Integration of dairy farms in supply chain in bulgaria

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INTEGRATION OF DAIRY FARMS IN SUPPLY CHAIN IN BULGARIA

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ABSTRACT

This paper presents a new business model for an effective market inclusion of numerous small-scale dairy farms developed by a private entrepreneur. Firstly, it gives insight on development and challenges of Bulgarian dairy sector. Next, it describes the innovation, identifies drivers and changes of inclusion, and assesses its efficiency and sustainability. Finally, it evaluates the possibilities for up-scaling of the model, and suggests business and policies recommendations.

Major features of the model include: developing a competitive dairy processing enterprise for locally produced milk; installing milk collecting, cooling, and controlling facilities in the neighborhood and within farms; modernizing milk supply and processing quality according to the top industry standards; building an effective system for governing relations (coordination, stimulation, control, conflict resolution) with individual farmers; developing a company mark and reputation for high quality products; introducing a great variety of specific, original and locally produced products into regional, national, and international markets. Critical factors for evolution of the model have been identified as: private entrepreneurship, experience and skills, technological discipline, available resources, introduction of innovations, effective governance (control, incentives, adjustment) of vertical relations, building a good reputation, development of markets and formal regulations. Integration of farmers has been associated with needs of progressive changes in breed of animals, technology of production, and labor organization, and led to higher income, quality of production, stability of sells and prices, care for animals and environment, and possibility for modernization and adaptation to formal requirements.

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1 INTRODUCTION

The post-communist dairy farming in Bulgaria is a typical example for the domination of subsistence and small-scale farms with no or little commercialization opportunities. Moreover, the rapid development of markets and institutional environment during transition and EU accession put serious challenges for the adaptation of the majority of dairy farms and processors. Therefore, a positive case for the successful inclusion of dairy producers in marketing channels would be interesting to study and replicate elsewhere.

This paper presents a business model for an effective market inclusion of numerous small-scale dairy farms from Plovdiv region developed by a private entrepreneur. "Dimitar Madzarov"LTD dairy was set up in first years of the transition and successfully modernized up to the highest industry standards. This enterprise has managed to adapt to dynamic market and institutional environment governing effectively relations with supplying farmers and downstream partners.

In our analysis we use the guidance of the Regoverning Markets team and research framework outlined in the background paper (BERDEGUE AND PEPPELENDOS, 2005). Firstly, we give insights on the general background and the situation before the innovation. Next, we describe the content of the business innovation. After that, we provide the evidence of inclusion of small-scale producers. Then, we specify the drivers and the changes of inclusion. Later, we assess the cost, the benefits, and the sustainability of inclusion. And finally, we evaluate the possibilities for up-scaling and replication of the model, and suggest business and policies recommendations.

The study is based on extensive fieldwork activities carried out in March-August 2007 including lots of interviews with the manager of "Dimitar Madzarov" LTD, experts in the dairy sector, and farmers supplying milk to the Dairy. In addition, a great amount of data has been collected by farmers through a survey on diverse aspects of governing of holdings and relations with "Dimitar Madzarov"LTD. A questionnaire was distributed randomly to 50 farmers (5% of the suppliers) and response rate was 84%.

The positive Bulgarian experience could be effectively replicated in other transitional and developing countries with widespread semi-subsistence and small-scale farming, lack of farmers organizations, shortage of adaptive and innovative processing enterprises, deficiency of public support to farms, dynamic evolution of modern food chains and increasing demand for high quality local products.

2 BACKGROUND AND SITUATION BEFORE INNOVATION

The post-communist reforms in Bulgarian agriculture in the beginning of 90-ties were associated with the liberalization of markets, restitution of farmland, and privatization of assets of ancient cooperative and state farms (BACHEV, 2007b). By 1994 all farming activities were entirely transferred into new emerging private structures – numerous unregistered farms, and several thousands production cooperatives and agro-firms.

The transition has led to a considerable decrease in number of livestock – comparing to the pre-reform year the amount of cows shrunk by 39%, dairy buffalos by 59%, and ewes by 73% (NATIONAL STATISTICAL INSTITUTE). Moreover, the greatest part of dairy animals has been reared in small-scale (subsistence, semi-subsistence) farms accounting for the biggest portion of livestock holdings (TABLE 1). Almost all livestock farms are unregistered individual, family or group holdings ("physical persons") concentrating the majority of dairy heads in the country (ANNEX 1).

Table 1: Number and size of livestock holdings in Bulgaria

Type	Share		Share		Share		Share		Total (000)		Average
	farms	heads	farms	heads	farms	heads	farms	heads	farms	heads	heads
	1 -2[1]		***3 - 9***		***10 - 19***		***20 and >***				
Cows	87,3	56,4	11,0	23,3	1,1	6,9	0,6	13,5	193,7	371	1,92
Buffalos	85,7	47,5	11,5	20,6	1,6	8,8	1,2	23,1	2	4,6	2,26
	1 - 9		***10 -49***		***50 -99***		***100 and >***				
Sheep	89,3	56,7	9,6	26,0	0,7	7,8	0,4	9,5	233	1365,8	5,86
	1 - 9		***10 - 19***		***20 - 49***		***50 and >***				
Goats	98,2	86,8	1,3	5,8	0,4	4,4	0,1	3,0	263,2	683,6	2,60

Note: [1]number of heads in farms

Source: Agricultural Census 2003

In the greater part of small-scale farms primitive technologies dominate, productivity is very low, and no modern (safety, quality, hygiene, environmental, animal-welfare) standards are applied. Persistence of that miniature livestock farming has been increasingly associated with growing environmental problems and social conflicts result of the poor manure management and discomfort (odor, noise) for the rural population (BACHEV, 2008a). A significant portion of the product is consumed by households, and surpluses are sold to processors, "street" market or delivered to relatives and permanent customers. According to the last census 42% of the dairy farms sell "only surpluses of produced milk" (ANNEX 2).

There have been significant problems for the small-scale dairy farms to sell out their output, meet increasing (quality, safety) consumers and industry demand,

and integrate successfully into rapidly evolving markets and food chains (BACHEV AND MANOLOV, 2007). The smaller-scale dairy farms are entirely ignored by dominating large processors since they are not able to meet quantity and quality requirements, and command high (transportation, training, transaction) costs. What is more, while only 3-4% of the dairy import is finished products, a good number of local processors increasing work with imported powder milk in order to meet tough EU standards (KOVACHEVA ET AL., 2007). Furthermore, smaller farms usually face price discrimination and hardly can break-even production costs (especially in summer season when supply is bigger than demand). In addition, farmers often experience delayed payments by a monopoly buyer which reaches up to several months (STOYANOV ET AL., 2007).

Collective (inputs supply, marketing, processing) organizations of the dairy farmers have not emerged because of: diversified interests of farmers (different age, unlike size and type of operations, distinct diversification and market orientation, specific political and ethnic ties); bad perception associated "collective" forms (living memory from communist period); mismanagement and misused of power in newly established associations; huge transaction costs for initiation and development; lack of appropriate legislation and incentives for association (BACHEV, 2006b).

Transitional Bulgarian farming has been one of the least supported in Europe. Estimates demonstrate that before 2000 the Aggregate Level of Support to Agriculture was very low, close to zero or even negative (OECD, 2000). Despite the progress in public assistance in recent years it rests very little with a tiny proportion of farms (mostly large afro-firms and cooperatives, and tobacco producers) effectively supported (BACHEV, 2005).

As a result of all these, the majority of dairy farms have been left out of modern marketing channels and their prospects of post-EU accession development are extremely limited. A great part of the farms have not been able to adapt to ever increasing competition, industry requirements, and evolving institutional quality, hygiene, animal welfare, environmental etc. standards. Consequently, the number of livestock farms constantly decreases (since the pick in 1994) while the animal per farm slightly increase. Only for 2003-2005 the number of livestock holdings diminished by more than 20% (MAF). Because of the absence of other employment opportunities (lack of resources, unfavorable conditions, age of farmers) a significant portion of the small-scale livestock farms would sustain in years to come as part-time and subsistence farming with restricted (mostly informal) marketing possibilities (BACHEV, 2006a).

According to the Association of Milk Producers there are only 900 farms with 50000 cows meeting EU standards for raw milk quality. They account for 0.5% of cow farms and 13% of cows in country. There is a transition period until the end of 2009 for milk producers to adapt to the new (quality, building, manure management) requirements in the dairy sector. Besides, special measures are

envisaged from 2007 on to use EU funds for modernization of dairy farms and support market orientation of "semi-market" farms. EU quota system for cow milk has been also introduced which is expected to stabilize income of the dairy producers.

After 1990 a huge number of dairy processors emerged making up an industry of around 840 enterprises. A great amount of them have not been able to adapt to modern market and institutional requirements. As much of 45% of the industrial and 77% of the small-scale dairies have failed after 2000 (KOVACHEVA ET AL., 2007). Currently there are 216 milk processors out of which only 22 having license to export to EU (others can sell in Bulgaria or export to third countries). Dairy processors are categorized in 4 groups: First group with 15 companies processing exclusively milk corresponding to EU standards; Second group with 69 companies processing with separate technological lines for "EU" and "non EU milk"; Third group with 121 dairies processing milk according to Bulgarian standards; Forth group with 3 processors working with non-cow milk.

Plovdiv region is located in South-Central part of Bulgaria (ANNEX 3) where agriculture has been well presented. There are more than 52000 farms averaging 2.8 ha mostly in labor intensive productions - vegetables, fruits, grape, and livestock (AGRICULTURAL CENSUS, 2003). More than 99% of the farms are unregistered individual, family or group farms.

A good portion of holdings in the region raise some kind of livestock – 34% have goats, 30% have cattle, 19% are with sheep, and 0.4% has buffalos. Trends for development of the dairy farming in the region are even worst than for the country (ANNEX 4). The number of cows, buffalos and sheep is accordingly 55%, 78% and 75% smaller than in 1990 while the increase of goats is little bit less than for the country. The concentration of all dairy livestock but goats per holdings is higher than in the country – correspondingly 2.34 cows, 3.67 buffalos, 7.93 sheep and 3.39 goats. Semi-subsistence and small-scale farming is typical in the South-central region most of holdings being with economic size less than 2 European Size Units. More than 93% of the holdings specialized in milk cows and 94% of the farms specialized in sheep and goats are in that group (AGRICULTURAL CENSUS, 2003). Likewise, more than 95% of the mix holdings with dominating grazing animals, 94% of the mixed farms with dominating cereals and grazing livestock, and 96% of the mixed farm with other crops and livestock belong to the same grouping.

There are 22 dairy processors in Plovdiv region facing similar challenges than the entire industry.

3 CONTENT OF BUSINESS INNOVATION

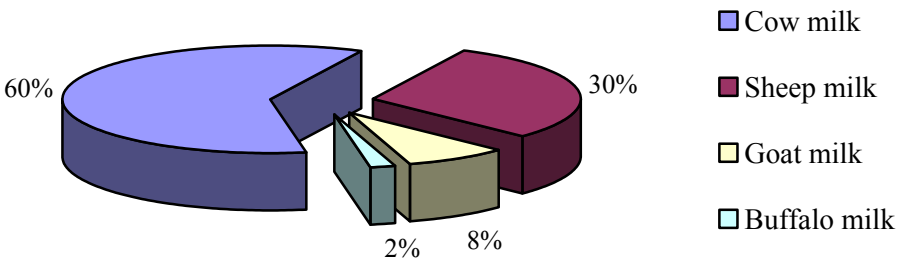
A new business model for market inclusion of small-scale dairy farms from Plovdiv region has been developed by a private entrepreneur. "Dimitar Madzarov"LTD was set up by Mr.Dimitar Madzarov in 1991. The company's business includes production and trade of dairy and meat products. The Dairy processing facilities are located in Stamboliyski town (15 km East from Plovdiv) and a storehouse in Plovdiv (ANNEX 5). "Dimitar Madzarov"LTD is owned by Mr.Madzarov as his wife Julia Madzarova is the Manager of the Dairy. They graduated the University of Food Processing Industries, Plovdiv with majors "Fridge Techniques and Technologies" and "Technology of Dairy and Dairy Processing" accordingly. Both of them had much previous professional experiences as employees of the State Dairy Processing Company.

