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FAO/GOVERNMENT COOPERATIVE PROGRAMME



DEVELOPMENT OF INTEGRATED DAIRY SCHEMES

AFGHANISTAN

PROJECT FINDINGS AND RECOMMENDATIONS

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

ROME, 2011

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Report prepared for
the Government of Afghanistan
by
the Food and Agriculture Organization of the United Nations

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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LIST OF ABBREVIATIONS

AI	-	Artificial Insemination
FMD	-	Foot and Mouth Disease
IFAD	-	International Fund for Agricultural Development
IDS	-	Integrated Dairy Scheme
LoA	-	Letter of Agreement
MCC	-	Milk Collection Centre
MAIL	-	Ministry of Agriculture, Irrigation and Livestock
M&E	-	Monitoring and Evaluation
MPCS	-	Milk Producer Cooperative Societies
NaWi	-	Regional Economic Development Programme
NFM	-	National Field Manager
NLPO	-	National Livestock Production Officer
PMU	-	Project Management Unit
SDA	-	Senior Dairy Adviser
SMA	-	Subject Matter Assistant
USAID	-	United States Agency for International Development

1. INTRODUCTION

1.1 PROJECT BACKGROUND

Livestock keeping is an important element of the Afghanistan economy, for both home consumption and the sale of products. Recent investigations by FAO have shown that, for a large proportion of the rural population, cattle represent the most important species and increased milk production for sale and home consumption is seen by many farmers as an important development opportunity. With an increasing part of the population living in cities and possessing growing incomes, there is also an increasing demand for livestock products, which offers a good opportunity to invest in the sector and to produce for the urban markets. This can primarily be achieved by increasing animal productivity through better feeding and management, improving the genetic potential of the cattle and improving animal health. For dairy development, the establishment of efficient marketing facilities is another important prerequisite. The strong internal demand for the products provides a good basis for a viable commercial dairy sector.

Crop production and animal husbandry are interdependent in the mixed farming systems of the country. Livestock are important to the economy and perform multiple functions, including the provision of food, nutrition, income, savings, draft power, manure and transport, as well as other social and cultural functions. Livestock allow the poor to exploit common property resources, such as roadsides, open grazing areas and water bodies. Most livestock are kept by small farmers and are directly linked to family income, nutrition and welfare. Milk and meat production are mainly by-products, except in a few specialized areas. Although cattle and poultry keeping are part of mixed farming, the system of production is not well integrated and maximum value is not always gained from all inputs and outputs. There is scope for basic improvements, leading to greater integration and productivity. When the indirect benefits of draught power and manure for fuel and fertilizer are added to the direct economic output of meat, milk and hides, the value added of the livestock subsector almost doubles, to about six percent of gross domestic product. Livestock also provide a critical cash reserve and steady cash income for many marginal farmers who grow crops essentially for subsistence, or who have little or no land.

Dairying is at an early stage of development in Afghanistan and is gradually attracting more farmers, as well as the interest of the Government and development partners. Milk is

produced by small-scale producers, who are widely dispersed in villages, although there is more intensive production of milk in and around the peri-urban markets. Women are normally responsible for household-level animal husbandry and are also the main beneficiaries of their labours.

The main consumer preference in Afghanistan is for fresh milk throughout the year, butter in winter, and yoghurt and fresh milk in summer. Normally, warm milk is consumed at breakfast, while yoghurt is preferred at lunchtime. Farmers typically have from one to three dairy animals, producing from five to ten litres of milk per day. As a priority, milk is used in the family, with surplus milk being sold to cooperatives, milk collection centres (MCCs) or dairy plants, or private vendors.

Since October 2002, the Government of Germany has been the major sponsor of the FAO Livestock Programme, through GCP/AFG/021/GER, “Development of Livestock Production Activities in Selected Districts”, and its successor, project GCP/AFG/032/GER, “Training of Rural Families and Technical Staff to Extend Proven Animal Health and Livestock Production Packages”, which ended in March 2005. In the past nine years, FAO, supported by the Government of Germany, has implemented a number of interventions in village and integrated small-scale dairy production, processing and marketing, in collaboration with the Ministry of Agriculture, Irrigation and Livestock (MAIL). A tailored model to sustainable and successful dairy development, known as integrated dairy schemes (IDSs) has evolved and a network of community-based milk producer cooperatives societies and unions, involving more than 1 600 farm families, has been established. The success of the dairy activities conducted under the current project, implemented in close consultation with MAIL, has encouraged other institutions to start similar initiatives and dairy development is now one of the livestock priorities of the Government of Afghanistan. The development of successful dairy schemes is a complex process involving not only various technical aspects of milk production, collection, processing and marketing but also a variety of organizational issues. During the project, farmers were assisted in improving their milk production and motivated to participate in the dairy business. Farmers became committed to participating in the establishment, operation and management of dairy cooperative societies/unions and farmer-owned milk processing plants.

The development of IDSs changed farmers’ livelihoods, providing them with a regular income at household level, as well as with milk and yoghurt for their families. Farmer incomes rose on average from USD 371 in 2005 to USD 645 in 2010, an increase that was driven and sustained by the increased volumes of milk produced. In addition, the multiple

benefits of dairying, such as calves and manure for use in crop and horticulture production, were noted. Other benefits from the project included improved social cohesion and collaboration as cooperatives developed.

1.2 OUTLINE OF OFFICIAL ARRANGEMENTS

Project GCP/AFG/040/GER, “Development of Integrated Dairy Schemes”, was approved in March 2005, with a budget of EUR 1 500 000, provided by the Government of Germany, and a scheduled duration of three years. The counterpart agency designated responsible for project implementation was the Ministry of Agriculture, Irrigation and Livestock, specifically the Departments of Extension and Cooperatives within the General Department of Livestock Production and Health Services. The project also worked closely with other departments within MAIL, such as the Department of Women’s Affairs and the Cooperative Department. Following an evaluation mission in April 2008, an extension of 18 months and a further donation of USD 1 665 756 were approved. As a result of the insecurity and political instability in the country, the extension was itself extended by one year. The final project budget was EUR 2.69 million (USD 3.94 million). Project activities began in May 2005 and ended in December 2010.

The project built on work conducted to improve milk production under the previous German-funded projects mentioned above. As a result of these projects, Mazar and Kunduz were identified as possible future locations for IDSs.

The project was based at the MAIL Darulaman compound in Kabul. FAO appointed a full-time project national field manager (NFM) based in Kabul, supported by four national livestock production officers (NLPOs). From 2008 onwards, as the schemes expanded, regional offices were opened in Mazar and Kunduz to minimize delays. An FAO Senior Dairy Adviser (SDA) joined the project in May 2006. An international expert on dairy processing completed a one-month mission and a dairy sector policy development consultant completed two missions in 2005 and 2006, respectively. The input of the SDA was cost-shared with a dairy project funded by the Government of Italy.

Coordination with MAIL was through frequent interaction, often on a daily basis, at local and regional level. Up to 2009, there was also a monthly livestock steering committee meeting at which project progress was presented and discussed. In addition to the NFM, the NLPOs and the SDA, the project team comprised several short-term national and international consultants.

