

"Project Formulation Survey" under the  
Governmental Commission on the  
Projects for ODA Overseas Economic  
Cooperation in FY2013

Summary Report

Socialist Republic of Viet Nam  
Installation and Use of an Integrated  
Milk Preparation System for  
Hospitalized Infants and Children

March, 2014

Mita Rika Kogyo Co. Ltd. / Waseda Research  
Institute Corporation  
Joint Venture

The content of this report is a summary of the project formulation survey, which was commissioned by the Ministry of Foreign Affairs of Japan in FY 2013 and is carried out by the consortium Mita Rika Kogyo Co. Ltd. / Waseda Research Institute Corporation. It does not represent the official view of the Ministry of Foreign Affairs.

## **Introduction**

The Ministry of Foreign Affairs of Japan awarded the joint venture of Mita Rika Kogyo Co.Ltd. and Waseda Research Institute Corporation a contract to carry out a detailed study of the possibility of installing an integrated milk preparation system in public hospitals in Viet Nam. We hope that completion of the study would be an advance toward the possibility of acquiring and using this system through ODA arrangements. It is believed, on the basis of this study, that the result would improve healthcare and welfare for children and infants in Viet Nam

### **I. Description of the current situation and development needs of the concerned development issues in the surveyed country**

Since the start of Doi Moi (đổi mới) the Vietnamese economy has achieved sustained growth at high levels. GDP per capita has risen, annual national income per capita has come to exceed US\$1,000, and in 2010 the nation came to be ranked in the middle-income group on an international level. While the Communist Party continues to provide the framework for policy and administration, there have been gradual reforms in the legal system and in local government administration, as the nation pursues a shift toward a more democratic system. Economic policy looking ahead to 2020 features moving away from labor-intensive industry in favor of knowledge-based technology-oriented industry, on the basis of development of the nation's human resources.

Meanwhile, although in overall terms the poverty rate has declined in keeping with growth of the economy, regional disparities persist. The Vietnamese Government is committed to achieving the MDGs and while results to date have been formidable, grave regional disparities prevail with respect to healthcare for infants and children.

In particular, the death rates of newborns show glaring regional differences – and there is no near-term outlook for rectification of this problem. A major cause of the high death rate is “neonatal death” and because the reasons for this are “premature,” “birth asphyxia,” “severe infection,” and “congenital malformations,” by attacking the problem at these causes can be expected to lower the infant death rate. Also, as indicated by a DALY (Disability Adjusted Life Years) analysis conducted by the Vietnamese Ministry of Health, among infant patients the influence on lifelong health of infectious disease such as pneumonia is particularly damaging and is a major subject of attention in infant and pediatric healthcare.

Similar to the gradual decline in infant mortality, in Viet Nam there has been a gradual decline in absolute terms of child malnutrition. Nevertheless about 30% of children age 5 or under show stunting. The malnutrition and stunting rates are particularly high in the Central Highlands.

Viet Nam has a nationwide network for managing healthcare, with the Ministry of Health at its apex, but there are serious regional differences in its accessibility; access is particularly poor in the Central Highlands. A major problem is that with regard to pediatrics, regional hospitals are poorly positioned in the referral system, and these hospitals show glaring differences in terms of their equipment and quality of medical treatment. The situation concerning hospital equipment, training of triage and paramedic staff for care of infants and children, and guidelines for this are serious issues that demand attention.

Thus, in view of the foregoing explanation of the need for rectification of disparities and aggregate improvement in pediatric healthcare, this project has been planned to conform with development policy and plans of the Vietnamese Government, to directly deal with an important disparity, so that a contribution can be made to better health of children through improved healthcare.

It is therefore judged that the proposals of this project are highly compatible with efforts by the Vietnamese Government to deal with a vital issue of the health of the nation.

## **II. Possible applicability of the SME's products and technologies, and prospects for future business development**

Mita Rika Kogyo Co., Ltd. ("the company") started research and development of an integrated milk-preparation system in 1971 through the adaptation of the company's brush washing machines for washing of baby bottles, for use by two hospitals in the Kansai region.

The operational concept of the system was a revolutionary change from the conventional milk preparation method in which milk preparation was done at a pediatrics ward and a neonatal intensive care unit by nurses through labor-intensive methods. The system was designed in line with a new concept of milk preparation under management of the food service and nutrition departments of the hospitals that had acquired a new facility which enables large-scale production of milk in labor-saving, efficient volumes.

Each component of the system was developed based on an idea of a centralized milk-preparation method to produce and preserve daily required milk in one integrated process. Pasteurization or aseptic treatment was studied to support the method.

After that, with the increase of specialized hospitals for children and general hospitals with pediatric wards in Japan, the company's integrated milk-preparation systems became widely adopted and the company has been playing an important role in supporting the safe and reliable nutrition of babies and little children of Japan.

