



**USAID**  
FROM THE AMERICAN PEOPLE

# DEVELOPMENT OF A BDS MARKET IN RURAL HIMALAYAS

microREPORT #85

**NOVEMBER 2007**

This publication was produced for review by the United States Agency for International Development. It was prepared by Dr. Lucy Creevey and Dr. Momar Ndiaye of Weidemann Associates Inc.

# IMPACT ASSESSMENT OF AT INDIA PROJECT ENTITLED “DEVELOPMENT OF A BDS MARKET IN RURAL HIMALAYAS”

**microREPORT #85**

**Submitted by:  
Weidemann Associates, Inc.**

**Submitted to:  
EGAT/PR/MD**

**Contract No.:  
GEG-I-00-02-00025**

## **DISCLAIMER**

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

# CONTENTS

	Pages
EXECUTIVE SUMMARY.....	1
I: BACKGROUND.....	1
Introudction.....	1
II. STATEMENT OF RESEARCH PROBLEM - METHODOLOGY.....	7
Impact Assessment Methodology.....	7
Research Methodology for the Impact Assessment.....	9
Hypotheses.....	10
III. ANALYSIS OF AT INDIA PROJECT IMPACT ON BDS PROVIDERS.....	17
Project Activities with BDS Providers.....	17
AT India worked with eight types of business services for the micro dairy farmers:.....	17
Analysis of Hypotheses.....	19
Hypothesis I:.....	19
Hypothesis II:.....	22
IV. ANALYSIS OF AT INDIA PROJECT IMPACT ON SUBSISTENCE DAIRY FARMERS.....	25
Project Activities with Farmers.....	25
Looking at Project Impacts on Micro Dairy Farmers.....	26
Hypothesis III:.....	28
Hypothesis IV:.....	29
Hypothesis V:.....	30
V: ANALYSIS OF CHANGE IN CONSUMER BEHAVIOR/PERCEPTION.....	35
VI. CONCLUSION.....	42
VII. ANNEXES.....	55
Annex 1 - Research Team for Impact Analysis for Final Report.....	55
Annex 2 - Questionnaires.....	56
Annex 3 - Focus Group Report.....	92

# EXECUTIVE SUMMARY

This Impact Assessment study of the USAID-funded project implemented by Appropriate Technology India (AT India) entitled “Development of a BDS Market in Rural Himalayas, India,” was conducted by Weidemann Associates Inc. over the period of 2003 to 2007. The project itself was implemented in the Districts of Rudraprayag and Chamoli in the Himalayan State of Uttaranchal (now called Uttarakhand), over the period starting July 2003 and ending in December 2006. The project goal was to promote the dairy subsector through the development of a business development services (BDS) market. The BDS market development activities, undertaken specifically in the Mandakini and Pindar watersheds, aimed to increase the demand for and supply of BDS, improve the quality and quantity of milk and milk products sold by subsistence-level dairy owners, and the income earned by these dairy farmers.

This study measures impact at three levels: the client (the micro dairy entrepreneur); the BDS market (providers); and the product market (consumers or buyers of milk and milk products). It attempts to establish the baseline business situation of the BDS providers (BSPs), the farmers and the market for milk products in the districts, and then looks at the changes that took place during and after project implementation with an effort to ascertain whether changes can be attributed to the interventions of the AT India project

To conduct this research, two major sets of activities were undertaken. The first was a Baseline survey undertaken when the project was already in the field but in its early stages. The samples for the survey included 150 BDS providers broken into those identified by the project and others (forming the control), 343 dairymen also divided into client and control groups, and 300 Consumers. Focus Group sessions with six dairy farmer groups were also held in February 2004. The surveys took place in Rudraprayag and Chamoli in December 2003- February 2004. A Baseline Report was submitted to USAID (finalized in March 2005). The second set of activities was undertaken after the project was completed in December 2006. A set of follow up surveys were conducted in May- June 2007.<sup>1</sup> The BDS survey was administered to 100 of the service providers associated with the project (they being the universe of service providers for micro dairy farmers in the project zone). The farmer survey included 90 project participants spread proportionately over the project zone as was the universe of participants, and equally divided into groups of small and large producers. 126 control respondents were surveyed in villages where the project had not been active among farmers matching the project participant characteristics. The consumer survey was given to sixty respondents divided between 40 householders and 20 commercial establishments (such as teahouses). Three focus groups were held, one with BDS providers, one with dairy farmer participants and one with dairy farmers who were not in the project.

The results of the impact analysis on the AT India project in Uttarakhand showed a complex pattern for the Business Service Providers, the Dairy Farmers and for the Consumers. The area in which the AT India project worked is remote, difficult of access and very poor. A Business Development Service market for micro dairy farmers was definitely created by the project which extended beyond milk collection. But the amount charged for these services had to be small and the profits, although increasing, not large. Average annual income increased over the project period but, once inflation was taken into account, the difference

---

<sup>1</sup> Because of problems in the Baseline data collection, the follow up survey was expanded to include retrospective questions to allow measure of change not dependent on comparisons within baseline findings.

was not significant.<sup>2</sup> The average annual net profits from their Business Development services in 2006 reported by providers was \$103,893.36 INR (\$2,404.93).<sup>3</sup> Note also that, among BDS providers, there was a very unequal distribution of net profits. For instance, milk collectors, who had the highest returns, averaged a net profit of 163, 857.90 INR (\$3,793.01) while sub-collectors only averaged 105,861.83 (\$2,450.50). Also, those with dairy shops received 158,274.00 INR (\$3,663.75) but those who offered artificial insemination and other para-vet services only reported an average net profit from their BDS work of 8,110 INR (\$187.73). These differences may well have had to do with the fact that AT India was creating a market for products, which had not been available before, and about which people were just beginning to learn. A few milk collectors had been there before the AT India project ever started but AT India promoted an increase in collectors (and use of their services) and developed the role of sub collector to bring more people into the market. This usually was a man selected by the Self Help Group (SHG) to collect the participants' milk to bring to the collection point where a collector (with transportation) would take it to sell.

Age was negatively correlated with BDS performance as measured by net profits, consistent with the assumption that younger people are willing and able to take on new things which AT India offered. Perhaps the final thing to note is that there were women among the BDS providers although only a minority. The largest groups of these were among the milk collectors/ sub collectors. They received significantly less in net profits than their male counterparts but it is certainly more important that they became entrepreneurs in their own right in a region where women (especially uneducated poor women) are not commercially active except in selling the milk and milk products through a collector or sub collector.

Looking directly at the dairy farmers, the first observation must be to emphasize that AT India worked with poor people who had micro dairy farms. Many of these were farmers whose families had consumed the major part of the dairy products they produced prior to the project so that these were by definition "subsistence" farming enterprises. At the end of the project, their net profits from the dairy business were still very low – for 2006 average net profits for the project participants was \$220 (9,483 INR)<sup>4</sup>. These net profits had increased since 2003, although slowly, and the difference between the two years was significant when inflation was taken into account. There was not a significant difference in net profits in 2006 between the participants and control women, although the former reported a slightly higher net income.

The most important finding in our study, however, is in the impact of the program's chief action strategy for the farmers. AT India stressed forming SHGs as the means to communicate with, organize, and facilitate the development of the micro dairies to the point where dairy producers could take advantage of the BDS offered. The result was forecast to be an improvement in the quality and quantity of their production and the bottom line of their net profits. By the end of the project, 616 SHGs had been formed with a membership of 6,780 women. This study can indeed show that the project made the right choice in its primary strategy - higher net profits from the dairy business do result from being a member of a Self Help group. Membership in an SHG outweighed whether or not one was a participant in the AT Program but it was true that participants were significantly more likely to join a SHG.<sup>5</sup>

---

<sup>2</sup> Tables 11, 12.

<sup>3</sup> US\$1 = 43.2 IN. See Table 15.

<sup>4</sup> Table 22.

<sup>5</sup> Tables 25, 26.

Further impacts of the AT Program had to do with the growing BDS market outside of milk collection (which everyone accessed). Program participants were significantly more likely to buy seeds and vaccines. Non participants, on the other hand, were more likely to buy medicines (this could be related to the fact that they were less likely to buy vaccines which might have prevented the illnesses for which they had to buy medicine although there is no proof of this connection).<sup>6</sup> Purchasing seeds and vaccines (but not medicine) is significantly related to having higher net profits.<sup>7</sup> We could not show (because of data problems) that women purchased seeds and vaccines because of the demonstrations and vaccination camps, which AT India held as part of its plan to promote BDS, although this is very likely.

Finally, this study could not find results which justify attributing major changes in the dairy products' market to the intervention of AT India in the region. This, however, was unlikely however successful the project. After only three years of being in the field and at the second hand distance of the consumer, there may be a beginning perception of changes and/or change in consumer behavior. Nonetheless, changes in consumer behavior are not likely to be statistically significant and, in fact, they were not. Consumers bought slightly more milk, were slightly more likely to buy other dairy products and said the quality and quantity of dairy products had improved, although so had the price gone up. The study did not have the data to show whether or not there was, in fact, a change in the cost and amount of available milk for the local consumer, especially when demand for milk is highest during the peak tourist season.

In summary, the study initially advanced six principal hypotheses relating to the impacts of the AT India BDS project. These were explored through studying the relationships posited in eighteen sub hypotheses. Fifteen of these could be tested while others could not because of data limitations. The following are the specific results, which are discussed in the text above:

### **BDS Providers:**

Hypotheses I: Growth of the subsector (the product market) will result in increased demand for BDS services and therefore more opportunities for providers:

- (i) Facilitation activities aimed to increase awareness about BDS will result in increased demand for BDS services and therefore more opportunities for providers;

***Partially supported:** Project participants were significantly more likely to purchase selected seeds and vaccines<sup>8</sup>. Control members were significantly more likely to purchase medicine. Both accessed milk collection services;*

- (ii) Provider access to credit will result in greater supply of services for MEs and improved, more sustainable businesses for providers;

***Not supported:** Those BDS providers who had loans had slightly higher income in 2006 than those who did not but the difference was not significant;*

- (iii) Organizing SHGs can reduce the costs of delivering BDS and increase the affordability of services and thus contribute to the profitability of service provision;

---

<sup>6</sup> Table 27

<sup>7</sup> Table 28.

<sup>8</sup> When reported as “significant”, the relationship tested was .05 or less. If otherwise, the figure is provided. See full text for details on each hypothesis.

**Supported:** Members of SHGs were significantly more likely to access BDS services;

- (iv) Providers with a larger volume of sales at the outset are more likely than those at the lower end to be able to take advantage of new methods/options drawn from training AND access to new market information;

**Not tested:** The very success of the project made testing this hypothesis difficult. There were only a few milk collectors and stud bull owners providing services to the micro dairy farmers before the project. The project enlisted those and helped develop new categories of service provider including the sub collectors, para vet service providers and insurance vendors. They also enlisted shop keepers to sell milk produced by the micro dairy farmers and organized the delivery of milk to them. Everyone reported increased net profits (although there were significant differences in levels of profit). It was not possible to compare a non participant's change in net profit from BDS services to a participant's because there was no non participant group.

Hypothesis II: Demographic characteristics, location and size of businesses at the outset will affect the degree to which providers take advantage of capacity building and new market information:

- (i) Younger and better educated providers will be more pro-active and therefore will have larger increases in sales;

**Partially supported:** Younger BDS providers had significantly higher net profits. Education was not significantly correlated to higher profits except among the sub collectors;

- (ii) Gender will impact the level of net profit of providers;

**Supported:** Among the group of service providers with the largest group of women (collectors and sub collectors of milk), women received significantly lower net profits;

- (iii) Providers whose businesses are closer to larger concentrations of micro dairies will be more likely than those who are in remote areas to benefit from project interventions (indicated by increased sales and profits);

**Not supported:** There was no significant difference between providers in "remote" versus providers in "non remote" or "peri urban" areas. There was a significant difference between the two project zones with those in Rudraprayag having significantly higher net profits than those in Chimoli. The explanation for this requires further research.

### **Subsistence Dairy Farmers:**

Hypothesis III: The organization of SHGs will lead to increased access to, improved affordability of, and greater use of, business services and therefore improved firm performance:

- (i) Farmers who form collective groups (SHGs) will be more likely to obtain access to BDS than will farmers who do not form such groups;

**Partially supported:** The hypothesis did not take into account that everyone accessed milk collector services and most had done so (if they sold the milk their farm produced) even before the project and even if they were not in an SHG. What tests showed is that SHG participants were significantly more likely to purchase vaccines and somewhat more likely to purchase selected seeds and medicines;

- (ii) Farmers in SHGs will (therefore) have more sales and a higher profit margin than those not involved;

**Supported:** *Members of SHGs had significantly (.06) higher net profits than non members. AT Project participant members of SHGs were not significantly more likely to have higher net profits than non-participant SHG members, BUT AT India participants WERE significantly more likely to join an SHG. Purchase of seeds and vaccines was significantly related to higher net profits;*

- (iii) Farmers who are trained by the project – who attend demonstrations and training sessions - will be more likely to purchase BDS goods and services (and those in SHGs will purchase more on average than those not);

**Not tested:** *The question used for this test proved to be confusing. Asked if they had had training, most interpreted this as “formal” training and not just going to a demonstration or a vaccination camp. Further research is needed.*

Hypothesis IV: As a result of access to fodder, stud services, vet services, and marketing/collection services, micro dairy MEs will find new market outlets and experience a greater volume of production, sales and profits:

- (i) Farmers who purchase more BDS products and services (or purchase for the first time) will experience an increase in sales translating into an increase in the net profit of their business;

**Partially supported:** *(see above) Purchase of seeds and vaccines was significantly related to higher net profits;*

- (ii) Farmers who purchase BDS will have better levels of sales, better and more varied quality of products and higher profit levels than those who do not and who had the same size/kind of dairy establishment at project beginning;

**Partially supported:** *(see above) Purchase of seeds and vaccines was significantly related to higher net profits.*

Hypothesis V: Demographic characteristics, location and size of farm will affect the likelihood of farmers purchasing inputs business services:

- (i) Younger, better -educated farmers are more likely to purchase BDS services;

**Not supported:** *No significant relationship with age or education;*

- (ii) Women farmers will continue to be less likely than males to purchase services although women connected to the project will be significantly more likely than women who are not to do so;

**Not supported:** *The Hypothesis, based on farming practices in other regions, did not allow for the fact that most respondents were in families where the women conducted the dairy activities but the men owned the farm and the animals. The only test possible was between women-headed households (widowed women usually) and men headed-households and there was no significant difference;*

- (iii) Farmers with larger farms are more likely to purchase collection services and veterinary goods and services than those with smaller enterprises at project outset;

**Supported:** *Although farmers producing more milk were significantly (at the 5% level) likely to purchase BDS services and had higher levels of net profits, the importance of this finding is not clear. It seems a truism. There was not enough information to show whether the degree of increase in net profits or BDS purchases was significantly larger for the smaller or larger farms;*

- (iv) Dairymen in more remote areas will be less likely than those in areas closer to urban centers to purchase collection services, fodder and veterinary goods/services;

**Not supported:** *(see above).*

Hypothesis VI: Access to credit will increase the size, profitability and sustainability of micro dairy MEs:

- (i) Those farmers not in an SHG belonging to a MAC will not have equal access to credit as do those who belong;
- (ii) Farmers who do have access to credit will increase the size, profitability, and sustainability of their micro dairy enterprises;

**Partially supported:** *All, but one, of those who had loans were members of SHGs. But only a very small number of micro dairymen (14 respondents total) had loans and there was no significant difference in net profits between this group and those without loans.*

## I: BACKGROUND

### FGD: MICRO DAIRYISTS (CONTROL), VILLAGE: SEMWAL (MAY 11, 2007)



AC Nielson 2006

**SEMWAL VILLAGE  
MICRO DAIRYISTS  
MEET FOR BDS  
TRAINING.**

## INTRODUCTION

### A. IMPACT ASSESSMENT STUDY

This Impact Assessment study of the USAID-funded project implemented by Appropriate Technology India (AT India) entitled “Development of a BDS Market in Rural Himalayas, India,” was conducted by Weidemann Associates Inc. over the period of 2003 to 2007.<sup>9</sup> The project itself was implemented in the Districts of Rudraprayag and Chamoli in the Himalayan State of Uttaranchal (now called Uttarakhand), over the period starting July 2003 and ending in December 2006. The project goal was to promote the dairy subsector through the development of a business development services (BDS) market. The BDS market development activities, undertaken specifically in the Mandakini and Pindar watersheds, aimed to increase the demand for and supply of BDS, improve the quality and quantity of milk and milk products sold by subsistence-level dairy owners, and the income earned by these dairy farmers. The project proposed to assist 4,000 dairy farmers to move out of subsistence and into commercial production and thereby to increase production by about 23%.<sup>10</sup> In fact it went beyond its initial projection and, by the end of the project, established 616 Self Help Groups (SHGs)<sup>11</sup> with a membership of 6,780 women.<sup>12</sup>

<sup>9</sup> Names and affiliations of impact assessment research team members may be found in Attachment A.

<sup>10</sup> AT India, Program Description (submitted to USAID, 2002?), Attachment B.

<sup>11</sup> Self Help Groups (SHGs) are composed of approximately 15 or 20 women in a village. They pool their small amount of money so that each in turn has money to buy what they need - like improved fodder for the cows, or vaccines or paying a milk collector as in the case of this project. They are also a base for communicating new ideas and demonstrating new techniques to micro dairyists. Mutually Aided Cooperative Societies (MACs) are federations of SHGs which can form linkages with banks and establish savings schemes (thus enabling loans to poor women not otherwise available).

This study measures impact at three levels: the client (the micro dairy entrepreneur); the BDS market (providers); and the product market (consumers or buyers of milk and milk products). It attempts to establish the baseline business situation of the BDS providers (BSPs), the farmers and the market for milk products in the districts, and then looks at the changes that took place during and after project implementation. In other words, the analysis here explores the pre-project (early project) business situation of the milk value chain and how this changed after project activities had taken place.<sup>13</sup>

### A. AT India Project Activities

The specific and direct AT India project activities focused on developing a BDS market to address the range of constraints in the micro-dairy subsector. To develop the milk subsector, the project focused on seven sets of interventions that corresponded to the major market constraints in 2003.<sup>14</sup>

**Table 1: Constraints, BDS Interventions (S = supply; D = demand)**

<b>Constraints</b>	<b>BDS Interventions</b>
Absence of cooperation or inter-firm cooperation to capture economies of scale	* Community organization among village dairy farmers(d) * Village & watershed meetings of dairy farmers and potential service providers to educate on benefits to individuals from group cooperation (d)
Underdeveloped market and unorganized milk collection	* Education of dairy farmers on benefits of milk collection services (d) * Promotion of milk collection as a viable small-enterprise (s) * Development of model business plan for collection services (s)
Productivity: Poor quality of herd	* Education of dairy farmers on cost/benefits of improving quality of herd, comparing different options (d) * Exposure trips for potential service providers to other areas where, AI, stud bull and improved breeding is occurring (s) * Development of model business plan of herd improvement services (s)
Productivity: Poor animal health & nutrition	* Demonstrations of improved animal husbandry practices, including vet care, stall feeding, fodder preparation (d) * Demonstrations of fodder cultivation techniques (d) * Demonstrations of feed and feed supplements (d) * Promotion of village based vet services as a viable enterprise (s) * Promotion of village-based fodder nurseries as a viable enterprise (s) * Promotion of feed & feed supplement supply as a viable enterprise * Development of model business plans on vet services provision, fodder nurseries, and feed and feed supplement supply (s)
Lack of access to financial services	* Organization of women/youth around micro finance issues (d) * Educational tours to successful microfinance self help groups (d) * Meetings and presentations to Financial services institutions and insurance companies on the business potential existing in the region

<sup>12</sup> AT India, Development of Business Services Market in Rural Himalayas India; July 2006-December 2006 (Final Report)

<sup>13</sup> A value chain may be defined as: "...the full range of activities that are required to bring a product from its conception to its end use. These include design, production, marketing, distribution, and support to get the product to its final use. The activities that comprise a value chain may be contained within a single firm or may embrace many firms. They may be limited to a single country or stretch across national boundaries." See Jeanne Downing, Don Snodgrass, Zan Northrip and Gary Woller, 'The New Generation of Private Sector Development Programming: The Emerging Path to Economic Growth with Poverty Reduction,' AMAP Component D, papers p. 9

<sup>14</sup> Discussion of activities found in Program Description, Ibid. pp. 4-5.

	(s)
Lack of knowledge of appropriate technologies & improved practices	*Testing & demonstrations of appropriate technologies & improved practices (d) * Development of model business plans on the manufacture, supply, distribution of various technologies (s)

### B. BDS Services Developed

AT India focused on those service markets that would most effectively address subsector constraints and benefit micro producers. Facilitation services were provided by AT India over the course of the project. Clarity on facilitation and BDS services is provided by the following table:

**Table 2: BDS Facilitation and BDS Services**

Service	Who Provides Service Now	Who provides at beginning of project	Who provides after completion of project	Who Pays after completion of project	How is it Delivered after completion of project
<b>Networking Services</b>					
1. SHG formation	AT India	AT India	MACS	Provider	Stand alone
2. MACS	AT India	AT India	MACS	Provider/SHGs	Stand alone
<b>Marketing Services</b>					
1. Collection Services	Collectors	Collectors	Collectors	Micro-dairies	Bundled with other services
2. Market linkages	Not provided	AT India	MACS	Provider	Stand alone
3. Dairy product development and market research	Not provided	AT India	MACS	Provider	Bundled with other services
4. Advertising Services	Not provided	AT India	MACS	AT India/MACS	Bundled with other services
<b>Animal Upgradation</b>					
1. Demonstration of AI, Stud Bulls, & improved breeds	Not provided	AT India/BAIF	N/A	N/A	Bundled with other services
2. Continuation of AI services	N/A	BAIF through trained extension workers	BAIF through trained extension workers	Clients	Bundled with other services
3. Continuation of Stud Bull services	N/A	Stud Bull owners	Stud Bull owners	Clients	Bundled with other services
4. Continuation of improved breeds	N/A	Breeders	Breeders	Clients	Stand alone
<b>Animal Health &amp; Nutrition Services</b>					
1. Demonstration of feed, feed supplements, fodder, silage, veterinary services, other improved practices and technologies	Not provided	AT India	N/A	N/A	Bundled with other services
2. Feed & feed supplements	Not provided	Suppliers	Suppliers	Clients	Bundled with other services

Service	Who Provides Service Now	Who provides at beginning of project	Who provides after completion of project	Who Pays after completion of project	How is it Delivered after completion of project
3. Fodder services	Not provided	Fodder cultivators/nurses	Fodder cultivators/nurseries	Clients	Stand alone
4. Other improved practices/technologies	Not provided	Suppliers	Suppliers	Clients	Bundled with other services
<b>Financial Services</b>					
1. Microcredit	SHGs	MACS/SHGs	MACS/SHGs	Clients	Bundled with other services
2. Savings	SHGs	MACS/SHGs	MACS/SHGs	Clients	Bundled with other services
3. Asset insurance	Not provided	MACS/SHGs	MACS/SHGs	Clients	Bundled with other services

**Table Guidelines:**

- *Service* – describe the service being delivered
- *Who provides*– identify who delivered the service (commercial provider, someone in the supply chain, facilitator, etc.)
- *Who pays* – identify who paid for the service (provider, client, facilitator, or a combination of the three)
- *How is it delivered* -- identify if the service was delivered through a stand alone arrangement, embedded in another transaction, or bundled with another service.

