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Prefeasibility Study on Nangarhar Dairy Value Chain
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Abstract	This report is a prefeasibility study of the dairy value chain in Nangarhar Province of Afghanistan. The study focuses on the ability to positively impact the overall dairy value chain with specific interventions.

ROOTS of PEACE

This Prefeasibility Study was produced by Roots of Peace under the ADB-funded Rural Business Support Project (JFPR 9100-AFG). It was written by Dr. Kenneth Neils, Acting Team Leader of the Rural Business Support Project, with assistance from RBSP Staff, including, Mr. Alemi Alem (Deputy Team Leader), and Dr. Vickie Sigman (Extension Specialist). The Study was edited by Gary Kuhn of Roots of Peace. For more information, contact Roots of Peace at info@rootsofpeace.org or +1 415 455 8008.

Roots of Peace is a humanitarian, not-for-profit organization based in California, USA. Roots of Peace, established in 1997, focuses on post-conflict countries to eradicate remnants of war and to re-establish and promote economic livelihoods and social programs. Roots of Peace is funded by public and private sources.

CURRENCY EQUIVALENTS

(as of 30 January 2008)

Currency Unit	–	Afghani (Afs), Rupee (Rs)
Afs1.00	=	$.05
$1.00 USD	=	50Afs
$1.00 USD	=	62Rs

ABBREVIATIONS

ADB	Asian Development Bank
AKDN	Aga Khan Development Network
AISA	Afghanistan Investment Support Agency
AREDP	Afghanistan Rural Enterprise Development Program
ARMP	Afghanistan Rural Microcredit Program
ASAP	Accelerating Sustainable Agriculture Program
ASMED	Afghanistan Small and Medium Enterprise Development
AWBF	Afghan Women's Business Association
DAIL	Department of Agriculture, Irrigation, and Livestock
HLP	Horticulture and Livestock Program
MAIL	Ministry of Agriculture, Irrigation, and Livestock
MFI	Microfinance Institution
MISFA	Microfinance Investment Support Facility for Afghanistan
M&E	Monitoring and Evaluation
MRRD	Ministry for Rural Rehabilitation and Development
NGO	Non-Government Organization
PFI	Participating Financial Institutions
PHDP	Perennial Horticulture Development Project
RBSP	Rural Business Support Project
ROP	Roots of Peace
SSPSRL	Support to Strategic Planning for Sustainable Rural Livelihoods
TOT	Training of Trainers
USAID	United States Agency for International Development

WEIGHTS AND MEASURES

kg	kilogram or kilograms
ser	7 kilograms

CONTENTS

1. SUMMARY

Nangarhar and part of Laghman province have a very good potential for dairy development. The present levels of milk production and the existing infrastructure should make it possible to organize milk collection and processing with a capacity of 10/mt shift, gradually expanding to reach 20mt/day.[1] The RBSP program would operate in collaboration with the World Bank Horticulture and Livestock Project (HLP) which is developing a 50mt/day milk processing plant near Kabul and may develop a 10mt/day plant in Nangarhar with an associated milk collection system and extension services to farmers. The RBSP would conduct the feasibility for the 10mt/day processing plant and, given a positive indication from the feasibility study, would assist private sector investors to prepare loan applications relating to the installation of milk collection and processing enterprises which build on the existing and planned milk production and collection system.

[1] John Bonnier, Study on Dairy Production and Processing in Afghanistan For the Horticulture and Livestock Project/HLP Ministry of Agriculture, Irrigation and Livestock/MAIL, Afghanistan, June 2007.

2. VALUE CHAIN DESCRIPTION

Milk in Afghanistan is produced on farms of all sizes and by peoples from many different cultural settings—pastoralists, agro-pastoralists, sedentary smallholders, landless farmers and sharecroppers. Most dairy farmers operate diversified subsistence or mixed farming systems which spread risk over multiple products. Supply chain structures and the relationships between traders and buyers in the wholesale and retail markets are simple. Farmers trade mainly through middlemen to sell their livestock products. The value adding of milk processing into cheese, yogurt, curd, butter and ghee is frequently done on farm and marketed directly to local consumers in the village or in nearby towns.[2]

In Nangarhar, most dairy production comes from small-holder farms with less than three cows. There are no significant off-farm or "commercial-scale" milk processing facilities; however, there are some established milk collection organizations operated by merchants. The milk from these collection organizations is exported to Pakistan on a daily basis.[3]

In many rural villages and towns farmers/traders process milk produced by their own cows as well as milk collected from a number of other farmers. Typically processing from 100-500 liters per day, they produce a limited range of products such as butter/ghee, yoghurt and chakka (cottage cheese type product, could be made with rennet or, from yoghurt after draining, whey).[4]

In his description of various dairy value chains, van Engelen notes that "The third and, for the future, most important value chain is the industrial dairy processing plant, including a milk collection system that collects milk from near and remote farmers. The processing plant has a wide range of products and more product quality control and guarantees. The first 3 relatively small dairies were established and operated by FAO in Kabul, Mazaar and Kunduz. Other dairies were established by LoL in Charikar and DCA in Baghlan (cheese factory). These all depend solely on farmers' milk to be collected and processed."[5]

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[2] Dairy Value Chains, Alternative Agricultural Livelihoods Programme, Afghanistan, GCP/AFG/036/UK, FAO Project Discussion Paper 28, August 2007.

