

"Needs Survey" under the  
Governmental Commission on the  
Projects for ODA Overseas Economic  
Cooperation in FY2014

Summary Report

People's Republic of Bangladesh

Needs Survey on  
Environment, Energy,  
Waste Management,  
Health, and  
Education

March 2015

IC Net Limited

The content of this report is a summary of the needs survey, which is commissioned by the Ministry of Foreign Affairs of Japan in the FY 2014 and was carried out by IC Net Limited. It does not represent the official view of the Ministry of Foreign Affairs.

## **Introduction**

This survey was conducted for identifying the basis needs and challenges for socio-economic development in the fields of environment, energy and waste management, health and education, to be addressed by the technologies and products of Japan. Japanese enterprises including a number of small- and medium-sized enterprises (SMEs) have developed a variety of advanced technologies for the sectors indicated above. This survey aims primarily at promoting the overseas operation of the Japanese SMEs, taking advantage of the scheme of the Official Development Assistance (ODA) by Japan.

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

#### **(1) Environment, Energy, and Waste Management**

The electrification rate of Bangladesh was 59.6% in 2011. In other words, about 60 million people had no access to electricity. The Government of Bangladesh (GOB) issued its Vision and Policy Statement in 2000, to supply power to all the people of Bangladesh by 2020. The GOB is committed to the improvement of the power supply system. Renewable energy is one of the promising energy sources for the system.

In urban areas such as Dhaka, the national capital, the amount of waste generated is increasing year by year because of the population growth. In Dhaka, waste generated is reportedly about 5,000 tons per day in 2014. This is about 1.5 times the amount in 2005, i.e., 3,200 tons per day. The amount of waste generated is expected to keep increasing. Waste disposal is an important development issue because it is a cause of urban environmental problems such as water and air pollution.

#### **(2) Health**

The health status in Bangladesh has improved substantially. The total fertility rate (TFR) has fallen sharply, and life expectancy at birth has increased much. However, there are many challenges in improving services for maternal and child health (MCH). The pregnant women who had antenatal care (ANC) at least once and those who received ANC four times are only 55% and 26% of all pregnant women, respectively. In addition, only 32% of all births are attended by skilled health personnel. The underdevelopment of these MCH services is the main cause of the difficulties in early identification of high risk delivery, control of various infections among

neonates, and consequently the high neonatal mortality rate. Many problems with infectious diseases that also affect maternal and neonatal health have been reported. More effective measures to control dengue fever to prevent epidemics are required, particularly in large cities with high population density. It will be also necessary to bring about a fundamental cognitive and behavioral change of health personnel regarding hygiene to prevent nosocomial infections.

The most important challenges in the health sector in Bangladesh include promotion of antenatal and postnatal care, and better control of infectious diseases and nosocomial infections to reduce the maternal and neonatal mortality rates. These approaches are consistent with the national health policies, and help attain the Millennium Development Goals (MDGs). The Government of Japan has already helped strengthen MCH services and control of infectious diseases through technical cooperation, grant aid and yen-loan projects, and has achieved many positive outcomes. Any future ODA project in MCH and infectious disease control needs to link with such existing outcomes in order to increase effectiveness and efficiency.

### (3) Education

In Bangladesh, the main issue in education is that the income gap is directly connected to the educational disparity. There are two aspects in the educational disparity: one is the inequality in the quality of education, and the other is the inequality in educational opportunities. On the quality aspect, the inequality exists between private educational institutions and those operated by the government and NGOs. For instance, major differences are seen between the two categories of institutions above in such factors as the students-teacher ratio, the quality of teachers, and the quality of school facilities. Only children of wealthy households can attend private schools and receive high-quality education. Meanwhile, the inequality in educational opportunities is caused mainly by the following three facts in Bangladesh. The first is that the number of primary schools varies widely by region. The second is that it is very difficult for children of low-income and even middle-income households to gain educational opportunities after completing primary education because 95% of the secondary schools in Bangladesh are operated by private entities and charge fees that their families cannot afford. The third is the number of secondary schools is insufficient to accommodate all pupils who seek secondary education. Therefore, to address the educational disparity in Bangladesh, it is vital to find solutions to the two aspects discussed above.

## **II. Sectoral analysis on the effectiveness of the products and technologies developed by the Japanese SMEs**

### **(1) Environment, Energy, and Waste Management**

In Bangladesh, more than three million solar home systems (SHSs) have been disseminated through the support programs of the GOB and aid agencies. The number of SHSs installed is expected to keep increasing. However, it is difficult for SMEs from Japan to enter the SHS market in Bangladesh because SHSs are technically simple devices whose prices tend to be too low for them to earn a profit. Many SHSs in Bangladesh are made in China and other countries. Therefore, Japanese SMEs need to develop and disseminate power supply systems that need advanced technologies and whose capacities are large enough to supply power to multiple households. Such power supply systems will be an effective means to address the issue of supplying power to non-electrified areas.