**C. Outputs/ Results of AT India Project**

As noted above, the AT India Project exceeded its own goals and expectations as shown by the results reported in its end-project summary and tables. The project promoted a network of 3,899 micro dairies. 95% of those who joined the project continued to participate in its activities (and their SHGs) until the project end (and presumably still). The “ establishment of collection, distribution and market services” appears to be directly connected to the significant “increase (d) in the value of the sale of fresh milk from the project area (which has) gone from 62,000 INR (\$3,681) to 88,02,00.00 INR (\$200,00).” In addition, the report notes that the initial sale of milk at the project inception was only 90 liters a day and is now (in 2006) 4,890 liters a day. Participants reported a 9.8% increase in cash income.

The project organized 616 SHGs, with a total membership of 6,780 women, into a MAC called Usamath Mahila Mahasangh (UMM). UMM became the “first formal microfinance institution wholly owned controlled and managed by its members” in Uttarakhand. It has disbursed loans to 225 members of SHGs. UMM has also developed linkages with 22 Primary Agriculture Cooperatives (PACs), which provide “door to door savings services” to the SHGs. Insurance services are now provided to members of the SHGs, via UMM, by the National Insurance Co. Ltd. and Life Insurance Corporation of India. Three thousand twenty (3,020) women now have coverage. Finally, where there had been no commercially viable business services in the project districts (offering services to micro dairies), now 203 “youths” obtain a “viable means of livelihood.”

Of these 5 are women, which, as the project report notes, is a departure for “this conservative Hindu region where women have never been directly involved in any type of public commercial activity.”<sup>15</sup>

#### D. Contextual Background

***The Micro Dairy Sub Sector***<sup>16</sup>The Himalayan state of Uttarakhand, located on the border with China and Nepal, is one of the most remote and economically undeveloped areas of India although there has been an increase in investment in the region in recent years (especially on the southern border of the state). Uttarakhand became India’s 27th state in 2000 under the name Uttaranchal, which name was changed in November 2006. It has a land area of 53,566 sq kilometers and a population of 8, 479,562. The state is comprised of two divisions – Garhwal and Kumaon broken into 13 districts, two of which located in Garhwal - Rudraprayag and Chimoli – are the site of the AT project intervention. Rudraprayag (1,580 sq kms) and Chimoli (7,520 sq kms.) are largely rural and located in the central northern section of the state. Economically productive activities include agriculture, dairy production and tourism (the latter because these two districts contain some very important ancient temples and religious sites to which thousands of pilgrims come annually). The supply of **fresh milk** in the entire state (including the area of the project) comes from two sources: micro-dairies and the state dairy.

Micro-dairies supply surplus household milk to markets made up primarily of families living in towns and tea stalls, sweetshops, restaurants and guest houses. Micro-dairies have two ways of marketing their milk, directly to the consumer or through the growing number of collectors, who have emerged in the past few years. Villagers who live close to their customers will sell directly and have no immediate need for the marketing services of the collectors, but villagers who live at a distance are increasingly willing to use collectors’ services. Experience has shown that, when micro-dairy collection services are organized and able to satisfy market demand, the market for state dairy milk attenuates since milk provided by the state dairy is considered to be of poor quality.

**Ghee** (clarified butter) is used in cooking and has a number of suppliers. Micro-dairies supplied a small amount when the project started, selling to neighbors in the same village who may periodically require ghee for some special occasion. **Khoia** is a coagulated form of milk that results from constant heating over a low fire. It is used in the preparation of Indian sweets. At project inception, all Khoia was supplied from the plains, mainly Najibabad. The local farmers were under the impression that they could not compete price-wise with the outside suppliers. There was also a small underdeveloped market for **curd** which was primarily supplied by the state dairy. Most buyers of curd are restaurants and some town based households.

In 2003 and at present, the dairy subsector has the greatest potential among economic subsectors in Uttaranchal for having a significant impact on the incomes of the large numbers of rural poor, especially rural women. While basically undeveloped, even in 2003, there were clear indications that the dairy subsector in Uttaranchal was robust and had strong potential for development. Among the strongest indicators of this potential were:

---

<sup>15</sup> AT India Final Report (*op. cit*), pp. 2-3

<sup>16</sup> This description is drawn directly from the Program description Annex B and Garhwal BDS Final Doc.

Note: The project documents (and this report) use the term “micro dairy” and “micro dairy farmers.” What this implies is small, poor farms with few cows, whose farming activities are largely subsistence, that is, at least before they joined the AT India project, the families consumed most of what they produced. Among the initial participants in the baseline survey, 59% owned only one or two female cows.

- a) Small-scale dairies and milk collection enterprises were coming up on their own, without any impetus from development programs, either public or non-profits. These small dairies were run quite progressively and went to great extremes to access commercially provided BDS.
- b) There was a strong and widespread demand by women members of self-help savings and credit groups (SHGs) for help in establishing micro dairies, for increasing production of milk for income and for technologies for value added processing of dairy products.
- c) There was likewise a demand for fodder trees and grasses and a clear willingness to pay for such.
- d) There was a strong demand for cross breeding services to upgrade the quality of the herd and a willingness to pay for such.

In other parts of India, dairy development has been an important strategy in improving the incomes of large numbers of rural poor and where it has succeeded it has been linked with provision of BDS. These factors provided a strong rationale for the establishment of the AT project in the two districts chosen.

The **BDS market** was virtually nonexistent in Chimoli and Rudraprayag in 2003 due to a combination of factors that had their foundation in the constraints existing in the dairy subsector. A major underlying factor that inhibited the development of a BDS services market was the absence of economies of scale. Because the potential market for services and inputs was so scattered, commercially-minded service providers were not attracted to the area, and services that were supposed to be provided by the government failed to be delivered. The creation of economies of scale was an essential condition for the development both of the subsector and the BDS market and was a central focus of the AT India project.

## II. STATEMENT OF RESEARCH PROBLEM - METHODOLOGY

**FGD: BDS PROVIDERS, VILLAGE: ROOMSHI (MAY 10, 2007)**



AC Nielson 2006

**ROOMSHI  
VILLAGE BDS  
PROVIDERS  
ATTEND MEETING.**

### IMPACT ASSESSMENT METHODOLOGY

AT India has already produced a final report that shows the outputs and outcomes of the project, which was completed in December 2006. The results were solidly impressive as the team carried out the goals and objectives they had established for themselves. Before the project, there were no BDS providers in the project zone providing commercial services to the subsistence dairy farmers. Now these farmers are linked into a commercial economy, have access to Business Services and to financial services as well (such as credit, savings and insurance). Their incomes have increased by more than 9%.

The purpose of this study is to go one step further than the reported outcomes to show whether these results can be attributed to the project or may reflect an overall change in the economic situation in the project zone. To quote from a paper written by one of the authors last year: "The objectives of doing impact assessments of private sector development (PSD) programs are: (1) to determine whether they had an impact on program beneficiaries, and (2) whether they also had an impact on other actors up and down the value chain or horizontally through clusters of geographically linked enterprises. The underlying question addressed by impact assessments is whether observed changes can be proved to result from the program itself, or, if attribution can not be fully proved in a scientific sense, whether the probability of attribution can be plausibly shown to be higher than from other possible causes. The principle of attribution is what distinguishes impact assessment from *program monitoring* or *program evaluation*. Attribution in turn requires comparing observed

outcomes to a counterfactual, which is an estimate of what would have happened if the program had not been undertaken.”<sup>17</sup>

The discussion below illustrates the link between the final impact analysis and project outputs and outcomes. The causal chain for this research, such as the one discussed in the quotation below, will be presented later in section II.2 describing the research for this study:

## **THE CAUSAL CHAIN**

The process of getting from program activities to intended impacts involves a number of intermediate steps. These intermediate steps are in turn linked to each other through a series of cause-and-effect relationships represented by a causal chain. Figure 1 shows an example of a causal chain that includes program activities, outputs, outcomes, and impacts.

Program activities consist not only of actual program activities but also of the inputs (resources) used to produce those activities. Outputs are the tangible results of program activities.<sup>18</sup> Examples of outputs include the number of trainings given, the number of people trained, the number of agreements signed, the number of business member organizations (BMOs) created, and the like. Such indicators can be easily quantified as well as aggregated. Outcomes, on the other hand, are observed changes among project clients, among other value chain actors, or in the enabling environment. Finally, impacts are the end results sought by the program that can be attributed to program activities.

As seen in Figure 1, the causal chain moves from left to right. The further to the right one goes, the more difficult measurement becomes and the stronger is the causal relationship with program impacts. Notwithstanding, each link in the chain is as important as any other link: break any link in the chain, and the entire chain breaks. <sup>19</sup>

In order to satisfy at least minimally acceptable criteria for an impact assessment to be credible, a study should use an experimental or quasi experimental methodology. In experimental studies, there is a random assignment of persons as beneficiaries, and thus into the treatment group, or non-beneficiaries, and therefore into the control group. The contrast between these two groups over time is the most rigorous setting for studying what impact the project, as opposed to other factors, may have had. This is only possible to do, however, if potential participants can be excluded (because they fell into the wrong group) although they may be qualified and desire to join. In addition, if an impact assessment is begun after a project is already underway, satisfying the experimental need for true randomization is very difficult. In contrast to experimental methods, quasi-experimental methods compare groups that already exist. Treatment group members are selected via random sampling of known program beneficiaries, while control group members are selected via random sampling of known non-beneficiaries. The success of this method relies on a close match of beneficiaries with the control group in terms of their key characteristics.

---

<sup>17</sup> Lucy Creevey, Principal Author, Impact Assessment of PSD Programs: “Rigorous” versus “Minimally Acceptable” USAID/DAI AMAP Component D, p.1.

<sup>18</sup>Unlike outcomes and impacts, outputs are typically objectively measurable, meaning they are capable of being independently observed, measured, and verified. For this reason, they are commonly used as performance indicators in program monitoring systems.

<sup>19</sup> Jeanne Downing and Gary Woller, “Developing A Causal Model for Private Sector Development Programs,” USAID/DAI, Impact Assessment Primer Series, pp 2-3

The most common tool for both these methodologies is the survey – that is a set of questions carefully drawn to test the hypotheses regarding causes of difference in outputs, quality, income well being etc., which the researchers are exploring. In particular, a longitudinal study based on analysis of an early, or prior-to-project, survey and one administered when the project is completed is the most reliable use of surveys although a one time late or after-project survey based on retrospective questions may be acceptable if carefully done. Qualitative methodologies, such as interviews and focus groups, can capture complex causal relationships and contextual information, which may not be understood in purely quantitative research such as those based on statistical analysis of survey data. But they produce less desirable results than quantitative studies in terms of standardization of data, representativeness, and ability to generalize and quantify impact and are not enough to establish attribution. Many researchers choose to use mixed methodologies as was done in the case of this research.<sup>20</sup>

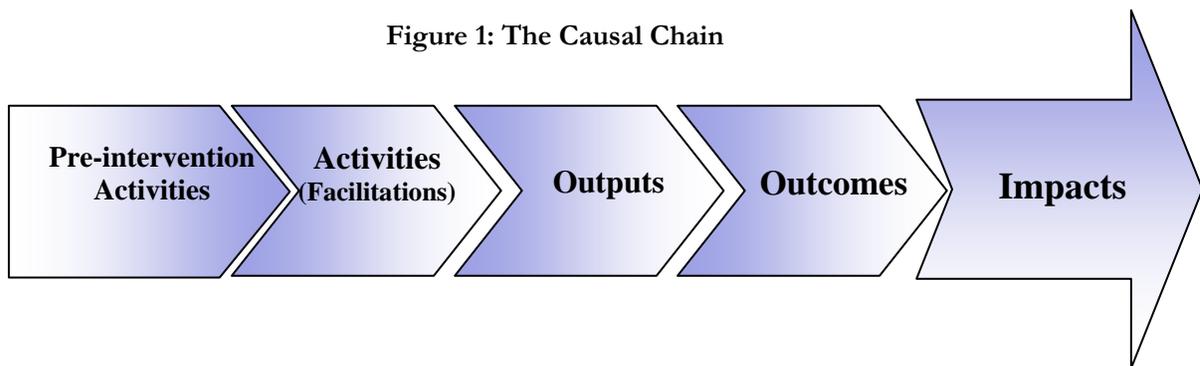
## RESEARCH METHODOLOGY FOR THE IMPACT ASSESSMENT

This section sets forth both the proposed research plan for this study and the one actually achieved and utilized. The differences are not great but they do indicate some problems which affect this analysis and of which these authors are fully aware. Our conclusions take into account those weaknesses from certain research errors, which are made explicit as this report progresses.

### CAUSAL MODEL

The research plan proposed to establish and record key indicators to show performance at three levels: micro-dairy entrepreneurs, BDS providers, and the dairy subsector (market for milk and milk by-products). It set out to measure the performance of potential and actual BDS providers serving the micro dairies, including their sales and profitability as the project proceeded. The study further proposed to examine the impact of increased availability and access to BDS services on subsistence dairy owners and the impact of the formation of these dairy farmers into SHGs (which were eventually organized into a MAC (UMM) by the project). Consumers of milk products were to be surveyed to find out how their perception of product availability and quality changes over the life of the project. The Causal Model upon which this research is based is as follows<sup>21</sup>:

Figure 1: The Causal Chain



<sup>20</sup> Creevey. Op.cit., whole.

<sup>21</sup> Downing and Woller, , “Developing a Causal Model...” op.cit.

**Table 3: The Causal Model**

Pre-intervention Activities	Activities (Facilitation)	Outputs (Service Delivery)	Outcomes	Impacts
<p><b>Subsector Selection: Micro dairy</b></p> <ul style="list-style-type: none"> <li>• Demand and constraints analysis</li> <li>• Selection and prioritization of business services that address constraints</li> </ul>	<p><b>Supply Side:</b></p> <ul style="list-style-type: none"> <li>• Facilitate marketing capacity of BSPs/milk collection services</li> <li>• Facilitate development of fodder nurseries</li> <li>• Promote village-based fodder industries</li> <li>• Testing (and dissemination) of appropriate technologies</li> <li>• Introduce BSPs (and potential BSPs) to improved breeding practices</li> </ul> <p><b>Demand Side:</b></p> <ul style="list-style-type: none"> <li>• Promote the value &amp; importance of BDS good/services/milk collection to micro-dairy MEs</li> <li>• Train dairy owners in improved animal husbandry techniques, need for collection services, possibilities in microfinance self help groups</li> <li>• Facilitate formation of cooperatives of dairy owners</li> <li>• Linkage with financial services institutions through MAC</li> </ul>	<p><b>Supply Side:</b></p> <ul style="list-style-type: none"> <li>• # of BSPs in milk collection services</li> <li>• # of fodder nurseries created</li> <li>• # of fodder processing in the village</li> <li>• # of BSPs adopting new technologies</li> <li>• # of BSPs receiving training in new techniques</li> <li>• # of BSPs given training in breeding practices</li> <li>• # of BSPs given training in breeding practices</li> </ul> <p><b>Demand Side:</b></p> <ul style="list-style-type: none"> <li>• # dairy owners contacting BSPs for services</li> <li>• # of dairy owners adopting new techniques</li> <li>• # of SHGs established</li> <li>• # of dairy owners members of SHGs</li> <li>• # of dairy owners with access to financial services</li> </ul>	<p><b>Supply Side:</b></p> <ul style="list-style-type: none"> <li>• Increased # of BSPs in milk collection services</li> <li>• Increased availability of milk products</li> <li>• Increased availability of fodder &amp; services</li> <li>• Increased # of skilled BDSs providers</li> <li>• Improved quality of milk products</li> </ul> <p><b>Demand Side:</b></p> <ul style="list-style-type: none"> <li>• Increased number of dairy owners soliciting BDSs services</li> <li>• Increased number of dairy owners adopting new techniques</li> <li>• Increased number of dairy owners joining SHGs.</li> <li>• Increased access to credit</li> </ul>	<p><b>Sub sector level:</b></p> <ul style="list-style-type: none"> <li>• Improved performance of micro dairy sub sector</li> <li>• Growth in production of dairy outputs</li> <li>• Greater access to high quality dairy products</li> </ul> <p><b>Firm/Dairy Enterprise level:</b></p> <ul style="list-style-type: none"> <li>• Increased sales</li> <li>• Increased profits</li> <li>• Higher productivity</li> </ul> <p><b>BDS provider level:</b></p> <ul style="list-style-type: none"> <li>• Increase in income</li> <li>• Increase in # of clients</li> </ul>

## HYPOTHESES

This research was conducted in the early stages of the project (three surveys Dec 2003-Feb 2004) and repeated at project end (three surveys May 2007-June 6 2007). Three focus groups were held in May 2007,

one with six BDS providers, one with ten participant dairy farmers and one with 15 dairy farmers not associated with the project.

Questions were developed for the BDS, Dairy farmer and Consumer surveys, and for the focus groups, corresponding to a set of hypotheses explained below.

### **BDS Providers**

Hypotheses I: Growth of the subsector (the product market) will result in increased demand for BDS services and therefore more opportunities for providers:

- (i) Facilitation activities aimed to increase awareness about BDS will result in increased demand for BDS services and therefore more opportunities for providers;
- (ii) Provider access to credit will result in greater supply of services for MEs and improved, more sustainable businesses for providers;
- (iii) Organizing SHGs can reduce the costs of delivering BDS and increase the affordability of services and thus contribute to the profitability of service provision;
- (iv) Providers with a larger volume of sales at the outset are more likely than those at the lower end to be able to take advantage of new methods/options drawn from training AND access to new market information.

Hypothesis II: Demographic characteristics, location and size of business at the outset will affect the degree to which providers take advantage of capacity building and new market information:

- (i) Younger and better educated providers will be more pro-active and therefore will have larger increases in sales;
- (ii) Gender will impact the level of net profit of providers;
- (iii) Providers whose businesses are closer to larger concentrations of micro dairies will be more likely than those who are in remote areas to benefit from project interventions (indicated by increased sales and profits).

### **Subsistence Dairy Farmers**

Hypothesis III: The organization of SHGs will lead to increased access to, improved affordability of, and greater use of, business services and therefore improved firm performance:

- (i) Farmers who form collective groups (SHGs) will be more likely to obtain access to BDS than will farmers who do not form such groups;
- (ii) Farmers in SHGs will (therefore) have more sales and a higher profit margin than those not involved;
- (iii) Farmers who are trained by the project – who attend demonstrations and training sessions - will be more likely to purchase BDS goods and services (and those in SHGs will purchase more on average than those not).

Hypothesis IV: As a result of access to fodder, stud services, vet services, and marketing/collection services, micro dairy MEs will find new market outlets and experience a greater volume of production, sales and profits:

- (i) Farmers who purchase more BDS products and services (or purchase for the first time) will experience an increase in sales translating into an increase in the net profit of their business;
- (ii) Farmers who purchase BDS will have better levels of sales, better and more varied quality of products and higher profit levels than those who do not and who had the same size/kind of dairy establishment at project beginning.

Hypothesis V: Demographic characteristics, location and size of farm will affect the likelihood of farmers purchasing inputs business services:

- (i) Younger, better -educated farmers are more likely to purchase BDS services;
- (ii) Women farmers will continue to be less likely than males to purchase services although women connected to the project will be significantly more likely than women who are not to do so;
- (iii) Farmers with larger farms are more likely to purchase collection services and veterinary goods and services than those with smaller enterprises at project outset;
- (iv) Dairyists in more remote areas will be less likely than those in areas closer to urban centers to purchase collection services, fodder and veterinary goods/services.

Hypothesis VI: Access to credit will increase the size, profitability and sustainability of micro dairy MEs:

- (i) Those farmers not in an SHG belonging to a MAC will not have equal access to credit as do those who belong;
- (ii) Farmers who do have access to credit will have greater increases in income and profitability of their micro dairy enterprises.

### **The Dairy Product Sub Sector**

Hypothesis VI: Consumers of milk and milk products who deal with project clients will experience improved quantity and quality of products and will increase purchases as a result.

### **Research Problems in first phase**

The problems that this research has encountered stem from two factors.<sup>22</sup> The first is the nature of the actual baseline sample and the second is the maintenance of a panel, i.e. the names, addresses and characteristics of those who had been in the Baseline sample. In regard to the first factor, four major errors occurred.

- 1) The Baseline farmer sample would ideally have consisted of dairy farmers who shared demographic and business characteristics with those at whom the project was targeted but it was not restricted to such farmers. In others words, AT India looked to develop the micro dairy or subsistence dairy sector and all

---

<sup>22</sup> The errors in this research are largely due to poor communication of the needed sample frame to the AC Nielsen India field team.

its farmer participants came from this group. The Baseline survey, in contrast, drew a sample of all levels of dairy farms in and near by the project region.

- 2) The project had a heavy representation of its participants in remote mountainous areas. The Baseline survey was drawn among farmers in more “accessible” areas (because the survey team said it could not get to the mountainous areas when the survey was carried out in December 2003).
- 3) The AT Project targeted women. In this area, which is largely Hindi, men own the land and cattle, are generally the head of household, and keep the financial accounts. Women in the family, however, tend the cattle, milk them, and produce and sell milk products. The Baseline survey included 55% male respondents in the control group and 8% male respondents in the participant group. This was because the field team found that the women could not answer the questions concerning the finances of the dairy business and the household in general and therefore felt that the male head of household had to be interviewed instead. Project women were both more likely to be head of household than the control were and, in any case, had more information on financial matters (in the very least because of contact with the project). Thus women were more generally likely to be interviewed by the Baseline team in the participant sample.
- 4) At the time the Baseline was conducted there were no BSPs (other than a few milk collectors or stud bull owners) working with (selling to) micro dairymen in the actual/proposed project zones (the watersheds of Pindar and Mandakini in the Chamoli and Rudraprayag districts) other than those working with the AT project.<sup>23</sup> Because the Baseline also surveyed large farmers, it included in the control group BDS providers who serviced them and thus included BSPs who were not, and would not be, available to the clientele of the project. It also included some state veterinarians (who were government employees of course) also not accessible to the micro dairymen - in part because of the distance of their service locations from the project areas. The numbers of BSPs appearing in the baseline, thus, contradicted the assertion, repeated even in the Baseline report itself, that the BDS market was virtually nonexistent in Chamoli and Rudraprayag when the project began.

Following these sampling problems, the lack of panel maintenance is equally troublesome. The field team for the follow up work could not provide the addresses/locations of the control farmers in the baseline. This is a serious handicap, ironically made less serious by the flaws in the original sampling, which would have required drawing a new sample for the follow up survey reflecting the project dairy farmer targets and their service providers in any case.

The team developing the follow up stage of this research had to decide if there would be a way to use the baseline results and, if not, could a single follow up survey based on both current and retrospective questions, together with focus groups, satisfy the requirements for a rigorous impact assessment.<sup>24</sup> The decision was to proceed in the research – with care. The results of the baseline survey were not discarded. The project participants originally interviewed had largely remained with the project<sup>25</sup> and averages of reported business conditions and practices of the women participant respondents in the baseline could be looked at and added to the information provided by the follow up survey of project participants, in particular comparing the

---

<sup>23</sup> Mukul Prakash, Director AT India, in a comment on the Baseline, January 5, 2006.

<sup>24</sup> Lucy Creevey and Momar Ndiaye began working with the Baseline data in an effort to revise the Baseline Report more than a year after the baseline research was done.

<sup>25</sup> AT India reported that 95% of those farmers who originally joined the project were with it until the end. See Final Project Report *op.cit.*

baseline group to those in the follow up from peri urban – or more accessible - areas. The emphasis was placed, of course, on the follow up retrospective survey results and comparisons within its participant and control samples.