Major features of the business model include:

● *starting up and developing a modern dairy processing enterprise for locally produced milk.*

Madzarovs have successfully developed a new dairy processing enterprise and modernized it according to the up-to-date technological and quality standards. Own know-how has been extensively used and funding of investments exclusively done by own sources and bank loans. Now the Dairy effectively competes in an environment of high market and institutional requirements being one of the well-known in the region and beyond. The company is equipped with qualified specialists; up-to-date lines for milk pasteurization, and production and maturisation of various dairy produce; a modern laboratory for chemical analyses of raw milk, milk processing and final products; and effective storage facilities. Processing capacity of the Dairy is 50t milk a day of cow, sheep, goat and buffalo milks (FIGURE 1). The production comprises a big range of traditional and original products: brined cheeses, yellow cheeses, soft cheeses, processed cheeses, curds, butter, katuk etc. All products are developed by Ms.Madzarova and the technologists of the company. Unlike the dominating industrial processors working exclusively with the large daily farms from around the country and/or imported powder milk, "Dimitar Madzarov" LTD uses entirely locally produced fresh milk from Plovdiv region.

Figure 1: Structure of processed milk by "Dimitar Madzarov"LTD

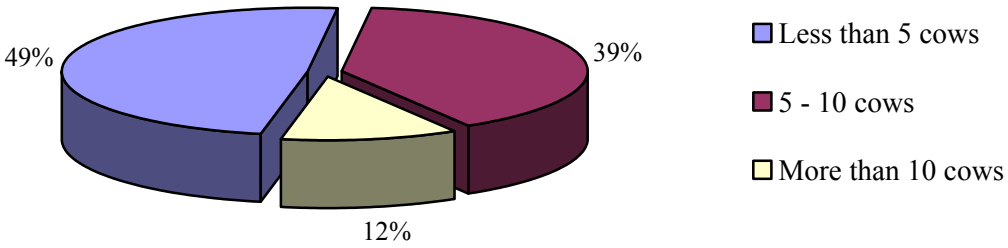


Source: "Dimitar Madzarov"LTD

- *installing milk collecting, cooling, and controlling facilities in the neighborhood to small-scale farms and within groups of farms and bigger farms.*

The Dairy suppliers are more than 1000 livestock farms from Plovdiv and Pazardjik areas located up to 30 km from the processing facilities. The best part of suppliers is small-scale producers with few heads per holding (FIGURE 2).

Figure 2: Size of milk suppliers of "Dimitar Madzarov"LTD



Source: "Dimitar Madzarov"LTD

The company has built 80 terminals in different locations in proximity of the dairy farms. Each terminal is equipped with 2-3 tanks for milk, staff and devices for analyzing major indicators of delivered milk - butter and water content, traces of antibiotics, other physical and chemical characteristics. In addition, 150 tanks have been installed within individual or groups of dairy farms. They are rented for free to farmers and entirely maintained by the company while raw milk is collected by the Dairy trucks daily or every other day. The livestock farmers equipped with tanks are responsible for the electricity and cleaning

costs. The installation of common and group collecting capacity nearby the small farms (having little or none alternatives for milk commercialization) let them become a major supplier to the Dairy. In addition, the group organization of milk collection increases farmers incentives for cooperation (restriction of opportunistic behavior, mutual control), and save costs for the quality and quantity verification and tests. The company buys and processes all types milk produced in the area (cow, sheep, goat, and buffalo) which let keeping and extension of the traditional livestock production in the region.

● *modernizing milk supply and processing quality according to the top industry standards and EU requirements.*

"Dimitar Madzarov"LTD is among few Bulgarian enterprises which not only adapt the evolving national standards but introduced the high international quality standards such as HACCP, Good Production Practices, and ISO 9000. It has been able to meet and maintain the tough EU norms for technologies, buildings, and organization of milk purchase, storing and processing. A modern system of laboratory and on-spot quality and safety checks up has been introduced; a separated line for purchasing, storing and processing of "euro milk" has been launched; all requirements concerning the registration of individual suppliers and every purchase of milk has been put in place. Since 2000 the Dairy has been certified for EU export, and always meets the high standards of national and EU inspectors. Currently, a third of processed milk fully corresponds to the EU requirements while rest is processed separately according to Bulgarian standards. Farmers have a period for adaptation to the new requirements until the end of 2009.

● *building an effective system for governing relations with individual farmers*.

An effective system for coordination, stimulation, and conflict resolution with individual farms has been developed by "Dimitar Madzarov"LTD (FIGURE 3). A good reputation for a reliable partner has been built by the Dairy. That gives farmers sense of security and willingness to maintain the trade relations. That is additionally enhanced by formal delivery contracts with the individual suppliers. Not surprisingly more than a half of the farms are long-term suppliers of the Dairy. The high frequency of relations between the same partners facilitates transactions, develop friendship and trust, stimulate cooperation and restrict opportunism. The Dairy Manager is personally responsible for the communications with farmers, and she is available to discuss goals and problems with every supplier any time. Twice a month regular group discussions and training of farmers on new company's and institutional requirements, prospective standards, problem identification and resolution, opportunities for participation in public support programs etc. are held.

Figure 3: Structure of governance of relations of "Dimitar Madzarov" LTD with

Individual farms

← *good reputation*
← *communication* →
← *training*
← *trust* →
← *specific investment*
← *delivery contracts* →
← *cost sharing*
← *registration* →
← *price premiums*
← *payment modes*
← *quality tests* →
← *punishment*
← *third party involvement* →
← *encouraging farms grouping*
← *demand for traditional milk* →
← *assistance with services*

"Dimitar Madzarov"LTD

Significant on farm (cite)specific investment have been made by the company consisting of milk collecting, cooling, and controlling facilities and staff. A good part of these highly specific to individual/group of farms material assets are provided (rented) for free to suppliers as the Dairy further carries maintenance (fixing) of facilities. The later creates possibility and/or gives strong incentives ("dependency") of farms to trade with that particular dairy since it makes marketing of milk feasible for farms saving considerable investment and maintenance costs. The provision of "group" tanks increases efficiency of milk collection minimizing costs for communication, verification, tests, and transportation. It also encourages group organization increasing farmers common interests and mutual (self)control.

An efficient system for verification and registration (documentation) of quality and quantity of delivered milk of each supplier is put in place. That guarantees a precise control (permanent test) on quality, full traceability, and avoids possible conflicts between the company and farmers on milk quantity and quality. In addition, punishment in form of not accepting supplied milk and/or ceasing actual payment is effectively applied for offenders. In that way, cheaters for the real quality of milk (e.g. treating animals with antibiotics) or quantity of delivery are commonly sanctioned. The former is coupled with notification and

consequent involvement of the State Veterinary-Sanitary Control (an example for a trilateral governance mode).

Regular payment of supplied milk (every 15 days) brings about a stable income of the farms household and incentives to keep up relation (contract) with the Dairy. Differential prices are used to stimulate the extension of livestock operations and milk supply. Small suppliers (holders of 1-2 cows) are paid at dominating market price (0.20 euro/liter), bigger suppliers (more than 100 liter) get a premium of 12.5% (0.225 euro/liter), and the biggest farms (more than 300 liter) receive 17.5% premium (0.235 euro/liter). In winter period, when supply of milk is deficient, an advance payment is also employed. That mode of interlinking an "interest-free credit" against the "marketing of raw milk" guarantees farms needed cash-flow and working capital, secure a continuation of the livestock production, and stabilize the milk delivery.

The company buys and processes all type milk produced in the area – cow, sheep, goat, and buffalo. That gives new employment and income opportunities for the small-scale holdings (usually rearing all kind livestock) opening new possibilities for commercialization of the traditional produce. It helps keeping-up and even extending some traditional livestock productions in region such as goats, sheep and buffalo.

The Dairy provides assistance to milk suppliers in construction of new facilities and preparation of projects for public support. That is particularly essential since small-scale farmers have no capacity (resources, expertise) to execute these operations or hire a market provider. The Dairy uses own experts and explores the economy of scale saving costs on provision of "standard" services to numerous farms.

All these facilitate, intensify and stabilize the relations with farmers, decrease information asymmetry, restrict opportunistic behavior, support farmers' adaptation to evolving market and institutional demand, rise efficiency and diminish costs of transactions for both sides.

● *setting up Company Mark and Label, and building reputation for high quality and authentic origin products.*

Company Mark and Own Label have been designed and registered. "Dimitar Madzarov"LTD has developed a good reputation for the high quality and safe products among leading food retailers, wholesale traders and exporters, and final consumers. For many years the company is perceived as a leader of the dairy production in the region and nationwide. That is an important factor for the progressive extension of the business in an environment of high competition with local and international players, increasing consumer demand for quality and safety, and tightening institutional requirements for food (particularly dairy and meat) sector.

● *introducing a great variety of specific, original and locally produced dairy products in a big selection of packages into regional, national, and international markets.*

"Dimitar Madzarov"LTD has introduced a huge assortment of specific local products such as Bulgarian white brined cheeses, Bulgarian yellow cheeses, soft cheeses, katuks, processed cheeses, curds, and butter. It processes all major type milk (cow, sheep, goat, buffalo, mixture), and contributes to revival of traditions in the production and consumption of divers local dairy products. A range of original products innovation developed by the own team headed by Ms.Madzarova has been also successfully introduced to market: Bulgarian yellow cheese with red pepper's flavor, Bulgarian yellow cheese with oregano and savory flavor, Bulgarian yellow cheese with hot paprika flavor, smoked yellow cheese, roll of yellow cheese with red paprika, and roll of yellow cheese with savory flavor. A great range of packaging has been used to suite to the specific requirements of various traders and final consumers. All these eventually contribute to increasing demand for (consumption of) local dairy products, and a greater commercialization of milk produced by local farmers.

As much as 60% of the Dairy output is marketed to the biggest food chains in the country such as 345, Billa, Fantastico, HIT, Klaufland, and Piccadilly (ANNEX 6). Delivery contracts are signed annually after negotiating quantities, assortments, packaging etc. In the contracting both the specific requirements of supermarkets and the promotion of the company's new products play an important role. The contract mode improves the coordination with the vertical partners and facilitates the integration into the food chain, reduces market and price uncertainty, and guarantee an effective marketing of the final products. Long-term trade relations with the same downstream partners are typical which develop trust and effective planning, adjustment and conflict resolution mechanisms. The rest portion of the Dairy product is sold on regional wholesale markets (10%) or exported (30%). Here the good reputation of the Dairy and the effective adaptation to the market demand (quality, assortment, packaging) is also critical.

4 EVIDENCE OF INCLUSION OF SMALL-SCALE PRODUCERS

The inclusion of the small-scale producers is also proved by the field study of suppliers of "Dimitar Madzarov"LTD. It demonstrated that a great part of the suppliers of all kind milk to the Dairy are farms with few heads of animals (TABLE 2). Most small holdings are not specialized but produce more than one sort of milk raring different kind of livestock. Collected and processed milk by "Dimitar Madzarov"LTD has augmented 20 folds for the last 10 years. At the same time, the structure of suppliers has not changed while there is some increase in number of the heads per farm. Therefore, a significant amount of

new small-scale farmers have been involved in the business with the Dairy, included in the food chain, and commercializing their milk thanks to the integration with the Dairy.

