Summary

Evaluation conducted by: JICA Bulgaria Office

1. Outline of the Project		
Country: Bulgaria		**Project title:** The Fermented Dairy Products Development Project in the Republic of Bulgaria
Issue/Sector: Animal Products Processing		**Cooperation scheme :** Project-type Technical Cooperation
Division in charge: Agricultural Development Cooperation Department		**Total cost:** 741 Million Yen
Period of Cooperation	(R/D) 1 July 1997 – 30 June 2002 (F/U) December 2002 – December 2004	**Partner Country's Implementing Organization:** Ministry of Agriculture and Forestry, LB Bulgaricum PLC, Capital Inspection for Veterinary and Sanitary Control (CIVSC)
		Supporting Organization in Japan: Agricultural Production Bureau of Ministry of Agriculture, Forestry and Fisheries, Meiji Dairies Corporation
Related Cooperation		

1-1. Background of the Project

Dairy products such as pasteurized milk, yoghurt, butter and cheese are traditional and staple parts for the daily diet in Bulgaria. Hence, development of Bulgaria's dairy processing industry is recognized for its importance in the health of its people. The state-owned LB Bulgaricum PLC utilizes a rich collection of lactic acid bacteria but due to (1) limited technology, (2) obsolete facilities and (3) a lack of research on the market economy, the company has been unable to make full use of the collection as starters of dairy products. Since the introduction of the market economy, livestock were divided among individual farmers, which resulted in a diminished farming scale across the country. This also caused a marked decrease in the output and quality of raw milk and fermented dairy products. Under these circumstances, the Bulgarian Government made requested the Japanese Government to implement Project-type Technical Cooperation in order to (1) fully utilize its lactic acid bacteria know-how and (2) to improve the quality of dairy products.

After finalizing the Project as a follow-up cooperation, another JICA Expert was dispatched for the period of two years from December 2002 to December 2004.

1-2. Project Overview

（1）Overall Goal

Development of fermented dairy products with internationally competitive quality in Bulgaria.

（2）Project Purpose

Improvement/Development of technologies for fermented dairy products and raw milk quality control at project sites.

（3）Outputs

1) The present situation of raw milk quality control and inspection are identified.
2) Improved methods for raw milk quality control and inspection are disseminated.
3) Characterization analyses on collected lactic acid bacteria are made.
4) New/improved starters are utilized.
5) Technologies for yoghurt production are upgraded.

（4）Inputs (as of the Project's termination)

Japanese side:

Long-term Expert	9	Equipment	232 Million Yen
Short-term Expert	17	Local cost	30 Million Yen
Trainees received	14		

Bulgarian Side:

Counterpart	26	
Equipment (including reagents)		11 Million Yen
Renovation of Facilities		16 Million Yen

2. Evaluation Team

JICA Bulgaria Office
Ms. Elena.Karaivanova, Ph.D (Consultant)

Type of Evaluation： Ex-post	**Period of evaluation:** 22/ 10/ 2007 - 08/ 11/ 2007

3. Ex-Post Project Performance

3-1 Performance of the Project purpose

To clarify whether the Project implementation has achieved the aimed purposes: improvement of the quality, variety of the dairy products in Bulgaria, development and application of novel starters, improvement of the control on the quality of the raw milk in Bulgaria, etc. The results from the Ex-Post evaluation study indicate that the Project purpose was successfully realized: the Project implementation led to the development of high-quality novel dairy products, the provision of starters by LB Bulgaricum has a positive influence on the dairy sector in Bulgaria and CIVSC established an up-to-date system for control and improvement of the quality of the raw milk.

3-2 Achievement related to Overall Goal

The Bulgarian dairy producers are exposed to highly competitive economical conditions. This includes the production of starters in regards to the import of dairy starters produced by private companies from Western Europe, which has an immediate impact on the Project outcomes. The improved quality of the raw milk in Bulgaria resulted in better quality of the dairy products and increased production amounts; technologies for yoghurt production are upgraded.The variety of dairy products and the domestic market was significantly increased as a result of the development of private dairy producers. LB Bulgaricum faces increasing competition, mainly from foreign dairy and starter culture producers. In this regard, the importance of the personnel qualification and motivation was recognized.