For the field of waste management, technologies and products with the following functions are needed to address the issue of an increasing amount of waste: 1) reduce the amount of waste landfilled in the final disposal sites; 2) process non-segregated waste; and 3) recycle materials that cannot be processed through the existing recycling methods in Bangladesh, or generate more added value than the existing methods.

### **(2) Health**

In the MCH sector, the following are confirmed as the areas where the products and technologies of Japanese SMEs may be able to contribute.

- ANC, particularly healthcare of the fetus and the pregnant woman
- Postnatal care, particularly treatment at the neonatal intensive care unit (NICU) in hospitals
- Capacity improvement of health personnel in maternal and neonatal care

For control of infectious diseases, the following are confirmed as the possible areas for the products and technologies of Japanese SMEs to address.

- Early identification of dengue infection using a rapid and accurate diagnostic kit
- Prevention of nosocomial infection in health facilities

In general, Japanese healthcare products are more expensive than those of other countries. However, many of them are technically superior to their foreign competitors. Among the advantages are the following: being compact and portable; ability to produce high-resolution images and having highly sensitive sensors; ability to function with battery power even if

electricity supply is cut. Here is a Japanese product using nanotechnology that may help prevent nosocomial infections: a spray to disinfect furniture and walls whose effect lasts for more than a month.

### (3) Education

A few Japanese products have the potential to help overcome the educational issues in Bangladesh. They are educational equipment using information and communication technology (ICT), products for school facilities such as blackboard and chalk, and subject materials for science and mathematics. In addition, individual enrichment courses and culture lessons, such as cram school and abacus lesson that use unique methods devised by Japanese enterprises, are also possible Japanese education services to compliment the public education system. However, it would be difficult to set competitive prices for the products and services above in Bangladesh. In addition, Japanese SMEs would not be able to make those products and services available in Bangladesh without making significant adjustments to address cultural, language, and curriculum differences between the two countries. They would also face other issues such as the state of Internet connection in Bangladesh and how to protect copyrights on their products and services.

## **III. Possible applicability of the SMEs' products and technologies to the future ODA projects in the surveyed sectors**

### (1) Environment, Energy, and Waste Management

To fulfill the needs required for products and technologies of Japanese SMEs mentioned in Chapter II, a medium-sized solar power system and a biomass power generation system are effective means of power supply to non-electrified areas. When a power supply structure for multiple households is built using the two systems above, an ODA project can help disseminate the structure.

In waste management, as products with technologies that can process waste mixed with materials such as raw garbage and plastics, the following can provide a solution in Bangladesh: a waste processing device using magnetic decomposition; and an apparatus that can produce compost and solid fuel simultaneously out of mixed waste. By using these devices in urban areas, an ODA project can help reduce the amount of waste brought to the final disposal site. Another possible ODA project would be to use a device that can change waste plastics into oil, promote recycling methods to create more added value than the existing methods, and educate the public through recycling-related activities in school as well as awareness raising on separating trash.

## (2) Health

Among the products and technologies of Japanese SMEs that are expected to help address the health challenges in Bangladesh are as follows. Compact and portable ultrasound equipment and a Doppler fetus actocardiograph with recording paper may be used for capacity building of district and upazila health personnel on ANC and delivery assistance. A delicate artificial respirator for premature babies can be used to strengthen NICUs, and various MCH models can be used to train nurses. To control infectious diseases, a device to treat jaundice using light-emitting diode (LED) to prevent nosocomial infection of newborns and a disinfectant spray for hospitals are recommended. In addition, a rapid dengue diagnostic kit is likely to help prevent an epidemic of dengue fever.

## (3) Education

Among possible ODA projects using the products discussed in Chapter II, a project on abacus lessons can be created to help pupils improve their calculation and mental arithmetic skills. Japanese abacus lessons are based on a rating system that can motivate learners to try hard and develop their skills quickly. The aim of such project would be to help improve the mathematical skills of children of low-income households by complementing public education and address the disparity in educational opportunities. A NGO that operates educational institutions would be the main counterpart of this project. Another possible ODA project would be to improve school facilities by using two special types of paint: one makes it possible to write smoothly on the blackboard and erase easily what is written on it; the other allows teachers to use magnets on the blackboard by covering it with iron powder.

# **IV. Possibility of business development by utilising the SMEs' products and technologies in the surveyed sectors**

## (1) Environment, Energy, and Waste Management

The GOB and aid agencies have conducted numerous programs to promote renewable energy in the country. Japanese SMEs are highly likely to be able to engage in renewable energy business in the country by making good use of these support programs. However, because many Bangladeshi and foreign companies and organizations have already entered the market in this field, it is important for Japanese SMEs to take advantage of the support programs effectively while differentiating their products from the existing ones. In addition, Japanese SMEs need to address the following points in order to develop their business in Bangladesh: improving their

products so that they suit the needs of Bangladesh; developing effective business models; selecting appropriate business partners; and checking relevant policies and regulations to comply with. It would be effective for those SMEs to use the support programs by ODA in order to reduce their technical and financial burdens.