Table 2: Kind and size of farms supplying to "Dimitar Madzarov"LTD

Farms kind and size	Number farms	Number heads	Share in farms	Share in heads	Average heads	Mix livestock farms number	Mix livestock farms share
Cows							
1 - 5	7	24	17,5	2,9	3,4	7	100
6 - 10	5	44	12,5	5,3	8,8	1	20
11 - 15	10	130	25,0	15,8	13,0	0	0
16 - 20	5	89	12,5	10,8	17,8	0	0
21 - 35	6	167	15,0	20,3	27,8	0	0
36 - 50	4	187	10,0	22,7	46,8	0	0
> 51	3	206	7,5	25,0	68,7	0	0
Sub total	40	847	100	100	21,2	8	20
Sheep							
1 - 10	6	55	54,5	12,6	9,2	6	100
11 - 20	2	33	18,2	7,6	16,5	2	100
21 - 50	1	28	9,1	6,4	28,0	1	100
51 - 99	1	59	9,1	13,6	59,0	1	100
> 100	1	260	9,1	59,8	260,0	0	0
Sub total	11	435	100	100	39,5	10	90,9
Goats							
1 - 10	3	23	75	54,8	7,7	3	100
> 11	1	19	25	45,2	19,0	1	100
Sub total	4	42	100	100	10,5	4	100
Buffalos							
1 - 5	1	4	50	19,0	4	1	100
> 6	1	17	50	81,0	17	0	0
Sub total	2	21	100	100	10,5	1	50
TOTAL	42	1345			32,0	23	54,8

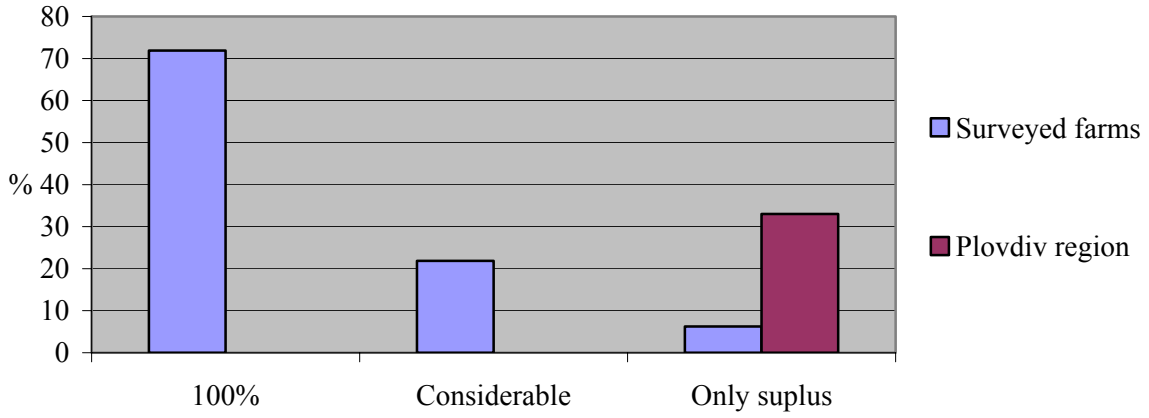
Source: Filed survey data

More than 71% of the surveyed farms are unregistered farms. One holding is identified as "cooperative" with a small number of animals (17 cows). Since 1990 the individual and family livestock holdings are typical examples for the small-scale farming in the region and nationwide (BACHEV, 2006). A significant portion of cow, sheep, goat and buffalo holdings in Bulgaria and Plovdiv region are subsistancy or semi-subsistence farms. In our case study 15% of the farms report their holdings are "predominately for own consumption". One farm declares that his/her holding is "entirely for own consumption". Small-scale farms produce a great range of products (vegetable, fruits, grain) mainly for household consumption. For all farms supplying to the Dairy the livestock comprises either "significant" (43%) or "entire part of farming activity". The

level of (semi)subsistency of surveyed small-scale farms is much lower than the regional where the majority of mixed holdings are less than two ESU[1] (used to define semi-market farms).

Most surveyed farms are market oriented as one quarter of them identify their farms as "mostly for sell" and 57% as "entirely for sell". The greatest portion of farms report they sell "entire" or "considerable" fraction of produced milk (FIGURE 4) which is much higher than the region level where 77% of the dairy farms "regularly sell out" milk. The national figure for the later mode of milk marketing is even lower - 58% (AGRICULTURAL CENSUS, 2003).

Figure 4: Share of sold milk in farms from case study and region



Source: Filed survey data

All but one farm report they sell the entire milk output to a single buyer - "Dimitar Madzarov"LTD. Therefore, the trade relationship with the Dairy is an important factor for significant commercialization of the milk production in surveyed farms. The number of farms selling "insignificant" segment of their milk is very small. The later percentage is much lower than the share of farms "selling only surpluses of milk" in Plovdiv region (one-third of dairy farms). All these figures prove a higher commercialization of the case study farms comparing to the rest farms in the region.

All farms sell milk to the Dairy "daily" which demonstrates a high frequency of the relations between the farms and the processor. The later speaks about the high efficiency of transactions and thus a bigger involvement of participating farms in the market chain. The high recurrence of transactions between the same

[1] 96% of the mixed holdings with dominating grazing livestock, 94% of the mixed farms with cereals and grazing livestock, 97% of the mixed holdings with other crops and livestock (AGRICULTURAL CENSUS, 2003).

partners develops knowledge, trust, and mechanisms to facilitate the mutual trade. Almost every other farm responds that "if they sell milk that is retail sell" and just one farm has an alternative buyer "another processor from region". That indicates a high intensity of the relations between the farms and "Dimitar Madzarov"LTD since demand for the retail sell in rural area is not immense (households have own livestock) while "street markets" in cities command high (transportation, transaction, fines, bribes) costs[2].

Bigger suppliers of the Dairy are mostly registered as firms. They are entirely commercial enterprises specialized in livestock and related (e.g. production of forage) operations.

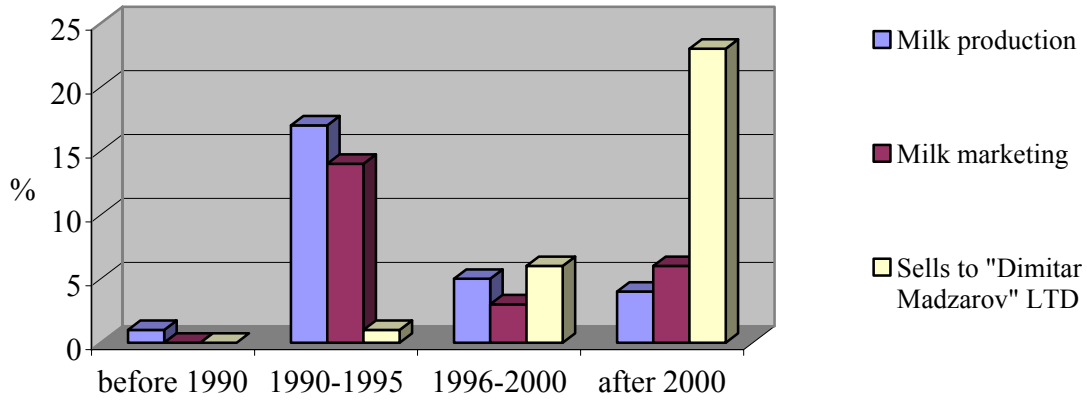
Surveyed farms are either "solely owned by farmer" (55% of cases) or "co-owned with other family members". As much as 70% of the farms use only own and family labor which indicates entirely "household" character of the farm. For all holdings farming is either "single" (54%) or "major occupation" (46%) while the regional and national figures stand around 71% (AGRICULTURAL CENSUS, 2003). The later is an indicator for the higher importance of farming for the farmers taking part in the integration with "Dimitar Madzarov"LTD. Thus, specialization into farming rather than off-farm diversification of activity is typical for the surveyed farms. Moreover, the livestock accounts for the entire or a considerable part of the farming activity. All these suggests that the specialization into farming and the integration with the Dairy gives higher employment (and income) opportunities for the surveyed farms comparing to other farming and off-farming employment. These figures are also much higher than the relevant regional and national levels. Similarly, for the bulk of investigated farms their holding is a "single" or a "major income source" both for the farmer and his/her household (ANNEX 7). The later again demonstrates a higher significance of the integrated to the Dairy farms to the individual and household economy. Contrary, in the country and Plovdiv region in particular, the part-time farming is dominant, and farming is mainly a "supplementary income source" (AGRICULTURAL CENSUS, 2003).

Our survey has found out that majority of the farms supplying to "Dimitar Madzarov"LTD started milk production and marketing in the period 1990-1995 (FIGURE 5). During that period the privatization of ancient farm structures and agrarian resources took place, and farming activity was transferred into the emerging private farms (BACHEV, 2007a). Since 1995 there has been decrease of "new comers" in milk production (result of specialization changes, take over or starting-up new farms) among surveyed farms. Simultaneously, there has been an increase in the number of farms marketing milk and a huge augmentation of the farms marketing milk to "Dimitar Madzarov"LTD. At the same time, the

[2] It is prohibited to sell milk and dairy products on street and open markets but such informal marketing is still practiced.

amount of milk producers in Plovdiv region (and nationwide) has decreased with an insignificant increase in the number of livestock and heads per farm (MAF). Therefore, the appearance and the development of that new Dairy has had positive impact on the commercialization of surveyed farms on the background of the general decline of the dairy sector in the region and the country. The effective new demand by "Dimitar Madzarov"LTD has equally attracted the new comers in the sector and the existing producers with no/little marketing alternatives.

Figure 5: Year of starting of milk production and marketing of suppliers of "Dimitar Madzarov"LTD

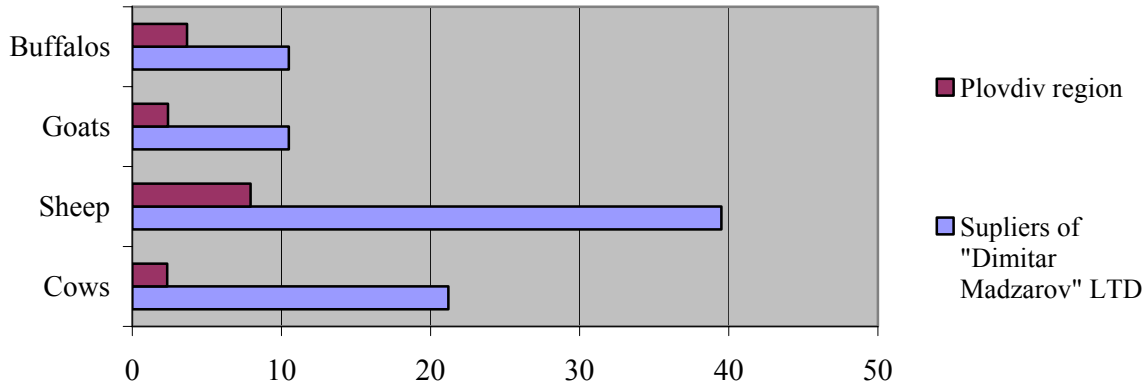


Source: Filed survey data

The involvement in trade relations with "Dimitar Madzarov"LTD has affected positively most of surveyed farms. A great portion of the suppliers say they have an increase in "milk production" and "milk marketing" comparing to the year(s) of commencement of milk production and marketing (ANNEX 8). The dynamics in surveyed farms is significant as average growth in the production is 195.4% and the expansion in milk marketing – 115.1%. Most farms indicate boost in marketed milk to "Dimitar Madzarov"LTD in comparison with the beginning of trade relation with the Dairy. For the later farms the growth in milk marketed to the Dairy is 83.5%. Some farms report a diminishing amount of sold milk comparing to the period they started marketing of milk – an average decrease in milk production and sells of 70%. Despite that no farm indicates any decrease in milk sold to "Dimitar Madzarov"LTD since the beginning of the bilateral trade. All these confirms a high efficiency and an extension of the trade relations with the Dairy for all participating farms. The later again is in a sharp contrast with the evolution and the commercialization of the small-scale dairy farming in Plovdiv region and nationwide.