The following Tables 4-6 present the basic elements of the Baseline Sample:

**Table 4: 2003 Baseline Study- Dairy Farmers (by location and grouping)**

Location	Program				Control			
	Male		Female		Male		Female	
	#	%	#	%	#	%	#	%
Remote village	0	0.00	0	0.00	12	8.51	4	3.51
Near town	7	100.00	81	100.00	129	91.49	110	96.49
Town/city	0	0.00	0	0.00	0	0.00	0	0.00
<b>Total</b>	<b>7</b>	<b>100.00</b>	<b>81</b>	<b>100.00</b>	<b>141</b>	<b>100.00</b>	<b>114</b>	<b>100.00</b>

**Table 5: 2003 Baseline Study- BDS Providers (by type of service & grouping)**

Type of Service	Program		Control		Total	
	#	%	#	%	#	%
Stud service provider	24	38.71	13	14.77	37	24.67
Milk collector	26	41.94	56	63.64	82	54.67
Veterinarian	10	16.13	8	9.09	18	12.00
Fodder producer	2	3.23	11	12.50	13	8.67
<b>Total</b>	<b>62</b>	<b>100.00</b>	<b>88</b>	<b>100.00</b>	<b>150</b>	<b>100.00</b>

**Table 6: 2003 Baseline Study- Consumers (by location and gender)**

Location	Male		Female		Total	
	#	%	#	%	#	%
<b>Rudraprayag</b>						
Remote village	0	0.00	0	0.00	0	0.00
Near town	53	63.10	13	41.94	66	57.39
Town/city	31	36.90	18	58.06	49	42.61
<b>Total</b>	<b>84</b>	<b>100.00</b>	<b>31</b>	<b>100.00</b>	<b>115</b>	<b>100.00</b>
<b>Chamoli</b>						
Remote village	0	0.00	0	0.00	0	0.00
Near town	79	56.83	26	56.52	105	56.76
Town/city	60	43.17	20	43.48	80	43.24
<b>Total</b>	<b>139</b>	<b>100.00</b>	<b>46</b>	<b>100.00</b>	<b>185</b>	<b>100.00</b>
<b>Total sample</b>						
<b>Remote village</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
<b>Near town</b>	<b>132</b>	<b>59.19</b>	<b>39</b>	<b>50.65</b>	<b>171</b>	<b>57.00</b>
<b>Town/city</b>	<b>91</b>	<b>40.81</b>	<b>38</b>	<b>49.35</b>	<b>129</b>	<b>43.00</b>
<b>Total</b>	<b>223</b>	<b>100.00</b>	<b>77</b>	<b>100.00</b>	<b>300</b>	<b>100.00</b>

## FOLLOW UP RESEARCH<sup>26</sup>

### i. Survey

The AC Nielsen Team set out the follow up sampling procedure as follows:

### ii. Microdairysts:

Project Microdairysts were sampled from the master list provided AC Nielsen by AT India. Based on the distribution of participants, the field team selected 37 operators of larger dairies (producing daily more than 2 liters of dairy milk) and 53 operators of 53 small dairies (producing less than 2 liters of milk daily) spread over the two watersheds randomly. The dairysts were also spread over Remote (Villages which are more than 4 km up or down hill from road-head), Non Remote Villages and Peri Urban Areas in the Ratio of 53: 31: 6, consistent with the overall participant distribution in the project. The total participant sample was 90 with 69% from Rudraprayag and 31% from Chimoli.

The control villages were selected from the census of India 2001. Eight villages where AT India was not active were selected from each of the districts randomly. In each village six interviews were initially conducted. The spread across large and small producers was decided only after reaching the village. The total control sample was 126 with 54% from Rudraprayag and 36% from Chimoli. The initial control sample of ninety included sixty three male respondents because the field team found many women, especially in the remote areas, unable to answer the survey questions about household finances. Their decision to interview men in such cases posed the same problem has had occurred in the Baseline. There is no legitimate way to compare participants for a project explicitly aimed at women conducting micro dairy activities with male head of households. It was the women who did these micro dairy activities who were needed to form the parallel sample. AC Nielsen was willing to (and did) conduct a follow up survey following the same set of rules for proportionality determined by project participant distribution as were used in the first round control survey. An additional thirty women respondents were added so that a true comparison could be made between control women respondents and the all-female participant sample. There were no significant differences between the first and second round groups of control women (and the two surveys were only three weeks apart).

**Table 7. 2007 Impact Study – Micro-dairies (by location and grouping)**

Location	Program				Control				Total			
	Male		Female		Male		Female		Male		Female	
	#	%	#	%	#	%	#	%	#	%	#	%
<b>Rudraprayag</b>												
Remote	0	0	32	51.61	16	34.78	24	72.73	16	34.78	56	58.95
Non remote	0	0	11	17.74	11	23.91	7	21.21	11	23.91	18	18.95
Peri urban	0	0	19	30.65	19	41.30	2	6.06	19	41.30	21	22.11
Total	0	0	62	100.00	46	100.00	33	100.00	46	100.00	95	100.00
<b>Chamoli</b>												
Remote	0	0	11	39.29	11	64.71	22	73.33	11	64.71	33	56.90
Non remote	0	0	12	42.86	6	35.29	8	26.67	6	35.29	20	34.48
Peri urban	0	0	5	17.86	0	0.00	0	0.00	0	0.00	5	8.62
Total	0	0	28	100.00	17	100.00	30	100.00	17	100.00	58	100.00

<sup>26</sup> See questionnaires and AC Nielsen Field report with results of focus group discussions in Annex 2.

			0	0	0	0	0	0	0			
<b>Total sample</b>												
<b>Remote</b>	<b>0</b>	<b>0</b>	<b>43</b>	<b>47.78</b>	<b>27</b>	<b>42.86</b>	<b>46</b>	<b>73.02</b>	<b>27</b>	<b>42.86</b>	<b>89</b>	<b>58.17</b>
<b>Non remote</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>25.56</b>	<b>17</b>	<b>26.98</b>	<b>15</b>	<b>23.81</b>	<b>17</b>	<b>26.98</b>	<b>38</b>	<b>24.84</b>
<b>Peri urban</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>26.67</b>	<b>19</b>	<b>30.16</b>	<b>2</b>	<b>3.17</b>	<b>19</b>	<b>30.16</b>	<b>26</b>	<b>16.99</b>
<b>Total</b>	<b>0</b>	<b>0</b>	<b>90</b>	<b>100.0</b>	<b>63</b>	<b>100.0</b>	<b>63</b>	<b>100.0</b>	<b>63</b>	<b>100.0</b>	<b>153</b>	<b>100.0</b>
				<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>

### iii. BDS Providers

Since AT India worked with all the BDS providers in the project zone, there was no control group. 203 BDS providers had worked with the AT India project. The AC Nielsen team took a sample of 100 BDS providers from the sampling frame provided by AT India's participant list.

**Table 8: 2007 Impact Study -BDS Providers (by district & type of service)**

Type of Service	Rudryaprayag		Chamoli		Total	
	#	%	#	%	#	%
Cattle Feed	8	12.12	4	11.76	12	12.00
Dairy	2	3.03	3	8.82	5	5.00
Composting	9	13.64	2	5.88	11	11.00
Artificial Insemination/ Para-vet	4	6.06	4	11.76	8	8.00
Insurance	4	6.06	0	0.00	4	4.00
Sub Collector	11	16.67	14	41.18	25	25.00
Collector	25	37.88	6	17.65	31	31.00
Stud-bull Provider	3	4.55	1	2.94	4	4.00
<b>Total</b>	<b>66</b>	<b>100.00</b>	<b>34</b>	<b>100.00</b>	<b>100</b>	<b>100.00</b>
						<b>0</b>

### iv. Consumers:

The sample of consumers was selected only after reaching the villages. For this purpose a snowball method was used and the sample was spread across both commercial (e.g. tea shops) and household consumers.

**Table 9: 2007 Consumers by district and type of consumer**

Type	Rudraprayag		Chamoli		Total	
	#	%	#	%	#	%
Domestic/HH	20	66.67	20	66.67	40	66.67
Commercial	10	33.33	10	33.33	20	33.33
<b>Total</b>	<b>30</b>	<b>100.00</b>	<b>30</b>	<b>100.00</b>	<b>60</b>	<b>100.00</b>

### v. Focus Group Meetings

The Focus Group discussions were conducted with the three different categories of participants in different villages (refer to table below):

**Table 10: Category wise distribution of Focus Group Discussions (FGD)**

SL	Category	Name of Village	# of Participants
1	BDS Providers	Rahdoo	06
2	Micro Dairysts (Program)	Barsal	10
3	Micro Dairysts (Control)	Semwal	15

### III. ANALYSIS OF AT INDIA PROJECT IMPACT ON BDS PROVIDERS

FGD: BDS PROVIDERS, VILLAGE: ROOMSHI (MAY 10, 2007)



AC Nielson 2006

**ROOMSHI  
VILLAGE MICRO  
BDS PROVIDERS  
DISCUSS PRODUCT  
DEVELOPMENT.**

#### PROJECT ACTIVITIES WITH BDS PROVIDERS

AT India identified interested BDS providers in the project zone and both trained them and linked them to useful sources (such as to financial institutions, feed companies and insurance companies). Village and watershed meetings of farmers and potential providers spread the information on what advantages these services would offer to farmers. Potential (and actual) BSPs were taken on “exposure trips” to other areas to see how such business services worked. AT Project personnel helped develop business plans for the different types of services offered. AT India used large numbers of demonstrations to actually show farmers the results of using such services. The AT India final report lists a total of 1031 demonstrations of winter fodder, 603 of summer fodder and 527 of monsoon fodder, 1008 demonstrations of cattle feed, and 751 demonstrations of urea treatment among others. The project also sponsored veterinary camps, 814 of which were organized for 403 villages producing a grand total of 12,893 animals vaccinated.<sup>27</sup>

#### AT India worked with eight types of business services for the micro dairy farmers<sup>28</sup>:

##### A. Cattle Feed Provider

These service providers were ones who sold specialized cattle feed to the farmers. Certain people were identified by the project for this purpose. Mostly these were people who already had a provision store or any such establishment. Initially a linkage was formed between these service providers and a feed producing

<sup>27</sup> AT India Final Report op.cit., Annexure 4.

<sup>28</sup> Explanation of types from Tathagata Dasgupta, Senior Manager, Centre for Social Research, AC Nielson, email, May 2007.

company called SP Solvents. This company provided free bags of fodder for these service providers to distribute to the farmers free of cost. Once the farmers used it and saw an improvement in the quality and quantity of milk, they were eager to buy this for their cattle. These service providers are basically the retailers of specialized feed that is beneficial for the cattle.

#### **B. Compost Service Provider**

This type of service provider does not sell services directly related to the milk production business, but, as per AT India, they were included to help the farmers have better fertilizers for their use. As most households have cattle, dung is commonly used in the fields as fertilizer. This dung is used to prepare compost, which increases its productivity. These service providers either prepare compost and sell it to the farmers or give specific advice to the farmers regarding usage and preparation of compost or both of the above. This service also helps in improving the productivity of the fodder that the farmers produce for themselves.

#### **C. Dairy Shop Owner**

Dairy shop owners are individuals who own a shop in the market where they can store and sell milk. They have been provided with specialized equipment like milk chillers to preserve milk for longer and further supply the milk. They buy their milk from the milk collectors.

#### **D. Collector and Sub-Collector**

The basic difference between these two BSPs is that a Sub-collector collects the milk from the farmers and sells to another collector, while a collector collects milk from, both directly from farmers and from such sub-collectors and supplies it to the market. There are certain villages, which are very remote, where the person collecting milk there cannot herself/ himself reach the market easily (a sub-collector). There is, then, another collector who comes to the nearest road head while he passes from the route and collects milk from this sub-collector. Then that collector supplies milk to the dairy shops or other buyers.

#### **E. Stud Bull Service**

This service provider owns a bull whose services are sold to farmers to increase their herds and/or improve the quality of their livestock.

#### **F. Artificial Insemination and Para-Vet Services**

These service providers are trained to offer artificial insemination to increase/improve the dairy herd and also to offer some basic veterinary services such as vaccinations for the animals.

#### **G. Insurance**

Typically before the AT Project was started, a micro or subsistence farmer would not have general or life insurance. These providers were connected with life insurance companies and trained to offer this option to the farmers.

The objective of the work of the AT India project with BDS providers was, as stated above, to increase the demand for and supply of BDS. This required creating a market for BDS and making service provision to very small dairy businesses in the project zone profitable and sustainable by creating economies of scale which had not existed.

## Analysis of Hypotheses

### Hypothesis I:

1. **Growth of the subsector (the product market) will result in increased demand for BDS services and therefore more opportunities for providers.**
  - (i) Facilitation activities aimed to increase awareness about BDS will result in increased demand for BDS services and therefore more opportunities for providers.
  - (ii) Provider access to credit will result in greater supply of services for MEs and improved, more sustainable businesses for providers.
  - (iii) Organizing SHGs can reduce the costs of delivering BDS and increase the affordability of services and thus contribute to the profitability of service provision.

The major problem for demonstrating the impact of AT India on BDS providers is in fact its success! Where, prior to the project, there were no BSPs (other than a few milk collectors and stud bull owners) working with subsistence dairy farmers in the zone, after its closure, AT India reported 203 including those who were there when the project started. There can be no control group in such a circumstance so the counterfactual can not be compared to the actual results achieved for program participants. However, indirectly, by looking at the dairy farmers themselves, including both an experimental and control group, we will be able to see if there is a significant difference in demand for BDS in these two groups, whether attending demonstrations improved demand, and whether membership in SHGs is related to demand. All these questions will be addressed in the next section. Here we can look directly at how these providers' businesses grew and developed over the project years and how their incomes from BDS activities were changed.

### 2. Did AT India have a significant Impact on the BDS Market for Subsistence Farmers?

To explore the overall hypothesis we first looked at the question of whether we could show a high probability that the average income from sales of business services (offered to subsistence dairy farmers) had increased from the beginning of the project to the end of 2006.

We compared the BDS participants from the 2003 Baseline survey to the BDS providers in the 2007 survey. We then looked at the results of the 2007 survey, in which we:

- asked respondents for sales income from BDS in both 2003 and 2006;
- calculated net profit in 2007 from BDS (after expenses and sales income had been compared); and,
- asked whether the respondents believed their profits had improved, stayed the same or fallen from 2003 to the end of 2006.

The result of the t-test (see table 11) shows that BDS sales in 2007 were significantly higher than in 2003 ( $p < .05$ ). This result should, however, be qualified since it does not take into account the average inflation rate for India. Inflation may be lower in the project zone, which is mostly rural, than in more urban areas of India and we can not control for this although it will make gains lower than they probably are between the

two years. Taking the overall inflation rate<sup>29</sup>, we show, in Table 12, a positive change in net profits, but it is NOT statistically significant.

**Table 11: Total Sales of BDS Providers in 2003 and 2007**

Dependent Variable	N	Mean	Std.Deviation	Std.Error Mean
Baseline	60	62,358.08	6,570.98	17,651.67
Follow Up	100	107,614.90	6,030.74	12,078.42

**Table 12: Total Sales of BDS Providers in 2003 and 2007, Controlling for Inflation**

Dependent Variable	N	Mean	Std.Deviation	Std.Error Mean
Baseline	60	62,358.08	6,570.98	17,651.67
Follow Up	100	89,679.05	100,653.49	10,065.35

Looking at the 2007 survey alone we could study the differences in the eight specialized types of service providers and see what kind of sales (from BDS) each had and whether they experienced growth in net profit over the project period. The actual average monthly sales income reported for 2007 differed strongly by type of service. Among the largest group in our sample, the average monthly income was 9,057.89 INR for sub-collectors (\$209.67) and 14,393.82 INR for collectors (\$333.19).<sup>30</sup> However, even those earning less (such as stud bull service providers) believed their income from BDS had in fact improved. Eighty seven percent reported that their profits had gone up either somewhat or a great deal. (Ten percent did not respond which could have meant they were unsure or perhaps they had only recently joined the project – in any case it did not necessarily imply a negative for the growth in their sales/net profit since joining AT India- See Table 13).

**Table 13: Would you say your business profits (from BDS) were:**

- much higher in 2003 than 2006?
- somewhat higher?
- the same?
- somewhat lower?
- much lower?

Service Group	Somewhat higher in 2003	Same	Somewhat Lower in 2003	Much lower in 2003	Not Applicable	Total
<b>Cattle Feed</b>			7	2	3	12
<b>Dairy</b>	1		2	2		5

<sup>29</sup> Inflation rates: 2004 – 3.8%, 2005- 5%, 2006 – 4%, 2007 – 6%

<sup>30</sup> This was also the largest group within the AT India BDS group (51% of the AT India BDS participant list are collectors or sub collectors). AT India reported a higher average monthly for collectors than found in our study. However they had the total population of milk collectors including several large earners (for example in Akaskamina, Kulsari and Parkhai where the average monthly income of the three largest milk collectors was almost three times that of the overall group average). The difference in our average income and theirs, therefore does not necessarily indicate error on either side. (see AT India Final Report, *op.cit*, Annexure 4). The exchange rate used in this report is \$1 = 43.2 INR.

<b>Composting</b>			8	2	1	11
<b>Artificial Ins. para-vet</b>		1	4		3	8
<b>Insurance</b>			1	1	2	4
<b>Subcollector</b>	2	2	20	1		25
<b>Collector</b>			23	8		31
<b>Stud Bull Provider</b>		1	2		1	4
<b>Total</b>	<b>3</b> <b>(3%)</b>	<b>4</b> <b>(4%)</b>	<b>67</b> <b>(67%)</b>	<b>16</b> <b>(16%)</b>	<b>10</b> <b>(10%)</b>	<b>100</b>

### 3. Impact of access to credit and training on BDS sales:

Hypothesis 1: ii posited that access to credit would significantly increase the sales of business services. We therefore compared BDS personnel with loans to those who had not received them during the project period (Table 14):

**Table: 14: Relationship between BDS Provider Access to Loans and Net Profits 2006**

**Did you take any loans between 2003 and 2006 for providing business services to farmers and dairy/animal husbandry activity?**

		<b>N</b>	<b>Mean</b>	<b>Std Deviation</b>	<b>Std Error Mean</b>
<b>Net Profits in 2006</b>	Yes	26	119535.5769	114843.32374	22522.62880
	No	68	99341.8235	112967.11755	13699.27523

Although those with loans had a higher average net profit in 2006, the mean difference was not significant ( $p > .05$ ). We could not support the sub hypothesis although, over a longer period of time and with a larger sample, it still may be a warrantable assumption. The one further question we asked in regard to loans was whether there would be a significant relationship with higher profits demonstrated within some of the sub categories of service providers. In fact all types other than the collectors showed higher levels of profits if they had loans but these findings could not be considered significant because the numbers were too small.

**Table 15: Access to Loan by Type of Service Provided and Net Profits**

<b>Considering 'Access to Loan'...</b>							
	<b>Yes</b>		<b>No</b>		<b>Total</b>		<b>Mean Difference</b>
	Mean	Total N	Mean	Total N	Mean	Total N	
Cattle Feed	143,300.00	3	93,205.56	9	105,729.17	12	50,094.44
Dairy	195,956.67	3	101,750.00	2	158,274.00	5	94,206.67
Composting	3,906.67	3	7,612.50	8	6,601.82	11	-3,705.83
Artif. Insem/ Para-vet	No Loan	1	8,591.67	7	8,591.67	8	
Insurance	No Loan	1	4,866.67	3	4,866.67	4	
Sub Collector	116,036.67	3	104,408.29	22	105,861.83	25	11,628.38
Collector	140,610.42	12	178,540.53	19	163,857.90	31	-37,930.11
Stud-bull Provider	21,500.00	2	9,350.00	2	15,425.00	4	12,150.00

Total	119,535.58	28	96,756.34	72	102,925.72	100	22,779.23
-------	------------	----	-----------	----	------------	-----	-----------

We also looked at whether or not those BDS providers who reported receiving training did experience significantly higher average net profits. Here again we did not find a significant relationship between training and higher net profits, indeed if there is any indication in the data it was the reverse. However, the question – and the test - may have been poorly conceived. AT India sent various BDS providers for training depending on their specialty of service. For some of these (for example those offering AI and para vet services) the training was essential and important, whereas, for milk collectors, who had higher overall sales in any case, it was linkages to SHGs and perhaps help with business organization that was essential and not training. The numbers of BDS providers other than milk collectors and sub-collectors are too small to test the impact of training per se. Table 16 breaks out the types of service, training appears to be important to those offering AI/Para Vet services and selling insurance. It seemed to be a factor in the higher net profits of stud bull service providers and was associated with higher net profits among collectors (but not sub collectors). But, again, the numbers are too small to allow any assertion of a significant relationship.

**Table 16: Access to Training by Type of Service and Net Profits**

Considering "Access to Training" ..							
	Yes		No		Total		Mean Difference
	Mean	Total N	Mean	Total N	Mean	Total N	
Cattle Feed	107,270.00	5	104,628.57	7	105,729.17	12	2,641.43
Dairy	92,823.33	3	256,450.00	2	158,274.00	5	-163,626.67
Composting	5,802.86	7	8,000.00	4	6,601.82	11	-2,197.14
Artificial Ins./ Para-vet	8,110.00	7	.	0	8,110.00	7	
Insurance	4,866.67	4	.	0	4,866.67	4	
Sub Collector	84,415.71	7	114,692.59	18	105,861.83	25	-30,276.87
Collector	219,206.54	13	123,883.89	18	163,857.90	31	95,322.65
Stud-bull Provider	23,500.00	2	7,350.00	2	15,425.00	4	16,150.00
Total	97,737.44	48	109,433.68	51	103,893.36	99	-11,696.24

The second Hypothesis in regard to the BDS providers themselves was concerned with their own personal and business characteristics and the way these affected net profits.

## Hypothesis II:

**Demographic characteristics, location and size of business at the outset will affect the degree to which providers take advantage of capacity building and new market information.**

- i. Younger and better educated providers will be more pro-active and therefore will have larger increases in sales.
- ii. Male BDS providers will have a higher level of net profits than females within the same service subgroup.

We were able to support the first sub hypotheses in regard to age and net profits where these did prove to be negatively correlated. Younger BDS providers did significantly better than older ones at the 10% level of significance (Table 17). Education (the second factor in this sub hypothesis) did not have the proposed effect,

which may be due to the type of service and the target population. AT India was working to get poor people with a moderate amount of education to have successful businesses and thus helped tailor relatively simple business plans appropriate to potential and actual entrepreneurs in the project zone. Not surprisingly there was a positive impact from education but this was only significant at the educational extreme – post graduate education did significantly relate to higher net profits (the significance level was .05). The other levels of education did not have a significantly positive relationship to higher levels of profits even tested those who were not literate (Table 18).