Forty technical missions from Kabul, as well as quarterly supervisory missions, were carried out by project management unit (PMU) staff. The project worked closely with government authorities and staff, above all with the General President of Animal Husbandry and the General President of Veterinary Services, the Deputy of Agricultural Cooperatives and the General President of Animal and Plant Production of MAIL. Monthly economic incentives were provided to selected government staff to assist the PMU in implementing project activities.

Monthly reports, project progress reports, quarterly project implementation reports and work plans were prepared by the NFM and finalized and technically cleared by the SDA, for submission to FAO and the donors.

Further training was provided for the leaders of cooperatives/dairy unions. Letters of Agreement (LoAs) were signed with Balkh livestock development union, Kabul dairy union and Kunduz dairy union. Dairy unions hired the managers and staff required to run their businesses through open competition at a locally competitive and sustainable salary level.

Technical backstopping missions were completed in June and November 2007, October 2008 and May 2010. They monitored performances, upcoming activities and priorities, and business plans. An exit and dairy strategy for Afghanistan was developed. Missions were also conducted by the dairy business management and marketing consultant, and by the dairy cooperative consultant.

A contract was signed with Kabul Washington Construction Company for the construction of a dairy plant building; this was completed and is now in use by Kunduz dairy union. A further contract was signed with Shahin Asia Construction Company for the construction of feed mill buildings at Kunduz and Balkh dairy unions. These were both completed.

Monthly reports on project activities were prepared and submitted to the NPLOs. The consolidated reports were submitted to the NFM and then to the SDA in Kabul. The NFM prepared draft quarterly reports which were finalized and technically cleared by the SDA, for submission to FAO and the donors.

1.3 OBJECTIVES OF THE PROJECT

The overall goal of this livestock development project was to improve food security in Afghanistan by raising the productive capacity of the national dairy sector through the development of integrated model dairy schemes.

The immediate objectives were to:

- increase the consumable and saleable products from cattle production;
- develop processing and marketing structures for milk and dairy products;
- develop cooperative organizational structures for the management of three dairy schemes in Kabul, Balkh and Kunduz; and
- assist with the development of policies and strategies for the dairy sector.

Each of these objectives was supported by component-specific objectives. In close cooperation with the public sector, the project supported the development of a dairy industry. It was instrumental in translating the principal commitments of Afghanistan with regard to developing the livestock private sector through cooperative societies. It also helped to clarify the responsibilities of the central authorities in the field of livestock production.

The project built on the successful experiences and ongoing activities of FAO in livestock production development in Afghanistan, above all through the German-funded projects GCP/AFG/021/GER and GCP/AFG/032/GER. These two projects had created the basic foundation for the further development of the dairy schemes in Kabul and Balkh and had identified Kunduz as a potential new location. In particular, project GCP/AFG/032/GER had achieved an increase of the daily milk supply in Balkh and Kunduz to more than two tonnes. Farmers were organized around the collection centres and representatives elected for the executive committees, taking part in the decision-making processes. In Kunduz, extension activities for fodder production and breed development established good contacts with farmers and prepared the basis for establishing a dairy scheme. Extension activities also progressed for farmers in Kabul and Balkh and efforts were made to approach village women through female extension staff. The schemes in both Kabul and Balkh operated with profits, which became available for future investment in the programme.

Experience gained with the integrated development concept in the field of dairy production was made available through workshops and discussions with other actors in the field of dairy development and the formulation of guidelines for policies and strategies in the dairy sector. The full involvement of central authority departments in the implementation of the project also assisted to spread its experiences to other locations in Afghanistan.

The intended direct beneficiaries of the project were 1 200 village families. When the project duration was extended in 2008, this number increased to 1 600 village families from the provinces of Kabul, Logar, Wardak, Balkh and Kunduz. Although the project was not restricted to a specific group, most families were small livestock owners with one or two cows, who were interested in supplementing their limited income opportunities with a regular income from the sale of milk and who wished to develop dairy production as an important income source. This included landless families and sharecroppers. Regular cash incomes were especially important for these resource-poor families. The selection of villages for new collection centres also considered priorities those locations with a larger number of food-insecure households.

Earlier investigations showed that dairy production involved all family members, with specific responsibilities for men, women and children. Men were responsible for feeding, fodder supplies and animal health, and women for milking, the care of young stock and decisions about the use of the milk produced. Children were mainly involved in herding, watering and the delivery of milk to collection centres. The project would specifically target the responsibilities of village women by giving technical assistance and advice in the fields of milking, hygiene and the care of young stock. The monitoring of production data, income and the relative uses of milk by families for sale or home consumption would provide opportunities to see how the project had helped to improve national food security and people's livelihoods.

2. RESULTS AND CONCLUSIONS

2.1 PRE-PROJECT SITUATION

2.1.1 Baseline surveys

A baseline survey of project areas was conducted at the end of 2005 by an independent contractor. Production, technical and socioeconomic data were collected from 950 households of Kunduz, Kabul and Balkh IDSs. Data from the surveys were used to prepare the detailed programme of work and budget for the project. The safe, practical systems and technologies for profitable smallholder livestock keeping and dairying to be promoted were then adapted and demonstrated. Highlights from the baseline survey included the following.

- Householders possessed 71.12 percent of local breeds, 25 percent of crossbreeds and 3.88 percent of exotic breeds of milk cows.
- Nineteen percent of beneficiaries used improved fodder crop seed in the project targeted area.
- Household income from selling surplus milk was AFG 49.8/day/farmer and annual income from milk USD 371/year/person.
- Women took ownership of over 34 percent of the regular cash income from selling surplus milk.
- Approximately 35.33 percent of cases of foot and mouth disease (FMD) and tick-borne diseases were under control.
- Zoonotic diseases and mastitis were under control in the project area.
- A daily average of 1 925 litres of milk was processed at the dairy plant.
- Fewer than 10 percent of dairy products were packaged and sold.

2.1.2 Implementation strategy

The project set out to empower the resource-poor and disadvantaged members of rural communities by adding livestock-based income-earning opportunities and, in so doing, develop a sustainable community-based dairy industry model suitable for scaling up. The IDS approach started in 2002, with a strong focus on improved production and productivity. As production improved and markets developed, a reorientation to a market-based approach was needed to respond to emerging market demands and changing consumer practices and preferences. The project was therefore initially focused on the livestock and crops components

of the integrated model, but progressed to a market-oriented approach as local conditions improved.

Sufficient production to feed the family and generate some reliable income was the priority identified during project inception. Dairying has a significant advantage over crop-based agriculture in that it generates a regular income, often on a weekly basis, which is mainly owned and managed by the woman of the household. Project implementation was thus based on a strategy that set the maximum possible prices for milk and promoted longer-term sustainability by developing locally based input service provision, such as feed and support services (e.g. veterinary and breeding/artificial insemination [AI] services), at gradual and eventually full-cost recovery.