The integration with “Dimitar Madzarov”LTD and the extension of bilateral trade eventually have led to the enlargement of the size of participated farms. That positive effect is proved by the fact that the average number of heads of all kind livestock in the surveyed farms is higher than in the region (FIGURE 6). Hence the inclusion of the dairy farms in the food chain through “Dimitar Madzarov”LTD creates incentives for the farms extension and further commercialization comparing to the rest of livestock holdings in the region.

Figure 6: Average number of heads in farms supplying to "Dimitar Madzarov"LTD and Plovdiv region



Source: Filed survey data

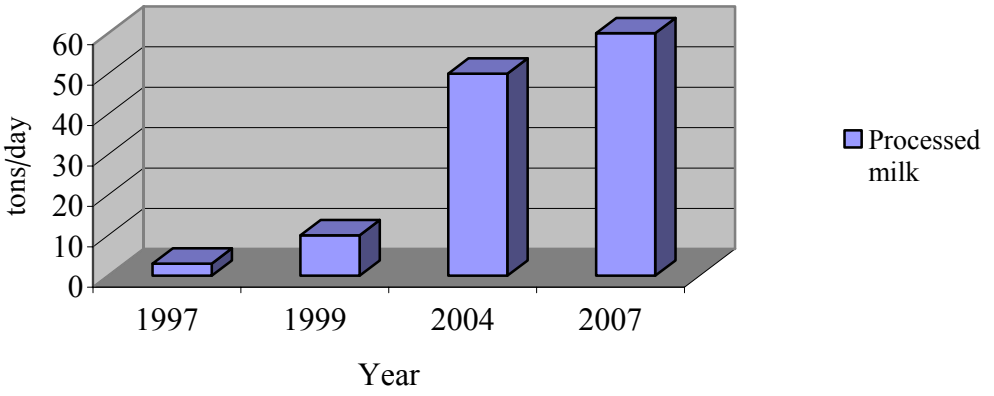
5 DRIVERS AND CHANGES OF INCLUSION

The major driving factors and the pace of evolution of the innovation are presented in Figure 7. *The entrepreneurship* of Mr. and Ms.Madzarov is the chief factor for the development of the new enterprise. For a short period of time the Dairy has extended its production capacity and now it process 20 folds more milk than in first years after the establishment (FIGURE 8). Madzarovs have been able to mobilize significant capital (own resources and bank credits) to extend and modernize the production potential of the Dairy according to the modern industry standards. Consequently, they are able to explore fully technological economies of scale and scope; build significant capacity for product innovation and promotion, and adaptation to evolving formal requirements and standards; and govern effectively outside relations with buyers and suppliers. Now “Dimitar Madzarov”LTD is well-known enterprise in region being one of the biggest employers in Stamboliyski area with staff reaching 140 persons.

Figure 7: Driving factors and timeline of innovation

Factors	**Evolution of "Dimitar Madzarov"LTD**		**Evolution of supplying farms**	*Factors*
Entrepreneurship	Extension of production capacity (1999, 2005)	↔	Extension of farm size	*Entrepreneurship*
Competition	Building effective milk collecting facilities (1999, 2005)	→	Improving milk quality	*Demand by "Dimitar Madzarov"LTD*
Consumers demand	Adaptation to national standards (continues)	→	Improving animal structure and breeds	*Incentives by "Dimitar Madzarov"LTD*
Expansion of large food stores	Product diversification and innovation (continues)	→	Studying "Dimitar Madzarov"LTD's and formal requirements	*Requirements and control by "Dimitar Madzarov"LTD*
Evolution of formal restrictions and standards	Export license to EU (2000 - current)	↔	Improving technology and hygiene	*Support by "Dimitar Madzarov"LTD*
EU integration	Introduction modern quality control (2004: HACCP, 2006: Good Production Practices, 2007: ISO 9000)	↔	Improving care for animals	*Cooperation*
	Long-term contracts with buyers and suppliers	→	Improving environmental performance	*Formal standards and control*
	System for consulting and servicing suppliers	→		*Public subsidies*
	Adaptation to EU requirements for separate milk collection and processing (2005)			*CAP implementation*

Figure 8: Evolution of production in "Dimitar Madzarov"LTD



Source: "Dimitar Madzarov"LTD

Another factor is *increasing consumers demand* for dairy products. Unlike first years of transition, since 1997 there is a reverse trend for augmentation of purchasing power of population and consumption of food (including dairy) products. The demand is not merely for more dairy goods but for higher quality and bigger assortment of traditional and new products. Along with that, concerns about safety, specific taste, and origin of food products also started to play a role. All that boost the demand for specific products of "Dimitar Madzarov"LTD, let realization of its comparative advantages (productivity, quality, innovation potential, good reputation), and contributed for the expansion of the Dairy.

The last 10 years has seen an emergence and rapid *expansion of large food stores and chains* in Bulgaria – big super and hyper-markets like Metro, Billa, HIT, Klaufland, Fantastico, 345, Piccadilly, Ramstore. They have come with new requirements for large volume, standardized products, up-to-date quality control, modern packaging, divers assortments etc. That generated a great potential for profiting from a tight integration with the food chains for innovative companies like "Dimitar Madzarov"LTD. Besides, *opening of EU market* for Bulgarian products created new "unlimited" opportunities. The Dairy responded to new market demand and opportunities by timely introduction of a modern system for quality control (HACCP, Good production practices, ISO 9000), diversification of products, development and promotion of new products, and adaptation to label, packaging etc. needs of big distributors and exporters. In addition, since 2000 a significant part of marketing of the Dairy has been effectively integrated through delivery contracts with the biggest food stores (60%) and exporters (30%).

The development of markets and the EU integration *enhanced competition* with the existing big industrial dairies, numerous newly-emerged small dairies, and imported cheap and quality dairy products. Along with that, the rapid *harmonization with EU laws and standards* has brought about new institutional requirements and restrictions for the dairy sector in the country. The timely adaptation to the new "rules of the game" by "Dimitar Madzarov"LTD is another factor for the success of the business model. The company managed to make all necessary arrangements (considerable investment, reorganization of production) to secure a separate collecting and processing of milk in two lines – milk corresponding to the EU standards for production, quality, hygiene, animal welfare, ecology, and milk meeting only the national standards. It should be underlined that in the transitional (to some extend current) conditions of a high uncertainty and low enforcement of standards, the competition with large "gray" sector has been neither fair nor easy to win.

"Dimitar Madzarov"LTD has been able to adapt successfully to ever increasing market demand, and tough formal requirements and standards introducing a high quality and safety control, and extensive product diversification and innovation. During difficult years of fundamental transformation of the industry "Dimitar Madzarov"LTD has found its place among the leading Bulgarian dairies operating according to the modern industry and EU standards. After 2000 a great number of dairy processors has left out business including 45% of the industrial and 77% of the small dairies. Currently only 10% of the dairies have license to export products to EU, and "Dimitar Madzarov"LTD is among them. Which is more, unlike industrial dairies extensively working with imported powder milk, "Dimitar Madzarov"LTD processes entirely local fresh milk. Above and beyond, 30% of the processed milk by the Dairy entirely corresponds to the EU standards for milk quality. The Dairy is well-integrated in the food chain through forward contracts with big supermarkets and exporters, and backward contracts with supplying farmers. That guarantee an effective governance of the outside relations, overcome high marketing and inputs supply uncertainty (risk), safeguard investments, and minimize costs of transactions.

According to Mr. and Ms.Madzarovi the major factors for the success of their enterprises are mostly internal: their "entrepreneurship", "managerial experience and skills", "technological knowledge", "high technological discipline", "available resources for investment", "introduction of innovation", "introduction effective control", "introduction incentives and sanctions", and "building good reputation". The only outside factors which have been critical are "development of markets and demand" and "formal regulations". "Existence of personal connections", "good luck", "access to outside credit", "public support", "local policy", and "national policy", all they have been identified as "unimportant" for the development of the Dairy and the case study innovation.

The process of inclusion of the dairy farms into the food chain and the progressive changes they make, have been determined by a number of factors. The farmers *entrepreneurship* and the ability to adapt to the new market and institutional environment has been a crucial factor for the farming development. Our study shows that most of the investigated farms assess as a significant factor their "own experience and skills" and none considers it "insignificant" (TABLE 3).

Table 3: Assessment of factors for farm development (percent of farms)

Factors	Significant	Moderate	Insignificant
Own experience and skills	70,6	14,7	0,0
Available farm resources	32,4	32,4	5,9
Introduction of innovation	20,6	14,7	14,7
Closer integration with "Dimitar Madzarov"LTD	32,4	23,5	11,8
Development of "Dimitar Madzarov"LTD	44,1	11,8	5,9
General development of the region	11,8	23,5	11,8
CAP implementation	32,4	11,8	8,8
Development of formal regulations	26,5	17,6	5,9
Improvement of farm education and advice	23,5	17,6	11,8
EU integration	17,6	17,6	8,8
Development of competition	11,8	23,5	14,7
State control on production	23,5	26,5	5,9
State control on quality	35,3	17,6	0,0
State guarantee of milk prices	29,4	2,9	23,5
State financial support to farms	26,5	8,8	23,5
State support to dairy processors	17,6	5,9	23,5
Extension of farm	38,2	17,6	2,9
Association with other farmers	5,9	5,9	35,3
Participation in larger projects for agrarian and rural development	11,8	8,8	23,5
Participation in professional organizational and associations	5,9	8,8	29,4
Respecting laws and private contracts	41,2	8,8	5,9

Source: Filed survey data

The analysis of the professional experiences, age structure, education level, and professional training of the farmers has found out that they are much more favorable than for the farmers in the region or nationwide (ANNEX 9, 10, 11, 12). More than 80% of the suppliers have got more than 10 years of farming experience. Most suppliers are younger generation of farmers (average age of 44.5 year), and thus more susceptible to learning, adaptation, innovation, and long-term investment than other farmers in the region. A big amount of participating farmers have a high level of education (high school or university

levels), and a significant part of them got a professional (livestock or another) training. The later is in a big contrast with the national figure where 98% of the unregistered (and all) farms have “only practical experience in agriculture” while very few have secondary vocational education (2%) and high education (1%) (AGRICULTURAL CENSUS, 2003). All these positive personal differences are critical factors for the higher entrepreneurship of the farmers, and reasons for their (willingness, possibilities for) adaptation to the new requirements of processor, market, and institutional environment. They eventually lead to an effective participation of these particular farms in studied innovative model and a greater inclusion in the modern marketing channels.

The development of "Dimitar Madzarov"LTD and the *closer integration with the Dairy* are major factors for the evolution of a good part of the surveyed farms. First of all, the establishment and the expansion of that new enterprise in the region increases significantly the demand for locally produced milk. Next, "Dimitar Madzarov"LTD provides new incentives for the farmers to increase production and commercialization of the milk, and improve the milk quality. According to the investigated farmers the main reasons for selling milk to "Dimitar Madzarov"LTD are “existence of contract”, “collecting milk close to farm”, “better quality control”, “good reputation”, “high trust”, “timely payment”, “higher prices”, and “lower risk” (TABLE 4). All these factors facilitate and intensify bilateral trade, and decrease transaction costs. Furthermore, the close integration (and existing communication, coordination and stimulation mechanisms) let "Dimitar Madzarov"LTD introduce effectively new requirements for the suppliers such as milk quality, time and mode of delivery etc. The later facilitate the adaptation of farmers to the modern market and institutional standards, and further increases commercialization and effective inclusion of supplying farms in the big food chains.