		<b>Age in Completed Years</b>	<b>Net Profits in 2007</b>
<b>Age in Completed Years</b>	Pearson Correlation	1	-.182
	Sig. (2-tailed)		.076
	N	100	96
<b>Net Profits In 2007</b>	Pearson Correlation	-.182	1
	Sig. (2-tailed)	.076	
	N	96	96

<b>Level of Education</b>	<b>N</b>	<b>Mean</b>	<b>Std Deviation</b>	<b>Minimum</b>	<b>Maximum</b>
Illiterate	3	35,893.33	29,010.48	3,500.00	59,480.00
Literate but no formal education	2	41,465.00	48,146.90	7,420.00	75,510.00
Up to Primary	5	50,324.00	44,300.42	4,500.00	111,100.00
Up to Middle	32	83,851.69	106,303.58	800.00	435,600.00
Up to Matriculation	17	110,232.94	82,249.86	2,000.00	247,000.00
Up to Intermediate	22	133,973.86	137,438.52	5,400.00	474,000.00
Up to Graduation	11	99,168.18	100,216.32	3,600.00	309,700.00
Above Graduate	4	210,787.50	206,293.84	200.00	435,000.00
Total	96	102,925.72	112,881.22	200.00	474,000.00

As a coda to this, we looked at the only large sub group within the BDS providers, the milk collectors and sub collectors, to see if there was a significant relationship between, either, age or education, generally, and net profits. In fact it was the case that among sub-collectors (not collectors), age and education was significantly related to higher net profits – younger, more educated BSPs had significantly higher profits.

**Table 19: Relationship between Age and Education and Net Profits among Milk Sub-collectors**

	<b>Unstandardized Coef.</b>		<b>Standardized Coef.</b>	<b>t</b>	<b>Sig.</b>
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
(Constant)	121615.24	108271.06		1.12	0.27
<b>Q5 Highest completed level of education of respondent</b>	29623.36	12762.59	0.41	2.32	0.03
<b>Q3 : Age In Years</b>	-4639.94	2126.38	-0.38	-2.18	0.04

The final demographic characteristic of the BDS providers whose impact on sales, service and profits we explored was gender. Like the assumption that youth and education would predict to higher sales and net profits for service providers, we hypothesized that women would have lower profits than men. This was based on the fact that women generally are less likely to be permitted to operate commercial businesses (other than selling agricultural products), have restrictions in freely traveling for business, and most must fulfill a double burden of domestic and well as business obligations. They also in general in rural areas have lesser education than men - in fact in Chamoli, 68% of the men are literate but only 34% of the women.<sup>31</sup> A first point to re-emphasize is that women do not provide all of the business services that AT India supported. On the AT India list of participants, there were no women stud bull keepers, no women among the artificial insemination/para vet providers, no women dairy shop owners and no women feed service providers. All of the insurance providers were women, and many of the composting service providers and sub collectors were women.<sup>32</sup> There is, of course, a significant difference in levels of net profits for different service activities with milk collectors having a significantly higher income than other categories. Nonetheless, we looked at the overall difference between women BSPs and men BSPs to find that our hypothesis was generally supported at a .00 level of significance (Table 20). This difference was born out when looking at the two sub groups with more women: collectors and sub-collectors. Among the collectors, women had average net profits two thirds lower than did men while, among the sub collectors, women's average net profits were one fourth of the average for men.<sup>33</sup> It should be noted in concluding this section, that the most important point in reviewing the impacts of this study in regard to gender issues is that AT India was able to include women among its providers. Our results here suggest that women face greater difficulties in making their businesses successful but we also do not have any data to show what incomes they otherwise would have from their prior economic activities. It seems probable that if we did, we could show a high percentage increase in what they are now able to earn by being involved in a Business Services enterprise and quite possibly that this percentage increase is higher than their male counterparts who had other options.

**Table 20: Gender and Net Profit among BDS Providers**

<b>Group Statistics</b>				
	Gender of Respondent	N	Mean	Std. Deviation
Net Profit in 2007	Male	43	163,270.35	128,826.76
	Female	12	49,971.17	25,863.74
<b>Independent Samples Test: t-test for Equality of Means</b>				
t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
3.01	53	0.00	113,299.18	37,638.26
5.39	50.95	0.00	113,299.18	21,016.80

<sup>31</sup> Uttaranchal website, May 2007.

<sup>32</sup> List sent by AT India to AC Nielsen. List does not designate who is a woman and who a man but Tathagata Dasgupta, Senior Manager of AC Nielsen, indicated for this report who were women on the list.

<sup>33</sup> Again these differences are not significant because the pool of women respondents is too small.

## IV. ANALYSIS OF AT INDIA PROJECT IMPACT ON SUBSISTENCE DAIRY FARMERS

FGD: MICRO DAIRYSTS (PROGRAMME), VILLAGE: BARSAL (MAY 10, 2007)



BARSAL VILLAGE  
MICRO DAIRYISTS  
ADDRESS  
QUESTIONS TO  
TRAINERS.

## IV. ANALYSIS OF AT INDIA PROJECT IMPACT ON SUBSISTENCE DAIRY FARMERS

### Project Activities with Farmers

One of the key strategies for the AT India project was the formation of Self Help Groups (SHGs) among project women. Typically these are groups of fifteen to twenty women from the same or adjoining villages (or, in other circumstances, within neighborhoods in towns or villages). The purpose of these groups is to facilitate communications and make economies of scale possible for savings and credit schemes. For example, women in an SHG may pool their small amount of cash so that each in turn has money to buy what they need - like improved fodder for the cows, or vaccines or paying a milk collector as in the case of this project. They are also serving as a base for communicating new ideas and demonstrating new techniques to micro dairymen. Mutually Aided Cooperative Societies (MACs) are federations of SHGs which can form linkages with banks and establish savings schemes (thus enabling loans to poor women not otherwise available). The emphasis on SHGs is not an innovation by AT India. These have been seen as a useful means of organizing poor women and are a fairly widespread phenomenon even in more remote rural areas. For example, twenty five percent of the women in the baseline control group belonged to an SHG although they had no connection with AT India.<sup>34</sup>

<sup>34</sup> See discussion in Development of Humane Action Foundation (DHAN), "Development of Shelter and Infrastructure in Urban Slums by Federations of Savings and Credit Groups: Kalanjiam Experience," (June 2002).

As reported above, AT India was very successful in making SHGs a basis for their activities in Uttarakhand. By the end of the project, they had organized a federation (a MAC called Ushamath Mahila Mahasangh (UMM)) made up of 616 SHGs with 6,780 members. The UMM has disbursed loans to 225 members of 192 SHGs and set up a further loan scheme with the Small Industries Development Bank of India. It also developed linkages with 22 Primary Agricultural Cooperative Societies (PACs). UMM also established a partnership with the National Insurance Company Ltd and Life Insurance Corporation of India. A total 3,020 women in the project were able to obtain policies.<sup>35</sup>

AT India, through the SHGs, helped organize sub collectors of milk, linking them to the collectors and establishing 11 small milk grids at different semi urban locations to (increase) the sale of milk.<sup>36</sup> In these activities, AT India was establishing access to markets which had not previously existed for small subsistence dairy farmers in the region. Milk production of these farmers was in turn increased through numerous demonstrations and vaccination camps (cited in the BDS section above) illustrating improved seed, ways of growing better cattle fodder, health needs of cattle etc. The availability of micro loans, through the project, in addition, allowed the purchase of health services for cattle, fodder or seed etc.

### Looking at Project Impacts on Micro Dairy Farmers

A principal underlying hypothesis for this section of analysis is that subsistence dairy farmers working with AT India in SHGs will have significantly higher sales and net profits than those who did not receive help from the project. This assumption reflects the combinations of assets which AT India was making available to the project participants including (but not limited to): SHG formation/ support, demonstrations, market linkage through development of sub collector/collector business and milk grids, and through SHG membership in UMM, access to loans and insurance.

In an initial comparison between the 2003 survey results and the 2007, we found that participants had indeed significantly increased their sales and their net profits (Table 21).<sup>37</sup> This should be clarified to indicate that if the average inflation rate for India during this period is taken into account, the value of reported sales and income in 2006 becomes less. Inflation may be lower in the project zone, which is mostly rural, than in more urban areas of India and we can not control for this although it will make gains lower than they probably are between the two years. However, taking into account the overall inflation rate<sup>38</sup>, we show again in Table 22 a significant gain in net profits.

**Table 21: Total Sales and Net Profits from Dairy Business of Program Participants in 2003 and 2007**

---

Earlier there was an effort to reach poor rural women in India through a dairy cooperative movement with a village banking system. See discussion in Lynn Bennett, Women, Poverty and Productivity in India, World Bank 1992.

<sup>35</sup> AT India Final Report *op cit.*, p. 4. See also Annexure 3.

<sup>36</sup> *Ibid.* p.7

<sup>37</sup> We could not use the 2003 control women in this comparison since there were many farmers in the sample who could not be classified as subsistence dairymen. It should also be noted that the original follow up sample included ninety participant women, sixty three control men and thirty three control women. As in the baseline, the enumerators found that women could not answer the financial questions and, when they could not, switched to an interview with the head of household with the women present. Because this introduced the problem of gender difference in context and interpretation, AC Nielsen did a second control survey of thirty women using the same sampling parameters as in the first round. Only the women control respondents are used in our analysis – see discussion in Section II.

<sup>38</sup> Inflation rates: 2004 – 3.8%, 2005- 5%, 2006 – 4%, 2007 – 6%

Dependent Variable	(I) Category by Period	Mean	(J) Category by Period	Mean	Mean Difference (I-J)	Std. Error	Sig.
Total Sales	Program in 2007 (*)	10,024.54	Program in 2003	3,453.57	6,570.98	866.45	0.00
Net Profits	Program in 2007 (*)	9,483.32	Program in 2003	3,452.58	6,030.74	864.39	0.00

\*The mean difference is significant at the .05 level.

**Table 22: Total Sales and Net Profits from Dairy Business of Program Participants in 2003 and 2007, Controlling for Inflation**

Dependent Variable	(I) Category by Period	Mean	(J) Category by Period	Mean	Mean Difference (I-J)	Std. Error	Sig.
Total Sales	Program in 2007 (*)	8,353.79	Program in 2003	3,453.57	4,900.22	770.19	0.00
Net Profits	Program in 2007 (*)	7,902.77	Program in 2003	3,452.58	4,450.19	768.59	0.00

\*The mean difference is significant at the .05 level.

Turning to the more cutting question of whether in 2007 those who were not in the AT India project were doing as well in terms of dairy sales and net profits as women who were, the results were not conclusive. It appears that subsistence dairy farmers in the area as a group did better over the period from 2003 through 2006. Participant women did have a higher average level of net profits<sup>39</sup> but the difference was not very large – Table 23 (Participant: average net profits 9,483 INR or \$219.51, Control: average net profits 8,789 INR or \$203.45) and was not significant). And, indeed, both sets of women dairymen felt they had higher net profits in 2006. AT India participants were only somewhat (not significantly) more likely to say that they had higher profits in 2006 than others and somewhat less likely to say they had higher profits in 2003.

**Table 23: Net Profit from Dairy Business of Program Participants and Control Respondents in 2007**

Dependent Variable	(I) Category by Period	Mean	(J) Category by Period	Mean	Mean Difference (I-J)	Std. Error	Sig.
Net Profits	Program in 2007	9,483.32	Control in 2007	8,788.65	694.671	1125.521	0.990

**Table 24: Opinion on Increase in Net Profits from Dairy Business**

	Program	Control
Had higher net profits in 2003	4 (5%)	7 (12%)
Had same net profits in 2003	8 (9%)	5 (8%)
Had lower net profits in 2003	76 (86%)	47 (80%)
Total	88 (100%)	59 (100%)

There remains, of course, the question if there was a spill-over effect from AT India project to nearby villages which would mean that the project indirectly caused the growth of the market and the rise in net profits for

<sup>39</sup> Sales and net profits were closely linked in the 2007 survey and after testing the relationships between each and the other independent variables we consider and finding the results the same, we decided to use the net profit figure to simplify (and shorten) the presentation.

other dairy farmers with whom they had no contact. There is no way of testing for this, however, there is a way of testing whether the key strategies of the AT India project were in fact significantly related to higher sales and profits. AT India worked through SHGs. These, as noted above, already existed when the project started but AT India helped its participants to either revive existing SHGs or form new ones. The project, at its end, had promoted 616 of these groups, which were linked into UMM and thus tied into a financial network. We looked at whether this key strategy could be the best predictor to higher increased net profits. The specific hypotheses explored were as follows:

### Hypothesis III:

**The organization of SHGs will lead to increased access to, improved affordability of, and greater use of, business services and therefore improved firm performance.**

- (i.) Farmers who form collective groups (SHGs) will be more likely to obtain access to BDS than will farmers who do not form such groups;
- (ii.) Farmers in SHGs will therefore have more sales and a higher profit margin than those not involved;
- (iii.) Farmers who are trained by the project – who attend demonstrations and training sessions - will be more likely to purchase BDS goods and services (and those in SHGs will purchase more on average than those not).

Initial tests showed that, indeed, AT India participants were significantly more likely to belong to an SHG than were respondents not in the project (Table 25). Eighty seven percent of the participants were SHG members and only 37% of the control women were. The difference is significant at  $p = .000$ .

**Table 25: Membership in SHG by Program and Control Respondents**

	Yes	No	Total
<b>Program</b>	82 (87%)	8 (9%)	90 (100%)
<b>Control</b>	23 (37%)	40 (64%)	63 (100%)
<b>Total</b>	105 (100%)	48 (100%)	153 (100%)

The next logical question is whether belonging to an SHG relates to the level of net profits experienced. According to our hypothesis there should be a significant relationship and, in fact, there is as shown in Table 26 although the level of significance is only  $p = .06$ . Members of SHGs did receive higher average net profits (mean of 9,901.04 INR or \$229.19) as compared to non members (mean of 5,630.96 INR or \$130.34). There is no strong relationship between AT India SHGs as opposed to other SHGs and net profits. Those belonging to an SHG related to the AT India project had a slightly higher average net profit but the difference was not significant (9,899.04 or \$229.14 versus 9,178.26 or \$212.46).

**Table 26: Membership in SHG and Net Profit**

t-test for Equality of Means								
Net Profits in 2007	Do you belong to a SHG?	N	Mean	Std. Deviation	Mean Difference	t	df	Sig. (2-tailed)
	Yes	105	9,901.04	7,213.19	2,243.23	1.90	151	0.06
	No	48	7,657.81	5,630.96				

(iv.) Purchase of Business Development Services by subsistence dairy farmers – the creation of the BDS market among subsistence dairy farmers - was a major objective of the AT India project, with the ultimate goal of improving the quality and quantity of milk and milk products sold by those farmers. Thus we explored how working with AT India related to purchasing BDS and how purchase of BDS related to net profits.

#### Hypothesis IV:

**As a result of access to fodder, stud services, vet services, and marketing/collection services, micro dairy MEs will find new market outlets and experience a greater volume of production, sales and profits.**

- I. Farmers who purchase more BDS products and services (or purchase for the first time) will experience an increase in sales translating into an increase in the net profit of their business.
- II. Farmers who purchase BDS will have better levels of sales, better and more varied quality of products and higher profit levels than those who do not and who had the same size/kind of dairy establishment at project beginning

Leaving aside dairy collection services which all dairymen needed to access<sup>40</sup>, there is a significantly greater likelihood of AT India farmers purchasing some business development services. They were significantly more likely to purchase Seeds ( $p = .000$ ) and Vaccines ( $p = .000$ ). Respondents who were not working with AT India, however, were significantly more likely to buy Medicine for their cattle ( $p = .000$ ). (Whether or not this is related to the fact that they were less likely to buy vaccines to prevent illnesses can not be shown here.)

**Table 27: Participation in Project and Purchase of BDS (% of total group)**

	Seeds	Vaccines	Medicines	Total in Group
<b>Participants who purchased</b>	32 (36%)	36 (40%)	16 (18%)	90
<b>Control who purchased</b>	7 (11%)	9 (14%)	23 (37%)	63

Membership in a Self Help Group *per se* without controlling for whether or not the respondent was in the AT India program was also related to purchasing BDS. Those who belonged to an SHG were slightly more likely to buy seeds and medical services although the differences were not significant. Membership in an SHG DID relate to buying vaccines which difference is significant at  $p = .000$  (36% of SHG members versus 15% of non members) .

The final question regarding BDS is whether purchase of it relates to higher net profits. Our findings indicate that for participants purchasing seeds ( $p = .10$ ) and especially purchasing vaccines ( $p = .05$ ) DID significantly relate to achieving higher net profits (Table 28).

**Table 28: Purchase of BDS and Level of Net Profit (Program ONLY)**

	Bought Seeds	N	Mean	Std. Deviation
<b>Net Profits in 2007</b>	Yes	32	11,164.75	7,596.97

<sup>40</sup> The field team found that all the respondents used dairy sub collector or collector services to whom they paid a commission (rather than a flat service fee). Email Tathagata Dasgupta, June 15, 2007.

	No	58	8,555.64	6,172.12
<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>	<b>Mean Difference</b>	<b>Std. Error Diff</b>
<b>1.77</b>	<b>88</b>	<b>0.081</b>	<b>2,609.11</b>	<b>1,477.30</b>

	<b>Bought Vaccines</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Net Profits in 2007</b>	Yes	36	11,360.36	7,818.81
	No	54	8,231.96	5,745.97
<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>	<b>Mean Difference</b>	<b>Std. Error Diff</b>
<b>2.19</b>	<b>88</b>	<b>0.031</b>	<b>3,128.40</b>	<b>1,430.48</b>

A further question relates to whether purchase of BDS is a direct result of attending the many demonstrations and camps held by AT India. This could not be analyzed here because the question was poorly phrased (asked about “formal training”) and apparently was not properly understood by the respondents. It is true that 13 (14%) of the participants said they had received formal training while only 4 (6%) of the control group had, suggesting more exposure to AT India participants.<sup>41</sup> But it is doubtful that only 13 had either been to a camp or several demonstrations or had someone in their SHG at a demonstration or vaccination camp. It is interesting, though, that the four control had clearly been only to a vaccination/animal health camp or demonstration while the AT India women reported broader training going beyond the vaccination camp – how to identify animal diseases, how to treat them, how to prevent them, how to grow green fodder and how to do dairy processing.

Because individual characteristics and circumstances frequently affect the income generating capability of an entrepreneur, this study also considered whether age, education, gender of the head of household, size and location of the farm affected the level of net profits.

### **Hypothesis V:**

Demographic characteristics, location and size of farm will affect the likelihood of farmers purchasing inputs business services and the level of their net profits.

Younger, better -educated farmers are more likely to purchase BDS services and will have higher net profits;

- I. Women farmers will continue to be less likely than males to purchase services and will have lower net profits although women connected to the project will be significantly more likely than women who are not to do so;
- II. Farmers with larger farms are more likely to purchase collection services and veterinary goods and services than those with smaller enterprises at project outset;
- III. Dairyists in more remote areas will be less likely than those in areas closer to urban centers to purchase collection services, fodder and veterinary goods/services.

Age was not related to level of net profit or purchase of BDS. Nor was education related to either variable although there was a tendency which was not statistically significant for those with some education to have slightly higher net profits (Table 29).

<sup>41</sup> This result is not statistically significant because of the small numbers involved.

**Table 29: Education and Net Profit**

<b>Participants Only</b>			
	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Illiterate	22	8,037.32	4,599.68
No Formal	16	9,759.25	7,600.47
Some Education	52	10,010.19	7,314.34
<b>Total</b>	<b>90</b>	<b>9,483.32</b>	<b>6,788.07</b>

<b>ANOVA</b>					
<b>Net Profits in 2007</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>		
	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	61,653,375.81	2	30,826,687.90		
Within Groups	4,039,284,349.85	87	46,428,555.75	0.66	0.52
<b>Total</b>	<b>4,100,937,725.66</b>	<b>89</b>			

The actual hypothesis relating to gender, that was originally formulated, asks whether women farmers are likely to have lower net profits than male ones but the question or relationship, derived from other studies where both sexes did dairy farming activities, was inappropriate for the project.

Dairy farming activities are generally carried out by women even if men own the farms and the cows themselves as was the case in this region. The only gender relationship we could explore was whether male headed households had higher levels of net profits than did female headed ones under the theory that women headed households had less access to basic inputs to the farming enterprise. Our findings showed this not to be true.

If anything, at least among program participants, women-headed households had slightly higher net profits than male headed ones but the differences were not significant (Table 30).

**Table 30 : Gender of Head of Household and Level of Net Profits 2006**

	<b>Male Headed Households</b>	<b>Female Headed Households</b>	<b>Total</b>
<b>Participants no.</b>	67	23	90
<b>Mean net profit</b>	9,322.90	9,950.65	9,483.32
<b>Control no.</b>	50	13	63
<b>Mean net profit</b>	8,801.50	8,739.23	8,788.65

Size of the dairy enterprise was also expected to be directly related to size of net profit of the dairy enterprise. This was evidently so with smaller enterprises (producing less than 2 liters of milk a day) showing significantly lower net profits than did larger producers (2 liters or more). The results were significant at  $p = .000$  (Table 21).<sup>42</sup> Farmers with larger farms were also significantly (at the 5% level) more likely to purchase BDS services as indicated in Table 32.

Farmers with both large and small farms, however, were almost equally likely to say that they thought had done better in 2006 than in 2003 (85% of small farms and 86% of large farms among the participants).

**Table 31: Size of Farm and Level of Net Profit - All**

	<b>Type of farm</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
--	---------------------	----------	-------------	-----------------------

<sup>42</sup> The same result is shown if only the program participants are tested.

Net Profits in 2007	Small	97	6,824.08	5,431.13
	Large	56	13,308.00	7,061.83
T	df	Sig. (2-tailed)	Mean Difference	Std. Error Diff
-6.36	151	0.000	-6,483.92	1,019.72

**Table 32: Purchase of BDS and Production of Milk Participants Only**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
No Purchase	32	539.13	365.85
One BDS Purchase	36	699.67	329.41
Two BDS Purchases	18	767.22	484.26
Three BDS Purchases	4	1305.00	399.12
Total	90	683.00	407.23

**ANOVA (LSD)**

<b>(I) # of BDS Purchases</b>	<b>(J) # of BDS Purchases</b>	<b>Mean Difference (I-J)</b>	<b>Sig.</b>
Three BDS Purchases	No Purchase	765.88	0.000*
	One BDS Purchase	605.33	0.003*
	Two BDS Purchases	537.78	0.012*

\* The mean difference is significant at the .05 level.

Another query in the study explored whether the location of the farm would *ipso facto* affect the level of net profit with the assumption being that those who are the most remote would have the most difficulty in finding markets for their products. The follow-up survey selected dairymen spread over Remote Villages (which are more than 4 km up or down hill from road-head), Non Remote Villages and Peri Urban Areas (close to larger towns) in the Ratio of 53: 31: 6.

After looking at location and level of net profit, we found the results do not support this hypothesis. To the contrary, Remote farmers did better than the Non Remote ones and almost did as well as those closest to bigger towns (with presumably easier access to markets). The difference was not significant if both participants and control were combined but was significant among the AT India program participants. The data do not suggest an explanation for this result but at least do show that farmers in remote zones can benefit from the same set of factors as others and can grow their businesses at least as well as others.<sup>43</sup>

**Table 33: Remoteness of Farm and Level of Net Profit - All**

<b>Net Profits in 2007</b>				
	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Remote	89	9,419.10	7,766.26	823.22
Non remote	38	7,695.45	4,530.99	735.02
Peri urban	26	10,632.96	5,852.08	1,147.69
<b>Total</b>	<b>153</b>	<b>9,197.28</b>	<b>6,818.68</b>	<b>551.26</b>

**No significant differences noticed**

<sup>43</sup> Our results did show that farmers in Rudraprayag did better than those in Chimoli (had significantly higher net profits) but further research would be necessary to find out if this reflects project organization in the two zones or market conditions.