The implementation strategy had four parts: studies to assess needs; the setting-up and development of viable local institutions, such as dairy cooperatives; the full adaptation of the IDS model to local conditions, including the development of private input service providers and product marketing systems; and the provision of cooperatives and unions with the skills and capacities needed to participate in the Afghan dairy market. The approach developed was a model for the community-based (Shura) and led development of dairy enterprises. National capacity development was one of the cornerstones of the project and is a pillar for the future development of the sector. In this context, strong partnerships were developed and maintained with provincial-level MAIL livestock services as the project was implemented.

Direct feedback from beneficiaries was gathered by the mission to ascertain their level of satisfaction with the project. This was done through direct interviews and meetings at the unions in the sites visited. All feedback was very positive and there was significant interest in expanding the IDSs to other areas. It was significant that women were the major beneficiaries of the project. Beneficiaries and MAIL (at local, provincial and national level) requested that the next stage of development to commercial expansion be supported in order for their enterprises to be more sustainable. FAO technical support switched from full-time to frequent technical backstopping missions from headquarters. This progressively contributed to national capacity development.

2.1.3 Monitoring and evaluation (M&E)

The project provided on-site monitoring and technical guidance. External M&E was conducted in accordance with the general rules for project cycle management. Following a mission to evaluate German-funded FAO projects in Afghanistan in April 2008, the project's duration and budget were increased. A final review mission took place in June 2010.

The M&E system was supplemented by adding a set of increasing cattle production and livelihood improvement indicators in 2005, aimed at assessing improvements in IDS livelihoods through milk collection and processing, increasing milk production through input services, establishing organizations and management structures and empowering farmers' communities. A checklist was also developed for assessing the annual operating profit/loss (balance sheet) for IDS households. Data were collected and analysed on a monthly basis and the M&E system was mainstreamed into the management information system. Regular monitoring and progress reports, based on the performance of the dairy unions and the delivery of technical services and feed enterprises, were prepared. The mission used these targets and indicators to measure the success of the IDS approach applied under the project.

2.2 INTEGRATED DAIRY SCHEME APPROACH

The IDS model outlined in the Project Document was developed into a full dairy value chain system and continuously honed as experience was gained during implementation. A brief description of the model is given below.

Initially, fodder resources were developed and improved to feed dairy cows. Farmers were organized as milk producer groups, and farmers, their groups and local service providers were trained in improved animal husbandry and animal health practices. Milk producer cooperatives were then set up to formalize the enterprises and enable the groups to be more visible and to trade more effectively. At the same time, milk processing and marketing centres (known as 'window shops') were set up in urban and peri-urban areas to provide direct access to consumers. A milk processing plant was established in collaboration with MAIL and Kabul dairy union. The producer cooperatives were then organized into regional bodies as milk unions in Kabul, Mazar I Sharif and Kunduz and, at the time this was written, represented over 1 600 dairy farmers and their families. The milk production and collection networks grew gradually as a high level of pervading insecurity and related investment risks continued to affect their expansion.

2.2.1 Assistance to farmers to develop commercial dairy production

Dairy farmers in three locations were assisted to improve the production and efficiency of milk production from cows for sale. Details of this subcomponent are given below.

2.2.1.1 AI for improvement of genetic potential of dairy cows

Despite the availability of semen straws in Kabul, the project supported the unions and government counterparts to carry out AI activities. The impacts and results of these activities were constantly assessed and analysed, and the results disseminated through reports.

2.2.1.2 Improvement of animal health to ensure good milk production

Regular vaccination campaigns against infectious diseases, especially FMD, were successfully carried out for all dairy cattle under IDSs. Preventive measures and training were organized to assist farmers to reduce the impact of infectious and non-infectious diseases in their dairy cattle herds. Monitoring activities and the active control and surveillance of the dairy cattle of the member farmers for zoonosis were undertaken by union veterinarians.

2.2.1.3 Improvement of feed base for dairy cows

Fodder demonstration plots were organized in project-targeted areas to introduce improved fodder crop seed and build the capacity of IDS farmers. Dairy farmers continued to be assisted through the cultivation of improved fodder crops and the supply of concentrate and mineral feeds. Union staff carried out this activity, with backstopping by the NLPOs. For this purpose, the cultivation of improved fodder crops was supported through the production and marketing of improved fodder seed under the IDSs, together with the commercial production and marketing of concentrate and mineral feeds. Feed mill buildings were constructed in the premises of Kunduz and Mazar dairy unions. Animal feed mill equipment was installed in July 2010 in Kunduz, Mazar and Kabul. A revolving fund of AFG 874 933 (USD 17 856) was used by three dairy unions for the fodder crop programme, as follows: Balkh dairy union, AFG 315 921; Kunduz dairy union, AFG 22 500; and Kabul dairy union, AFG 536 512. A second revolving fund of AFG 5 706 206 (USD 116 452) was used by the same unions for animal feeding units, as follows: Balkh dairy union, AFG 1 603 520; Kunduz dairy union, AFG 1 256 746; and Kabul dairy union, AFG 2 845 940.

2.2.1.4 Cattle housing and management

The cattle stables of IDS households were improved through extension and training services in the targeted areas. Attempts to improve the technical knowledge of farmers and to assist them with the establishment of small and medium-scale dairy farms were impeded by security problems.

2.2.1.5 Extension and training in improved dairy production and business

Extension services trained, advised and supported beneficiary families in villages and districts in Kabul, Logar, Wardak, Balkh and Kunduz provinces with regard to improved methods of hygienic milk production. Training carried out by dairy unions was backstopped by the NLPOs. These extension activities resulted in the increased supply of hygienic milk, income from milk sales, and an assessment and analysis of the home consumption of milk and dairy products, with the results being disseminated through reports.

Women trainers conducted constant training activities with women milk producers in the project-targeted areas in animal health and husbandry, hygiene, cooperatives and cattle management. Encouraged by this, approximately 264 women farmers became members of cooperative societies. The main achievements of the input services in terms of increasing cattle productions were as follows:

- Seventy percent of householders had crossbreed milk cows.
- The milk produced by each cow increased from 1.13 litre/day to 5.3 litre/day over a five-year period.
- Fodder resources were developed and improved to feed dairy cows. Approximately 75 percent of farmers cultivated improved fodder crop seed in project-targeted areas.
- Farmers, their groups and local service providers were trained in improved animal husbandry and animal health practices.
- A total of 95.93 percent of FMD and tick-borne diseases, as well as zoonotic diseases and mastitis, was brought under control in the targeted areas.
- There was an increased level of employment at grassroots level.
- Women's participation in livestock production in the field had increased.

2.2.2 Processing and marketing structures for milk and dairy products

Because of the worsening security situation, the IDSs in Kabul, Mazar and Kunduz collected only 11 462.9 tonnes of milk between January 2005 and September 2010 from the selected beneficiaries of the project. This was done through 31 village MCCs (8 in Balkh, 16 in Kabul and 7 in Kunduz).

In Kabul, a 1 000 litre/hour high-temperature-short-time milk pasteurization plant and yoghurt production and packaging plant were set up and made operational at Guzgergah dairy plant, to be run by Kabul dairy union. The union established a network of retail outlets from which fresh Afghan milk and dairy products were available for consumers. The highest daily amount of milk to be collected and processed by the union was 5 518 litres.