The building *an effective system for governing* relations with the farmers has been an important factor for the success of studied model. The development of the system includes building of a good reputation and trust, improving coordination and information mechanisms, investing in on-cite farm-specific assets for milk collection, providing significant incentives and services, effective contracting, payment and conflict resolution modes. There has been a significant evolution of the contract relations between "Dimitar Madzarov"LTD and the suppliers (FIGURE 9). Now a written form is commonly used to govern relations as long-term mode, fixing quality, quantity, pricing and sanctions, all they are wider (than before) applied in the negotiated terms. The contract governance improves the coordination between partners, let easy adaptation to evolving market conditions, gives a security for both sides, facilitates relations and decreases costs of transactions. Furthermore, the written mode has a number of advantages over the oral agreements such as clarity of provisions, possibility to specify(fix) more details, an easy verification and control, incentives to meet

negotiated terms, facile dispute resolution (including through court system) etc. The high recurrence of relations between the same partners (situation of bilateral trade) justifies the efforts and allows an effective return on (pay-back of) the costs for negotiations and putting agreements in a written form. Not surprisingly a considerable number of the farms see the "respecting laws and private contracts" as one of the most important factors for the farm development.

Table 4: Main reasons for selling milk to "Dimitar Madzarov"LTD (percent of farms)

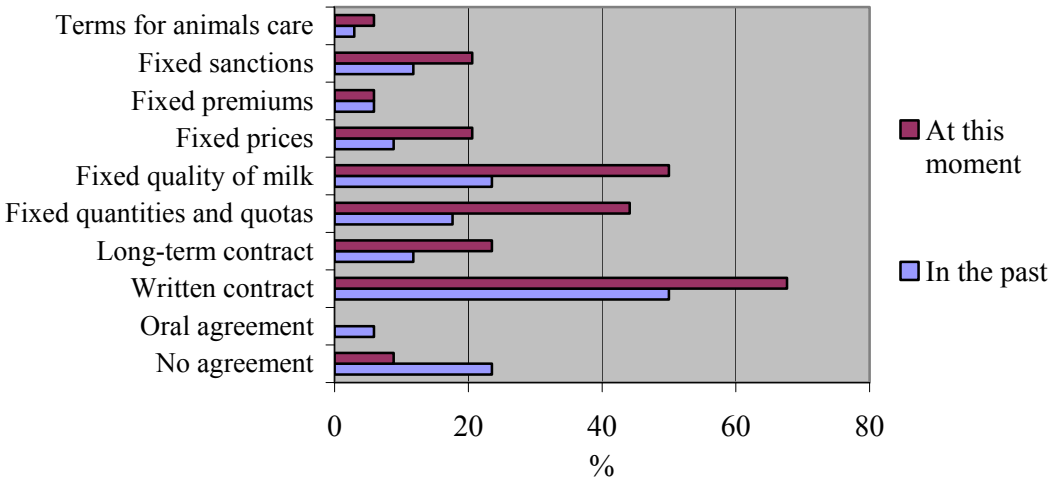
Reasons	At this moment	In the beginning
No alternative buyer in the region	5,9	11,8
Higher prices	41,2	38,2
Additional premiums	20,6	5,9
Possibility for unlimited sell	23,5	5,9
Lower risk	38,2	11,8
Timely payment	44,1	44,1
Existence of contract	55,9	26,5
High trust	47,1	23,5
Lower costs associated with sell	14,7	5,9
Receiving additional services from "Dimitar Madzarov"LTD	8,8	14,7
Friendship relations	8,8	0,0
Good reputation	52,9	26,5
Better quality control	47,1	11,8
Lack of special requirements	5,9	2,9
Existence of sanctions	11,8	5,9
Easy dispute resolution	17,6	8,8
Collecting milk close to farm	55,9	26,5
Opportunity to reach final consumers	11,8	2,9
No special reason	20,6	11,8

Source: Filed survey data

As far as prices are concerned, most farms report that "market prices" are employed (FIGURE 10). However, there is a considerable development of the pricing mode which is adjusted to the partners needs including negotiation of the levels, periods, sanctions etc. Now more than before farmers negotiate higher than market prices, and get long-term stable prices, and see sanctions (linked to milk quality and safety) included in the price terms. Also there is a slight increase in the number of farmers obtaining subsidies on milk by the state. The later is an example for a third-party intervention (support) aiming at increasing production and supply of high quality milk. That public involvement facilitates

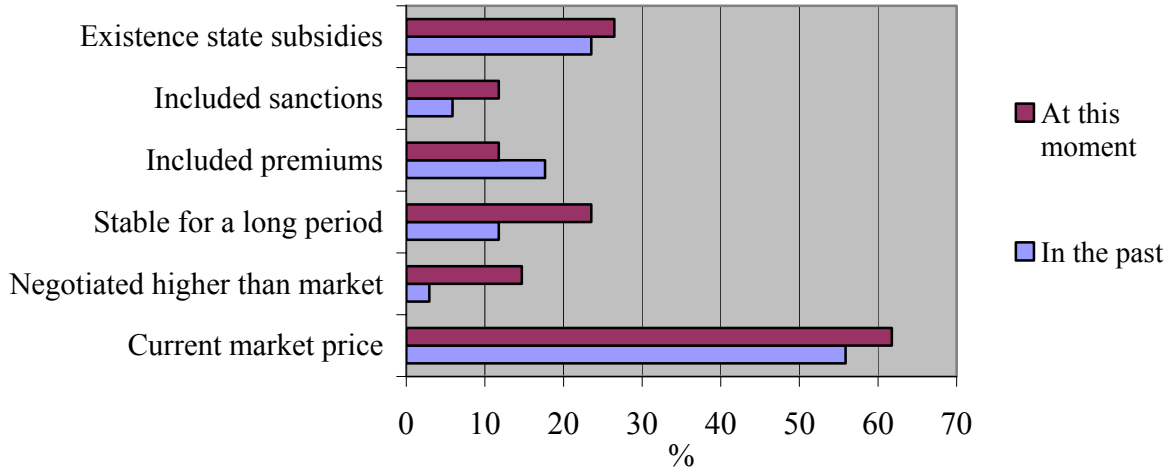
and intensifies relations between the dairy farmers and the Dairy, and eventually improves the quality of raw milk and dairy products.

Figure 9: Type of contracts between suppliers and "Dimitar Madzarov"LTD



Source: Filed survey data

Figure 10: Type of milk price for selling to "Dimitar Madzarov"LTD



Source: Filed survey data

For the majority of farmers the payment is made every 15 days, and the importance of this mode increased comparing to before. In addition, around 3% of farms indicate they continue to get an “advance payment” as before, and other 3% receive “payment in cash combine with other services”. The advance

payment, and the cash and service payment are modes for interlinked organization combining “supply of an interest-free short-term credit against the marketing of milk” and a “service supply against the marketing”. They further induce the production and the marketing in most needy farmers with a shortage of the working capital. This mode of private governance enhances integration of the farms with the Dairy and thus inclusion in the food chain.

According to the surveyed farms the major conflicts with "Dimitar Madzarov"LTD are associated with the “low milk price”. More than 35% of farms report having currently such conflicts comparing to 24% before experiencing the same problem. Like the majority of milk producers in Bulgaria surveyed the farmers are not happy with the “free” market prices of milk. All of them want to see it raised as 10% consider up to 50% increase enough to allow an effective adjustment to the new market and formal requirements. The rest wish much higher augmentation of the purchase price averaging 125% and reaching 275% in one case. Another conflict point has been connected with the “milk quality“ but the share of farmers experiencing this sort of conflict decreases from 12% in the past to just bellow 6% now. Presently around 6% of the farms have conflicts associated with the “assuring needed milk quality” and that share has doubled than in the past. Also an insignificant portion of the farms report continues conflicts related to the “assuring needed milk quantity” and the “environment protection” – around 3% in each category. Apparently, some of the surveyed farms are still experiencing problems adapting to the evolving market and institutional requirements - price competition, quality demand, new EU regulations and restrictions.

Most needy farmers get predominately two type services from "Dimitar Madzarov"LTD - around 30% mention receiving “consultation and information” and 6% “crediting”. Such interlinked organization (“information and consultation supply” and “credit supply” against “marketing of milk”) facilitates trade, increases efficiency and intensifies relations, and keeps smooth/increases the milk production and supply. In addition, the farmers report receiving four type of services by the state. “Crediting” and “veterinary services” get just under 15% of the surveyed farms, “consultation and information” – 12%, and “professional training” – 3%. Those are again examples for a third-party Government intervention in the private transactions in milk production and processing. The later support production and commercialization in certain farms, and thus assist their integration in the food chain.

The implementation of *an effective control on milk production, output, and farm performance* has been an important factor for the farm development and inclusion. A considerable number of the investigated farms report that "Dimitar Madzarov"LTD executes a strict control on “milk quality”, “milk safety”, and “hygiene of production” (ANNEX 13). Moreover, according to the good part of the respondent “sanctions and punishments are applied” by the Dairy on

offenders. All these modes of private governance restrict the poor performance and opportunistic behavior, improve quality, and enhance effective commercialization of the farms output. In addition, the state control is applied on "animal health", "milk quality", "hygiene of production" and "environment performance" of the farms. These modes of a third-party (Government) intervention assist the timely adaptation of the farms to the modern quality and eco-standards, and thus an effective integration into the big food chains.

Another important factor for the farming development and commercialization has been farmers *cooperation.* More than a quarter of the farms are "members of cooperatives" and around 6% belong to "informal farm groups". Only the small-scale holdings are members of formal and informal farm organizations in the past and now. The development and the sustainability of the small-scale (subsistence and subsistence) farming and the production cooperatives in Bulgaria are highly complementary (BACHEV, 2006b). The cooperatives provide highly specific to the farms and farm households products and services (forage for livestock, mechanization services, food for consumption) while the farm grouping allows the exploration of economy of scale on joint operations. All these let individual farms benefit from the coop membership (member orientation, non-for-profit character) and specialize in "profitable" and market-oriented livestock operations. What is more, as much as 62% among investigated farms state they produce forage for their animals, while 69% (bigger operators) report purchasing the forage.

Among most common changes farmers had to make to start selling milk to "Dimitar Madzarov"LTD in the past were: in the "hygiene of production", "farms management", and "milk quality" (TABLE 5). The continuation of the relations with the Dairy put higher requirements to the majority of farms at the current stage of development. Most farms have to improve the "hygiene of production" and "milk quality" in order to carry on selling milk to the Dairy. A good part of the farms are to "increase number of animals", "volume of production", "improve animal welfare", and "environmental care". That requires progressive changes in "breed of animals", "technology of breeding", and "labor organization" in the bulk of suppliers. Some of the necessary changes are dictated by the new EU regulations about food traceability, safely, animal welfare and environmental protection. The adaptation to the new "Dimitar Madzarov"LTD's requirements and the formally imposed standards are being associated with additional "costs and investment" and raising "amount and intensity of labor" in a significant amount of the farms. Only 12% of the surveyed farms fit well to changing requirements having no considerable changes to make to begin and keep on business with the Dairy.