**Table 34: Remoteness of Farm and Level of Net Profit – Participants Only**

<b>Net Profits in 2007</b>				
	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Remote	43	10,420.58	8,007.89	1,221.19
Non remote	23	6,476.39	3,871.74	807.31
Peri urban	24	10,685.71	5,888.14	1,201.91
<b>Total</b>	<b>90</b>	<b>9,483.32</b>	<b>6,788.07</b>	<b>715.53</b>
Multiple Comparisons Dependent Variable: Net Profits in 2007				
<b>(I) Location</b>	<b>(J) Location</b>	<b>Mean Difference (I-J)</b>	<b>Std. Error</b>	<b>Sig.</b>
Remote	Non remote	3,944.19	1,711.89	0.02*
	Peri urban	-265.13	1,688.49	0.88
Non remote	Remote	-3,944.19	1,711.89	0.02*
	Peri urban	-4,209.32	1,933.66	0.03*
Peri urban	Remote	265.13	1,688.49	0.88
	Non remote	4,209.32	1,933.66	0.03*

(\*) significant differences noticed at the .05 level

(v.) The last area of exploration in the farmer survey was related to the role of credit in the small/micro dairy market. Here our findings were counter intuitive:

**Hypothesis VI:** Access to credit will increase the size, profitability and sustainability of micro dairy MEs.

- I. Those farmers not in an SHG belonging to a MAC will not have equal access to credit as do those who belong
- II. Farmers who do have access to credit will have greater increases in income and profitability of their micro dairy enterprises.

It was the case that members of SHGs were significantly more likely to have loans. In fact, only one non member did (Table 35).

**Table 35: Membership in SHG and Loans**

<b>SHG</b>	<b>Did you receive any loans?</b>		
	No	Yes	Total
AT India	42	5	47
PYRDC/UYRDC	15	0	15
Jandesh	0	2	2
Panvas	8	0	8
Grass	2	2	4
Swaraj	4	0	4
Perna	0	1	1
Other specify	21	3	24
None	47	1	48
<b>Total</b>	<b>139</b>	<b>14</b>	<b>153</b>

However, although we hypothesized that farmers who received loans would have more financially productive enterprises (as this has been shown to be true in many previous studies of microfinance including among

rural women in India),<sup>44</sup> this was Not supported (Table 36). Looking closer at this relationship we found that AT India members mostly did not have loans (only 10% did) and that the same was true for our control group (8% did). Thus, there was no significantly higher probability within our sample of project participants having a loan. Nor did having a loan predict to higher level of net profits. In fact the reverse was the case although the relationship was not significant.

The question of why access to loans does not prove in our survey to relate to higher profits can not be answered here but several possibilities should be considered. In the first place our data does not show when the loan was received or for what it was to be used. We also do not know, with recent loans, whether those who received them might show relatively higher profit margins than others after more time has passed. These are questions for further research.<sup>45</sup>

**Table 36: Access to Loans and Net Profits**

	<b>Received any loans?</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Mean Difference</b>	<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>
<b>Net Profits in 2007</b>	Yes	14	7,952.93	6,197.73	-1,369.68			
	No	139	9,322.61	6,886.21	-1,369.68	-0.72	151	0.48

---

<sup>44</sup> Lucy Creevey and Jim Edgerton, "Evaluation of the Impacts of Grassroots Management Training on Women in India," *Canadian Journal of Development Studies*, XVIII, Special Issue 1997, p. 668.

<sup>45</sup> Multiple regression analysis was conducted which shows that 50% of the variation in average net profit was explained by the variables shown here to have a positive relationship with net profits plus district (Chamoli versus Rudraprayag).

## V: ANALYSIS OF CHANGE IN CONSUMER BEHAVIOR AND CONSUMER PERCEPTION OF CHANGE IN REGARD TO THE DAIRY PRODUCTS MARKET

FGD: MICRO DAIRYSTS (CONTROL), VILLAGE: SEMWAL (MAY 11, 2007)



**SEMWAL VILLAGE MICRO DAIRYSTS MEET FOR BDS TRAINING.**

The research on consumers was located in towns and villages where project participants were selling milk (of course along with other sellers). Tables 37 and 38 show the distribution of consumers in the survey. The objective of the analysis was to see if residential and commercial buyers of milk and milk products perceived a difference in the price, quantity and quality of these products available in 2007 as opposed to 2003. In addition we wanted to see if they were more likely to buy these products and if they bought them more often. The products considered were milk, ghee (clarified butter), khoia (condensed milk), paneer (farmers' cheese) and curd. Butter was included as a possible item among the dairy products but was rarely purchased.

**Table 37 Distribution of Consumer Respondents by Type and Location**

Type of consumer		District		Total
		Rudraprayag	Chamoli	
<b>Domestic/HH</b>	Remote village	11	13	24 (60%)
	Peri Urban	3	7	10 (25%)
	Urban	6	0	6 (15%)
	Total	20	20	40 (100%)
<b>Commercial</b>	Remote village	3	1	4 (20%)
	Peri Urban	4	8	12 (60%)

	Urban	3	1	4 (20%)
	Total	10	10	20 (100%)
Grand Total		30	30	60 (100%)

**Table 38: Distribution of Consumer Respondents by Type, District and Gender**

Type of consumer		District		Total
		Rudraprayag	Chamoli	
Domestic/HH	Male	8	14	22 (55%)
	Female	12	6	18 (45%)
		20	20	40(100%)
Commercial	Male	10	10	20(100%)
		10	10	20(100%)

The product most consumed was, fresh milk both in 2003 and 2006 with ghee being the only other product which most consumers bought (77% reported doing so in 2006) – see Table 39. There was no significant difference in the purchasing pattern between 2003 and 2006 although a few more people reported buying dairy products in 2006 that they had not bought in 2003. Nor was there a significant difference in how often consumers bought dairy products between the two periods although, looking at the two most popular products, a few people reported buying milk daily when they said they had not in 2003.

**Table 39: Purchase by Type of Product**

Product		2006		2003	
		#	%		
Ghee	Yes	46	76.67	40	66.67
	No	14	23.33	20	33.33
Fresh Milk	Yes	60	100.00	56	93.33
	No	0	0.00	4	6.67
Paneer	Yes	12	20.00	11	18.33
	No	48	80.00	49	81.67
Khoya	Yes	11	18.33	10	16.67
	No	49	81.67	50	83.33
Curd	Yes	15	25.00	14	23.33
	No	45	75.00	46	76.67
Other	Yes	3	5.00	2	3.33
	No	57	95.00	58	96.67

**Table 40: Frequency of Purchase of Dairy Products**

Product	Did not Buy		Daily		1x wk to 1 x mo		Less		Total 2006/2003
	2006	2003	2006	2003	2006	2003	2006	2003	
Milk HH Commercial		2	34	31	5	7	1		40
		2	18				1		20
Ghee HH Commercial	7	11			1	1	32	28	40
	7	10					13	10	20

The pattern of where the products were purchased was as follows. Most people still purchased from neighboring households (as was shown in the Baseline of 2003). There was also no significant difference in

this pattern although a few people reported they had bought from private dairy outlets in 2006 and not in 2003 – see Table 42.

**Table 41: Milk Purchase by Source**

	2006		2003	
	#	%	#	%
<b>MILK</b>				
Purchased from other households	53	88.33	49	81.67
Purchased directly from private dairy outlet	5	8.33	4	6.67
Purchased directly from government dairy outlet	0	0.00	0	0.00
Purchased from door to door-to-door vendor/milkman	5	8.33	5	8.33
Purchased from retail outlet/shop/grocer	0	0.00	1	1.67

**Table 42: Purchase of Other Dairy Products by Source**

	2006		2003	
	#	%	#	%
<b>GHEE</b>				
Purchased from other households	38	63.33	35	58.33
Purchased directly from private dairy outlet	4	6.67	2	3.33
Purchased directly from government dairy outlet	1	1.67	1	1.67
Purchased from door to door-to-door vendor/milkman	1	1.67	1	1.67
Purchased from retail outlet/shop/grocer	8	13.33	6	10.00
<b>PANEER</b>				
Purchased from other households	0	0.00	2	3.33
Purchased directly from private dairy outlet	6	10.00	2	3.33
Purchased directly from government dairy outlet	0	0.00	1	1.67
Purchased from door to door-to-door vendor/milkman	0	0.00	0	0.00
Purchased from retail outlet/shop/grocer	6	10.00	7	11.67
<b>KHOYA</b>				
Purchased from other households	2	3.33	2	3.33
Purchased directly from private dairy outlet	3	5.00	1	1.67
Purchased directly from government dairy outlet	0	0.00	0	0.00
Purchased from door to door-to-door vendor/milkman	0	0.00	0	0.00
Purchased from retail outlet/shop/grocer	5	8.33	6	10.00
<b>CURD</b>				
Purchased from other households	10	16.67	10	16.67
Purchased directly from private dairy outlet	4	6.67	1	1.67
Purchased directly from government dairy outlet	0	0.00	0	0.00
Purchased from door to door-to-door vendor/milkman	0	0.00	0	0.00
Purchased from retail outlet/shop/grocer	2	3.33	1	1.67
<b>BUTTER</b>				
Purchased from other households	0	0.00	0	0.00
Purchased directly from private dairy outlet	1	1.67	0	0.00
Purchased directly from government dairy outlet	0	0.00	0	0.00
Purchased from door to door-to-door vendor/milkman	0	0.00	0	0.00
Purchased from retail outlet/shop/grocer	2	3.33	2	3.33

Asked about what factors they considered important in making a purchase and how they had changed from 2003 to 2006, the responses focused on price, availability (quantity) and quality.

Looking at the detailed Table 43 on perceptions of change, the most important factors that stand out relate to milk, the one dairy product most people bought. Here we find two interesting factors. Consumers who buy milk (98%) believe that the quality of milk they purchase is higher than it was in 2003. This is true whether these consumers live in remote villages or in urban areas (towns). They also report that the price of milk is higher than it was in 2003 (78%) with one quarter of them saying the price is much higher. Thirty five percent say that the packaging of milk has improved but most (in all areas) think it has stayed the same. Thus price and quality are the relevant points of change

**Table 43: Perception of Change in the Dairy Market**

<b>Factor of Influence</b>	<b>Remote village</b>	<b>Peri Urban</b>	<b>Urban</b>	<b>Total</b>	<b>% of Respondents</b>
<b>Price - Ghee</b>					
Do not purchase	7	6	1	14	23.33%
Much higher	7	7	1	15	25.00%
Some what higher	8	6	6	20	33.33%
The same	5	3	0	8	13.33%
Somewhat lower	1	0	2	3	5.00%
Much lower	0	0	0	0	0.00%
<b>Price - Milk</b>					
Do not purchase	0	1	0	1	1.67%
Much higher	5	8	1	14	23.33%
Some what higher	17	10	5	32	53.33%
The same	5	3	3	11	18.33%
Somewhat lower	1	0	1	2	3.33%
Much lower	0	0	0	0	0.00%
<b>Price - Paneer</b>					
Do not purchase	25	18	5	48	80.00%
Much higher	0	0	0	0	0.00%
Some what higher	3	3	3	9	15.00%
The same	0	1	2	3	5.00%
Somewhat lower	0	0	0	0	0.00%
Much lower	0	0	0	0	0.00%
<b>Price - Khoya</b>					
Do not purchase	24	19	7	50	83.33%
Much higher	0	0	2	2	3.33%
Some what higher	3	3	0	6	10.00%
The same	0	0	1	1	1.67%
Somewhat lower	1	0	0	1	1.67%
Much lower	0	0	0	0	0.00%
<b>Price - Curd</b>					
Do not purchase	23	16	6	45	75.00%
Much higher	0	0	0	0	0.00%
Some what higher	4	5	1	10	16.67%
The same	1	1	2	4	6.67%
Somewhat lower	0	0	1	1	1.67%
Much lower	0	0	0	0	0.00%
<b>Price - Butter</b>					
Do not purchase	27	22	8	57	95.00%
Much higher	0	0	0	0	0.00%
Some what higher	1	0	0	1	1.67%
The same	0	0	1	1	1.67%
Somewhat lower	0	0	1	1	1.67%
Much lower	0	0	0	0	0.00%

<b>Quality of Packaging - Ghee</b>	<b>Remote</b>	<b>Peri urban</b>	<b>Urban</b>	<b>Total</b>	
Do not purchase	7	6	1	14	23.33%
Much higher	0	0	0	0	0.00%
Some what higher	3	6	1	10	16.67%
The same	11	7	1	19	31.67%
Somewhat lower	6	3	7	16	26.67%
Much lower	1	0	0	1	1.67%
<b>Quality of Packaging - Milk</b>					
Do not purchase	0	0	0	0	0.00%
Much higher	0	1	0	1	1.67%
Some what higher	5	8	1	14	23.33%
The same	14	6	1	21	35.00%
Somewhat lower	8	5	8	21	35.00%
Much lower	1	2	0	3	5.00%
<b>Quality of Packaging- Paneer</b>					
Do not purchase	25	18	5	48	80.00%
Much higher	0	0	0	0	0.00%
Some what higher	0	0	0	0	0.00%
The same	0	1	0	1	1.67%
Somewhat lower	3	3	5	11	18.33%
Much lower	0	0	0	0	0.00%
<b>Quality of Packaging - Khoya</b>					
Do not purchase	24	19	7	50	83.33%
Much higher	0	0	0	0	0.00%
Some what higher	1	0	0	1	1.67%
The same	2	0	0	2	3.33%
Somewhat lower	1	3	3	7	11.67%
Much lower	0	0	0	0	0.00%
<b>Quality of Packaging - Curd</b>					
Do not purchase	23	16	6	45	75.00%
Much higher	0	0	0	0	0.00%
Some what higher	0	0	0	0	0.00%
The same	2	3	0	5	8.33%
Somewhat lower	1	3	4	8	13.33%
Much lower	2	0	0	2	3.33%
<b>Quality of Packaging- Butter</b>					
Do not purchase	27	22	8	57	95.00%
Much higher	0	0	0	0	0.00%
Some what higher	0	0	0	0	0.00%
The same	1	0	1	2	3.33%
Somewhat lower	0	0	1	1	1.67%
Much lower	0	0	0	0	0.00%
<b>Quality of Product - Ghee</b>	<b>Remote</b>	<b>Peri Urban</b>	<b>Urban</b>	<b>Total</b>	
Do not purchase	5	6	1	12	20.00%
Much higher	0	1	0	1	1.67%
Some what higher	12	3	7	22	36.67%
The same	11	12	2	25	41.67%
Somewhat lower	0	0	0	0	0.00%
Much lower	0	0	0	0	0.00%
<b>Quality of Product - Milk</b>					
Do not purchase	2	0	0	2	3.33%
Much higher	0	2	0	2	3.33%

Some what higher	14	6	5	25	41.67%
The same	12	13	5	30	50.00%
Somewhat lower	0	1	0	1	1.67%
Much lower	0	0	0	0	0.00%
<b>Quality of Product- Paneer</b>					
Do not purchase	25	18	5	48	80.00%
Much higher	1	0	0	1	1.67%
Some what higher	1	2	3	6	10.00%
The same	1	2	1	4	6.67%
Somewhat lower	0	0	1	1	1.67%
Much lower	0	0	0	0	0.00%
<b>Quality of Product - Khoya</b>					
Do not purchase	24	19	7	50	83.33%
Much higher	0	1	0	1	1.67%
Some what higher	3	1	0	4	6.67%
The same	1	1	2	4	6.67%
Some what lower	0	0	1	1	1.67%
Much lower	0	0	0	0	0.00%
<b>Quality of Product - Curd</b>					
Do not purchase	23	16	6	45	75.00%
Much higher	0	0	0	0	0.00%
Some what higher	3	1	1	5	8.33%
The same	2	5	3	10	16.67%
Some what lower	0	0	0	0	0.00%
Much lower	0	0	0	0	0.00%
<b>Quality of Product- Butter</b>					
Do not purchase	27	22	8	57	95.00%
Much higher	1	0	0	1	1.67%
Some what higher	0	0	1	1	1.67%
The same	0	0	1	1	1.67%
Some what lower	0	0	0	0	0.00%
Much lower	0	0	0	0	0.00%

In regard to whether dairy products more available both in terms of the distance they need to travel to obtain them and in terms of the quantity available for purchase, Table 44 indicates no significant trend toward thinking that products are available in larger quantity OR in thinking that they can be found closer to home than in 2003.

**Table 44: Perception of Change in the Dairy Market: Distance to Travel for Purchase and Quantity Available to Consumer**

	Do not purchase	Much more	Somewhat more	The same	Somewhat less	Much less
<b>Distance to travel to purchase</b>						
<b>GHEE</b>						
#	14	0	14	19	11	2
%	23.33	0.00	23.33	31.67	18.33	3.33
<b>MILK</b>						
#	1	1	18	22	15	3
%	1.67	1.67	30.00	36.67	25.00	5.00
<b>PANEER</b>						
#	49	2	8	0	1	0
%	81.67	3.33	13.33	0.00	1.67	0.00

<b>KHOYA</b>						
#	50	1	7	0	1	1
%	83.33	1.67	11.67	0.00	1.67	1.67
<b>CURD</b>						
#	46	0	3	7	1	3
%	76.67	0.00	5.00	11.67	1.67	5.00
<b>BUTTER</b>						
#	57	1	1	1	0	0
%	95.00	1.67	1.67	1.67	0.00	0.00
<b>Quantity of Product Available</b>						
<b>GHEE</b>						
#	13	2	15	21	9	0
%	21.67	3.33	25.00	35.00	15.00	0.00
<b>MILK</b>						
#	1	3	22	22	10	2
%	1.67	5.00	36.67	36.67	16.67	3.33
<b>PANEER</b>						
#	48	0	4	4	4	0
%	80.00	0.00	6.67	6.67	6.67	0.00
<b>KHOYA</b>						
#	50	1	2	3	4	0
%	83.33	1.67	3.33	5.00	6.67	0.00
<b>CURD</b>						
#	46	0	2	8	3	1
%	76.67	0.00	3.33	13.33	5.00	1.67
<b>BUTTER</b>						
#	57	0	0	1	2	0
%	95.00	0.00	0.00	1.67	3.33	0.00

## VI. CONCLUSION

The results of the impact analysis on the AT India project in Uttarakhand showed a complex pattern for the Business Service Providers, the Dairy Farmers and for the Consumers. All of the hypotheses on which this study is based are tested and the results explained in the separate sections above. Here we would just review the major findings:

The principle question was whether we could attribute to AT India a set of positive impacts from its project interventions observable at the BDS provider level and at the level of the micro dairy farmer. The answer to this overall question is yes we could, although not every hypothesis was supported.

### A. Business Service Providers

- 1) In regard to the BDS market and the individual BSPs, the major observation is not testable but must be observed. There were no BDS providers (other than a few milk collectors and owners of stud bulls) offering services to subsistence dairy farmers when the project started other than those identified by the project to work with them. At the end of the project, in 2006 there were 203 including those initially there when the project began. Where in the beginning, service providers in the zone were virtually all milk collectors, by the end of 2006 there were BSPs selling insurance, offering stud bull services, offering artificial insemination and other para-vet services, selling seed for fodder, selling compost (or advising on its composition), although milk collectors and sub collectors were still the largest group.
- 2) The net profits from BDS for the BSPs had improved over the project period, but when inflation was taken into account the difference was not significant.
- 3) We could not demonstrate that either access to loans or training had significantly contributed to the rise in net profits for the BDS providers. A larger sample followed over a longer time period is needed to see this relationship.
- 4) Younger service providers did have significantly higher average net profits but education did not have a significant relationship with net profit.
- 5) Women providing milk collection services (the largest BSP group) had significantly lower net profits than their male counterparts in the same area of service.

### Micro Dairy Farmers

- 6) Dairy farmers working with the AT India program experienced higher sales and net profits between 2003 and 2006 and the difference was significant even when inflation was factored in. AT India program participants did NOT have significantly higher averages of net profits than other women dairy farmers.
- 7) Women who were members of Self Help Groups had significantly higher average net profits than women who were not members.
- 8) AT India participants were significantly more likely to be members of SHGs than others.

- 9) Both AT India participants as such and all respondents who belonged to SHGs were more likely than their opposites to buy business development services, in particular, seeds and vaccines.
- 10) Purchasers of BDS, and specifically seeds and vaccines, were significantly more likely than those who did not buy these things to have a higher level of net profit.
- 11) Few received loans but of those who did, their average net profit was significantly lower than those who did not.

The results of the impact analysis on the AT India project in Uttarakhand showed a complex pattern for the Business Service Providers, the Dairy Farmers and for the Consumers. The area in which the AT India project worked is remote, difficult of access and very poor. A Business Development Service market for micro dairy farmers was definitely created by the project which extended beyond milk collection. But the amount charged for these services had to be small and the profits, although increasing, not large. Average annual income increased over the project period but, once inflation was taken into account, the difference was not significant.<sup>46</sup> The average annual net profits from their Business Development services in 2006 reported by providers was \$103,893.36 INR (\$2,404.93).<sup>47</sup> Note also that, among BDS providers, there was a very unequal distribution of net profits. For instance, milk collectors, who had the highest returns, averaged a net profit of 163, 857.90 INR (\$3,793.01) while sub-collectors only averaged 105,861.83 (\$2,450.50). Also, those with dairy shops received 158,274.00 INR (\$3,663.75) but those who offered artificial insemination and other para-vet services only reported an average net profit from their BDS work of 8,110 INR (\$187.73). These differences may well have had to do with the fact that AT India was creating a market for products, which had not been available before, and about which people were just beginning to learn. Milk collectors had been there and everyone used their services regularly before the AT India project ever started, although what AT India added to this is the promotion of sub collectors to bring more people into the market. This usually was a man selected by the Self Help Group (SHG) to collect the participants' milk to bring to the collection point where a collector (with transportation) would take it to sell.

Age was negatively correlated with BDS performance as measured by net profits, consistent with the assumption that younger people are willing and able to take on new things which AT India offered. Perhaps the final thing to note is that there were women among the BDS providers although only a minority. The largest groups of these were among the milk collectors/ sub collectors. They received significantly less in net profits than their male counterparts but it is certainly more important that they became entrepreneurs in their own right in a region where women (especially uneducated poor women) are not commercially active except in selling the milk and milk products through a collector or sub collector.

Looking directly at the dairy farmers, the first observation must be to emphasize that AT India worked with poor people who had micro dairy farms. Many of these were farmers whose families had consumed the major part of the dairy products they produced prior to the project so that these were by definition “subsistence” farming enterprises. At the end of the project, their net profits from the dairy business were still very low – for 2006 average net profits for the project participants was \$220 (9,483 INR)<sup>48</sup>. These net profits had increased since 2003, although slowly, and the difference between the two years was significant when inflation

---

<sup>46</sup> Tables 11, 12.

<sup>47</sup> US\$1 = 43.2 IN. See Table 15.

<sup>48</sup> Table 22.

was taken into account. There was not a significant difference in net profits in 2006 between the participants and control women, although the former reported a slightly higher net income.

The most important finding in our study, however, is in the impact of the program's chief action strategy for the farmers. AT India stressed forming SHGs as the means to communicate with, organize, and facilitate the development of the micro dairies to the point where dairy producers could take advantage of the BDS offered. The result was forecast to be an improvement in the quality and quantity of their production and the bottom line of their net profits. By the end of the project, 616 SHGs had been formed with a membership of 6,780 women. This study can indeed show that the project made the right choice in its primary strategy - higher net profits from the dairy business do result from being a member of a Self Help group. Membership in an SHG outweighed whether or not one was a participant in the AT Program but it was true that participants were significantly more likely to join a SHG.<sup>49</sup>

Further impacts of the AT Program had to do with the growing BDS market outside of milk collection (which everyone accessed). Program participants were significantly more likely to buy seeds and vaccines. Non participants, on the other hand, were more likely to buy medicines (this could be related to the fact that they were less likely to buy vaccines which might have prevented the illnesses for which they had to buy medicine although there is no proof of this connection).<sup>50</sup> Purchasing seeds and vaccines (but not medicines) is significantly related to having higher net profits.<sup>51</sup> We could not show (because of data problems) that women purchased seeds and vaccines because of the demonstrations and vaccination camps, which AT India held as part of its plan to promote BDS, although this is very likely.