In Mazar, a 5 000 litre/day milk processing plant was set up by Balkh livestock development union and supported by FAO under the IDS approach, with additional equipment and building being provided by the United States Agency for International Development (USAID)/Land O'Lakes. The plant continues to expand, with FAO support. The highest daily amount of milk to be collected and processed by the union was 4 179 litres.

In Kunduz city, a 2 000 litre/hour milk processing plant was installed and made operational in October 2008. The plant is operated and managed by Kunduz dairy union with backstopping support from FAO. Additional dairy equipment for sealing and packaging dairy products was procured and installed in July 2010 and the highest daily amount of milk to be collected and processed by the union was 1 318 litres. Thirty-three dairy window-shops (15 in Mazar, 13 in Kabul and 7 in Kunduz) were established and made operational.

Farmers were paid for the milk supplied to the MCCs on a weekly basis, according to quality and quantity. The amount generated by the three IDSs through the sale of milk and milk products was AFG 184 425 793.

In 2009 and 2010, the political and security situation negatively affected project activities, field movement and the missions of short-term international consultants. The main achievements and impacts in terms of developing the processing and marketing structures for milk and dairy products were as follows.

- The annual income of each farmer increased from USD 371 to USD 645 between 2005 and 2010 through the sale of surplus milk production.
- Market access to regular and dependable raw milk increased.
- Of the income produced by the sale of milk, 84 percent went to housewives.
- Household income from livestock production increased.
- Milk processing and marketing centres were set up in urban and peri-urban areas to provide direct access to consumers.
- A partial contribution was made to import substitution and the level of food security increased, with from 8 000 to 9 000 litres of milk per day being processed and supplied to the market.
- A milk processing plant was set up in collaboration with MAIL and Kabul dairy union.
- Milk production and collection networks grew slowly as a high level of pervading insecurity and related investment risks continued to affect their expansion.
- The use of efficient and suitable technology was introduced to milk and animal feed processing.

- The establishment of MCCs was a key to encouraging beneficiaries to bring milk on a daily basis.

2.2.3 IDS management in Kabul, Mazar and Kunduz

Nine milk producer cooperative societies (MPCSs) from the provinces of Wardak and Logar were registered at the Cooperative Department of MAIL under the Kabul IDS. In turn, these MPCSs joined together to form Kabul dairy union, with 416 registered members (the number of members subsequently increased to 650 members), in line with the newly approved Cooperative Law of Afghanistan. Kabul dairy union was officially registered with MAIL in November 2006; this was the first cooperative dairy union to be registered in Afghanistan.

Kunduz dairy union, with 208 registered members (the number of members subsequently increased to 400 members) and four MPCSs was officially registered with MAIL in January 2007; three more MPCSs registered and joined the union at a later date.

Balkh livestock development union registered in May 2007 and comprised four MPCSs with 290 members (the number of members subsequently increased to 550 members); three more MPCSs registered and joined the union at a later date.

The three functional dairy unions formed under the project and a dairy union of Herat IDS requested assistance in forming an apex dairy cooperative body called the National Dairy Federation of Afghanistan. The Federation will coordinate and liaise with all the dairy unions and develop a dairy business network at national level. It will represent cooperative dairy farmers at national-level policy bodies, and lobby for their development in the country.

An LoA was signed with the three dairy unions, and the operational and business responsibility of the IDS was handed over to them. Technical subject matter assistants (SMAs) were also transferred to the dairy unions, where they worked with the cooperative dairy farmers in Balkh, Kunduz and Kabul to operate and manage the business in a sustainable way. The salaries of technical staff were covered by the income of each dairy union. NLPOs provided technical and managerial support to the unions. With this support, the Kabul, Kunduz and Balkh unions developed independent management structures, improved their marketing, built the capacity of farmers and completed the remaining construction and installation work. The unions hired managers and the staff required to run their businesses in a competitive manner, at a locally competitive sustainable salary level.

The main achievements and impacts of the development of cooperative organizational structures for the management of IDSs were as follows. Farmers were organized as 23 milk producers' cooperatives. These were set up to formalize enterprises and enable the groups to

be more visible and to trade more effectively. They were then organized into regional bodies as milk unions in Kabul, Mazar I Sharif and Kunduz, representing over 1 600 dairy farmers and their families. The unions developed business plans for milk collection and processing, the marketing of dairy products and other input services. The participatory approach encouraged community participation, which led to the setting-up of cooperatives and unions by communities themselves. Hiring dedicated and committed staff at managerial and professional levels also contributed positively to the success of the project. Farmers were motivated to participate in the dairy business, and to understand its importance.

2.2.4 Development of policies and strategies for the dairy sector

Two workshops were organized, in December 2005 and May 2006, respectively, to identify strategic options and a plan of action for the development of dairy policies with the major stakeholders for dairy development in Afghanistan. During the meetings, the following issues were addressed: the development of the domestic market for domestically produced milk and milk products, and investment in, and the development of, the domestic dairy industry. A draft dairy policy discussion paper for Afghanistan was also presented. The development of the policy was informed through many consultative meetings, but, at the time this report was written, remained in draft form. The IDS model was identified by the current draft as an ideal model for application in Afghanistan.

2.3 CAPACITY DEVELOPMENT

2.3.1 National capacity development

With the significant gap in national capacity in practical aspects of dairy development, on-the-job and practical training was essential. Specific detailed training was provided for service providers (AI, animal health, etc.) and input providers (fodder and feed). The aim of this training was to build local capacity for profitable dairy production, collection, processing and marketing.

The training had a multiple beneficial effect. It directly enhanced the local capacity of service providers and enabled nearby villages and communities to see at first hand the opportunities for improved food security and income generation provided by participation in IDSs. Local government also benefited significantly as it learned about the approach; interest in replicating and extending the IDS approach to other districts and provinces was reported.

2.3.2 Outreach training

The outreach activities of dairy projects and a dairy project case study of Afghanistan were presented by the NFM to professors and students of the agriculture and veterinary faculties of Kabul University in October 2009. Guidelines for the implementation of IDS development in Afghanistan were prepared in the local language. Dairy development issues were discussed and experiences shared with government institutions, the World Bank, the Horticulture and Livestock Programme, non-governmental organizations, United Nations agencies, the Aga Khan Foundation, Land O'Lakes in Kabul and Mazar, USAID and Japan International Cooperation Agency.

2.3.3 Study tours and field days

To complement local training, further training was arranged for cooperative and union members, and for government officers from MAIL.

A study tour programme to Mashhad, Iran, was organized for 11 people from unions, FAO and MAIL, and focused on: increased capacity-building of technical staff and leadership of dairy unions in dairy industry; exposure to small and medium-scale dairy processing operations (from 2 000 to 15 000 litre/day) by cooperative and private small-scale dairy farms, and dairy cooperatives, and to small and medium-scale dairy equipment manufacturers and suppliers; and development of participants' ability to solve problems themselves with regard to practical operations.

Unions, cooperatives and MAIL observed similar dairy development practices in India during a training course for 24 participants. The training focused on: the organization of dairy farmers, especially milk producer groups; improved livestock production practices; milk collection, processing and marketing; and dairy cooperatives. Study tour participants shared their experiences with colleagues at Shura level through presentations after the course.