Table 5: Changes which had to and have to be make in farm in order to sell milk to "Dimitar Madzarov"LTD (percent of farms)

Changes to be made	In the past	At this moment
In number of animals	11,8	29,4
In animals breed	2,9	20,6
In kind of livestock	0,0	17,6
In volume of production	8,8	26,5
In milk quality	20,6	41,2
In technology of breeding	2,9	23,5
In costs and investment	14,7	35,3
In hygiene of production	29,4	61,8
In animal welfare	5,9	26,5
In environmental care	8,8	20,6
In specialization of production	5,9	17,6
In amount and intensity of labor	8,8	26,5
In labor organization	0,0	23,5
In farm management	29,4	5,9
In formal registration	17,6	2,9
In farms type	17,6	5,9
Membership in professional organizations	8,8	0,0
Others	0,0	2,9
No any significant changes	11,8	11,8

Source: Filed survey data

6 COST, BENEFITS, AND SUSTAINABILITY OF INCLUSION

The involvement of the farms with "Dimitar Madzarov"LTD has led to a higher commercialization and a bigger inclusion into the marketing channels. Our study has found out that the general status of the surveyed farms is better-off than the similar farms from the region not supplying to "Dimitar Madzarov" LTD. According to their own estimates the majority of these farms enjoy a higher income, a better quality of production, a greater stability of sells and prices, a better possibility for modernization and adaptation to formal requirements, and care for animals and environment, than other farms in the region (TABLE 6). The integration with "Dimitar Madzarov"LTD has led to a progressive improvement of the relative situation of the farms. Now the share of farms feeling they are better-off for all these major indicators is much higher then it was in the past. The farm improvement is to be judged even higher on the background of lack of a progression (regression) of the dairy sector nationwide – a sharp decrease in the number of farms, widespread economic loses from milk production, a poor state of manure management. The portion of farms having worst than average income and expenditure dropped significantly, and now it comprises a tiny segment of the surveyed holdings.

Table 6: Status of surveyed farms comparing to other similar farms in the region not supplying to "Dimitar Madzarov"LTD (percent of farms)

Indicators	In the past			At this moment		
	Better	Same	Worst	Better	Same	Worst
Level of income	23,5	26,5	11,8	41,2	26,5	2,9
Level of expenditures	14,7	26,5	11,8	20,6	26,5	5,9
Level of production	20,6	17,6	8,8	38,2	17,6	0,0
Quality of production	29,4	20,6	0,0	47,1	20,6	0,0
Possibility for modernization	17,6	23,5	5,9	32,4	26,5	5,9
Level of risk	5,9	20,6	14,7	2,9	14,7	26,5
Stability of sells	17,6	29,4	2,9	44,1	20,6	2,9
Stability of prices	14,7	29,4	8,8	29,4	29,4	8,8
Care for animals	11,8	26,5	0,0	32,4	23,5	0,0
Care for environment	11,8	20,6	5,9	23,5	26,5	2,9
Social status	8,8	29,4	0,0	17,6	26,5	0,0
Possibility for adaptation to formal regulations and standards	14,7	14,7	0,0	26,5	5,9	0,0

Source: Filed survey data

The number of farms which perceive their situation as "the same" as other farms not supplying to "Dimitar Madzarov"LTD in levels of income, expenditure, and production is not small and it has not changed in time. Partially that has been a result of the progressive changes in the general economic level of the dairy farms in Plovdiv region – one of the biggest milk producing regions of the country with numerous milk processors. The correspondence of the status of a significant share of the surveyed farms to other similar (market or semi-market) farms prove that a good number of the suppliers of "Dimitar Madzarov"LTD are just typical farms from the region. Nonetheless, the surveyed farms still benefit carrying on and extending commercialization though integration with the Dairy. The later is very important having in mind the low level of inclusion of small-scale farms in the marketing channels and the continuing process of ceasing commercial activity (turning to subsistency, failures, take-overs) of a great number of the dairy farms in Bulgaria.

According to Mr. and Ms.Madzarovi the evolution of their business model contributes to "creation of employment in region" and "popularization and development of local products". At the same time this innovation does not affect "demand on milk in region" neither "restrict production of dairy products in households and subsistence farms". The later (neutral impact) could be also considered as positive since "own production" accounts for a significant part in the consumption of dairy products for a good part of the rural households.

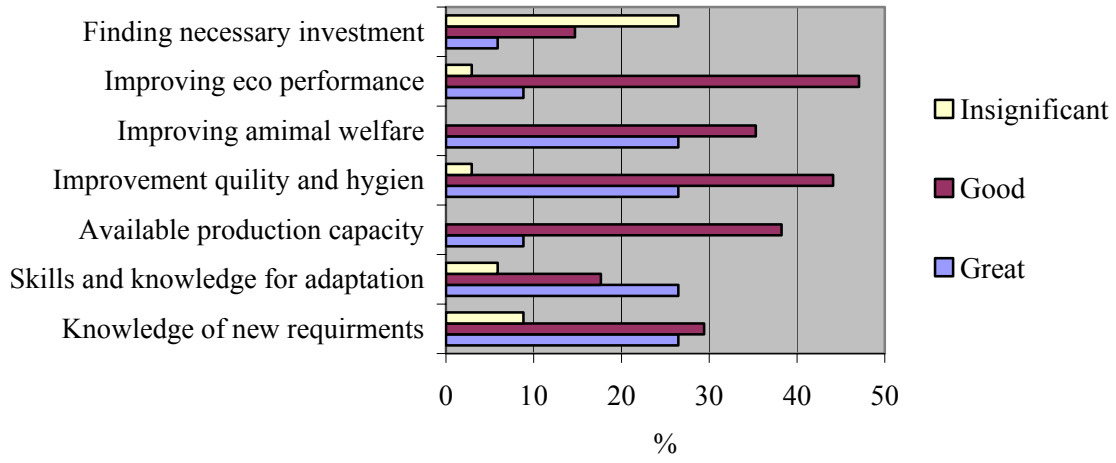
The analyses of the major items of the production and the transaction costs shows that the biggest efforts and time of the suppliers of "Dimitar Madzarov"LTD are associated with: "production activity", "quality control", "planning farm activity", "studding formal requirements" and "adaptation to new formal requirements" (ANNEX 14). A good part of the farms also spend great efforts for "introduction of innovation", "relations with control authorities", and "relations with bureaucracy". Our research has found out that for the Bulgarian farms in general and the dairy farms in particular the "marketing costs" (along with the "credit supply costs") account for the greatest part of the managers efforts (BACHEV AND KAGATSUME, 2003). In contrast with the common situation in the country the "marketing of product takes insignificant costs" for the most surveyed farm. The later is a consequence of the higher integration with "Dimitar Madzarov"LTD and the existence of an effective mechanisms for the governing various (including marketing) relations between the farms and the Dairy. According to Ms.Madzarova the "relationships with milk suppliers" accounts for a significant part of her managerial efforts. Apparently, the Dairy bears a considerable part of the costs for improving governance of the bilateral trade.

More than a half of the surveyed farms declare their intention to "extend current farm activity", and 30% aim at "keeping activity unchanged" (ANNEX 15). Moreover, no farm intends to decrease the present farm size, concentrate on crop production, or change the type of farm. Besides, only few farms plan to focus on subsistence farming in future. Furthermore, the greatest part of farms has in mind to "modernize their farm". What is more, a considerable number of farmers envisage "closer integration with "Dimitar Madzarov"LTD". Mr. and Ms.Madzarovi also see the further integration with the chief suppliers as a probable direction for the development. All these suggest a high sustainability of the studied mode and the participating farms. The later is extremely important since all experts assessments and trends show a low sustainability of a great part of (mostly small and middle-scale) dairy farms in Bulgaria (BACHEV, 2006a; MLADENOVA ET AL., 2007).

The sustainability of the farms and the future evolution of the business model is strongly affected by the introduction of EU CAP in the country. All analyses indicate that a great part of the dairy farms (especially small-scale operators) will hardly make the necessary changes (and associated investments) and will have to cease the commercial activity (BACHEV 2006b; MLADENOVA ET AL., 2007). Unlike the common situation the surveyed farms declare having a high capacity for the adaptation to the new EU requirements for the dairy sector (FIGURE 11). As our survey has found out the most farm managers have a great or good "knowledge on new requirements" and "necessary skills and knowledge for adaptation". Furthermore, the farms potential is significant in all critical areas such as: "available production capacity", "improvement of quality and

hygiene", adaptation to requirements for "animal welfare" and "environment". All these will facilitate the adaptation to the new institutional requirements and enhance the sustainability of the participating farms.

Figure 11: Farm capacity for adaptation to new EU requirements for dairy sector



Source: Filed survey data

A good number of the farms indicates they have no sufficient financial capacity to cover the necessary investment (costs) associated with the adaptation to the EU standards. From 2007 on a significant public support to farms is envisaged in forms of direct support and investment subsidies for modernization of enterprises and adaptation to the new quality, safety, animal welfare and environmental standards. Special support measures for "semi-market" and smaller-scale dairy holdings are being also preparing which will assist their adaptation to the new institutional and quality requirements. Therefore, the high capacity for adaptation and the special position of surveyed farms (effective integration and inclusion) would let take advantage of the new funding opportunities and enhance the farm efficiency. Thus sustainability of the farms in the conditions of CAP would increase, and the integration with "Dimitar Madzarov"LTD strengthened and extended.

Our survey has found out that more than 40% of the farms expect the implementation of CAP to increase their income and product quality (ANNEX 16). Around a third of farms also anticipate a positive impact of the new policies on the volume of production, the improvement of care for animals, and the social status of the farm household. A good share of the farms are optimistic for the CAP effect on investment, technology of production, improvement of

environmental care, development of infrastructure, and increasing access to public programs. All these figures are much higher that the widespread expectations of the dairy farmers in Bulgaria for predominately "negative" or "neutral" effect of CAP implementation on their farms (BACHEV 2006a). In our case, a fifth of the surveyed farms have a pessimistic expectation for the impact of the new policies on their income.

According to Mr. and Ms.Madzarovi the most important factors for the future development of "Dimitar Madzarov"LTD and the business model of farmers inclusion are following: "own experience", "implementation of CAP and EU integration", "closer integration with suppliers", "enhancement of competition", "state control on production", "state control on quality", "state financial support to farms", "state support to processors", "extension of the "Dimitar Madzarov"LTD", "modernization of "Dimitar Madzarov"LTD", "farmers training", "enlargement of farms", "farmers association", "participation in bigger projects for agrarian and rural development", "general development of region", "taking part in professional associations", "improvement of formal regulations", and "respecting lows and private contracts". "Closer integration with buyers" and "state guarantee of milk prices" are considered as insignificant factors for the development of "Dimitar Madzarov"LTD and the studied business model.

In addition to the "perfection of institutional environment" (improvement and better enforcement of laws and regulations) the "state support to milk producers" is perceived as crucial for the development of the model. The owner is planning to extend the capacity of "Dimitar Madzarov"LTD with 20% in near future. The necessary land in proximity of Plovdiv was purchased and construction started. A significant "new" demand by the Dairy will come up and boost the extension of the business model. A great part of that new demand will be effectively met by the current suppliers. Most of them will adapt to the new EU requirements and extend their operation size. The farms and the Dairy have developed effective mechanisms to govern their relations (trust; communication, coordination, payment, dispute resolution etc. modes), and that will facilitate further extension of the mutual trade. Not least important, from 2007 a new quota system obliges each producer of cow milk to have a "sell contract with a single buyer". That additionally will increase the sustainability of the relations (trade) between the farms and the Dairy.