Finally, this study could not find results that justify attributing major changes in the dairy products' market to the intervention of AT India in the region. This, however, was unlikely however successful the project. After only three years of being in the field and at the second hand distance of the consumer, there may be a beginning perception of changes and/or change in consumer behavior. Nonetheless, changes in consumer behavior are not likely to be statistically significant and, in fact, they were not. Consumers bought slightly more milk, were slightly more likely to buy other dairy products and said the quality and quantity of dairy products had improved, although so had the price gone up. The study did not have the data to show whether or not there was, in fact, a change in the cost and amount of available milk for the local consumer, especially when demand for milk is highest during the peak tourist season.

In summary, the study initially advanced six principal hypotheses relating to the impacts of the AT India BDS project. These were explored through studying the relationships posited in eighteen sub hypotheses. Fifteen of these could be tested while others could not because of data limitations. The following are the specific results, which are discussed in the text above:

## **B. BDS Providers**

Hypotheses I: Growth of the subsector (the product market) will result in increased demand for BDS services and therefore more opportunities for providers.

---

<sup>49</sup> Tables 25, 26.

<sup>50</sup> Table 27

<sup>51</sup> Table 28.

- (i) Facilitation activities aimed to increase awareness about BDS will result in increased demand for BDS services and therefore more opportunities for providers.

**Partially supported:** *Project participants were significantly more likely to purchase selected seeds and vaccines<sup>52</sup>. Control members were significantly more likely to purchase medicine. Both accessed milk collection services.*

- (ii) Provider access to credit will result in greater supply of services for MEs and improved, more sustainable businesses for providers.

**Not supported:** *Those BDS providers who had loans had slightly higher income in 2006 than those who did not but the difference was not significant.*

- (iii) Organizing SHGs can reduce the costs of delivering BDS and increase the affordability of services and thus contribute to the profitability of service provision.

**Supported:** *Members of SHGs were significantly more likely to access BDS services.*

- (iv) Providers with a larger volume of sales at the outset are more likely than those at the lower end to be able to take advantage of new methods/options drawn from training AND access to new market information.

**Not tested:** *The very success of the project made testing this hypothesis difficult. There were only a few milk collectors and stud bull owners providing services to the micro dairy farmers before the project. The project enlisted those and helped develop new categories of service provider including the sub collectors, para vet service providers and insurance vendors. They also enlisted shop keepers to sell milk produced by the micro dairy farmers and organized the delivery of milk to them. Everyone reported increased net profits (although there were significant differences in levels of profit). It was not possible to compare a non participant's change in net profit from BDS services to a participant's because there was no non participant group.*

Hypothesis II: Demographic characteristics, location and size of business at the outset will affect the degree to which providers take advantage of capacity building and new market information.

- (i) Younger and better educated providers will be more pro-active and therefore will have larger increases in sales.

**Partially supported:** *Younger BDS providers had significantly higher net profits. Education was not significantly correlated to higher profits except among the sub collectors.*

- (ii) Gender will impact the level of net profit of providers.

**Supported:** *Among the group of service providers with the largest group of women (collectors and sub collectors of milk), women received significantly lower net profits.*

- (iii) Providers whose businesses are closer to larger concentrations of micro dairies will be more likely than those who are in remote areas to benefit from project interventions (indicated by increased sales and profits).

---

<sup>52</sup> When reported as “significant”, the relationship tested was .05 or less. If otherwise, the figure is provided. See full text for details on each hypothesis.

**Not supported:** *There was no significant difference between providers in “remote” versus providers in “non remote” or “peri urban” areas. There was a significant difference between the two project zones with those in Rudraprayag having significantly higher net profits than those in Chimoli.. The explanation for this requires further research.*

### **Subsistence Dairy Farmers**

**Hypothesis III:** The organization of SHGs will lead to increased access to, improved affordability of, and greater use of, business services and therefore improved firm performance:

- (i.) Farmers who form collective groups (SHGs) will be more likely to obtain access to BDS than will farmers who do not form such groups.

**Partially supported:** *The hypothesis did not take into account that everyone accessed milk collector services and most had done so (if they sold the milk their farm produced) even before the project and even if they were not in an SHG. What tests showed is that SHG participants were significantly more likely to purchase vaccines and somewhat more likely to purchase selected seeds and medicines.*

- (ii.) Farmers in SHGs will (therefore) have more sales and a higher profit margin than those not involved.

**Supported:** *Members of SHGs had significantly (.06) higher net profits than non members.*

*AT Project participant members of SHGs were not significantly more likely to have higher net profits than non-participant SHG members, BUT AT India participants WERE significantly more likely to join an SHG.*

*Purchase of seeds and vaccines was significantly related to higher net profits.*

- (iii) Farmers who are trained by the project – who attend demonstrations and training sessions - will be more likely to purchase BDS goods and services (and those in SHGs will purchase more on average than those not).

**Not tested:** *The question used for this test proved to be confusing. Asked if they had had training, most interpreted this as “formal” training and not just going to a demonstration or a vaccination camp. Further research is needed.*

**Hypothesis IV:** As a result of access to fodder, stud services, vet services, and marketing/collection services, micro dairy MEs will find new market outlets and experience a greater volume of production, sales and profits.

- (i) Farmers who purchase more BDS products and services (or purchase for the first time) will experience an increase in sales translating into an increase in the net profit of their business.

**Partially supported:** *(see above) Purchase of seeds and vaccines was significantly related to higher net profits.*

- (ii) Farmers who purchase BDS will have better levels of sales, better and more varied quality of products and higher profit levels than those who do not and who had the same size/kind of dairy establishment at project beginning.

***Partially supported:*** (see above) Purchase of seeds and vaccines was significantly related to higher net profits.

Hypothesis V: Demographic characteristics, location and size of farm will affect the likelihood of farmers purchasing inputs business services.

- (i) Younger, better -educated farmers are more likely to purchase BDS services.

***Not supported:*** No significant relationship with age or education.

- (ii) Women farmers will continue to be less likely than males to purchase services although women connected to the project will be significantly more likely than women who are not to do so.

***Not supported:*** The Hypothesis, based on farming practices in other regions, did not allow for the fact that most respondents were in families where the women conducted the dairy activities but the men owned the farm and the animals. The only test possible was between women-headed households (widowed women usually) and men headed-households and there was no significant difference.

- (iii) Farmers with larger farms are more likely to purchase collection services and veterinary goods and services than those with smaller enterprises at project outset.

***Supported:*** Although farmers producing more milk were significantly (at the 5% level) likely to purchase BDS services and had higher levels of net profits, the importance of this finding is not clear. It seems a truism. There was not enough information to show whether the degree of increase in net profits or BDS purchases was significantly larger for the smaller or larger farms.

- (iv) Dairyists in more remote areas will be less likely than those in areas closer to urban centers to purchase collection services, fodder and veterinary goods/services.

***Not supported*** (see above).

Hypothesis VI: Access to credit will increase the size, profitability and sustainability of micro dairy MEs.

- (i) Those farmers not in an SHG belonging to a MAC will not have equal access to credit as do those who belong.

- (ii) Farmers who do have access to credit will increase the size, profitability, and sustainability of their micro dairy enterprises.

***Partially Supported:*** All, but one, of those who had loans were members of SHGs. But only a very small number of micro dairyists (14 respondents total) had loans and there was no significant difference in net profits between this group and those without loans.

## VII. ANNEXES

### Annex I - Research Team for Impact Analysis for Final Report

**1) Authors of Final Report:**

Dr. Lucy Creevey, Professor of Political Science *emeritus*, University of Connecticut acting as consultant for Weidemann Associates

Dr. Momar Ndiaye, Director, Office of International Studies, Illinois State University acting as consultant for Weidemann Associates

**2) Weidemann Associates Inc.**

Dr. Wesley Weidemann, President  
933 N. Kenmore Street, Suite 405  
Arlington, VA 22201

Support:

Joseph Kotun, Associate - (Field visit to AC Nielsen)  
Sharon Williams, administration and office support  
Nicole Driscoll, administration and office support

**3) Field Research conducted by: AC Nielsen South Asia/India**

The Nielsen Company  
3rd Floor, Bharat Yuvak Bhawan  
1, Jai Singh Road, New Delhi - 110 001  
Tathagata Dasgupta - Senior Manager  
Pallavi Karnick - Senior Executive  
Vishnu Tiwari - Operations Executive  
Abhiroop Chaterjee - Research Associate

**Annex 2 - Questionnaires**

Introduction: **Main Points**

- ✓ My name
- ✓ Describe why doing the survey (aimed at assisting milk collectors and others involved in milk production strengthen their business)
- ✓ Explain confidentiality thoroughly
- ✓ This will take about 30 minutes
- ✓ Ask will they agree to be interviewed
- ✓ Thank them.

With your cooperation, the results from this survey will help policy makers understand better what helps to make dairy and other businesses stronger, so that they can support their families and children.

We want to know more about what actually helps or hurts service providers like you to provide your services, sell products that help the farmers that are your customers, expand what you offer and increase your profits. The time and information that you provide us will be very helpful for people all over the world.

All the information that you share in this survey will be kept strictly confidential. Though we will be asking you for your name or address, this is just for our own records and will not be shared with anyone.

**IDENTIFICATION:**

01. District:
- Rudraprayag..... 1
  - Chamoli..... 2

02. Category of PSU (*Circle all that apply*)

Sub-Group		Control or Program group			Location of business				
Cattle feed	1	Control	1	Program	2	Urban	1	Rural	2
Dairy	2	Control	1	Program	2	Urban	1	Rural	2
Composting	3	Control	1	Program	2	Urban	1	Rural	2
Artificial insemination/ Para-vet	4	Control	1	Program	2	Urban	1	Rural	2
Insurance	5	Control	1	Program	2	Urban	1	Rural	2
Sub collector	6	Control	1	Program	2	Urban	1	Rural	2
Collector	7	Control	1	Program	2	Urban	1	Rural	2
Stud- bull service provider	8	Control	1	Program	2	Urban	1	Rural	2

03. Name of Respondent: .....

04. Business Address: .....

05. Total number of villages/urban centers covered: □□□

06. Nature of service provider
- Private Service provider ..... 1
  - Government employee ..... 2

Serial number of provider: 

--	--	--

07. Name of the interviewer .....

Interviewer initials .....

.....

.....

08. Date of Interview: .....

09. Whether checked by Supervisor:

Yes..... 1

No..... 2

Signature of Supervisor .....

10. Status of the schedule:

Completed .....1

Partially completed .....2

**PART I: BACKGROUND INFORMATION**

Q1. Gender of respondent:

Male..... 1

Female..... 2

Q2. Place of residence:

Rural ..... 1

Urban..... 2

Q3. Age in completed years / \_\_\_\_ / years

Q4. Number of members in the household?

Q5. Highest completed level of education of respondent:

Illiterate	1	Up to Intermediate	6
Literate, but no formal education	2	Up to Graduation	7
Up to primary	3	Any Technical Degree	8
Up to middle	4	Above graduate	9
Up to Matriculation	5		

Q6. Current marital status of respondent

Single, never married..... 1

Married ..... 2

Divorced or Separated ..... 3

Widow/widower ..... 4

**PART II: HOUSEHOLD AND INCOME INFORMATION**

Q7.

Including you, how many other people in your household are earning and contributing to the family income?

Q8. Please rank the items in the table below (from 1 to 15 where 1 is the most important source of income and 15 the least important source of income) in 2006 and 2003.

Yes .....1 No.....2

	Response	Source	Earnings in 2006 (Rs.)	2006 Ranking	Source	Earnings in 2003 (Rs.)	2003 Ranking
1.	Services to others in dairy/ animal husbandry						
2.	Cultivation						
3.	Wage labour						
4.	Dairy/animal husbandry related business						
5.	Other petty trade or micro enterprise						
6.	Livestock rearing						
7.	Salaried work						
8.	Artisan/self employed professional						
9.	Collection of Minor forest produce						
10.	Remittances						
11.	Monthly rents from property						
12.	Pension						
13.	Other social assistance						
14.	Savings and monthly interest						
15.	Others, specify						

Q8a. If the respondent did NOT know what he earned for his services in 2003, please ask this question:  
In 2003, how did your earnings for these services differ from 2006?

- Much more in 2003.....1
- More in 2003.....2
- The same in 2003.....3
- Somewhat less in 2003 .....4
- Much less in 2003.....5
- Did not provide service .....6
- Do not have profits as service is provided by government.....7

	Response	Earnings in 2003 (Rs.) Compared to 2006 earnings
1.	Services to others in dairy/ animal husbandry	<input type="checkbox"/>
2.	Cultivation	<input type="checkbox"/>
3.	Wage labour	<input type="checkbox"/>
4.	Dairy/animal husbandry related business	<input type="checkbox"/>
5.	Other petty trade or micro enterprise	<input type="checkbox"/>
6.	Livestock rearing	<input type="checkbox"/>
7.	Salaried work	<input type="checkbox"/>
8.	Artisan/self employed professional	<input type="checkbox"/>
9.	Collection of Minor forest produce	<input type="checkbox"/>
10.	Remittances	<input type="checkbox"/>
11.	Monthly rents from property	<input type="checkbox"/>

	Response	Earnings in 2003 (Rs.) Compared to 2006 earnings
12.	Pension	<input type="checkbox"/>
13.	Other social assistance	<input type="checkbox"/>
14.	Savings and monthly interest	<input type="checkbox"/>
15.	Others, specify	<input type="checkbox"/>

**PART III: BUSINESS INFORMATION**

Q9. Since when are you working/ worked as a milk collector/stud provider/fodder producer/veterinarian?

STATE YEAR

Q10. Including you, how many people work in your business (service to farmers business)? Please provide the details in the table below for each year.

	Category	2006				2003 – or year mentioned in Q 9			
		Full time		Part time/ seasonal		Full time		Part time/ seasonal	
		Male	Female	Male	Female	Male	Female	Male	Female
1.	Paid								
2.	Unpaid (incl. family)								
3.	Trainee								
	<b>Total</b>								

Q11. What percentages of your customers live in the following types of areas? (Make sure it sums to 100 percent) for each year?

	Location	Percentage of customers (In 2006)	Percentage of customers (2003 – or year mentioned in Q 9)
1	Rural-same village		
2	Rural-different village		
3	Urban-same locality		
4	Urban-outside locality		
5	Urban-rural combination		
	<b>Total</b>		

Q12a. What type of customers do you serve? (For each year, Yes=1 No=2).

	Type of customer	In 2006	In 2003 – or year mentioned in Q 9
1	Farmers connected to dairy collective	<input type="checkbox"/>	<input type="checkbox"/>
2	Organizations	<input type="checkbox"/>	<input type="checkbox"/>
3	Individual farmers/families	<input type="checkbox"/>	<input type="checkbox"/>
4	No direct services to farmers	<input type="checkbox"/>	<input type="checkbox"/>
5	Other (Specify).....	<input type="checkbox"/>	<input type="checkbox"/>

Q12b. Which group of customers do you serve the most (Check one for each year)?

	Type of customer	In 2006	In 2003 – or year mentioned in Q 9
1	Farmers connected to dairy collective	<input type="checkbox"/>	<input type="checkbox"/>
2	Organizations		
3	Individual farmers/families		
4	No direct services to farmers		
5	Other (Specify).....		

Q13. How far are you from a SHG?  Km If no SHG in the area, code 99

Q14. What percentage of your customers are women?

Percentage of women customers	In 2006	In 2003 – or year mentioned in Q 9

Q15a. In 2006, what is your revenue/sales turnover (in Rupees) from providing services to dairy/animal husbandry farmers from each of the following cattle types?

	Type of Animal	Revenue/sales turnover
1	Cow	
2	Buffalo	
3	Mules/horse	
4	Goats	
5	Sheep	
	<b>Total</b>	

Q15b. In 2003, were your revenues/sales from such activities, higher or lower than in 2006? (Put in numbers from list below).

- Much higher 1
- Somewhat higher 2
- The Same 3
- Somewhat lower 4
- Much Lower 5

Type of Animal		Revenues/sales turnover in 2003 – or year mentioned in Q 9 were:
1	Cow	<input type="checkbox"/>
2	Buffalo	<input type="checkbox"/>
3	Mules/horse	<input type="checkbox"/>
4	Goats	<input type="checkbox"/>
5	Sheep	<input type="checkbox"/>
<b>Total</b>		<input type="checkbox"/>

Q16a. In 2006, what have been your net profits (in Rupees) from dairy/animal husbandry – related activities from each of the following cattle types?

Type of Animal		Net profits
1	Cow	
2	Buffalo	
3	Mules/horse	
4	Goats	
5	Sheep	
<b>Total</b>		

Q16b. In 2003, were your net profits from such activities, higher or lower? (Put in numbers in table from list below)

- Much higher 1
- Somewhat 2
- The Same 3
- Somewhat lower 4
- Much Lower 5

Type of Animal		Net profits in 2003 – or year mentioned in Q 9 were:
1	Cow	<input type="checkbox"/>
2	Buffalo	<input type="checkbox"/>
3	Mules/horse	<input type="checkbox"/>
4	Goats	<input type="checkbox"/>
5	Sheep	<input type="checkbox"/>
<b>Total</b>		<input type="checkbox"/>

Q17. What percentage of your business/work is devoted to selling business services/health products to farmers engaged in animal husbandry? (For each year)

Percentage of business/work	In 2006	In 2003 – or year mentioned in Q 9

Q18. Please tell me what services or/and products you have offered to your customers in 2006 and 2003. (Fill in the table below)

Services / Products Offered		Provide this service/product (Yes 1 No 2)	
<b>For Milk Collectors</b>			
		<b>In 2006</b>	<b>In 2003 – or year mentioned in Q 9Z</b>
1	Collection Services	<input type="checkbox"/>	<input type="checkbox"/>
2	Advice about milk processing	<input type="checkbox"/>	<input type="checkbox"/>
3	Advice about milk preservation	<input type="checkbox"/>	<input type="checkbox"/>
4	Advice about quality control (washing the cow before milking, no adding water)	<input type="checkbox"/>	<input type="checkbox"/>
5	Credit to customers for purchase of services and products	<input type="checkbox"/>	<input type="checkbox"/>
6	Market outlet or price information	<input type="checkbox"/>	<input type="checkbox"/>
7	Others, specify	<input type="checkbox"/>	<input type="checkbox"/>
<b>For Breeding services</b>			
1	Artificial insemination	<input type="checkbox"/>	<input type="checkbox"/>
2	Natural insemination	<input type="checkbox"/>	<input type="checkbox"/>
3	Specialized feed or vitamins	<input type="checkbox"/>	<input type="checkbox"/>
4	Credit (short term postponement of payment) to clients for purchase of services and products	<input type="checkbox"/>	<input type="checkbox"/>
5	Promotions (free-bees, reduced price)	<input type="checkbox"/>	<input type="checkbox"/>
6	Market outlet or price information	<input type="checkbox"/>	<input type="checkbox"/>
7	Other, specify	<input type="checkbox"/>	<input type="checkbox"/>
<b>For Feed and Fodder Producers</b>			
1	Specialized vitamin enriched feed (poushtik ahar)	<input type="checkbox"/>	<input type="checkbox"/>
2	Small Tools or equipment sales	<input type="checkbox"/>	<input type="checkbox"/>
3	Advice about fodder storage	<input type="checkbox"/>	<input type="checkbox"/>
4	Advice about fodder quality control	<input type="checkbox"/>	<input type="checkbox"/>
5	Credit (short term postponement of payment) to clients for purchase of services and products	<input type="checkbox"/>	<input type="checkbox"/>
6	Promotions (discounts, free add-ons etc.)	<input type="checkbox"/>	<input type="checkbox"/>
7	Others, specify	<input type="checkbox"/>	<input type="checkbox"/>
<b>For Veterinarians</b>			
1	Emergency medical care	<input type="checkbox"/>	<input type="checkbox"/>
2	Medicines	<input type="checkbox"/>	<input type="checkbox"/>

Services / Products Offered		Provide this service/product (Yes 1 No 2)	
3	Vaccinations	<input type="checkbox"/>	<input type="checkbox"/>
4	Artificial insemination	<input type="checkbox"/>	<input type="checkbox"/>
5	Natural insemination	<input type="checkbox"/>	<input type="checkbox"/>
6	Birthing services	<input type="checkbox"/>	<input type="checkbox"/>
7	Specialized feed or vitamins	<input type="checkbox"/>	<input type="checkbox"/>
8	Small Tools or equipment sales	<input type="checkbox"/>	<input type="checkbox"/>
9	Credit (short term postponement of payment) to clients for purchase of services and products	<input type="checkbox"/>	<input type="checkbox"/>
10	Advisory services on production	<input type="checkbox"/>	<input type="checkbox"/>
11	Training or technical information ( <i>describe</i> )	<input type="checkbox"/>	<input type="checkbox"/>
12	Others, specify	<input type="checkbox"/>	<input type="checkbox"/>
13	<b>INSURANCE PROVIDER</b>	<input type="checkbox"/>	<input type="checkbox"/>
14	<b>COMPOSTING SERVICES – Selling compost</b>	<input type="checkbox"/>	<input type="checkbox"/>
15	<b>COMPOSTING SERVICES – Advice on compost preparation</b>	<input type="checkbox"/>	<input type="checkbox"/>

**PART IV: SALES AND COSTS CALCULATION**

**SALES CALCULATIONS**

Q19a. Now I would like to talk about your business service to farmers' sales for the entire year of 2006. How much did you sale (*products and/or services*) during 2006?