3-3 Follow-up of the Recommendations by Terminal Evaluation Study

The impact of the terminal evaluation and the connection with the termination of the Project is taken into account and the effects of the follow-up of the recommendations are monitored. Recommendations are followed properly and this resulted in prolonged positive impact of the Project implementation and sustainability of the Project outcomes. The adequate assigning of personnel conferred effective management. This resulted in a proper utilization of the equipment and know-how delivered by the Project and dissemination of technical guidance and starters to Bulgarian dairy producers. The sub-site CIVSC as a reference laboratory provides analytical technologies on raw milk quality analysis to other institutions controlling raw milk as recommended. Measures for institutionalizing the system for raw milk quality analysis countrywide is described in the Bulgarian strategy for the dairy sector.

4. Results of Evaluation

4-1. Summary of Evaluation Results

4.1.1 Impact

The Overall Goal of the Project has been achieved in terms of improvement/development of the quality of the dairy products and raw milk in Bulgaria. The provision of equipment to the counterparts, training by Japanese experts and transfer of technology and know-how resulted in increase of the institutional capacities of the counterparts and scientific, technological and production excellence. As a result of the acquired skills and knowledge the personnel of LB Bulgaricum and CIVSC is successfully competing for EU-financed innovation projects for further development of the capabilities of both institutions and improvement of the competence of the employees. The development of the nation-wide centers for control of the quality of the raw milk and improvement of the quality of Bulgarian dairy products are enabled due to the implementation of the new equipment and the new methods for analysis and control. The Counterparts of the Project are continuing to cooperate with each other and profit mutually from this cooperation. LB Bulgaricum supplies CIVSC with starters for conduction of fermentation experiments with raw milk. Both institutions are collaborating in the transfer of methodologies and standardized microbiological procedures for determination of bacterial cell counts, including *Bifidobacteriae* and lactic acid bacteria. LB Bulgaricum is producing high-quality dairy products, including the calcium-enriched yogurt developed during the Project calcium-enriched yoghurt, and provides private dairy producers in Bulgaria with starter cultures. Therefore the Project has nation-wide impact providing internationally competitive products on the domestic market. The overall quality and variety of dairy products was significantly improved as a result of the implementation of the Project due to the increased competition and

the availability of high-quality Bulgarian dairy products. For instance, only as an immediate result of Project implementation 3 novel yoghurt products were developed by LB Bulgaricum.
The achievements of the Counterpart institutions for the period after 2002 are an immediate result of the completion of the Project Overall Goal. The Bulgarian state has sponsored a nation-wide study of the status of the quality of the raw milk in Bulgaria which was possible only due to the appropriate application of the analytical equipment introduced in the course of the Project. Importantly, the results indicate that the portion of the quality raw milk was increased from 10% to 30% in year 2004. As a result of the impact of the Project international standards for control of the quality of the raw milk and dairy products were introduced in both Counterpart institutions (i.e. the standards of the International Dairy federation). Manuals for investigation of the quality of the raw milk and dairy products and trainings of co-workers from the National Veterinary Sanitary Service and MAF, as well as personnel of private dairy producer laboratories were performed.
The Project had an unexpectedly good impact in terms of influence on the personal professional skills of the employees of CIVSC and LB Bulgaricum, according to the opinion of the participants of the Project.
An important impact of the Project on the CIVSC and LB Bulgaricum employees is the increase of the language knowledge and significant improvement of the skills in preparation and accomplishment of projects.

4.1.2 Sustainability
4.1.2.1 Technological Aspects
In 2007 Bulgaria became member of the EU and therefore in order to improve the milk quality according to the EU standards, the Bulgarian government subsidizes the system for analysis and control of the raw milk introduced as a result of the implementation of the Project and has a plan to expand this system.
The equipment is used properly and effectively. The technique for milk analysis is expected to be fully utilized for the implementation of the national plan and has been actively utilized during the state-sponsored study of the quality of the raw milk in Bulgaria 2003 – 2004. The equipment delivered to LB Bulgaricum enabled expansion of its production list with products of higher quality, development and introduction of novel starters for dairy production, supply of private Bulgarian dairy producers with starter cultures. Since the equipment provided by the JICA Project is being used intensively, a minor obstacle for the technological sustainability of the Project is the fast and in time acquisition of spare parts.