The extension of "Dimitar Madzarov"LTD will open new inclusion and commercialization opportunities for a number of other semi-subsistence and small-scale farms from the region. They will likely start supplying to the Dairy, integrate with enterprise, and therefore join the big marketing chain. The incoming special public measures for supporting commercialization of semi-market farming would considerably help in that respect. Since cow milk quotas are already exceeded with 10% nationwide, a further diversification into cheep,

goat, and buffalo milk productions (where no quantity restrictions exists) is to be expected in smaller farms.

The effective and expending business model of "Dimitar Madzarov"LTD will also attract some of the regional suppliers of other dairies. The enforcement of EU standards and the enhancement of competition would take out of business a part of the existing dairies which will not be able to adapt to the new institutional and market requirements. The attractive conditions and the commercialization perspectives offered by "Dimitar Madzarov"LTD will also "take over" the effective (middle and big size) suppliers of competitors.

According to Mr. and Mr.Madzarovi only two criteria will continue to be important for the selecting suppliers of the Dairy in future: "category of farms" and "milk quality". Since smaller farms have serious difficulties adapting to the new EU requirements they can hardly manage to adapt to the new standards by the end of the transitional period (2009). Therefore, farms enlargement and association along with the state support policy for milk producers is considered as extremely important. Also a further extension of the vertical integration with the suppliers is envisaged in the future. As far as the tighter integration with the buyers of dairy products is concerned, Madzarovs do not perceive any significant change in the status quo.

7 UP-SCALING AND REPLICATION OF MODEL

The business innovation developed by Dimitar Madzarov is a positive example for an effective private mode for inclusion of small-scale dairy farms into the supply chain. That effective model emerged in the specific Bulgarian conditions characterized by:

● a fundamental institutional transformation – a rapid liberalization and development of markets, privatization of major agrarian resources, overall restructuring of farms and processing industries, introduction of modern quality and safety standards, progressive integration into global (regional, EU, world) markets;

● a high market, economic, and institutional uncertainty and instability – carrying-out farming and business activities in the environment of swift changes (dynamics) of markets, prices, formal regulations etc. as well as domination of a huge informal (including "gray" and illegal) sector of the economy;

● absence of public support to farming and processing sectors – deficiency of public law and contract enforcement, lack of any (financial, price, tax, extension) support to farms and business enterprises;

● domination of small-scale (semi-subsistence, domestic) farms and business enterprises with good professional but no managerial (market, contracting, investment) experiences;

● evolution of new production cooperatives with member-oriented (food, services, and forage supply) functions, and undeveloped farmers association in marketing, processing, price negotiating, risk bearing etc;

● transformation of food retail sector – wide-spreading of big international and local food chains with specific demands for the large volume and standardized, superior quality, safe, labeled, diversified and original products.

In such rapidly evolving market and institutional environment the *personal characteristics* of agents (education, previous experiences, available resources) and the *private entrepreneurship* have happened to be the most important factors for the successful development of farming and business activities. The initiatives of private entrepreneurs like Dimitar Madzarov have been able to set up adaptive business enterprises, take advantage of the specific milk supply and marketing conditions, accumulate a significant capital for the effective extension and modernization up to the top industry standards, and compete successfully in the fast changing (market and institutional) environment. What is more, the development of various *private modes of governance* have been an effective way to overcome the great market and institutional uncertainty, safeguard private investments and (absolute and contracted) rights, and intensify trade with diverse partners. These "managerial" innovations have been successfully employed to "correct" market failure and coordinate, stimulate, integrate, interlink, and enforce relationships with counterparts both backward into the inputs supply and forward into the marketing. They make possible and lead to an effective inclusion in the big commercial channels of small-scale processors and numerous small-scale farmers.

The upscaling of that particular enterprise will predominately depends on the (ongoing) extension of the processing capacity of "Dimitar Madzarov"LTD, and the farmers adaptation to the new EU quality and safety requirements. To a great extend the later will be predetermined by the efficiency of public policies for supporting modernization of farms according to the modern quality, safety, animal-welfare, environmental etc. standards.

The state of development of the dairy sector and the livestock farms are quite similar in other parts of the region and country. Therefore, this business model could be successfully replicated around the country. For achieving that, a widespread popularization of the positive experience of "Dimitar Madzarov"LTD, and an effective extension education of entrepreneurs and farmers, and appropriate public support policies, all they would be essential.

Furthermore, the positive Bulgarian model for the inclusion of small-scale dairy producers in the big marketing chains could be effectively replicated in other

transitional and developing countries with widespread semi-market and small-scale farming, lack of farmers (marketing and processing) organizations, shortage of any or domination of less-adaptive and innovative (large state) processing enterprises, deficiency of public (government, international assistance) support to small-scale farms, and increasing demand for high quality local dairy products. As Mr. and Ms.Madzarovi put it: their model would be good for similar conditions of "chaotic markets" and "absence of state support". The experience shows that *similar conditions* are quite *common in many countries* around the world.

An effective transfer of the business innovation could be achieved after an appropriate popularization of the pace and the factors of its development. Our recommendations to the prospective *business entrepreneurs* are to use "Dimitar Madzarov"LTD experience in governing relations with suppliers and buyers. Crucial for the success of farmers integration would be:

- investment in relation-specific capital to suppliers such as good reputation, near or on-farm milk collecting facilities, training of farmers;

- building effective communication, stimulation, control, payment and sanction mechanisms;

- interlinking marketing of milk supply by farmers with the credit and service supply by the dairy.

All these would develop mutual trust, overcome uncertainty and risk, stimulate dairy specific investment by farmers and effective adaptation to evolving requirements, minimize costs of transactions, facilitate and intensify bilateral trade between the dairy and farmers.

In addition, effective public and/or international assistance policies could considerably accelerate a successful replication. In that respect, a number of recommendations to the relevant government bodies and international assistance organizations could be suggested:

Firstly, policies should be directed to support private initiatives and entrepreneurship through providing information, education, advise, sharing positive (*and* negative) experiences as well as assisting financially innovative small-scale business projects.

Secondly, no restrictions have to be put on business entrepreneurs to invent and apply effective private governing modes (special contractual agreements, product specification, price and payment modes, joint ventures) with suppliers and buyers which most suit to the particular conditions of their mutual trade. Contrary, the public intervention is to be focused on improvement of general regulations, fight against "gray" and black sectors, execute control on critical points within food chain (e.g. food safety), effective enforcement of laws and private contracts, financial and other support to prospective joint initiatives. The

later is particularly important as far as new ventures aiming at inclusion of small-scale farmers in the modern food chains are concerned.

Third, identification of big transaction difficulties ("failures") in market and private transactions between farmers and processors, and a third-party (public, international assistance, hybrid) assistance through market and price information, setting-up and enforcing prospective quality and safety standards, independent control and arbitration, price stabilization schemes etc.

Forth, considerable efforts is to be put on small-scale farmers information on market and business opportunities, training in farm (business) management and contracting, providing technical and financial assistance for adaptation to the new consumers, processors, food chains, export, and institutional requirements. For instance, public premiums for high quality products or preferential credits for enlargement and modernization of farms could significantly speed-up transformation. In order to guarantee an access of the small-scale (rather than larger) producers in the public support program special criteria, tailored to their particular conditions, have to be applied – e.g. maximum size, a particular structure of production, available cost-sharing potential, existing project preparation capacity, feasible project implementation terms.

Fifth, when certain "public goods" are to be supplied by farmers (preservation of environment and biodiversity, keeping traditional productions and varieties) they have to be effectively funded by the state budget. Here neither pure administrative measures ("public orders") nor market competition and private (voluntary) initiatives can be effective. Likewise, when significant "non-productive" investment are to be made in benefit of the entire food chain (adaptation to new safety, hygiene, animal welfare etc. standards) then they are to be financed by the public or shared by all actors (farmers-processors-retailers-final consumers).

Finally, public support is to be provided to grouping, cooperation, and association of small-scale farmers through assisting initiation, registration, and organizational development; providing independent control, and tax breaks; and funding common projects and collective actions etc. Furthermore, public support is to embrace larger joint initiatives and collective actions of farmers *and* rural actors – projects for environmental and biodiversity preservation, integration of farming with agro-tourism and retailing, other agrarian and rural development plans.

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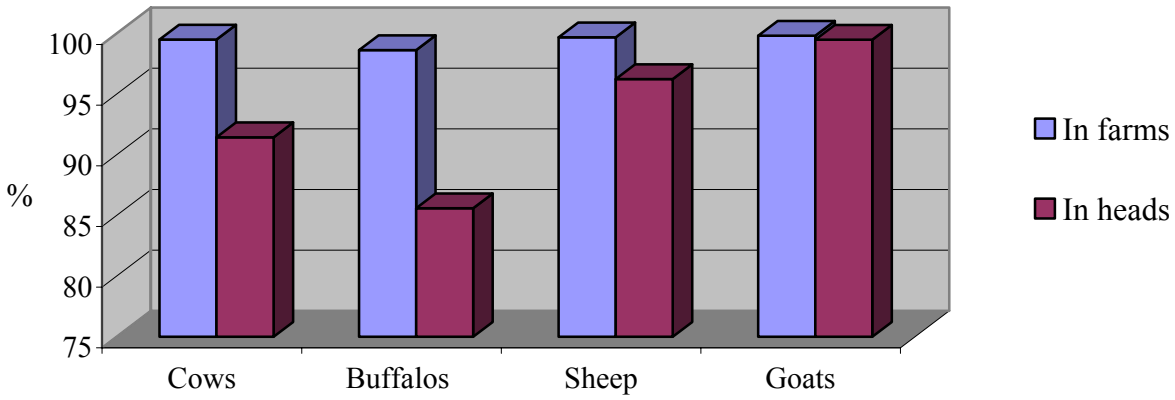
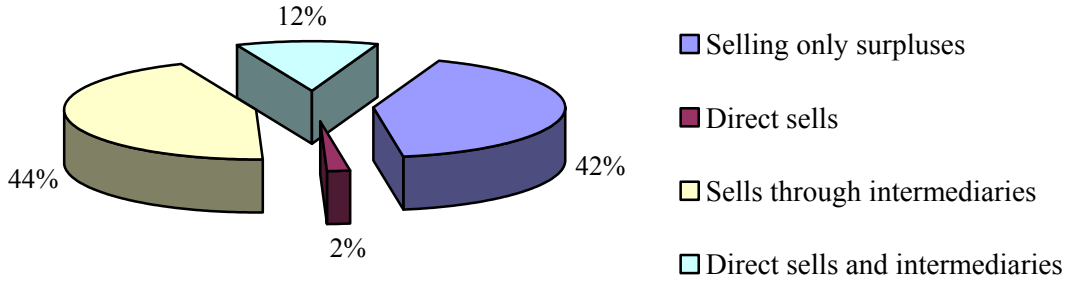
Annex 1: Share of unregistered farms in all livestock holdings and dairy animals in Bulgaria



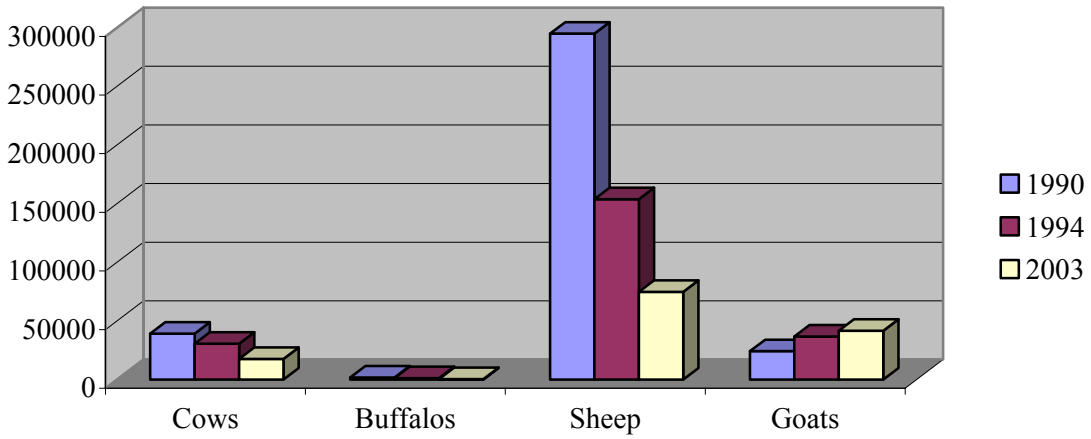
Source: Agricultural Census 2003

Annex 2: Share of farms using different ways of marketing of produced milk in Bulgaria