Services / Products Offered		Average price charged (Rs.)	Total sales in Rs.
<i>For Milk Collectors</i>		<i>Total</i>	
1	Collection Services		
2	Advice about milk processing		
3	Advice about milk preservation		
4	Advice about quality control (washing the cow before milking, no adding water)		
5	Credit to customers for purchase of services and products		
6	Market outlet or price information		
7			
1	Artificial insemination		
2	Natural insemination		
3	Specialized feed or vitamins		
4	Credit (short term postponement of payment) to clients for purchase of services and products		
5	Promotions (free-bees, reduced price)		
6	Market outlet or price information		
7			
1	Specialized vitamin enriched feed (poushtik ahar)		
2	Small Tools or equipment sales		
3	Advice about fodder storage		
4	Advice about fodder quality control		
5	Credit (short term postponement of payment) to clients for purchase of services and products		
6	Promotions (discounts, free add-ons etc.)		
7	Others, specify-----		
<i>For Veterinarians</i>			
1	Emergency medical care		
2	Medicines	(Charges for medical care)	
3	Vaccinations		
4	Artificial insemination		
5	Natural insemination		
6	Birthing services		
7	Specialized feed or vitamins		
8	Small Tools or equipment sales		

Services / Products Offered		Average price charged (Rs.)	Total sales in Rs.
9	Credit (short term postponement of payment) to clients for purchase of services and products		
10	Advisory services on production		
11	Training or technical information ( <i>describe</i> )		
12	Others, specify-----		
<b>Composting</b>			
<b>COMPOSTING SERVICE</b>			
1.	<b>COMPOSTING SERVICES – Selling compost</b>		
2.	<b>COMPOSTING SERVICES – Advice on compost preparation</b>		
<b>Insurance</b>		<b>Total commission (Rs.)</b>	
1.	<b>INSURANCE PROVIDER</b>		

Q19b Was your gross income from business services to animal husbandry/dairy farmers in 2003 higher, the same or lower than in 2006? (*Enumerator please refer only to the total by category from Q19a.*)

- Much Higher Income..... 1  
 Somewhat higher Income ..... 2  
 Same Income..... 3  
 Somewhat lower Income..... 4  
 Much Lower Income..... 5  
 Don't know ..... 6

	Services / Products Offered	Gross income in 2003 – or year mentioned in Q 9 was:
1	<b>Milk Collectors</b>	<input type="checkbox"/>
2	<b>Breeding services</b>	<input type="checkbox"/>
3	<b>Feed and Fodder Producers</b>	<input type="checkbox"/>
4	<b>Veterinarians</b>	<input type="checkbox"/>

### **COSTS CALCULATIONS**

Q20. In 2006, what were your operating costs? (*Fill in amount for entire year.*)

	Types of Costs	Amount (Rs.)
1	Monthly rents	
2	Loan Payment/interest	
3	Utilities	
4	Fuel/transportation costs	
5	Communications	
6	Information services	
7	Disposable equipments	
8	Employee salaries	
9	Employee benefits and other types of payments	

10	Payments to workers who are not employees (e.g., short term workers)		
11	Advertising		
12	Others, specify -----		
<b>Total</b>			

Q20b Were your costs in 2003 higher, the same or lower than in 2006?

- Much Higher Income in 2003 .....  
..... 1  
Somewhat higher Income in 2003 ..... 2  
Same Income in 2003 ..... 3  
Somewhat lower Income ..... 4  
Much Lower Income in 2003 ..... 5  
Don't know ..... 6

	Types of Costs	Costs in 2003 – or year mentioned in Q 9 were:
1	Monthly rents	<input type="checkbox"/>
2	Loan Payment/interest	<input type="checkbox"/>
3	Utilities	<input type="checkbox"/>
4	Fuel/transportation costs	<input type="checkbox"/>
5	Communications	<input type="checkbox"/>
6	Information services	<input type="checkbox"/>
7	Disposable equipments	<input type="checkbox"/>
8	Employee salaries	<input type="checkbox"/>
9	Employee benefits and other types of payments	<input type="checkbox"/>
10	Payments to workers who are not employees (e.g., short term workers)	<input type="checkbox"/>
11	Advertising	<input type="checkbox"/>
12	Others, specify .....	<input type="checkbox"/>
<b>Total</b>		<input type="checkbox"/>

Q21. Comparing 2006 to 2003, would you say that your business profits were (circle one):

Much Higher in 2003 ..... ..... ..... .....1
Somewhat Higher in 2003 ..... ..... .....2
About the same in 2003..... ..... .....3
Somewhat lower in 2003 ..... ..... .....4
Much Lower in 2003 ..... ..... .....5

Don't know .....	6
Do not have profits as service is provided by government.....	7

Q22. If profits are higher or lower in 2003, what is the difference between the two years and what are the reasons for the difference?

.....  
 ..... (write in answer)

Q23. What percentage of your family's income is provided by your services to dairy/animal husbandry? (Circle one for each year)

	2003	2006
Between 75% and 100%	1	1
Between 50% and 74%	2	2
Between 25% and 49 %	3	3
Less than 25%	4	4

Q24. If it has increased or decreased, please explain why:

.....  
 ..... (Write in answer – use the back of the page if necessary)

**PART V: INFORMATION ABOUT AND ACCESS TO BUSINESS DEVELOPMENT SERVICES**

Q25. Are you a member of a Self Help Group?

- Yes ..... 1
- No..... 2

Q26. Did you take any loans between 2003 and 2006 for conducting your business services to farmers with dairy/animal husbandry related activities?

- Yes ..... 1
- No..... 2

Q27a. If yes, please give the following details:

Number of loans taken?   
 For how much? (Total Rupees) / \_\_\_\_\_ /

Q27b. If No, please explain why:

..... (write in answer)

Q28. If yes in Q26, from what institution or organization (circle all that apply)?

- Nationalised bank (name)..... 1
- Private bank..... 2
- Cooperative society ..... 3
- Self-help group funds ..... 4
- Moneylender ..... 5
- Friends/relations/acquaintances..... 6
- Others (Specify all) ..... 7

Q29. In your opinion, what prevents your business from growing faster or being more profitable? (Circle all that apply)

Lack of access to credit, insurance or other financial service	1
Market conditions	2
Transportation difficulties	3
Low demand for services	4
Need more business training	5
Need more technical training	6
Difficult to get needed supplies (green grass)	7
Not enough time	8
Not enough skilled or semi-skilled people available to help	9
Lack of cooperation from clients (people are late giving milk, etc)	10
Other, specify-----	11

Q30a. In the last three years have you felt the need for any training to improve your animal husbandry service or milk collection business?

Yes ..... 1  
 No ..... 2

Q30b. In the last three years have you received any training to improve your animal husbandry service or milk collection business?

Yes..... 1  
 No..... 2      **(END INTERVIEW)**

Q 30c. Please state the month and year when you joined the ATI program and when you left the program

If still continuing in the program, enter 99 9999

Joined          Discontinued          
 month                      year                                      month                      year

**Please use the following 3 questions to fill in the table below.**

Q31. What types of assistance or training to improve your animal husbandry or milk collection business have you received in the last three years?  
*If training mentioned, list practices and techniques presented to the respondent (please probe on type of training received)*

.....  
 .....  
 .....  
 .....

Q32. Who did you receive this from? (Use codes below to fill in Table)

AT India project (staff or someone they trained) .....1  
 Other (Identify)..... 2

Q33. How much did you pay for the service?

Service type on which training was provided	Q31. Describe what kind of training ( <i>Brief probe</i> )	Q32. From Whom	Q33. Cost
By-Products of Milk			
Exposure visits			
Information about prices			
Urea treatment			
Vitamin enriched fodder			
Animal husbandry			
Fodder demonstration			
Others, specify			

Q34. Overall, how would you rate your level of satisfaction with each training on specific services you have obtained? (*Circle one in the table below*)

- Extremely satisfied** (I enjoyed and would pay for it myself again – if I could) ..... 1
- Satisfied** (I enjoyed, so long as someone is paying *for part of it*).....2
- Somewhat satisfied** (I enjoyed it and would participate again **only** if someone pays for it) .....3
- Disappointed** (it was a waste of my time) .....4

Service		Satisfaction level ( <i>Circle one</i> )			
		Extremely satisfied	Satisfied	Somewhat satisfied	Disappointed
1	By-Products	1	2	3	4
2	Exposure visits	1	2	3	4
3	Information about prices	1	2	3	4
4	Urea Treatment	1	2	3	4
5	Vitamin enriched fodder	1	2	3	4
6	Animal husbandry	1	2	3	4
7	Fodder demonstration	1	2	3	4
8	Others, specify	1	2	3	4

Q35. What are the top three most useful skills that you gained from training related to business management practices? (*Please circle all that apply but limit to three choices*).

- Things related to fortifying animal feed .....1
- Customer relations and market segmentation.....2
- Different in milk by-products grades/quality .....3
- Differences in relations with suppliers (if applicable) .....4
- Assistance in coordinating supplies with sales.....6
- Bookkeeping or financial management .....7
- Artificial insemination.....8
- Technical/medical/veterinary skills .....9
- Other (Specify): .....10

**Do you have any questions?**

**Thank you for your time and patience with us.  
The information you provided us will be very helpful.**

---

INDIAN FARMER SURVEY

FARMER QUESTIONNAIRE

No

--	--	--

**Introduction:** Main Points

1. My name
2. Describe why doing the survey (to see what helps farmers like you)
3. Explain confidentiality thoroughly
4. This will take about 30 minutes
5. Ask if they will agree to be interviewed

With your cooperation, the results from this survey will help policy makers understand better what helps farmers make their businesses stronger, so that they can support their families and children. We want to know more about what actually helps or hurts farmers, like you, to improve your livestock and animal products and increase profits. **The time and information that you provide us will be very helpful.** All the information that you share in this survey will be kept strictly confidential. Though we will be asking you for your name or address, this is just for our own records and will not be shared with anyone.

**IDENTIFICATION:**

01. District: Rudraprayag.....1  
Chamoli.....2
02. Program group.....1  
Control Group.....2

03. Category of PSU (*Circle all that apply*)

Location	Control Group	Program Group
Remote ( <i>Village</i> )	1	1
Non remote ( <i>Village</i> )	2	2
Peri Urban ( <i>large vill. on or near main road</i> )	3	3

04. Name of village/ remote village/ Peri-urban center

05. Name of Respondent:.....

06. Address of the respondent: .....  
 .....

07. Name of the Head of the Household: .....

08. Gender of Head of Household:  
 Male .....1  
 Female..... 2

09. Is Respondent Same as Head of Household?  
 Yes..... 1  
 No..... 2

10. If No, please specify relationship of respondent to head of household:.....□□

11. Type of farmer: Small .....1 Large .....2

**Serial number of household:**

--	--	--

12. Name of the interviewer:.....

13. Interviewer initials: .....

14. Date of Interview :(mm/dd/yyyy):.....

15. Whether checked by Supervisor:  
 Yes.....1  
 No .....2

Signature of Supervisor .....

16. Status of the schedule:  
 Completed .....1  
 Partially completed .....2

**PART I: BACKGROUND INFORMATION**

Q1. Gender of respondent:  
 Male ..... 1

Female..... 2

Q2. Place of residence:

- Remote village .....1
- Non remote village.....2
- Peri-urban/large village on main road/near main road.....3

Q3. Age (in completed years) / \_\_\_\_/ years

Q4a. No. of members in Household

Q4b. Number of Adult Males living in household /\_\_/\_/

Q4c. Number of Adult Females living in household /\_\_/\_/

Q4d. Number of Children 16 and under living in household /\_\_/\_/

Q5. Highest completed level of education of respondent

Illiterate	1	Up to Intermediate	6
Literate, but no formal education	2	Up to Graduation	7
Up to primary	3	Any Technical Degree	8
Up to middle	4	Above graduate	9
Up to Matriculation	5		

Q6. Current marital status of respondent

- Single, never married..... 1
- Married ..... 2
- Divorced or Separated ..... 3
- Widow/widower..... 4

Q7. Please indicate status of your farming enterprise

- Family farm ..... 1
- Cooperative farm..... 2
- Other ..... 3

**PART II: FARM BACKGROUND INFORMATION**

Q8. Land entitlement (*Write local unit if not told in acres*)

	Land Category	In 2006	In 2003
1.	Total Land Owned in		
2.	Total Land Rented		
3.	Total Land Under Cultivation		

Q9. *If, for any of the categories, the respondent does not know the 2003 total, please fill in table below*

C o	Opinion	Total Land Owned in 2003	Total Land Rented in 2003	Total Land Under Cultivation in 2003

d					
e					
1	Much More		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Somewhat More				
3	The same				
4	Somewhat Less				
5	Much Less				

Q10. List the livestock you have owned in each year: *(write in table below)*.  
In case of cow and buffalo, record information for 'major= milching age' and 'minor'

	Type of Animal	Total Number in 2006		Total Number in 2003	
		Major	Minor	Major	Minor
1	Cow				
2	Buffalo				
3	Ox				
4	Male buffalo				
5	Goats				
6	Sheep				
7	Donkeys/ mules				
8	Horses				
9	Other				

Q11. *If respondent does not know the number of animals in 2003, please fill in table below*

Code	Number of animals in 2003 was:	Cow	Goats	Sheep	Donkeys	Buffalo	Horses	Other
1	Much More	<input type="checkbox"/>						
2	Somewhat More							
3	The same							
4	Somewhat Less							
5	Much Less							

Q12. Including you, how many people worked in your dairy farm? Please provide the details in the table below *(in 2006 and 2003)*.

		Full time in 2006		Full time in 2003		Part time/Seasonal in 2006		Part time/Seasonal in 2003	
		Male	Female	Male	Female	Male	Female	Male	Female
1.	Paid								
2.	Unpaid (incl. family)								
	Total								

Q13. If you think about how much livestock and animal products (milk, milk products, meat) you produce, what percentage of that output will your family consume normally in the household? What percentage of that output do you *barter or trade* in kind?

Percentage		% Consumed in the household		% Bartered or Traded	
		In 2006	In 2003	In 2006	In 2003
1	More than half	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	About half				
3	Less than half				
4	Not sold ugha				

Q14. In what proportion do you sell or trade your livestock or animal products to the following customers? (Mark a percentage and the sum must be equal to 100)

Customers		Proportion sold/traded			
		In 2006		In 2003	
		Milk	Other animal products	Milk	Other animal products
1	Surrounding village inhabitants				
2	Retail and/or service outlets (stores, restaurants, butchers)				
3	Others (specify)				
<b>Total</b> (Check if sum is equal to 100)					

**PART III: HOUSEHOLD AND INCOME INFORMATION**

Q15. Please rank the items in the table below (from 1 to 14, where 1 is the most important source of income and 14 the least important source of income) in 2006 and 2003.

Yes =1 No =2

	Response	Source	Earnings in 2006 (Rs.)	2006 Ranking	Source	Earnings in 2003 (Rs.)	2003 Ranking
1.	Cultivation						
2.	Wage labour						
3.	Dairy/animal husbandry related business						
4.	Other petty trade or micro enterprise						
5.	Livestock rearing						
6.	Salaried work						
7.	Artisan/self employed professional						
8.	Collection of Minor forest produce						
9.	Remittances						
10.	Monthly rents from property						
11.	Pension						
12.	Other social assistance						
13.	Savings and monthly interest						
14.	Others, specify						

*Please fill in the following table based on the questions below. Write the name of the veterinarian or others involved in animal husbandry who provided services. If training is mentioned, list practices and techniques they learned*

**I'd like to talk about the inputs you used for your livestock in 2006.**

Q16. Besides labor, what other inputs (veterinary and/or livestock-related services) have you used for your livestock in 2006?

Q17. How many times in 2006 did you buy or receive this?

Q18. From where did you get this service in 2006?

Products and Services		Q16 Used in 2006	Q17. How many times in the last 12 months of 2006	Q18. Source of this service in 2006
1.	Seeds for grazing crops or green grasses or direct purchase of green fodder	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
2.	Vaccines for livestock	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
3.	Medicines for sick livestock	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
4.	Emergency medical care for livestock	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
5.	Artificial insemination	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
6.	Breeding/delivery	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
7.	Specialized livestock feed or fortified feed (poushtik ahar)	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
8.	Equipment or tool purchases	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
9.	Milk collections	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
10.	Credit for purchase of services and products (from the person you bought them from)	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
11.	Production/animal husbandry related advice ( <b>refer Q20</b> ) ( <i>Please describe</i> )	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
12.	Promotions or discounts for purchases of new equipment or training	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
13.	Other marketing costs (butchering, processing, packaging, delivery, etc.)	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
14.	Market outlet or price information	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
15.	Formal training ( <b>refer Q20</b> )	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
16.	Other: Explain:	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>

(1 = veterinarian, 2 = drug store, 3 = bazaar, 4 = shop, 5 = other farmer, 6 = family, 7 = farmer organization, 8 = ATI project, 9 = other (*explain*))

**Q16a. In 2003, besides labor, what other inputs (veterinary and/or livestock-related services) did you use for your livestock?**

Q17a. How much did these services cost in 2003 compared to 2006?

Q18a. How many times in 2003 did you buy or receive this?

Q19a. From where did you get this service in 2003?

Products and Services		Q16a Used in 2003 Yes=1 No=2	Q17a. How much did it cost compared to 2006? In 2003 (1= More, 2= Same, 3= Less, not used in 2006)	Q18a. How many times in the last 12 months of 2003 All year round=99	Q19a Source of this service in 2003
1.	Seeds for grazing crops or green grasses or direct purchase of green fodder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
2.	Vaccines for livestock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
3.	Medicines for sick livestock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
4.	Emergency medical care for livestock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
5.	Artificial insemination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
6.	Breeding/delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
7.	Specialized livestock feed or fortified feed (poushtik ahar)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
8.	Equipment or tool purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
9.	Milk collections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
10.	Credit for purchase of services and products (from the person you bought them from)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
11.	Production/animal husbandry related advice (refer Q20) (Please describe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
12.	Promotions or discounts for purchases of new equipment or training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
13.	Other marketing costs (butchering, processing, packaging, delivery, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
14.	Market outlet or price information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
15.	Formal training (refer Q20)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
16.	Other: Explain:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>

(1 = veterinarian, 2 = drug store, 3 = bazaar, 4 = shop, 5 = other farmer, 6 = family, 7 = farmer organization, 8 = ATI project, 9 = other (explain))

**PART IV: BUSINESS SERVICES INFORMATION**

Q20. If advice/training is mentioned in Q16 : Which are the three most important types of new skills you have **used or applied** in your farming activities since 2003? (Please circle and limit to **three choices**)?

How to identify animal diseases	1	How to improve livestock nutrition	5
How to prevent animal diseases	2	Diary by-product processing	6
How to treat animal diseases	3	Milking techniques	7
How to grow green fodder throughout the year	4	Other	8

Q21. Would you like to have additional animal-related services (or any, if not used any service) than what you are using at present?

Yes ..... 1  
 No..... 2

Q22. Beginning in 2003, did you receive any loans for your animal husbandry related activities?

Yes ..... 1  
 No..... 2

Q23. If yes, please give the following details:

Number of loans taken? ..... /\_\_/\_/\_/  
 For how much? (*Total Rupees*)..... /\_\_/\_/\_/

Q24. If yes in Q22, what institution or organization gave the largest loan?

Nationalized bank (name)	1	Moneylender	5
Private bank	2	Friends/relations/acquaintances	6
Cooperative society	3	Others (Specify all)	7
Self-help group funds	4		

Q25. If yes in Q22, from what other institution or organization (*circle all that apply*)?

Nationalized bank (name)	1	Moneylender	5
Private bank	2	Friends/relations/acquaintances	6
Cooperative society	3	No other source	7
Self-help group funds	4	Others (Specify all)	8

Q26. In your opinion, in 2006, how difficult is it to find a buyer for your *animals and animal products (milk, ghee,...)* if you want to sell them? (*Check one for each category*)

	Selling was:		Animals tkuoj	Animal Products lk'kq mRikn
1	Impossible		<input type="checkbox"/>	<input type="checkbox"/>
2	Very difficult			
3	Somewhat difficult			
4	Easy			
5	Do not want to sell			

Q26a. In your opinion, was it more difficult in 2003 to find a buyer for your *animals and animal products (milk, ghee,...)* if you wanted to sell them? (*Check one for each category*)

	Compared to 2006, selling in 2003 was:		Animals	Animal Products
1	Much more difficult		<input type="checkbox"/>	<input type="checkbox"/>
2	Somewhat more difficult			
3	The same			
4	Somewhat less difficult			
5	Did not want to sell in 2003			

Q27. If there is a difference between 2003 and 2006, could give some reasons to why?  
 In selling animals:

.....

Q27a. *If there is a difference between 2003 and 2006, could give some reasons to why?*

In selling animals products: .....

.....

Q28. What are the limitations that keep you from being able to increase your income from livestock or animal products? *(Multiple answer possible)*

	Yes=1	No=2	
	Limitations:	Animals	Animal Products
1	Lack of money to invest	<input type="checkbox"/>	<input type="checkbox"/>
2	Difficulty of transportation to market	<input type="checkbox"/>	<input type="checkbox"/>
3	Don't know how to improve	<input type="checkbox"/>	<input type="checkbox"/>
4	Don't have time	<input type="checkbox"/>	<input type="checkbox"/>
5	Sickness of animals	<input type="checkbox"/>	<input type="checkbox"/>
6	Other (Specify)	<input type="checkbox"/>	<input type="checkbox"/>

Q29. What are the limitations that keep you from availing yourself of more veterinary and other animal husbandry/dairy related activities? *(Circle all that apply)*

I am not satisfied with the quality of the services:	1	My animals are not sick	5
I am not satisfied with the products offered	2	Too hard to contact the veterinarian due to distance	6
Timing of access was not good	3	The veterinarian doesn't come soon enough	7
I can't afford it	4	Other	8

Q30. Do you belong to a SHG? If so who has created that SHG ?

AT India .....1  
 PYRDC/ UYRDC .....2  
 Jandesh .....3  
 PANVAS .....4  
 GRASS .....5  
 Swaraj .....6  
 Prerna .....7  
 None .....8  
 Others (specify) \_\_\_\_\_ 77

Q31. *If the respondent belongs to a self-help group, when (in what year) did you join this group?*

Q32. What is the frequency that the respondent attends meetings?

Regularly ..... 1  
 Irregularly ..... 2

Rarely ..... 3

Q33. *If the respondent belongs to a self help group* did joining this group change the way you conduct your dairy farming/ animal husbandry activities or affect the income you receive from them?

Yes:..... 1

No: ..... 2 If 2, then Skip to Q 34

Q33a. (If yes) What was the economic effect of joining the group?

Increased production/output and/or increased income received:..... 1

Decreased production/output and/or income received:.....2

Q33b. (If Q 33a=1) Why did joining the SHG have this impact on your business (*may circle as many as are appropriate*)

Gave me access to a veterinary or other animal husbandry related services: ..... 1

Organized transport which I did not have before to get my goods to market:..... 2

Found a market outlet for my products:..... 3

Trained me how to care for my animals and/or increase my product output: ..... 4

Provided credit which I could not get before: ..... 5

Other:..... 6

**PART V: BUSINESS INCOME AND EXPENSE INFORMATION**  
**COSTS CALCULATION**

Q34. In addition to the products and services you mentioned earlier, what other *operating* costs did you pay for related to your dairy farming/animal husbandry activity in the year 2006?

	<b>Types of Costs</b>	<b>Amount (in Rs.)</b>
1.	Monthly land or building rental of animal shed	
2.	Loan Payment/interest	
3.	Utilities/telephone (if taken for dairy activity)	
4.	Fuel costs	
5.	Transportation costs	
6.	Other information services	
7.	Employee salaries	
8.	Employee benefits	
9.	Payments to workers who are not employees (e.g., short term workers)	
10.	Advertising	
11.	Other-----	
	<b>Total Costs for 2006</b>	

Now I would like to estimate your yearly INCOME from your animals and animal products.

**SALES CALCULATIONS**

Q34a. How much was your gross income from livestock or animal products for all of 2006?

	<b>Products mRikn</b>	<b>Quantity/ Volume sold csph xbZ ek=k</b>	<b>Total (Rs.) ;ksx ¼:lk;s eas½</b>
1.	Cow (live)	Nos.	
2.	Buffalo (live)	Nos.	
3.	Goat (live)	Nos.	
4.	Goat (meat)	Kg	
5.	Sheep (live)	Nos.	
6.	Sheep (meat)	Kg	
7.	Milk	Liters	
8.	Butter	Kg	
9.	Ghee	Kg	
10.	Curd	Kg	
11.	Cheese	Kg	
12.	Wool	Kg	
13.	Natural insemination (stud bull services)	Nos.	

Q35. How were your costs, gross income, and net profit in 2003 compared to year 2006?

<b>Comparison</b>	<b>Cost</b>	<b>Gross</b>	<b>Net Profit</b>
-------------------	-------------	--------------	-------------------

			Income	
1	Much higher in 2003			
2	Somewhat higher in 2003			
3	The same as in 2003			
4	Somewhat lower in 2003	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Much lower in 2003			
6	Do not know			

**Do you have any questions?**

Thank you for your time and patience with us.  
The information you provided us will be very helpful.