An almost similar situation to the past Japanese pediatric healthcare settings can be observed in today's hospitals of Viet Nam, and considering the greater need for improvements that ensure

the safe and reliable supply of milk in Vietnamese hospitals, expansion of introduction of the milk-preparation system is highly desired.

Meantime, with the decline of the birthrate in Japan, the trend of market expansion of the milk-preparation system is not expected, and it is necessary for the company to look for overseas markets. Especially, the company considers that the market in ASEAN countries will still be expanding along with the increase of birthrates. In parallel with the needs survey of those new markets, the company is planning to develop new products such as facilities related to mother's milk banks. To conduct those works, a business development department has been established in the company and this department has been conducting market surveys of Asian countries. The company has a plan to incorporate a new company to promote overseas businesses and consign overseas sales and marketing activities to this new company.

With the target of becoming a model case of overseas business development through private-public initiative by a medical-equipment maker in the Kansai region, the company will join the movement for export growth of the Japanese medical infrastructure and technology.

Further, in order to provide more value added services in the medical field, the company has made an initial approach to a local governmental unit and a university to form a strong team with them.

### **III. Verification of adaptability of the SME's products and technologies to the surveyed country (Demonstration and pilot survey)**

In order to benefit fully from this system, it is important to ensure that the particular hospitals normally have a considerable number of inpatients, and thus employ dedicated, specialized staff needed to provide the large number of bottles of milk as a part of its healthcare services. In the context of eligibility as an ODA project, it is indispensable that the hospitals should have top referral status in the field of obstetrics and pediatrics in order to have a ripple effect throughout the region or regions they serve. We have identified and prioritized the hospitals based on their concerns, management policy regarding the issue as well as relevant engineering issues of each hospital as verified by the field surveys. The result reflects the prospects in formulating specific ODA projects described in the following Chapter 5.

As a prerequisite for the smooth implementation of the proposed system through an ODA project, it is indispensable to maintain or lower the fee for milk paid by the families of inpatients. This would expand the number of people who seek the service and consequently it would lead to manifestation of the merit of scale of the proposed system which also serves the fundamental objective of ODA which is to provide public goods to the general public. As such, at this stage, we examined several alternatives and the determinants for the design for each hospital in order

to flexibly deal with financial constraints so that hospital can operate in a self-sustaining way. Based on the information obtained from the field survey, the utility cost to operate the proposed system is judged to not be too much of burden at all if there is a considerable level of demand for the prepared milk. However, regarding some consumables, it is desirable to check on the possibility of locally procured substitutes to duly carry out pretesting the quality and possible load to the equipment in the suggested pilot study. Though the thorough examination provided by the demonstration project, formulation of the basic grounds for wider, effective, and stable operation of the proposed system would be achieved.

#### **IV. Expected development impact and effect on business development of proposing SME in the surveyed countries through proposed ODA projects**

“The Guidelines on Safe Preparation, Storage and Handling of Powdered Infant Formula” was developed and issued by WHO/FAO, in order to call for vigilance regarding the hazardous risk of infection associated with Powdered Infant Formula (PIF) as a non-sterile product. Especially, immuno-compromised infants are most at risk. In developing countries, as in most settings in their overcrowded public hospitals, there is not always a safe and hygienic environment for preparation of large batches of reconstituted PIF for feeding many inpatients, and because of this the death risk implied by the Guidelines must be taken with utmost seriousness.

Although there are areas of concern on the presence of pathogens in PIF which is an indispensable nutritional source, the reality is that it is not easy to ensure safety under the current situation at most hospitals. To combat this, the company has devised and proposes for adoption in Viet Nam a proprietary integrated system that encompasses the entire phases of mechanical washing, sterilizing baby bottles and utensils, water purification, de-mineralization, pasteurization and storage process in which each differentiated temperature matching the specific process is properly set and automatically controlled. The concepts and realities of the system have been proven in a number of institutions in Japan. Further, the expressed mother’s milk can be decanted into bottles which have been fully sterilized by the system, thereby contributing to the safe administration of expressed mother’s milk at hospitals. Therefore, the system is also relevant to support the policy of promoting use of mother’s milk for feeding infants in Viet Nam.

Following are the envisaged development effects and impact after the system is installed. It is assumed that the system is properly installed, fully managed and used to the extent to ensure elimination of pathogenic bacteria and maintenance of nutritious value in the milk, that hospitalized infants and children will not be exposed to the hazard of tainted milk, and smoother

weight gain of the infants will be promoted, facilitating for the earliest possible discharge.

Direct effect indicators would be:

- Reduction of the number of deaths of neonatal hospitalized babies in the hospitals
- Reduction of the number of babies who are infected or lead to a complication while hospitalized
- Increase in the rate of weight gain of babies in NICUs.
- Improvement of healthcare service through duly optimization of labor allocation within the hospital by reducing time of milk preparation and burden of medical staff

It can also function as a catalyst for promotion of perinatal care systems by encouraging information-sharing and possible collaboration between relevant sections of obstetrics, gynecology as well as pediatrics, if the hospital intends to fully exploit merits of the milk preparation system. Further, it aims at reducing the infant mortality rate of disadvantaged regions as a strategic objective of the system that would conform to the present conditions of the referral system and future improvement of the system to alleviate regional disparities.