In the waste management sector, it would be also effective for Japanese SMEs to use the ODA support programs in the initial stage of business development. Because the main likely customers of waste management business are those of the public sector such as central and local governments, it would be productive to work with local private companies and NGOs in such tasks as bidding. In addition, it would be fruitful to sell products on industrial waste disposal to private firms, especially the factories of Japanese companies operating in Bangladesh.

## (2) Health

It is necessary to increase the demand for Japanese products, increase recognition of them, and disseminate knowledge and technologies to seasoned Bangladeshi health personnel and technicians on how to make full use of the products. Japanese SMEs are recommended to use ODA schemes in the initial stage of their business development in Bangladesh because it is difficult for them to perform the tasks above without sufficient information and networks. In the initial stage, Japanese SMEs can analyze the possibility for the Bangladeshi side to introduce their products, and seek partner health facilities and local distributors. Then they can verify the adaptability of the products to the Bangladeshi market and train health personnel to increase their recognition of the products. At the same time, they can conduct networking as well as marketing activities, create demand for the products in the Ministry of Health and Family Welfare and private clinics, and prepare to launch full-scale sales promotion for expanding their business in Bangladesh in the years to come.

## (3) Education

In the Bangladeshi education sector, it is difficult for Japanese SMEs to exclude the wealthy from the marketing targets of their products and services at this point. The abacus lessons suggested in Chapter III can target the wealthy at first. Their selling point can be the enhancement of the calculation and intellectual capacities of children. Japanese SMEs may be able to run an abacus school for the high-income class, increase recognition of the abacus in Bangladesh, and increase gradually the number of abacus schools for the middle- and low-income classes. In addition, it has been confirmed that private schools need ICT-using systems on school management and subject-content provision. It will be easy to install such systems in private schools because many of them already have their own local area network. However, it will be important for Japanese

SMEs to establish local branches and develop agents because they need to sell their products to individual schools; this also applies to selling school equipment and teaching materials. If branches and agents are secured, Bangladesh is likely to prove a profitable market for Japanese SMEs that start their business in the country now. Such SMEs may be able to reap the benefit of being a trailblazer in Bangladesh because the country has a large school-age population and a growing economy.

#### (4) SME Promotion

Foreign investors have recently been interested in Bangladesh for its huge potential domestic market and cheap labor. However, Japanese companies, especially SMEs, are still hesitant to enter Bangladesh. Although Japanese products and technologies are highly acclaimed in Bangladesh, the people of the country do not have much information on them to consider buying them. As a result, Japanese products are not only not price-competitive but also less predominant than their competitors in the Bangladeshi market. To raise consumer recognition of Japanese products in Bangladesh, ODA projects may be a useful means.

It is still difficult for Japanese SMEs to enter Bangladesh by themselves because of many reasons including lack of human resources and experience. They may be able to address these challenges through industry-government-academia cooperation, as well as working with other SMEs.

## Attachment: Outline of the Survey

### People's Republic of Bangladesh Needs Survey on Environment, Energy and Waste Management, Health, and Education

#### Research Company and Counterpart Organization

- Name of Research Company: IC Net Limited
- Survey Site/Counterpart Organization: Public, private and academic organizations; institutions of three sectors (Environment, Energy and Waste Management; Health; and Education) in Bangladesh

#### Concerned Development Issues

- (Environment, Energy and Waste Management) Low economic and social development due to limited power supply; urban environmental issues due to increased waste disposal
- (Health) High neonatal mortality rate due to poor maternal and child health service, infectious diseases, and nosocomial infection
- (Education) Income gap and educational disparity causing the entrenched and widening gap between rich and poor

#### Products, Technologies, etc. of SMEs

- (Environment, Energy and Waste Management) Micro solar grid; biomass power generation; system to use surplus electricity of automobiles; device to process non-segregated waste; device to turn plastics into oil
- (Health) Artificial respirator for premature babies; portable ultrasound equipment; Doppler fetus actocardiograph with recording paper; jaundice treatment equipment; disinfectant spray; rapid dengue diagnostic kit
- (Education) Content delivery system and school management system using ICT; special paint for blackboard; abacus

#### Proposed ODA Projects and Expected Impact

- (Environment, Energy and Waste Management) Better access to electricity by disseminating renewable energy in non-electrified areas; better waste management by new processing and recycling methods
- (Health) Capacity building project with portable ultrasound equipment and Doppler fetus actocardiograph; project to improve NICU using artificial respirator for premature babies; project to prevent nosocomial infection and reduce neonatal mortality through LED-using jaundice treatment equipment
- (Education) Capacity development project with abacus; income generation by founding small businesses through microfinance; project to improve educational quality through better school facilities

#### Future Business Development of SMEs, etc.

- (Environment, Energy and Waste Management) Partnership with NGOs and local organizations; using support program for dissemination; marketing to the public sector
- (Health) Finding local distributors; marketing to public and private hospitals; maintaining equipment quality by training local distributors
- (Education) Setting up and increasing abacus schools through microfinance and transfer of abacus skills to the poor