Both study tours were found to be useful and relevant.

Internal study tours and exchanges between cooperatives at regional and interregional level also built strong cooperation among cooperatives and unions. This was evidenced during discussions with participants and by the fact that Kabul dairy union now sells *chakka* (Quark) on behalf of Balkh dairy union.

Seven field days and exchange visits were organized, with visits to dairy farmers, fodder plots, MCCs, feed milling centres and cattle shows to encourage farmers to improve their dairy livestock keeping skills. Over 850 farmers participated in these events.

2.3.4 Business plans

The midterm evaluation of the project in 2008 observed that the dairy activities of the cooperatives could be profitable (Kabul and Mazar). The future pillar for the unions was identified as the need to switch from a socially oriented programme to a more commercially oriented enterprise. Beginning in 2008, each union prepared a three-year business plan in which the dairy business is broken down into three units within the union: milk collection, milk processing and marketing, and feed milling and concentrate manufacture. These plans were designed on a risk-based approach and reflect the realities of doing business in a challenging environment in the various areas of Afghanistan.

2.4 IMPACT AND SUSTAINABILITY

2.4.1 Impact summary

Most activities during the first phase of the project, from 2005 to 2008, were completed. During the consolidation phase, from October 2008 to October 2010, there was significant growth in the activities and impact of the project. These are shown in the table below.

Table

PROJECT OBJECTIVES AND OUTPUTS

<i>Objectives (from 2005 to 2008)</i>	<i>Achievement %</i>
Assist farmers to develop commercial dairy production	110
Develop processing and marketing structures for milk and dairy products	85
Develop organizational structures for IDS management	100
Establish policy guidelines for dairy sector development	67
<i>Outputs (from 2008 to 2010)</i>	
Three dairy processing plants operate at optimum capacity	100
All three plants operate a feed mill as a second economic pillar	85
Milk collection network operating on an extended basis for Kunduz, Mazar and Kabul dairy unions	78
Independent management structure established in all three schemes	100
Efficient production of quality dairy products	108
Documentation of lessons learned from developing dairy schemes	100

Some gaps, such as the delivery and installation of increased capacity feed milling equipment and dairy policy ratification by MAIL, needed to be resolved. Milk production activities progressed well, while the drafting of dairy policy was delayed by changes in MAIL.

2.4.2 Increased incomes for women

Altogether, 84.5 percent of dairy cash income was provided directly to women and women had full control over how it was spent. During discussions with beneficiaries, it was confirmed that the men of the house did not interfere with the dairy income. Based on the feedback from a sample survey, women used the dairy income for the following, in order of priority: education for children, food, clothing, medicines, feed for dairy animals and such traditional expenses as ceremonies.

This result was significant and represented possibly the greatest impact of the project. The effect was sustainable and improved the quality of lives in rural areas in Afghanistan.

2.4.3 Improved food security

In all areas, the beneficiaries emphasized that they only sold milk that was surplus to their needs. Before the project, milk production was low and they had very little milk to sell. They now have much more milk and have increased the amount used at household level. Milk is consumed fresh and heated by the children and elderly of the house, and converted to *dogh* (butter milk) and butter at household level for storage and use in winter months.

2.4.4 Increased role of women

An interesting and unexpected benefit of the project was that beneficiaries reported an increased willingness of IDS beneficiaries to allow female members of the household to participate in other social and group activities, including development programmes.

2.4.5 Poppy

It was found that, in the project areas, the village Shuras and cooperatives decided to set a series of conditions for participation in the IDS. The mission was advised that one of the conditions set by the Shuras was that any farmers interested in participating in the IDS must agree not to cultivate poppy.

2.5 COLLABORATION WITH PARTNERS

The following is a list of the funding agencies and partners that provided substantive inputs to, or collaborated with, the project.

MAIL was the principal project partner and benefited not only from the substantial improvement in technical skills in all three locations in which the IDS was implemented in

collaboration with local offices, but also through the specialized training provided to private and public stakeholders. A total of 234 extension workers of MAIL received training. In addition, 33 agriculture trainers were trained in the IDS approach.

The project had a strong link with, and provided substantial inputs to, universities in Kabul, Balkh and Kunduz, illustrating the project approach and providing specific lectures on such technical issues as improved animal production and health practices. Over 1 500 students participated in courses and lectures related to activities and improved techniques and approaches used by the project. A total of 245 agriculture school students also participated, while over 800 students took part in practical sessions in dairy facilities in the three sites.

A strong partnership was forged with Land O'Lakes, which provided and equipped a milk processing plant in Balkh. The project provided technical support, training and advice on the organization of milk producers, milk processing and marketing.

Encouraged by the project impact and presence on the ground in Logar (Kabul region), the Government of the Czech Republic stimulated investment in four MCCs, complete with cooling facilities, with a capacity of 1 000 litres/day, complete with generator. In addition, Kabul dairy union staff trained 450 farmers in livestock and other agriculture production programmes. Provincial reconstruction teams also followed up and provided primary livestock production kits to farmers, as well as 10-20 litre capacity milk cans (800 in total).

A Memorandum of Understanding was signed between FAO Afghanistan and the Regional Economic Development Programme (NaWi), covering the provision of support to Kunduz and Balkh. At the time this report was written, this had included three support missions by a dairy technology expert to Mazar and Kunduz. NaWi also supported five members of Kunduz and Mazar dairy unions to travel to India on a two-week training course on milk production, processing and marketing. Further support was planned in business plan development. NaWi indicated that they would provide additional dairy processing equipment to Balkh dairy union in the form of equipment, as recommended by the dairy technology consultant.

The Alternative Agriculture Livelihood Project, a development project funded by the Department for International Development, United Kingdom, and implemented by FAO, provided financial support for the procurement of a yoghurt processing and packaging line at Kabul dairy union in 2007.

Project GCP/AFG/015/GER trained 35 women trainers from the project regions in milk processing and value addition for seven days. The training was implemented in collaboration

with two teachers from the agriculture faculty of Bamiyan and two from the Provincial Agriculture Department.

The project assisted the International Organization for Migration in the selection of milking animals and beneficiaries for milking cows in Kunduz in 2009.

At the Agriculture University of Peshawar, an Afghan student undertook a Masters in Food Science on comparative studies of selected dairy products available in Kabul market, under the supervision of project staff.

2.6 LESSONS LEARNED AND REPLICATION

2.6.1 Best practices

The IDS model consists of a number of integrated dairy chain components or best practices as indicated below. Each link in the chain adds value and is profitable. The model may be put into practice as a whole or in parts.

The success factors include the following:

- The participatory approach encouraged community participation that led to the setting-up of cooperatives and unions by the communities themselves.
- There was close coordination of activities with the relevant departments of MAIL.
- Use was made of efficient and suitable technology in terms of machinery and processing, such as milk processing and animal feed processing.
- The MCCs established under the project were a key facility, encouraging beneficiaries to bring milk on a daily basis.
- Hiring dedicated and committed staff at the managerial and professional levels also contributed positively to the project's success.