Indirect effect indicators would be:

- Strengthening of the perinatal care system in the hospitals
- Strengthening of the referral system in the regions

Provided that it is sufficiently effective as presumed, accompanied by improved capability of the referral system in parallel, it will be expected to have the impact of realizing steady reduction of the infant mortality rate and incidence of infectious diseases of major public hospitals for the seriously ill and highly vulnerable infants and children who are largely from poor households in the regions.

Regarding the prospect of business development in the context of the proposed ODA projects, if the company could be enabled to put the system into practical use in Viet Nam as an ODA project which rightly aims at solving a development issue of the country, it would be clearly appealing in terms of serviceability in a social development context. Further, through various levels of public-private partnerships including local enterprises, it is possible for the business development to evolve far beyond what it could have been expected as a result of conventional business practices. On top of that, being able to acquire first hand information in the field will encourage R&D activities and provide know-how to meet various highlighted local needs, with the implication that lessons learned can be of value not only in Viet Nam but elsewhere as well. With all things considered, a small to medium size healthcare equipment company can establish a precedent for a new business model through this ODA project.

## **V. Proposals for formulating ODA projects**

The company must customize the milk preparation system according to the prevailing conditions at each hospital. Also, some part of consumables should be locally procured in order to sustainably operate the system over time. Moreover, in order to fully utilize the merit of the system and to improve its healthcare service, it inevitably requires human capacity development to establish a workable operation system. Until such a time as the company establishes a business base overseas and endeavors to form partnerships with local enterprises in order to provide the system to hospitals, it is proposed by means of an ODA funded demonstration project to implement a pilot study at the highest priority hospital where a substantial synergy effect would be obtained. After proving beneficial and sustainable as an exemplary model case, it can be considered to replicate it through Grant Aid approaches. As such, the milestones of the implementation process will be examined as follows;

Prior to the installation of the system, it is proposed to invite hospital personnel from the prioritized hospitals for an observation trip to Japanese hospitals and the company in order to more strongly motivate themselves to establish each operation system so as to be fully adjusted for each hospital's needs and requirements.

In the next stage of installation and operation, it is suggested that there be implementation of a pilot program for disseminating SME technology at the prioritized hospital(s). This pilot program would comprise several activities ranging from the actual operation of the system to human dimensions of management and operation. By doing so, it will create a showcase example in the country for achieving hygienic, safe and efficient handling and an appropriate environment for milk preparation. Thus, the benefits of the system will be highlighted and may help motivate the Vietnamese to adopt it at their own initiative.

Furthermore, based on the lessons learned from the demonstration project, we can look forward to the stage of expansion. In the case that the Vietnamese government recognizes that the proposed system can fully contribute to its objectives of improvement of healthcare service and that the potential impact is sufficiently high and feasible to achieve its relevant social development goal, it may be possible to implement projects at several hospitals through Grant Aid.

**Attachment: Outline of the survey**

## Project Formulation Survey Social Republic of Vietnam, Installation and Use of an Integrated Milk Preparation System for Hospitalized Infants and Children

### SMEs and Counterpart Organization

- Name: Mita Rika Kogyo Co. Ltd.
- Location of SME : Osaka, Japan
- Survey Site • Counterpart Organization : Hanoi, Da Nang, Ho Chi Minh City / Ministry of Health

### Concerned Development Issues

- Achieving hygienic, safe and efficient handling and medical environment for milk-preparation in public maternity and pediatric hospitals
- Reducing growth retardation in low birth weight babies and hospitalized children, and infectious diseases and death among them
- Alleviating regional disparities in the child mortality rate

### Products and Technologies of the SME

- Mechanical washing and sterilization of baby bottles
- Water purification and de-mineralization device for reconstituting powdered infant formula
- Pasteurization process for the prepared milk
- Integrated milk-preparation system which is in accordance with the WHO "Guidelines for safe preparation, storage and handling of powdered infant formula"

### Proposed ODA Project and Expected Impact

- Through an ODA funded demonstration project, it is proposed to implement a pilot study on system design for equipment and plans for its operation, adjusted for each hospital's needs and requirements. Also it will examine effective use of locally procured consumables.
- Consequently, a grant aid project will raise awareness of the importance of a safe and effective milk-preparation system on a larger scale in the country.
- Improvement of healthcare service and reduction of the rate of death and incidence of infectious diseases of major public hospitals for seriously ill and highly vulnerable inpatients who are largely from poor households in the region.

### Future Business Development of SMEs

- As a case study of how a small and medium-sized medical equipment company can expand business it will establish a precedent for market entry into emerging countries by highlighting existence of needs for healthcare services that specialized companies can effectively satisfy.

