"Project Formulation Survey" under the
Governmental Commission on the Projects for
ODA Overseas Economic Cooperation
in FY2012

Summary Report

India

Study for Fortifying Medical Cold Chain by Icebattery System

March, 2013

ITE Co., Ltd, Value Frontier Co., Ltd, Fujita Planning Co., Ltd

Summary

Background of the Study

The 11th Five Year Plan (2007-2012) in India promotes vaccinations of 6 vaccine (BCG, DPT, OPV, Hepatitis B, Measles, and TT) preventable diseases for all the nationals as well as development and establishment of transfusion systems with recent technologies. However, since there is no advanced logistic system in India that is capable of maintaining a certain low temperature for a long time, India still faces difficulties in establishing a medical cold chain for transporting vaccines and blood from hospitals/clinics and central blood banks in urban areas to community health centers/sub-centers and blood banks in rural areas. Consequently, a report points out that despite the fact that India annually spends 2 billion Rupees on purchasing the above-mentioned 6 types of vaccines that it considers as necessary, it is capable of delivering them to only half of the 26 million new born babies every year, though there are also other contributing factors. Besides, there are still some areas where doctors cannot provide medical treatment with blood transfusion for patients. Moreover, the caste system embedded in Indian society prevents blood transfusion among different castes and sometimes causes deaths of patients especially in rural areas where access to blood appropriate to each caste is limited. The Icebattery system that the study team proposes is capable of maintaining a certain degree of temperature from -25C to 25C for a long time and transporting vaccines and blood from hospitals/clinics and central blood banks in urban areas to a place wherever needed. Therefore, the study team thinks that it can contribute to solving issues related to the medical cold chain in India. The team also thinks that it can fortify activities in health and sanitation sectors that the Ministry of Foreign Affairs of the Japanese government carries out under its official development assistance program for India.

Objectives of the Study

The study team carried out the following activities for the purpose of considering a project formulation of the Icebattery system in India;

① Description of the current situation and development needs of the development issues concerned in India

② Possible applicability of the ITE Co., Ltd's products and technologies, and prospects for future business development

③ Expected development impact and effect on business development of ITE Co., Ltd in India through proposed ODA projects

④ Proposals for formulating ODA projects

Description of the current situation and development needs of the development issues concerned in India

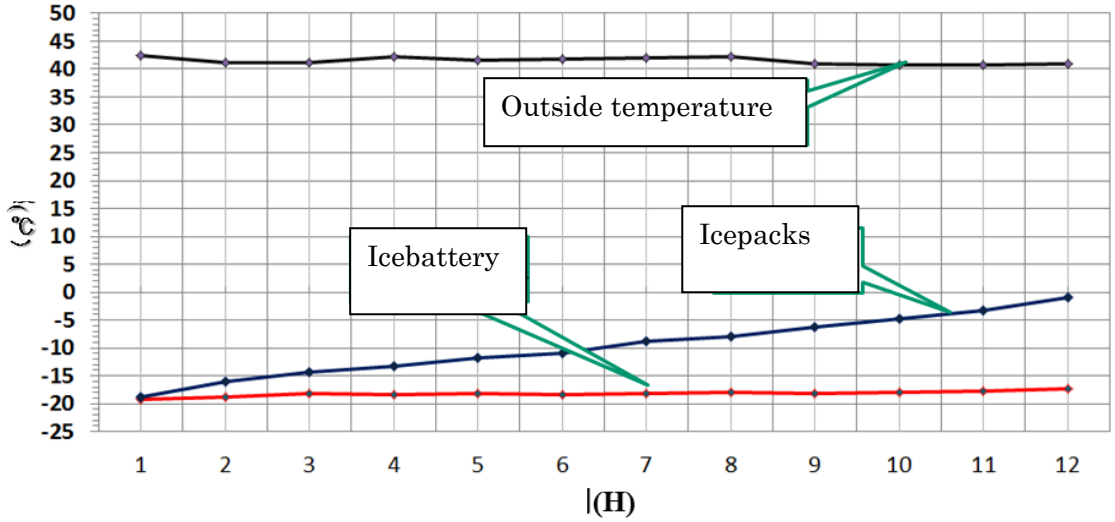
The Government of India (GOI) in 1985 launched the Universal Immunization Program (UIP) targeting all children under 1 year old and promoted free vaccinations of 6 kinds of vaccine (Tetanus, DPT, OPV, BCG, Measles, and Hepatitis B) preventable diseases. As a result of GOI spending of over USD 500 million in the vaccinations, it now achieves over 80%, on average 85%, of the vaccinated rate in the 5 kinds (Tetanus, DPT, OPV, BCG, and Measles). However, 20% of population in India is significant. As a matter of fact, the number of children under 1 year old who have not been vaccinated, in the case of Tetanus, is roughly 6 million. Over 80% of vaccinated rate is only an average on the whole and the figure is significantly lower in some states and regions. For instance, Arunachal Pradesh and Daman & Diu have vaccinated rates ranging from 30 to 60 percent. In short, the vaccinated rate in India shows a wide disparity between the planned figure (100%) and the actual figure (average 85%). According to Ministry of Health and Family Welfare (MOHFW), the causes of the disparity lie in 1) fragility of temperature control at vaccine stores, 2) fragility of the cold chain, and 3) mismatch between demand and supply at the final location.