With regard to motivation, farmers were encouraged to participate in the dairy business and to appreciate its importance. They are now committed to participating in the establishment, operation and management of dairy cooperative societies and unions, and farmer-owned milk processing plants, in terms of providing land and labour.

Livestock-based household enterprises included the keeping of dairy cows, the cultivation of fodder crops and animal feed and the use of "milkshaws" for milk collection.

Community livestock services covered such areas as animal health, AI/breeding and animal feed delivered to MPCs by livestock officers and livestock field assistants, on a full-cost recovery basis.

The community feed mills set up under the project supplied affordable and reliable quality supplementary animal feed and improved fodder crop seed to MPCSSs at village level, enabling farmers to feed their animals and cultivate their own land to grow feed.

The community dairy enterprises established under the project comprised MCCs, milk cooling centres and milk processing units.

Affordable, hygienic milk collection, processing and marketing and the supply of quality dairy products to local markets were made possible through the provision of dairy food chain equipment.

As with all livestock interventions that aim to help the very poor to make a sustainable living, the IDS model and dairy development are relatively complex. If milk is to be moved safely to urban consumers, and regular incomes and jobs are to be channelled back to poor rural producers, efficient services for preservation, cold chains and livestock support services need to be in place. IDS has gained unique experience for this purpose and should consider promoting and scaling up the model, or its individual best practice components, in other parts of the country, tailored to the local situation.

2.6.2 Lessons learned

Based on the documentation reviewed and the feedback from project beneficiaries, and verified through a questionnaire developed and applied by the final review mission, the main lessons learned by the project may be summarised under the following four headings.

- *Enhanced development opportunities for women:* Over 84 percent of the income earned is returned directly to, and controlled by, the woman of the house.
- *Improved household food security and nutrition:* Earnings from selling milk surplus to household needs and other livestock allow the purchase of other foods, indicating that the IDS model contributes to significantly improve household food security and nutrition.
- *Reduced incidence of poverty:* Increased earnings from dairying activities, excluding dung stock disposal, have significantly improved the livelihoods of rural Afghan families.
- *Family income increased by sustainability:* 1 600 rural Afghan families now earn regular extra income from their dairy activities, especially from milk, manure and calves.

2.6.3 Replication

At the end of the project, replication was already taking place, as described below.

In 2007 the Government of Italy provided USD 2 million for the replication of the IDS in Herat province. The project progressed well and was expanded to additional areas in late 2009, with additional funding of USD 2 million. Further expansion to additional districts in the western provinces was expected.

The International Fund for Agricultural Development (IFAD) and MAIL contracted FAO to replicate the IDS approach in Nangarhar, under IFAD grant funding. The project began in July 2010 and is based in Jalalabad.

After 2005, all unions planned to expand their milk collection systems. However, because of the worsening security situation, this was limited to one new centre in Kabul and six new centres in Mazar. In Kunduz, three new MCCs were set up but were subsequently closed for security reasons.

Many farmers from the project districts and surrounding districts in several provinces are reported to have shown interest in the IDS. Based on this demand, it is suggested that existing IDS schemes be expanded and that a national IDS programme be implemented.

2.7 NATIONAL DAIRY POLICY

Led by MAIL and supported by FAO, the preparation of a national policy for the dairy sector was implemented by a Dairy Development Policy Committee, composed of public, private and beneficiary representatives. Following an intensive stakeholder consultation process, the national dairy policy was drafted in 2006 and finalized in 2007 under the IDS project. At the time of writing, the policy, in which the IDS model is identified as an ideal model for application in Afghanistan, was under final review by MAIL.

2.8 CONCLUSION

Through the IDS model, the project introduced a sustainable integrated model for smallholder-based dairy development that offers opportunities to reduce the incidence of poverty, enhance development opportunities for women, improve household food security and nutrition, and sustainably increase family income and that is consistent with safeguarding the environment by promoting and contributing to integrated farming systems. There is evidence that the model has improved the livelihoods of some of the poorest people in the world.

At the request of MAIL, the model was scaled up by such development partners as IFAD in Nangarhar and Herat. There is significant scope to accelerate and expand this process at existing sites and in other areas of Afghanistan.

The National Strategy for Agriculture, published by the Government in 2008, indicated the importance of the livestock sector for Afghanistan. This was confirmed by FAO surveys which suggested that over 85 percent of Afghan households have, and partially depend on, livestock for their food security and poverty alleviation. With rapid urbanization and increased incomes, the demand for livestock products will continue to rise. However, productivity is limited by being small-scale, at subsistence level and widely dispersed.

Afghanistan currently imports some 80 percent of its milk and dairy products. With its huge potential to benefit the poor through livestock products, especially milk and dairy products, and the growing involvement of national and international development partners, Afghanistan has a clear comparative advantage to produce more of its own milk. Moreover, with the rapidly escalating prices of internationally traded dairy commodities and worldwide consumption poised to outstrip demand over the next two decades Afghanistan will need to start replacing imports. In this context, the IDS model can contribute to making Afghanistan more food-secure and help to achieve its Millennium Development Goal of halving poverty and under-nutrition by 2015.

Milk has huge potential for import substitution. The strategy of promoting community-based organizations in dairy production, processing and marketing to overcome constraints, has proven successful in India and Pakistan. More specific strategies are contained in the draft national dairy policy, prepared under the project, currently being considered by MAIL.

The IDS model, if linked to school milk schemes in rural area and smaller urban centres, could also boost dairy sector development in Afghanistan. Such schemes work well in other countries, e.g. India, and link small rural producers, through hygienic milk collection and processing, to school nutrition and feeding schemes that provide locally produced, low-cost, attractively packaged ready-to-drink dairy products for children.

3. RECOMMENDATIONS

3.1 IDS APPROACH

During the project, the IDSs achieved and, in some cases, exceeded the project objectives, above all in terms of increased income at farm family level. It is recommended that the IDS be scaled up and implemented in other sites and that it be expanded at existing sites.

3.2 PROJECT IMPACT

Altogether, 1 600 farm families benefited from the project, with a reported 84.5 percent of dairy income going directly to the woman of the household. Income levels rose and household food security increased. Farmers were organized into cooperative societies and three dairy unions were established. New milk plants were installed and made operational in Guzgergah and Mazar, and at Kunduz dairy union. Other benefits include the transfer of AFG 180 784 702 (USD 3.8 million) from urban to rural areas, increased investment by rural households in education, improved food security, the creation of 143 off-farm jobs and enhanced participation by women in social and development activities.

It is recommended that future IDS initiatives increase participation by women, given the high level of rural food insecurity, poverty and sociocultural conditions in the country.

3.3 SUSTAINABILITY OF DAIRY ENTERPRISES

The dairy enterprises established under the project can be considered sustainable in both Kabul and Balkh. Their commercial viability could, however, be enhanced and beneficiaries added to the IDS through further investment in dairy value chain improvements. It is recommended that a second phase of the project be initiated, using a value chain approach to enhance participation in improving market conditions. A concept note in this regard was prepared and submitted to MAIL and the Government of Germany.