[3] ROP staff observation March 2008.

[4] A. van Engelen, Phase 1 Report – Volume II, Livestock Agribusiness Report, Preparing the Commercial Agricultural Development Project, ADB, 2006.

[5] A. van Engelen, op. cit..

3. DEMAND

The available data show an increased demand for milk and dairy products, mainly as a result of rising standards of living and an increase in (urban) population.[6] The market for dairy products in Jalalabad has been studied by Land O'Lakes[7]. The information in the following section comes from that report.

> "The value per ton for domestic and/or fresh product is one half that of imported products: Imported: $1,840 Domestic/local $928. This would imply that local producers can add more value to their products, and receive a higher unit price, if they can improve their product quality and create a better consumer image of their products. Based on the research and marketing observations, there is a marketing opportunity within the Jalalabad area for a product line of local dairy products which combines the advantages of fresh products with some of the benefits of the imported products. Fresh dairy products, packaged in see-through sealed containers, with ingredient declarations, a product quality guarantee and branding imagery, is essential to drive trial and usage. This will also communicate to consumers that these products are in the same competitive set as the imported products, and thus they will be more likely to draw volume from that segment. The core product line of any new dairy [in Jalalabad] should include whole, 3.2% fat content, fluid milk, and drinkable and set yogurt, given the high interaction, usage and preference for these products.
>
> The estimated annual value of dairy products sold in the Jalalabad-area market is $38,870,484. Eight percent (8%) of this total is composed of local products such as yellow cheese, yogurt, fresh milk, chaka (dried yogurt) and milk cream all of which are produced on the farm or in small-scale (<500lt/day) processing facilities. "

[6] John Bonnier, op. cit.

[7] Nangarhar Dairy Market Survey & Assessment, USAID Cooperative Agreement No: 306-A-00-04-00545-00 , Land O'Lakes, Inc., June 2006.

4. DAIRY PRICES

For the farmers it is not only important that the dairy plant is profitable, but for them it is even more important that they get a good price for their milk.[8] The Guzargha dairy plant in Kabul pays an average price of 13 Afs/liter ($ 0,26) to the suppliers, while the Balkh dairy in Mazar paid an average price of 12 Afs/liter. Direct sales in the urban areas fetch higher prices (around 20 Afs/liter). The FAO reported an average income for all their suppliers and over the total reporting period (2002-2006) of $ 363/year. The Balkh Dairy Business Plan (BDBP) calculations are based on a milk price of $0.25/liter at the start of operations and gradually increasing to $0.30 towards 2013.

The raw milk price depends on the price that the dairy plant can obtain for its products. If milk is sold to the shops for $0.36/liter (18 Afs), as is the case in Mazar, the operating margins for the plant are limited. A similar situation exists in Kabul. With better quality and packaging a higher price can be obtained in the market and the BDBP therefore works with $0.44 – 0.53 for pasteurized milk and $0.56 – 0.71 for yoghurt over the period 2008-2013. These prices allow a reasonable margin and the calculated profits will be an additional source of income for the members of the co-ops. At these prices the plant can still compete with the imported UHT milk sold at $0.80/liter (40 Afs).

The above calculations are based on a gradual development of milk supply and dairy product marketing. The HLP indicators assume that already in Year 1 the 15.000 households will supply an average of 18.500 liters/day. This milk was to be processed through the Guzargha dairy plant, which still has a daily milk intake of less than 2.500 liters/day on average. Even with the expanded capacity that has been installed recently, the Guzargha dairy plant could not cope with 18 tons/day. We can only conclude that the HLP indicators are far too optimistic and therefore provide an unrealistic picture of the revenues of the project and for the farmers involved.[9]

Van Engelen also provides information on the farm gate price of liquid milk. These prices change across regions and specific product value chains. He estimates that liquid milk used in production of maska and quroot near Kabul is valued at $.20/lt. He also notes that: “The Guzergha plant [in Kabul] collects more milk than it can process and sells [at $.40/lt] to a commercial processor, with more advanced equipment and sophisticated packaging. This processor manages to produce yoghurt and sells it at more than twice the FAO yoghurt’s price.”[10] This implies that some processors can afford to pay $.40/lt for milk delivered to their processing plant.

[8] John Bonnier, op.cit.
[9] John Bonnier, op.cit.
[10] A. van Engelen, op. cit.

