious cycle of not being able to support optimal production.

IV. Economic:

- Some provinces provide support for households to buy exotic or domestic breeds of cattle; there are examples of donors (CIDA) and NGOs supporting dairy development through the distribution of dairy cows along with technical training.
- Subsidies: one consequence of dairy development programmes that provide subsidised inputs in that prices soar for all inputs related to dairy production, thus penalizing/taxing already existing operations; subsidizing the purchase of animals (and mismanagement of programmes) can have a perverse effect on breeding stock quality (follow-up on this; recommended that development plans should not provide subsidies on purchase of cross-bred heifers because it distorts the market.
- Government management of milk procurement prices limits profitability of the sector; processors benefit and small producers bear most of the risk of market fluctuations and many credit programmes did not allow sufficient time for smallholders to pay back debts and expand herds.
- Sudden liberalization (plus WTO accession) led to import surges; the resulting fragmentation of the marketing chain is challenging local producers.
- Recent global price increases have had immediate impacts on industry profitability with procurement prices from major dairy companies increasing sharply.
- 10 cows is minimum size for profitable activities

V. Technical

- Technical and policy support is also provided by provincial governments who provide subsidies on vaccination, production costs, support of collection/ transportation; there are some cases where provinces have tax exemption on land used for fodder production.
- Milk production: poor skills and services, need for training;

VI. Policy/Legislation:

- Policy reforms in 1986 (Doi Moi) which privatized production and encouraged marketing accelerated a rapid development of the dairy sector in Vietnam.
- National Dairy Development Plan launched in 2001, supported by follow up legislation, underpins dairy development, particularly the strong support for government to replace imports by domestic production (target local production of 40% demand by 2010); direct Government support for cows/heifer purchase, vaccination, milk collection etc and indirect such as tax exemptions etc.
- Strong opportunities for dairy development, given rapid gains in milk consumption (despite limited milk consumption traditions.)
- Dairy development programme/plans failed in some regions because of: (i) haphazard introduction, inexperience and inflexibility (ii) inadequate feed/fodder (iii) lack of vet. services (iv) focus on high yielding-high management cows (v) poor milk quality/lack of standards (vi) distance from markets (vii) low producer prices etc
- Government dairy development plans that do not account for the long period required to enhance breeding, build feed resource bases but encourage lending to small farmers pose considerable risks for livelihood of potentially interested small producers.
- Dairy development policy/strategy should include:
- National Plan: adapt to focus on 'dairy priority zones'
- Markets: (i) let private processors set own producer payments systems; (ii) develop user-friendly guidelines for contracts; (iii) increase in world prices seen as great opportunity - producer prices increased by approx 40% in first half of 2007
- Production: (i) form producer groups (ii) more focus on capacity building and training for self-reliance (iii) transformation to large scale dairy farming will not be sustainable (iv) improve feeding and extension services (v) less focus on exotic animals, more on home-raised herd replacements/profitable crosses (vi) flexible incentive pricing system.

VII. Documents consulted:

- FAO lessons learned case study (Draft-01: 17/10/2007)
- Review, analysis and dissemination of experiences in dairy production in Vietnam (FAO Pro-Poor Policy Initiative Report, July 2006)
- The economics of milk production in Hanoi, Vietnam, with particular emphasis on small-scale producers (FAO Pro-Poor Policy Initiative Paper No. 33, February 2006)
- Smallholder dairy production and marketing systems in Vietnam (ILRI)