Investing in public-private partnerships, as practised under the IDS, is an ideal approach to foster national capacity and encourage private-sector dairy industry development in Afghanistan. The approach could also be applied to other subsector development programmes.

3.4 DOCUMENTATION OF PROJECT APPROACH

The project approach was fully documented and guidelines prepared for its replication in other areas in Afghanistan. Given the level of success of the approach, as noted by the final review mission, it is recommended that an article on the achievements of the IDS be prepared for publication in an international development journal.

3.5 COOPERATION AND COLLABORATION

Working in close partnership with MAIL, the project was successful in establishing links and useful partnerships with other programmes and projects. This included attracting additional investments for the unions valued at USD 820 000. The project also collaborated and substantially contributed to national capacity development through field visits, exchange tours and capacity-building, sharing its results and approaches with national research institutions, national and international non-governmental organizations, and development partners. Future IDS programmes should continue such collaboration and cooperation.

3.6 REPLICATION

It is recommended that consideration be given to marketing the IDS model, or its individual best practice components, tailored to the local needs of poor people in other parts of the country. Scaling up had already started in Herat at the time this report was written, but more should be done to maximize the potential of the model. A concept note was developed for a second phase of the current programme for the existing IDS sites; requests were received for the expansion and replication of the IDS approach in other provinces and districts. It is recommended that MAIL expand the model to other areas with favourable production and market situations. Women are the major beneficiaries of the programme and this would provide an opportunity to enhance their livelihoods and improve household food security.

Future development of the IDS will necessitate additional investments in national and technical skills development and the strengthening of emerging local and national institutions such as the dairy cooperatives and the dairy unions. It is recommended that the key pillars in a future dairy development strategy include: enhanced emphasis on women as the main beneficiaries; strengthened government and local institutions; and an industry/market development approach through the IDS.

3.7 CAPACITY OF DAIRIES TO TRAIN NEW STAFF

The progressive and gradual exit strategy adopted by FAO stimulated a commercially minded approach to dairy enterprise development and a strong sense of ownership at all three IDSs. Milk cooperatives and unions substantially improved their capacities and took advantage of enterprise opportunities such as feed milling. All unions would now benefit from additional enhancement of their cooperative, financial and management capacities and could, with technical support, provide basic training in some topics.

Additional investment in young Afghan professionals in development programmes is recommended in order to enhance national capacity and exposure to expertise and successful approaches in dairy development. This should include external in-depth training in dairy production, processing, marketing and dairy business.

3.8 MARKET DEVELOPMENT

It is recommended that a pilot national school milk programme be developed, as this would be a valuable boost to child nutrition and would stimulate interest in, and awareness of, the improved safety and diversity of the Afghan fresh milk and dairy products now on the market. A concept note for such a programme was prepared and shared with MAIL.

3.9 NATIONAL DAIRY POLICY

The draft dairy policy is now in the final stage of review by MAIL. Adoption of the policy should be pursued so that the action plan may be strengthened, and a detailed and actionable investment programme drafted. Based on this policy, it is recommended that a national dairy development strategy, reflecting international experiences and successes, be prepared. This could be part of the abovementioned National Programme for Integrated Dairy Schemes, after approval from the General Department of Livestock Health and Production Services and MAIL of the national policy.

Appendix 1

PROJECT STAFF

<u>Name</u>	<u>Function</u>	<u>Dates of Service</u>			
		<u>Starting Date</u>		<u>Concluding Date</u>	
<u>International</u>					
Tek B. Thapa	Dairy Consultant	Oct.	2005	Nov.	2005
H. Jorgen	Dairy Policy Consultant	Nov.	2005	Dec.	2005
		April	2006	May	2006
Ramesh	Dairy Business/Marketing	Sept.	2009	Oct.	2006
Munankarmi	Consultant	March	2010	April	2010
Mayur Vyas	Dairy Cooperative Management and Training Consultant	May	2010	June	2010
Ibrahim Osman	Senior Projects Operations Officer	March	2008	Dec.	2010
Prem Sharma	Senior Projects Operations Officer	May	2005	Jan.	2008
Moeen ud Din	National Projects Operation Officer	May	2005	Dec.	2010
Siraj					
Mohammad Aqa	Assistant	May	2005	Dec.	2010
A. Bennett	Livestock Value Chains and Infrastructure Officer	May	2005	Dec.	2010
<u>National</u>					
A. Rota	Senior Technical Adviser	May	2005	May	2006
Tek. B. Thapa	SDA	May	2006	Dec.	2010
Lutfullah Rlung	NFM	May	2005	Dec.	2010
Mir M. Bashir	National Livestock Production Officer, Fodder Crop	May	2005	June	2010
Shams Alhaq	Administrative/Finance Assistant	May	2005	Dec.	2010
Sayeed Maseh	Assistant NPLO/Data Entry Clerk	June	2009	June	2010
		May	2005	May	2009
M. Hanif Padar	National Cooperative Consultant	June	2009	Dec.	2009
		Sept.	2010	Dec.	2010
M. Esaq	Driver	May	2005	Dec.	2008
Nasrat Mir	Driver	May	2005	Dec.	2010
Ahmad Jan	Cleaner	May	2005	June	2010

<u>Name</u>	<u>Function</u>	<u>Dates of Service</u>			
		<u>Starting Date</u>		<u>Concluding Date</u>	
<u>Regional, Kabul</u>					
Mustafa Zafar	National Livestock Production Officer, Animal husbandry	May	2005	Dec.	2010
M. Daud	Driver	May	2005	June	2010
Neek M. Noorani	SMA, Dairy	May	2005	June	2010
Sayed Eshaq Masumi	SMA, Fodder	May	2005	June	2009
Raz Mohammad	SMA, Livestock Extension	May	2005	June	2010
Khair Mohammad	SMA, Animal Health	May	2005	June	2010
Makai	SMA, District Women Trainer	May	2005	Dec.	2009
Hamaun	SMA, Fodder	May	2005	Dec.	2010
Abdullah	Guard	May	2005	June	2010
Mustafa	Cleaner	May	2005	June	2010
<u>Regional, Mazar</u>					
M. Jafar Emal	NPLO	May	2005	Dec.	2010
F. H. Salimee	Assistant of NLPO	June	2009	June	2010
Ebadullah Azizi	SMA, Fodder	May	2005	Dec.	2008
Nadira Najand	SMA, District Women Trainer	May	2005	April	2010
Zermina	SMA, District Women Trainer	May	2005	June	2010
Hamidullah	SMA, Animal Health	May	2005	Dec.	2010
Hamaun Majidi	SMA, Dairy Processing and Marketing	May	2005	Dec.	2010
Haji Abdul Ahad	Guard	May	2005	June	2010
Mahammad Asif	Guard	May	2005	Nov.	2008
S. M. Sultan	Driver	May	2005	Dec.	2010
<u>Regional, Kunduz</u>					
Painda M. Kishtarwarz	NLPO	May	2005	June	2008
Ebadullah Azizi	NLPO	June	2009	Dec.	2010
	Assistant of NLPO	May	2008	May	2009
Abdul Qadir	SMA, Dairy	June	2006	Jun	2010
Mohammad Sayed	SMA, Livestock Extension	May	2005	Dec.	2009
F. M. Mullakhil	SMA, Dairy	May	2005	May	2006
Assdullah	SMA, Animal Health	May	2005	Jan.	2006
Noor Alam	SMA, Animal Health	Feb.	2006	June	2008
Nazifa Noori	SMA, District Women Trainer	Jan.	2006	May	2008
Jawad Azizi	Driver	May	2005	Dec.	2010
Dur Mohamad	Guard	Jan.	2006	June	2010
Noorullah	Guard	Jan.	2006	June	2010
Abdul Manan	SMA, Animal Health	Sept.	2008	Dec.	2010
Safora	SMA, District Women Trainer	July	2008	June	2009
Yasmin	SMA, District Women Trainer	July	2009	Feb.	2010
Jamila Karimi	SMA, District Women Trainer	March	2010	Dec.	2010