5. PRODUCTION

The total milk production in Afghanistan is not enough to meet the demands for dairy products.[11] Based on the FAO 2003 census the annual production figures in the Master Plan were estimated at:

- Cow milk 945,000mt
- Ewe milk 210,000mt
- Goat milk 180,000mt

The 2005 estimates based on predictions of animal population, production estimates and growth indicators, comes with a figure of 1,450,900 tons of milk total (cows, ewes and goats).

No detailed information on import of dairy products is available[12], but the Master Plan[13] reports a 'rapid increase, mainly from Pakistan'. The total volume is estimated at 100,000 tons of liquid milk, mainly in the form of milk powder and the rest as UHT. Other estimates[14] mention volumes of 50 tons of milk powder and up to 18 million liters of liquid milk per year.

[11] John Bonnier, op.cit.
[12] John Bonnier, op.cit.
[13] MAIL Master Plan for Agricultural Development
[14] A. van Engelen , op. cit.

6. PROPOSED INTERVENTIONS AND IMPACT

This RBSP program would be implemented in collaboration with the World Bank Horticulture and Livestock Project (HLP). Bonnier emphasizes that 2-3 years is an insufficient amount of time to develop dairy value chains. He notes that the existing dairy processing systems that are being supported by public funds have been at work for several years and that profitable and sustainable levels of operation have not yet been reached. Bonnier notes that: "Milk collection schemes were developed by FAO, in combination with simple processing facilities. The first place was Kandahar (1998), followed by Kabul (2000), Mazar-I-Shariff (2002) and Kunduz (2005). These schemes have generated considerable interest among the farmers but have remained quite limited in scale, reportedly because of late provision of needed equipment and insufficient financing. Recently investments have been made in new processing.[15]

However, van Engelen's observation that a private sector processor in Kabul can purchase milk from the publicly-supported Guzergha (at twice the price paid for the liquid milk by Guzergha) plant and sell yogurt at more than twice the Guzergha plant's price for yogurt, indicates that the private sector may have some advantages in operating processing plants and may become sustainable before publicly-supported systems. Similarly, Dr. khaista Yousafzai[16] notes that after the publicly-supported dairy processing plant in Heart was privatized, private sector businesses have entered the industry and are providing alternative markets to farmers.

A comprehensive feasibility study would be the first step in developing this program. The study would require two-three months for completion. Following a positive recommendation from the feasibility study, the RBSP program would focus on assisting one or more private sector investors install the recommended milk processing center. Due to the short time frame of the RBSP, the development of milk collection systems and technical assistance to farmers would not be attempted.

The impact of the RBSP dairy program can be estimated by the following logic. Assume that, as a result of investments in dairy processing plants made by RBSP participants, 10mt/day of milk will be processed. Assuming that the producers would receive an additional $.10/lt for their liquid milk, the impact on increased farm level revenue would be $1,000/day. There would be additional impact from the increased level of processing and marketing. These could be calculated using data from van Engelen's value chain analyses; however, the author could not be contacted and his report shows only bar graphs of the margins along the value chains he presents. Therefore, accurate figures on the margins were not available at the time of reporting.

[15] Bonnier, op. cit.
[16] Khaista Yousafzai, personnel communication.

Jalalabad Market: Total Annual Value[1]			
Product Description (Local Products)	Local Products US$	Product Description (Imports)	Imported Products $US
Yogurt	$603,832	Haleeb UHT Milk/Cream	$8,115,173
Fresh Milk	$427,691	Nestle UHT Milk/Cream	$6,633,486
Paneer/Yellow Cheese	$1,491,149	Condia UHT Milk/Cream	$4,211,844
Chaka	$586,683	Milk Pack	$3,067,384
Afghan Cream	$79,672	Dairy Bell	$985,370
		Soft Processed Cheese	$5,760,730
		Butter/Margarine	$1,253,498
		Malkenez Iran Quroot	$4,844,000
Total Value	**$3,189,027**		**35,681,456**
[1]**NANGARHAR DAIRY MARKET SURVEY & ASSESSMENT, Land O'Lakes, Inc., June 2006**			

The Balkh Dairy Business Plan shows a total investment need of $759.000, including second hand equipment and transport facilities belonging to the old FAO supported plant. With pasteurized milk and yoghurt as the main products, the dairy plant expects a slight positive cash flow in Year 2 and in Year 5 the cumulative cash flow becomes positive. With the planned grants for building and equipment, the cumulative cash flow is already positive in Year 2. Technical assistance is not included in the calculations and higher investments in milk collection are likely to be needed. The plant is expected to operate with an average raw milk intake of 4.1 ton/day, which is quite modest if we consider the availability of milk in the area and the potential for marketing of dairy products. However, even with this limited capacity the calculated profitability of the plant justifies the investments.