**THIS SECTION (VI) SHOULD BE FILLED OUT ONLY IF THE RESPONDENT CAN NOT ANSWER Q 34, 34a and 35 in Section V above.** In that case, the enumerator can ask the household head to provide the economic information. If Section V was filled in with information provided by the respondent, leave this section blank please (!)

**SECTION IV: BUSINESS INCOME AND EXPENSE INFORMATION FROM HOUSEHOLD HEAD**

**COSTS CALCULATION**

Q36. In addition to the products and services you mentioned earlier, what other *operating* costs did you pay for related to your dairy farming/animal husbandry activity in the year 2006?

	Types of Costs	Amount (in Rs.)
1.	Monthly land or building rental of animal shed	
2.	Loan Payment/interest	
3.	Utilities/telephone (if taken for dairy activity)	
4.	Fuel costs	
5.	Transportation costs	
6.	Other information services	
7.	Employee salaries	
8.	Employee benefits	
9.	Payments to workers who are not employees (e.g., short term workers)	
10.	Advertising	
11.	Other -----	
	<b>Total Costs for 2006</b>	

Now I would like to estimate your yearly INCOME from your animals and animal products.

**SALES CALCULATIONS**

Q36a. How much was your gross income from livestock or animal products for all of 2006?

	Products	Quantity/ Volume	Total (Rs.)
--	----------	------------------	-------------

		sold	
1.	Cow (live)	Nos.	
2.	Buffalo (live)	Nos.	
3.	Goat (live)	Nos.	
4.	Goat (meat)	Kg	
5.	Sheep (live)	Nos.	
6.	Sheep (meat)	Kg	
7.	Milk	Liters	
8.	Butter	Kg	
9.	Ghee	Kg	
10.	Curd	Kg	
11.	Cheese	Kg	
12.	Wool	Kg	
13.	Natural insemination (stud bull services)	Nos.	
Total			

Q37. How were your costs, gross income, and net profit in 2003 compared to year 2006?

	Comparison	Cost ykr	Gross Income dqy vkenuh	Net Profit 'kg} vkenuh
1	Much higher in 2003			
2	Somewhat higher in 2003		<input type="checkbox"/>	<input type="checkbox"/>
3	The same as in 2003			
4	Somewhat lower in 2003	<input type="checkbox"/>		
5	Much lower in 2003			
6	Do not know			

**INDIAN CONSUMER SURVEY**

**CONSUMER QUESTIONNAIRE**

**No**

--	--

01. District:

Rudraprayag . 1  
Chamoli 2

02. Location of PSU (Circle one)

Location	Code
Remote (Village)	1
Non Remote (Village)	2
Peri Urban Center	3

03. Name of village / Peri-urban centre: .....

04. Name of Respondent:.....

05. Type of consumer: Domestic/ HH.....1 Commercial .....2

06. Name of the Head of the Household: .....

07. Address of the respondent: .....

.....  
.....

**Serial number of household:**

--	--

08. Name of the interviewer ..... Interviewer initials.....

09. Date of Interview:

10. Whether checked Yes.....1 Signature of Supervisor.....  
by Supervisor No.....2

11. Status of the schedule:

11.1 Completed 1  
11.2 Partially completed 2

**PART I: BACKGROUND INFORMATION**

Q1. Gender of respondent:

Male .....1  
 Female.....2

Q2. Place of residence:

Remote village .....1  
 Non-remote village .....2  
 Peri-urban/large village on main road/near main road.....3

Q3. Age in completed years / \_\_\_\_\_ / years

Q4. Household size:

*How many people live in your household?* ..... / \_\_\_\_\_ /  
 Adult (Male): ..... / \_\_\_\_\_ /  
 Adult (Female): ..... / \_\_\_\_\_ /  
 Children: ..... / \_\_\_\_\_ /

5. Highest completed level of education of respondent:

Illiterate	1	Up to Matriculation	5
Literate, but no formal education	2	Up to Intermediate	6
Up to primary	3	Up to Graduation	7
Up to middle	4	Any Technical Degree	8
		Above graduate	9

Q6. Current marital status of respondent

Single, never married .....1  
 Married ..... 2  
 Divorced or Separated ..... 3  
 Widow/widower ..... 4

Q7. Including you, how many people in your family work? Please provide the details in the table below.

		Full time		Part time/seasonal	
		Male	Female	Male	Female
1.	Paid				
2.	Unpaid (incl. family)				
	<b>Total</b>				

Q8. Please indicate the main source of income for your family as well as all other sources of income and how much does your family earn from this source per annum

	Response	Main source	Other sources	Earnings per annum (Rs.)
1.	Cultivation	1	1	
2.	Wage labour	2	2	
3.	Dairy/animal husbandry related business	3	3	
4.	Other petty trade or micro enterprise	4	4	
5.	Livestock rearing	5	5	
6.	Salaried work	6	6	
7.	Artisan/self employed professional	7	7	
8.	Collection of Minor forest produce	8	8	
9.	Remittances	9	9	
10.	Monthly rents from property	10	10	
11.	Pension	11	11	
12.	Other social assistance	12	12	
13.	Savings and monthly interest	13	13	
14.	Others, specify	14	14	

## PART II: PRODUCT CONSUMPTION

Now I would like to ask you about your household consumption of dairy products:

Q9. List products **consumed in** household (*Mark all that apply*)

Yes 1                      No 2

Code	Products	In 2006		In 2003	
1	Ghee	1	2	1	2
2	Fresh Milk	1	2	1	2
3	Paneer	1	2	1	2
4	Khoya	1	2	1	2
5	Curd	1	2	1	2
6	Other	1	2	1	2

Q10. List of products **produced** in household. (*Mark all that apply*)

Code	Products	In 2006		In 2003	
1	Ghee	1	2	1	2

2	Fresh Milk		1	2	1	2
3	Paneer		1	2	1	2
4	Khoya		1	2	1	2
5	Curd		1	2	1	2
6	Other		1	2	1	2

Q11. List of products ***purchased outside*** the household. (*Mark all that apply*)

Code	Products	In 2006		In 2003	
1	Ghee	1	2	1	2
2	Fresh Milk	1	2	1	2
3	Paneer	1	2	1	2
4	Khoya	1	2	1	2
5	Curd	1	2	1	2
6	Other	1	2	1	2

Q12. Frequency of purchase of different dairy products

	Codes for Frequency	2006						2003						
		Ghee	Milk	Paneer	Khoya	Curd	Butter	Ghee	Milk	Paneer	Khoya	Curd	Butter	
1	Daily													
2	Not daily but at least 3 times a week													
4	Not every week but a few times a month													
5	Less frequently													
6	Do not purchase this product													

Q13. Source of purchase of different dairy products (Yes = 1 No = 2)

	Sources	2006						2003						
		Ghee	Milk	Paneer	Khoya	Curd	Butter	Ghee	Milk	Paneer	Khoya	Curd	Butter	
1	Purchased from other households within village													
2	Purchased directly from pvt. dairy outlet													

3	Purchased directly from govt. dairy outlet												
4	Purchased from door-to-door vendor/ milkman												
5	Purchased from retail outlet/shop/grocer												

Q14. Quantity purchased last time (*in 2006*) and the price paid per unit for these products

		Ghee (grams)	Milk (liters)	Paneer (grams)	Khoya (grams)	Curd (grams)	Butter (grams)
1.	Quantity						
2.	Price (in Rupees)						

Q15. In 2006, what things do you check before you buy dairy products? (*Check all that apply*)

Yes=1 No=2

Code	Factors	Ghee	Milk	Paneer	Khoya	Curd	Butter
1	Price						
2	Packaging						
3	Quality						
4	Quantity						
5	Seller						
6	Distance of shop from home						
7	Other (Specify)						

Q16. If you think about 2003, have any factors which influence your decision about buying a dairy product changed since then? (Circle separately for each product)

(G=Ghee ; M=Milk; P= Paneer; K= Khoya; C= Curd; B= Butter)

Code	Type of Change	Price						Quality of Packaging						Quality of Product					
		G	M	P	K	C	B	G	M	P	K	C	B	G	M	P	K	C	B
1	Much higher	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Somewhat higher	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	The same	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	Somewhat lower	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	Much lower	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Code	Type of Change	Seller's Persuasive Attitude						Distance to Travel to Purchase						Quantity of Product Available						Other (Specify) <sub>1/2</sub>					
		G	M	P	K	C	B	G	M	P	K	C	B	G	M	P	K	C	B	G	M	P	K	C	B
1	Much more	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Somewhat more	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	The same	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	Somewhat less	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	Much less	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

***Do you have any questions?***

***Thank you for your time and patience with us. The information you provided us will be very helpful.***

## Annex 3 - Focus Group Report

### A. FGD: Business Development Service Providers

#### List of Participants:

SL NO.	NAME	SERVICE	VILLAGE
1	Prem Singh	Sub-collector	Hudoo
2	Mitranand	Compost Provider	Rahdoo
3	Narmada Devi	Sub-collector	Sari
4	Surma Devi	Insurance Provider	Ukhimath
5	Balbeer Singh	Stud Bull Provider	Karokhi
6	Jagdamba Bhat	Para Vet & Feed	Rahdoo

The responses of the participants to each question are listed below:

#### 1. According to you is the business of milk and milk products feasible in this area? Do you think the people can benefit from it?

**Ans.**

*Jagdamba Bhat*- "Yes. Because this generates income for us and the other services help in improving the breed of cattle in the region. This way the productivity of milk improves and the income of the people can increase. Benefits are seen that is why people are associated with such business; else why would they continue with such a business that is not beneficial."

#### 2. What are the services you provide to the micro-dairysts?

**Ans.**

*Narmada Devi*- "We provide feed, fodder and other services to the farmers. Collect milk from the farmers at Rs.12 per kg and sell it in the market at Rs.14. So there is a good amount of earning from these services."

*Jagdamba Bhat*- The AI provider goes to the cattle shed in the village where he has been called to provide his service and does the AI for which he charges the owner of the cattle. "As a para-vet we provide first aid and minor treatment to the cattle. We also do immunization for the cattle. And we received this training at Rishikesh in a training camp."

*Mitranand*- The compost service provider makes a pit and puts waste material and cow dung in the pit. Then they add earth worms to it and leave it for 6 months. After this the compost is ready. "We sell it to the farmers who use it for their cultivation."

*Balbeer Singh*- The stud bull service provider is still not in business. The calf is still young. It would take some time before they can start this business. They intend rearing the calf properly as it is of a good breed and it can help improving the breed of cows in the region. "The cows in the area are small in size and give very small quantities of milk. So if we can manage to improve the breed of cattle in the area then we can help the community in improving their status and will help in the business."

*Surma Devi*- "As an insurance service provider I provide insurance for education of children. And we do not provide any insurance for cattle as yet."

#### 3. When did you start providing these services?

**Ans.**

The para-vet, *Jagdamba Bhat*, is in this service since April 2002.

*Mitranand*- Compost service provider since about 2 years.

*Narmada Devi*- Sub-Collector services since 3 years.

*Surma Devi*- Insurance service for last 1year.

*Balbeer Singh*- Stud Bull service for last 2years.

*Prem Singh*- Sub-collector for last 4 years.

**4. Why did you start when you did? What changed to make this business feasible?**

**Ans.**

*Jagdamba Bhat*- Do this work for self-employment, and to improve the breed of animals in the region.

*Prem Singh* - Get some income from this and make some daily profit, so I am engaged in this service.

*Narmada Devi* - Increase in income and improvement in living conditions of family and children. With a few hours of work I get some income.

*Balbeer Singh* - Our awareness has increased and we have come to know about a lot of things.

**5. Did you get any training in order to provide the BDS you now operate?**

**Ans.**

*Jagdamba Bhat*- Training in Pashulok, Rishikesh in a training camp organized by government and was taken there by AT India.

*Prem Singh* - Training in Ukhimath by AT India

*Mitranand*- in the village itself.

*Surma Devi*- At Ukhimath

*Balbeer Singh* - By AT India in Ukhimath, Mastura and at times in the Village itself.

*Narmada Devi* - Training at Ukhimath and in their village itself.

**6. What percentage of your household income is based on this business and is it currently becoming more or less important for you?**

**Ans.**

*Jagdamba Bhat* - 40%

*Narmada Devi* - I spend only a few hours in this work and get a steady income. And I have the rest of the day for other activities. In this short time I get a decent income and it is important for me.

*Prem Singh* - 10-15%

*Surma Devi*- 10-15%

The services carry lot of importance for us. With increase in knowledge we are slowly able to improve our business as well.

**7. Have you taken a loan to help your business in the past few years? If yes, from where and for what purpose? How did you find out about where credit was available?**

**Ans.**

*Jagdamba Bhat* – “Loan of Rs. 15,000 from State Bank of India and Rs. 10,000 from UMM to buy some medicines initially. I got information about loans from the villages. Also I got some information in the meetings conducted by AT India.”

*Prem Singh* – “Got a loan from UMM to buy a buffalo for Rs. 25,000. “

*Narmada Devi* – “Our SHG got a loan from SBI Rs. 250,000 with a subsidy of Rs. 125,000 under **SGSY** scheme. I also took a loan of Rs. 20,000 from UMM for buying a buffalo. In my village itself there are loans of about Rs. 160,000 from UMM.”

*Surma Devi* and *Balbeer Singh* have not taken any loans.

**8. How did the AT India project help or facilitate your business?**

**Ans.**

*Jagdamba Bhat* – “AT India employees took us to different villages and in the SHG meetings they introduced us and informed people of the services we provide.”

*Prem Singh* – “Container, lactometer which is at a cost for which I have to pay monthly.”

*Narmada Devi* – “I got feed and grass and training for my services.”

*Surma Devi*- “I got training from AT India and a job at UMM.”

*Balbeer Singh* – “I got training about this service and feed and seeds for growing fodder.”

**9. A few people hold this opinion that AT India is not working properly and their work does not have any positive effect on the community. What is your opinion? What according to you is the reason for their dissatisfaction?**

**Ans.**

*Narmada Devi* – “Who says so? How can they say so? I am very happy with their work. There are some people for and some against anything. In my village there are 5 SHGs with 60-65 members who have a source of income now. They have created a saving habit also. Since we have got income and savings now, the other women who are not a part of this and not benefiting from the services of AT India can be against. There are some women and people in the village who have family members working in the Army and other services. These people have higher income and greater needs. So they may not be satisfied with AT India. I was a poor woman and I am very happy with what I have got from this. Some women tell me that you are saving only 10-15-20 rupees in a month so what is the use. To deposit money in the bank you would need at least 100-150 rupees in a month. We do not have that much money. So we collect money among ourselves and have 100 rupees which we go and deposit. We cannot think of depositing Rs.10 each in a month. It wouldn't be feasible. Probably the other women who are complaining have the capacity to save 100 rupees individually and don't see any advantage in the small savings that we have.”

**10. What more, according to you, is required for you to be able to increase the scale of your business? What steps should AT India take and what efforts will you be willing to put in?**

**Ans.**

*Jagdamba Bhat* – “There is greater need for information to be given to people. I would need more training to be able to improve and extend my services.”

*Balbeer Singh* – “More information to be given to people. People should start work as per their choice and AT India should help. AT India should work to give more information to people and make them more aware. Since I have joined in the programme I have got some income, so this should be spread to others as well.”

*Prem Singh* – “Marketing facilities of milk should be improved. Larger markets should be made more accessible and a channel should be created. If I have a collection of 40 litres of milk and the demand is only 20 litres, I might face losses, so marketing facilities should be provided.”

*Narmada Devi* – “We have facilities and income sources through the programme.”

**B. Micro Dairysts**

**(i). List of participants (Programme Village):**

SL NO.	NAME	VILLAGE
1	Ramdei Devi	BARSHAL
2	Gudee Devi	
3	Devaki Devi	
4	Anju Devi	
5	Sarveshwari Devi	
6	Sateshwari Devi	
7	Kathi Devi	
8	Sateshwari Devi II	
9	Beena Devi	
10	Sulochana Devi	

**1. According to you is the business of milk and milk products feasible in this area? Do you think the people can benefit from it?**

**Ans.** This business is very good as this is one of the few things that can work here. All houses have cattle. The seeds that are provided for growing fodder are not good and don't have a good yield.

**2. Have things in the business of selling milk and milk products improved or gotten more difficult and why?**

**Ans.** Things were a little more difficult than it is today. Earlier we used to get a very small price for our produce. But nowadays we get a decent price and feel that there are some returns at least for the efforts we put in. Also we women have found a source of income for them.

Since the market for milk has improved, we are eager to sell milk even if we have a small surplus of 250gm.

**3. Have you joined a collective or marketing group in the last few years? If so, when and what has been the impact on your business?**

**Ans.** The collective we are a part of is an SHG. All members of this SHG are milk farmers. We have created a sub-collector from the village who would collect our milk and sell to the market.

The advantage we have derived out of this is that there have been a few services that are channelized to us through our SHGs- like seeds to grow grass to be used as fodder, and loans to buy cattle or for other purposes. A big advantage we have is that we women find time for

ourselves from our busy and hectic schedule. We also get to share our thoughts and our experiences when we gather here for our meetings.

**4. Do you use/purchase the services of a veterinarian or stock breeder or milk collection agency or do you buy fodder for your cattle?**

**Ans.** We have never used the services of a para vet as the cattle haven't fallen ill. But we have used the services of a para vet for immunization of the cattle. Collectors take milk from our homes. We do not buy feed either. We do it at home ourselves.

**5. Is this kind of service more available now? Or is it just the same or worse?**

**Ans.** The price we get for our produce has improved. The service of a Stud Bull has become more expensive. It was Rs.250 earlier but now it costs Rs.350.

**6. Has the business of selling milk and milk products become more important to your family income over the last few years? If so (or if not) why?**

**Ans.** It is very important for me as we get some money. Now if we need to buy something- say 10kg rice, we are able to buy on our own. This helps reduce the load on the male member who is the earning member of the family. We also make ghee at times and sell it.

**7. Have you taken a loan to help your business in the last few years? If yes, from where and for what purpose? How did you find out about where credit was available?**

**Ans.** Yes, I have taken loan to buy buffalo and also for our house. I have got a loan from AT India. We got this information in our meetings.

**8. What support or assistance have you received from AT India (or any external agency) to develop such a business?**

**Ans.** We have received seeds to grow grass, fodder, information on loans, and ways to improve our milk productivity. In the meetings the people inform us about various things. No external training has been provided.

**9. A few people hold this opinion that AT India is not working properly and their work does not have any positive effect on the community. What is your opinion? What according to you is the reason for their dissatisfaction?**

**Ans.** We feel they are doing a good job. How would I know why those people who said this. It's good for us and if it is bad for someone else then how would I know.

Probably they are unable to understand what AT India

Some other people say that AT India people take away you're the money that is collected from the SHGs. But we have our own pass books with us. We have a register with us, all records are maintained well, we deposit the money ourselves and the withdrawal too is done by us. So AT India taking away our money is not possible. When people say this we don't get scared. We know that our money is in the bank and it is safe and in our control. And the bank won't run away from this place or won't shut down taking away our money. So we feel safe. Some say that AT India has given so many loans, so they will take away all our savings. But we know this won't happen. We are so many women involved. It's not just our SHG. It involves a large number of SHG and many women. We have power together. Moreover we have faith.

**10. What more, according to you, is required for you to be able to increase the scale of your business? What steps should AT India take and what efforts will you be willing to put in?**

**Ans.** What we need is better quality seeds. Also we would need some training about making milk products from the milk if there is no market sometimes. Sometimes milk is left over. If we get proper training for making some products out of it, then we can benefit more. We make ghee sometimes but it is not always possible to make ghee. So we need to know more. There is a variety of grass that improves milk production. They should try to improve the availability of this grass.

We too should change. We are not getting out cattle immunized regularly. But this is not good. This is because only a few people know about the advantages of immunization. So, more people should be told about this so that more people take this service.

**(ii). List of participants (Control Village):**

SL NO.	NAME	VILLAGE
1	Dubree Devi	SEMWAL
2	Sharadi Devi	
3	Sharmila Devi	
4	Kushma Devi I	
5	Kamla Devi	
6	Sudama Devi	
7	Neema Devi	
8	Sushila Devi	
9	Kushma Devi II	
10	Pramila Devi	
11	Shamplee Devi	
12	Suneeta Devi	
13	Urmila Devi I	
14	Chandramatee Devi	
15	Urmila Devi II	

**1. How many households produce milk in this village and how many are involved in selling this milk?**

**Ans.** Everyone produces milk in this village. About 80% houses have milk. Some sell milk within the village. A few households make ghee and sell within the village and some take it to the markets. But it is in a very small extent and done by very few people.

**2. Have things in the business of selling milk and milk products improved or gotten more difficult and why?**

**Ans.** It is possible for this business to be helpful but the accessibility is a problem. Our village is very remote and connectivity is not good.

**3. This business of selling milk/milk products- has it become easier or difficult as compare to the past?**

**Ans.** There has been a change in the price. But the marketing difficulties are the same as it had been for the last 25 years. But we have hopes now as a road is being made close by and we expect it to be complete in 2-3 years. Then our condition may improve and we might be able to do this business.

**4. Have you joined a collective or marketing group in the last few years? If so, when and what has been the impact on your business?**

**Ans.** No we are in no marketing collective.

**5. Have you benefited from any of the services that are provided by the various people that are trained and provided by AT India?**

**Ans.** No we haven't got any service. When we need immunization we have to take our cattle or get him to the village. We need to take them to the government animal-clinic in Ukhimath. They

are supposed to provide service for free, but they charge Rs.3 per cattle. The charge for the service of a veterinarian is much higher now.

**6. Has the business of selling milk and milk products become more important to your family income over the last few years? If so (or if not) why?**

**Ans.** The earnings from milk have improved. But if we were able to sell it at Ukhimath, then we would get Rs.4 more than what we get now. But the people who sell milk are benefited as it adds to their earning.

**7. Have you taken a loan to help your business in the last few years? If yes, from where and for what purpose? How did you find out about where credit was available?**

**Ans.** No, none of us have taken loans. As it is we are not in a stable financial position. If we take a loan and are unable to pay the installments, then the interest would keep adding up and our condition would further worsen. Government will definitely recover their money. So we need to be very cautious. We are thinking of taking loans now but that will be only if we get some subsidy.

**8. What more, according to you, is required for you to be able to increase the scale of your business from subsistence to commercial? What efforts will you be willing to put in?**

**Ans.** To improve the productivity of milk we need feed and fodder which we could give to our cattle. Then the milk production will improve. Also if there is one single person who carries all our milk to the nearest market and we would all bear the expenses collectively. If some 30-40 people are going to the same place to sell milk, they spend at least 4 hours each. This way no one benefits. Had some person been available who takes our milk- milk from 30 people adding up to 50-60 litres- we could improve our earnings. A lot of time is wasted- and for this reason many people avoid selling milk.

To improve the productivity we would need better breed of cattle. We need cattle that are able to suit the climate of this area.

The biggest problem in our area is that there is acute shortage of water. Our water source is decreasing rapidly. This is very important and is the biggest problem for us.

We have heard that some women have formed groups under AT India and are benefiting out of it. We have also tried to come together. The women from the nearby villages tell us about the changes that they have seen. They say AT India is working there for 8-10 years. They say that AT India help them to get access to loans for various activities. We want to benefit from these facilities, so we all have come together.