4.1.2.2 Organizational/Human Resources Aspect
The Project implementation has extended positive influence on the employees in terms of personal motivation, team-work and cooperativeness. The improved skills and knowledge allowed the personnel of LB Bulgaricum to apply for and profit from projects financially supported by the Bulgarian Small and Medium Enterprises Promotion Agency. Both Counterpart institutions expend intensive labors in training new employees, increase of the professional qualifications of the personnel by organizing training courses and seminars. As a result of the Project the importance of good language skills is recognized and the employees are encouraged to attend language courses. Generally, there is an increased, but still moderate turnover ratio in both Counterpart institutions due to the establishment and development of numerous highly-competitive attractive private dairy companies and the improved possibilities for career abroad as a result of the EU entrance.

4.1.2.3 Financial Aspects
CIVSC is supported financially by Bulgarian government and LB Bulgaricum is a self-supported state company. The sales of upgraded dairy products of LB Bulgaricum provide the company with additional financial incomes. Although no exact information was available on the exact budget of the Counterpart institutions (partially due to confidentiality reasons), the budgets of both institutions are sufficient to secure their proper functioning.
A matter of concern is the prices for analysis of samples by CIVSC, which are fixed by a decree of Bulgarian government and therefore restricts the means for profit, which results in lack of flexibility for maintenance and repair of equipment acquired from the Project. Therefore the Bulgarian government should provide particularly annual financial support for maintenance and repair of the equipment.
We consider that further measures of the Bulgarian government are needed for support of both institutions, since their functioning is of crucial importance for the quality of the raw milk and dairy products in Bulgaria, as well as for the production of dairy products with traditional original taste and properties.

4-2. Analysis of factors that have promoted Project

4.2.1 Impact

The overall successful social and economic development of Bulgaria promoted the impact of the Project. Particularly, the entrance into EU intensified the efforts for improvement of the quality of dairy products and achievement of EU standards. Increased competition with Western companies stimulated Bulgarian dairy producers to look for technological and methodological help CIVSC and LB Bulgaricum, since there is overall positive attitude to the traditional Bulgarian dairy products. Many private dairy producers invested in improvement of production facilities and equipment for control analysis. There is an increasing interest in the implementation of upgraded technologies for yoghurt production and better starters. Therefore the Project exhibits a continuing impact by providing technology, modern analysis methods and starters. The increased need for high-quality raw milk makes the established control system, including feedback information flow to the farmers, particularly valuable.

4.2.2 Sustainability

The improvement of Bulgarian dairy sector promotes the sustainability of the Project's outcome. More strict regulations in accordance with EU policy and increased consumer's requirements and expectations with respect to the quality of the dairy products further supports the ongoing efficacy of the Project. Notably, the introduction and application of EU regulations (i.e. Natura 2000) regarding the environmental preservation and ecological policies are expected to protect Bulgarian national reservoirs for isolation of novel lactic acid bacteria (mountain regions and isolated forest areas with low population density) from industrial contamination which will promote the continuation of the efforts for isolation and characterization of new lactic acid isolates and development of starter cultures resulting from the Project implementation.

4.2.3 Others

A factor that is expected to have a positive effect on the Project sustainability is the already existing overall positive attitude of the Bulgarian population for consumption of original Bulgarian dairy products with traditional taste and properties. This circumstance might promote the usage and sales of starter cultures for traditional Bulgarian yoghurt and chesses, unlike the ones offered by Western competitors.

4-3. Factors that have inhibited project

4.3.1 Impact

The impact of the Project was limited to some extent as a result of the increased competition on the market of dairy products and starter cultures. The introduction of dairy products on the market is difficult with respect to the low prices and the increased variety of imported dairy products.

The amount of raw milk produced in Bulgaria are still not satisfactory, and a large part of it is produced by small family farms with restricted capabilities for further improvements of the hygienic conditions and fulfillment of strict sanitary regulations.