Source: Agricultural Census 2003

Annex 4: Number of livestock in Plovdiv region

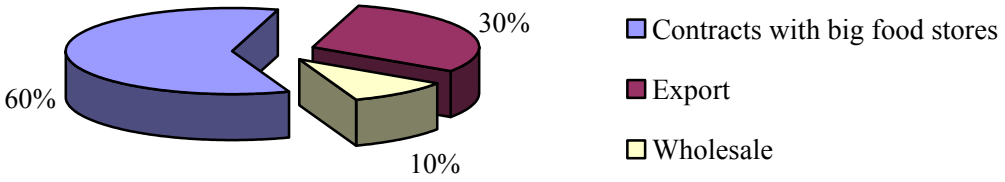


Source: Agricultural Census 2003

Annex 3: Map of Bulgaria

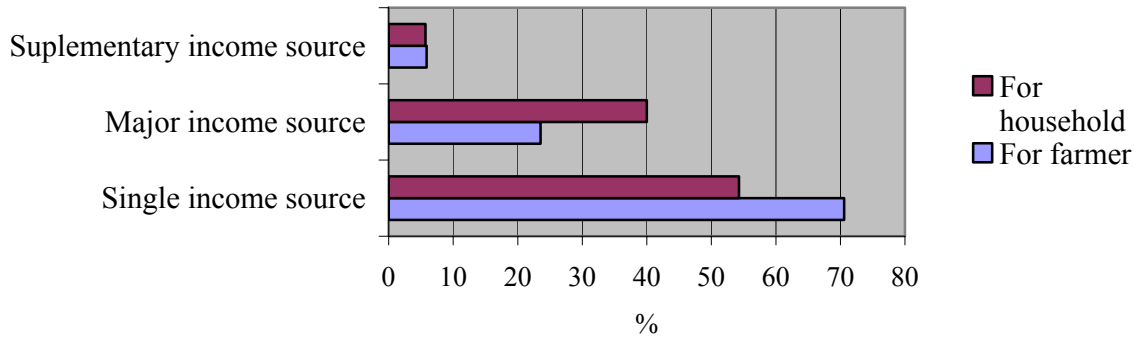
Annex 5: Map of Plovdiv region and location of “Dimitar Madzarov” LTD

Annex 6: Marketing of dairy output of "Dimitar Madzarov" LTD



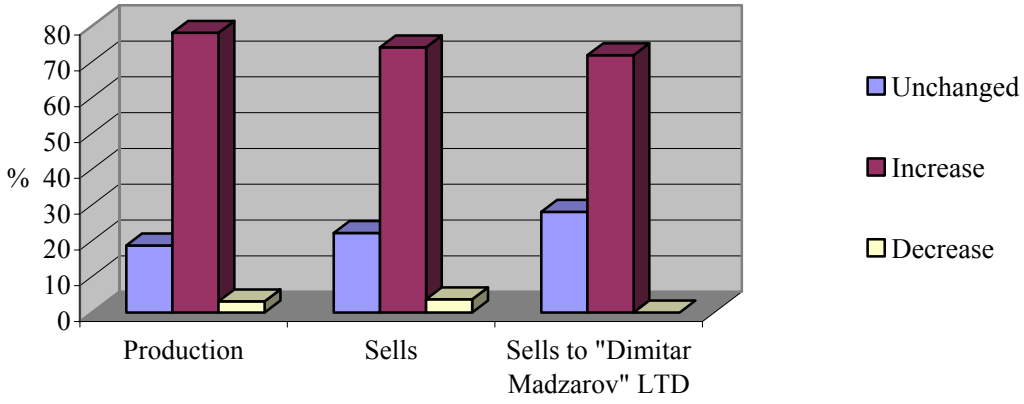
Source: "Dimitar Madjarov"LTD

Annex 7: Economic importance of farm for the suppliers of "Dimitar Madzarov" LTD



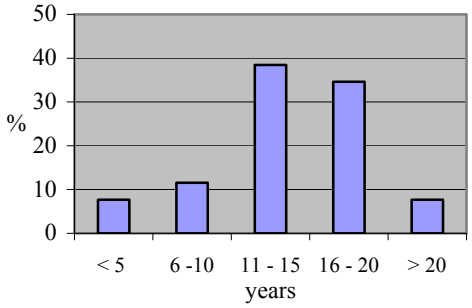
Source: Filed survey data

Annex 8: Share of farms with different dynamics of milk production and sells



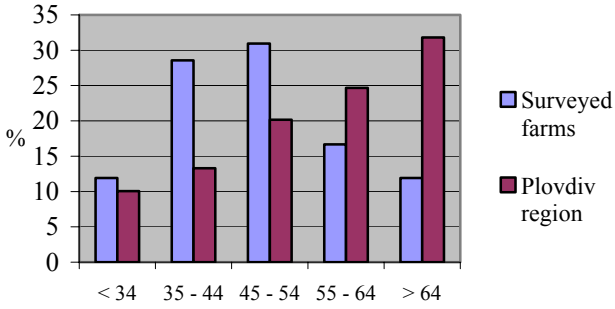
Source: Filed survey data

Annex 9: Farming experience of managers of surveyed farms



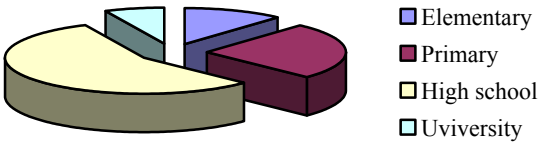
Source: Filed survey data

Annex 10: Age structure of farm managers



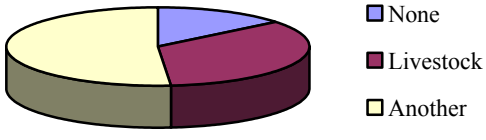
Source: Filed survey data

Annex 11: Education of managers of surveyed farms



Source: Filed survey data

Annex 12: Type of professional training of farms managers



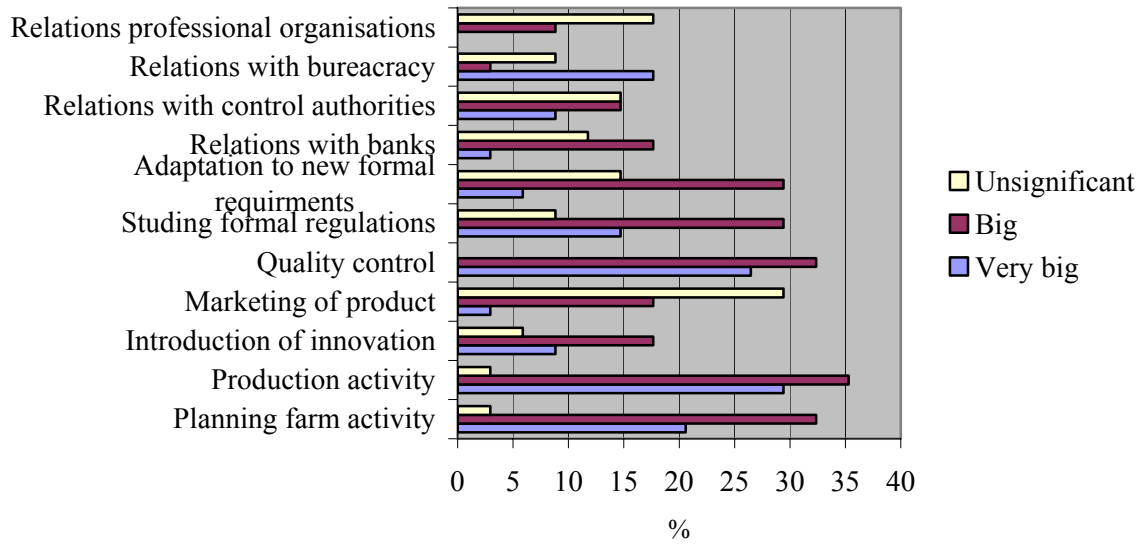
Source: Filed survey data

Annex 13: Control from "Dimitar Madzarov" LTD and the state on farms (percent of farms)

Control on:	"Dimitar Madzarov" LTD	State body
Milk quality	94,1	52,9
Milk safety	47,1	17,6
Hygiene of production	58,8	44,1
Animal health	20,6	55,9
Forage for animals	11,8	35,3
Care for animals	8,8	35,3
Care for environment	8,8	41,2
Control is permanent	2,9	20,6
Sanctions and punishments are applied	38,2	8,8

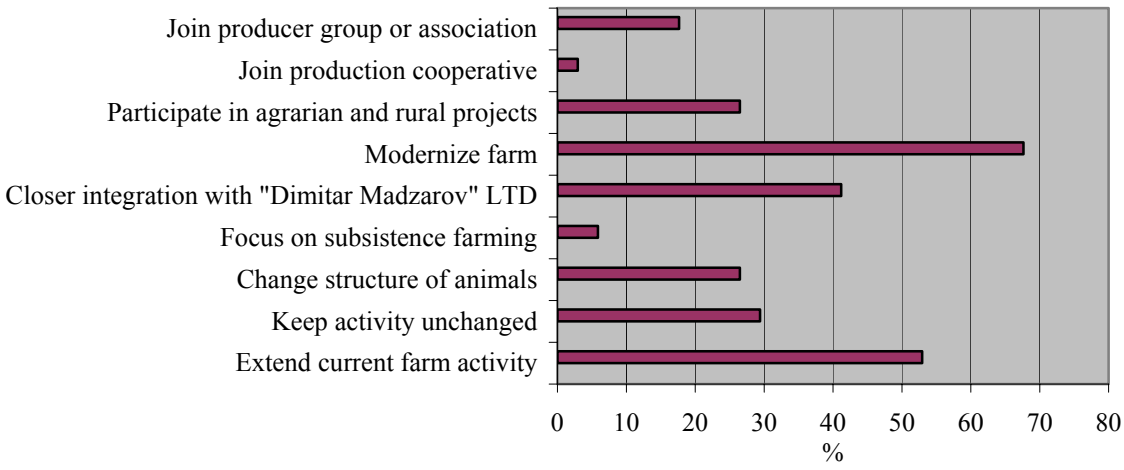
Source: Filed survey data

Annex 14: Level of efforts and time of suppliers of "Dimitar Madzarov" LTD



Source: Filed survey data

Annex 15: Intention for future development of farm



Source: Filed survey data

Annex 16: Expectation for impact of EU CAP implementation on your farm (% farms)

Impact on:	Positive	Neutral	Negative
Volume of production	32,4	14,7	17,6
Income of farm	41,2	5,9	20,6
Technology of production	29,4	17,6	8,8
Investment	29,4	8,8	11,8
Products quality	38,2	14,7	0,0
Access to public programs	23,5	8,8	11,8
Improvement of care for animals	32,4	14,7	2,9
Improvement of care of environment	26,5	11,8	5,9
Development of infrastructure	29,4	8,8	5,9
Opportunities for new income	26,5	20,6	8,8
Social status of your household	32,4	14,7	14,7
Other expected impact	2,9	2,9	5,9

Source: Filed survey data