Appendix 2

STUDY TOURS AND TRAINING

<u>No. of</u> <u>Participants</u>	<u>Study</u>	<u>Place</u>	<u>Date</u>
24	Milk collection, processing and marketing	National Dairy Research Institute, Karnal, India	18 March 2010- 31 March 2010
2	International workshop on yoghurt technology and quality control system	Harbin, China	23 July 2006- 7 Aug. 2006
11	Study tour to small and medium-scale dairy processing operations	Mashhad, Iran	6 Nov. 2009- 13 Nov. 2009
32	Implementation methodology and planning of IDS	Kabul	15 May 2005- 19 May 2005
12	Pregnancy test and reproductive system diseases	Kunduz	30 Oct. 2005- 6 Nov. 2005
21	Pregnancy test and reproductive system diseases	Kabul	18 Nov. 2005- 26 Nov. 2005
18	Dairy product processing and quality testing	Kabul	27 Oct. 2005- 30 Oct. 2005
15	AI techniques	Jalalabad	15 Nov. 2005- 29 Dec. 2005
21	Training of trainers and management	Kabul	10 Dec. 2005- 18 Dec. 2005
12	AI techniques	Jalalabad	3 July 2006- 14 Aug. 2006
	Milk collection and processing	Kabul	24 July 2006- 26 July 2006
7	Milk collection and processing	Kabul	3 April 2007- 12 April 2007
33	Animal health/ husbandry and fodder crop	Kabul	24 March 2007- 4 April 2007
36	Animal health and husbandry (management, breeding, feed and feeding)	Kabul	25 May 2007- 5 June 2007
7	Animal health and husbandry (management, breeding, feed and feeding)	Kabul	11 Feb. 2007- 14 Feb. 2007
5	Dairy production and cheese-making	Kabul	3 March 2007- 7 March 2007

<u>No. of Participants</u>	<u>Study</u>	<u>Place</u>	<u>Date</u>
4	Dairy production and cheese-making	Kabul	11 Dec. 2007- 13 Dec. 2007
90	Milk quality testing, milk collection and hygiene (6 courses)	Kabul, Kunduz and Mazar	2005- 2009
7	AI techniques	Mazar	13 May 2009 25 May
22	Dairy business and marketing management	Kabul	12 March 2010- 15 March 2010
51	Cooperative management training	Kabul	15 May 2010- 18 May 2010
400	Animal husbandry and health, hygiene, milking, collection of milk and cooperatives in the field (28 courses for women farmers)	Aliabad, Khanabad, and Kunduz city	For the duration of the project
495	Animal husbandry and health, hygiene, milking, collection of milk and cooperatives in the field (33 courses for women farmers)	Dehdadi Nahrishahi and Mazar city	For the duration of the project
466	Animal husbandry and health, hygiene, milking, collection of milk and cooperatives in the field (31 courses for women farmers)	Logar	For the duration of the project
650	Animal husbandry and health, hygiene, AI, collection of milk, fodder crop, hay-making, feed stuff storage and cooperatives in the field (43 courses for men farmers)	Logar, Wardak and Kabul	For the duration of the project
550	Animal husbandry and health, hygiene, AI, collection of milk, fodder crop, hay-making, feed stuff storage and cooperatives in the field (37 courses for men farmers)	Dehdadi Nahrishahi and Mazar city	For the duration of the project
400	Animal husbandry and health, hygiene, AI, collection of milk, fodder crop, hay-making, feed stuff storage and cooperatives in the field (27 courses for men farmers)	Khanabad, Kunduz city, Chardara, Imamsahib and Aliabad	For the duration of the project
420	Practical training in production of dairy products and animal feed	Kabul and Mazar	For the duration of the project
517	Cooperative management, accounting and organization (35 training courses)	Kabul, Mazar and Kunduz	For the duration of the project

Appendix 3

MAJOR ITEMS OF EQUIPMENT PROVIDED

<u>Quantity</u>	<u>Item</u>	<u>Cost (USD)</u>
4	Air conditioner, Samsung	2 360
1	Photocopier, Hewlett Packard	4 900
1	Computer, desktop, Dell Gx755	1 010
10	Computer, laptop, Dell Latitude D830	14 730
2	Projector, Sony Cx31	3 110
1	Satellite telephone, Thuraya Sg-250	2 940
1	Vehicle, Ford Ranger Base Double-cab	20 875
2	Vehicle, Ford Everest Xlt Station Wagon	51 156

Appendix 4

DOCUMENTS PREPARED DURING THE PROJECT

Field documents

Dairy processing facilities and training for dairy staff in Afghanistan. November 2005. Tek B. Thapa.

Dairy policy for IDS reported in Afghanistan. December 2005 and May 2006. H. Jorgen.

Dairy business and marketing reported in Afghanistan. October 2009 and May 2010. Ramesh Munankarmi.

Dairy cooperatives and management in Afghanistan. May 2010. V. Mayur.

Implementation methodology and planning workshop report. May 2005. Lutfullah Rlung.

Guidelines for how to train farmers (local language). June 2005. Lutfullah Rlung.

Guidelines for the implementation of the development of integrated dairy schemes in Afghanistan. August 2007. Lutfullah Rlung.

Guidelines for organization and management (local language). October 2006. Lutfullah Rlung.

Manual for fodder cultivation (local language) in Afghanistan. October 2007. Mir M. Bashir.

Reproduction and infertility of cows. July 2009. Lutfullah Rlung.

Technical reports

FAO technical backstopping mission reports in Afghanistan. May 2006, November 2007, November 2008, December 2009 and May 2010. A. Bennett.

Evaluation mission report of IDS in Afghanistan. April 2008. K. Schiffer.

Final review mission report of IDS in Afghanistan. May 2010. M. R. Mirzad et al.

Dairy case study in Afghanistan. October 2007. Lutfullah Rlung.

Semi-annual progress reports with work plans. April-September 2005 and October-December 2005. A. Rota and Lutfullah Rlung.

Semi-annual progress reports with work plans. January-June 2006, July-December 2006, January-June 2007, July-December 2007, January-June 2008, July-December 2008, January-June 2009, July-December 2009, January-June 2010 and July-December 2010. Tek B. Thapa and Lutfullah Rlung.