4.3.2 Sustainability

The massive invasion of foreign dairy products on the Bulgarian market is going to change the traditional preference for traditional Bulgarian dairy products. For instance, Danone acquired one of the biggest state-owned dairy producers, namely Serdika-Sofia and developed a modern production and nation-wide distribution of variety of dairy products. Private Western companies producing starter cultures (Chr. Hansen, Danisco, etc.) invaded the Bulgarian market and introduced to the dairy producers relatively cheap dairy starters. The EU policy for restriction of the amounts of Bulgarian dairy products (so-called "milk quotes") allowed to be exported in other EU countries are expected to have a negative effect on the entire Bulgarian dairy sector.

4.3.3 Others

There are not sufficient and persistent governmental efforts for the preservation, registration and protection of the traditional Bulgarian dairy products, names and brands.

4-4. Conclusions

The results of the Ex-Post Evaluation Study indicate successful long-lasting impact of the Project implementation and results. There is a sustainable positive impact on the entire Bulgarian dairy sector 5 years after termination of the Project, as well as particularly on the institutional capacity of the Counterpart

institutions. Matters of concern are the proper financing of the equipment maintenance, lack of financial flexibility in CIVSC due to governmental regulations, the increased competition with foreign companies offering cheap dairy products and starters with unsatisfactory properties.

4-5. Recommendations

(1) Further allocation of necessary budget for CIVSC should be provided by the Bulgarian government.; Good management of assigned personnel, proper operation and maintenance of equipment provided are required to sustain/develop outcomes of the Project. Better supply of spare parts and technological assistance for repairs of the delivered equipment. This issues might be addressed in a future project with the Bulgarian Small and Medium Enterprises Promotion Agency (see 4.1.2.1 and 4.1.2.3)

(2) LB Bulgaricum should continue to contribute to the development of internationally competitive fermented dairy products and to provide technical guidance to dairy products factories in Bulgaria. For that purpose, LB Bulgaricum should make efforts to assign personnel appropriate for the good management of the Research & Development activities and to apply more active and permanent efforts to attract qualified scientists and employees (see 4.1.2.2)

(3) The sub-site (CIVSC) should continue to disseminate the acquired analytical technologies on raw milk quality analysis to other institutions controlling raw milk quality, and contribute to strengthen the system for raw milk quality control, as a reference laboratory. This should result in more effective institutionalization the system for raw milk quality analysis countrywide (see 4.1.1).

(4) Improvement of the quality of raw milk is important for high-quality dairy products production. The Bulgarian government should allocate necessary budget and assignment of necessary personnel for the implementation of measures to promote the production of high quality milk and modernization of facilities/equipment (see 4.1.2.3)

(5) Flexible and modern economic management of LB Bulgaricum is needed for successful competition on the market and expansion (see 4.3.2)

(6) More persistent governmental efforts are needed for the preservation, registration and protection of the traditional Bulgarian dairy products, names and brands (see 4.4).

4-6. Lessons Learned

For the efficient implementation of the Project, should be assigned administrator in the relevant governmental institutions. Popularization of the significance of the Project and its goals in the society is needed in the future in order to gain positive public attitude towards the governmental efforts to support the production of traditional Bulgarian dairy products. In order to increase the effectiveness of Project implementation, one should optimize the financial flexibility of CIVSC and provide possibilities for additional financial stimulation of the LB Bulgaricum employees involved in the research and development. It is obvious that both institutions should be able to attract and motivate qualified personnel with good language skills for promotion of the sustainability. The highly-competitive market situation nowadays requires adequate and innovative management and production practices in LB Bulgaricum. For this purpose, the proper maintenance and further modernization of the equipment is a must. Additional sources of incomes and financial diversification (i.e. projects with Bulgarian Small and Medium Enterprises Promotion Agency, EU funds) would increase the institutional and production capacity of the Counterparts and allow flexible economic and human resources management.

4.7 Follow-up Situation*

**There is no need of Follow-up Cooperation.*

Other Situation:

On January 1st, 2007 Bulgaria became an EU member, and now turns into a "Donor Country". Due to the specifics of the Technical Cooperation, Bulgaria needs to receive "know-how", and that is why JICA's experience in the field might turn very useful. In this connection, if Bulgaria decides to implement Technical Cooperation in the sphere of "Fermented Dairy Products" and finds it necessary, JICA could support Bulgaria's efforts in becoming a "donor country" and transfer "know-how" to the Bulgarian experts concerning the related field.