Annex: Asian Dairy Benchmarks

	Good access countries			Marginal access			Limited access			Other		
	Thailand	China	India	Vietnam	Philippines	Sri Lanka	Bangladesh	Pakistan	Mongolia	Nepal	Indonesia	Asia (developing)
Population*	65	1,301	1,118	85	85		144	162			225	3,754
GDP* billion US$	184		720	44		720	90	7			270	
GDP*per capita	8,300	0	643,828	2,800		#DIV/0!	622,222	41,358		#DIV/0!	1,197,870	
% GDP growth	4.0	9.1	6.5	7.0	4.0		5.5	4.4			3.3	4.9
% population growth (1996-2006)	0.9	0.7	1.6	1.4	1.9		2.0	2.2			1.3	1.3
Dairy production and consumption												
Cows (million)	0.3	12.2	98.7	0.1	0.0	0.5	22.4	26.6	1.6	3.7	9.2	257.7
Yields (tonnes/hd)	3.3	2.4	1.0	1.9 (cross breeds 3.8-4.7)	2.2	0.4	0.1	1.2	0.2	0.4	0.1	0.9
Production (1,000 tonnes)	990	37,775	98,511	252	13	174	2,264	30,562	359	1,312	664	211,601
Consumption (1,0000 tonnes	1,987	40,140	97,924	927	1,452	607	3	30,609	376	1,332	2,305	232,811
Per capita consumption' (Kg/caputa)	43	31	90	11.2	23.4	31.5	17.5	190.0	139.0	51.0	12.0	61.7
Imports	1,377	2,565	88	680	1,683	434	0	61	17	25	1,835	21,210
Exports	380	200	587	5	244	1	0	14	0	5	194	3,598
Net trade	-997	-2,365	499	-675	-1,439	-433	0	-47	-17	-20	-1,641	-17,612
Percentage growth (1990-2006)												
Cows	9.2	?	1.6	7.2	-2.5	-3.0	0.9	2.2	0.2	1.8	0.2	0.7
Yields	0.9	?	2.0	8.9	-2.5	-1.9	0.0	0.8	-0.9	0.3	-1.3	3.9
Production	10.2	16.2	3.7	16.7	3.4	-4.8	0.5	2.9	-0.3	2.3	-1.3	4.5
Consumption	1.7	16.1	3.6	15.2	0.4	1.6	1.3	2.9	0.0	2.5	6.4	4.4
Per capita consumption'	3.1	15.0	2.1	14.0	1.2	0.8	-0.8	0.4	-1.1	0.1	6.5	3.2
Imports	-0.2	12.3	8.5	14.6	1.8	5.2	7.4	-0.9	15.6	38.0	13.7	3.8
Exports	17.2	5.7	39.2	-100.0	72.7	0.0	0.0	17.5	0.0	-7.6	29.3	9.0
Share s												
Import/consumption	69%	6%	0%	73%	116%	71%	15%	0%	5%	2%	80%	9%
Exports/production	38%	1%	1%	2%	1877%	1%	0%	0%	0%	0%	29%	2%
Share of World consumption	0%	6%	15%	0%	0%	0%	0%	5%	0%	0%	0%	35%
Share of World Imports	3%	5%	0%	1%	3%	1%	0%	0%	0%	0%	3%	40%
Share of World Exports	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	7%

Abbreviations And Acronyms

AGA	(FAO) Animal Production and Health Division
AGAL	(FAO) Livestock Policy Branch
AGAP	(FAO) Animal Production Service
APHCA	Animal production and Health Commission for the Asia-Pacific Region
APO	Asian productivity organisation
CCS	(Detailed) Country Case Study
CFC	Common Fund fore Commodities
CIDA	Canadian International Development Agency
CLDDP	(Bangladesh) Community Livestock and Dairy Development Project
DDS	Dairy Development Strategy
FAO	Food and Agriculture Organisation of the UN
FMP	Full Cream Milk Powder
ILRI	International Livestock Research Centre
IMAR	Chinese (Inner Mongolia Autonomous Region)
LME	Liquid Milk Equivalent
LTO	Lead Technical Officer
NC	National Consultant
NDA	Philippines National Dairy Authority
NWFP	(Pakistan) North West Frontier Province
PMT	Project management team
PPR	Project progress report
PRSP	Poverty Reduction Strategy Paper
RAP	(FAO) Regional Office for Asia and the Pacific
SME	Small/Medium-scale Enterprise
SMP	Skimmed Milk Powder
TCP	(FAO) Technical Cooperation Programme
ToR	Terms of Reference
UNDP	United Nations Development Programme
USD	United States dollar
WTO	World Trade Organisation