GOI has also launched a National Blood Transfusion Program (NBTP). The national Blood Transfusion Council (NBTC) under MOHFW makes policies on national blood supply services and the State Blood Transfusion Council (SBTC) under NBTC carries out concrete plans at the state level based on the policies. As a result, according to the Indian Red Cross, approximately 9 million units of blood were transfused in 2012. However, that is just equivalent to 75% of the required units which are 12 million units. Meanwhile, according to another entity, the actual supply was approximately 4 million unites whereas the actual demand was approximately 40 million units, which meant that only 10% was supplied. In short, there is a wide disparity between demand and supply of blood. According to MOHFW, the causes of the disparity lie in 1) non-standardized blood supply that is different from one state to another, 2) incapability in transporting blood under controlled temperature from District Hospital (DH) to Sub-District Hospitals (SDH) and from DH and SDH to vaccinated sites via Community Health Center (CHC) and Primary Health Center (PHC), and 3) difficulties of transfusion among different castes, particularly in rural areas.

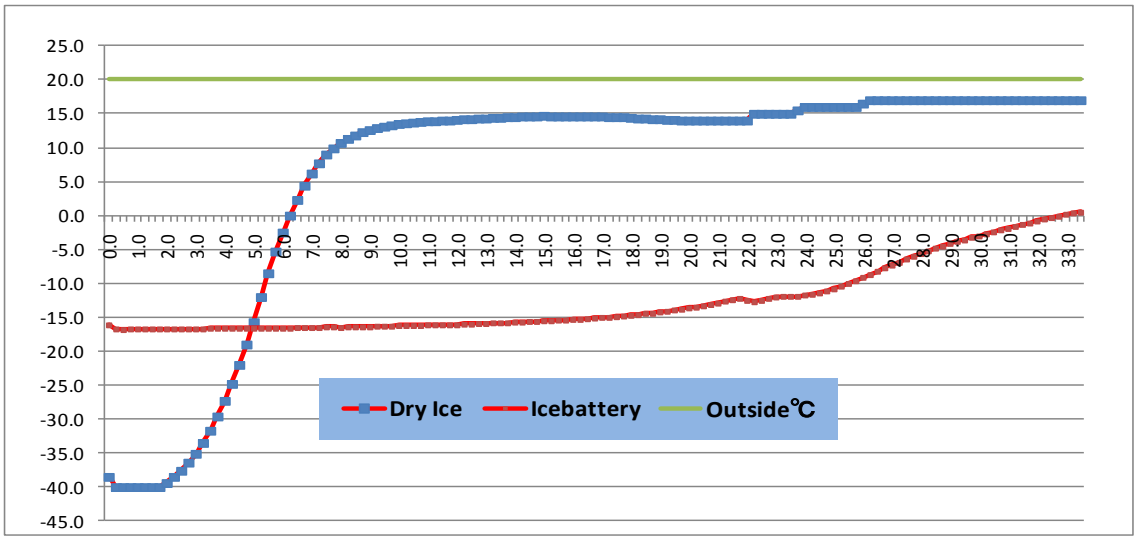
Possible applicability of the ITE Co., Ltd.'s products and technologies, and prospects for future business development

Unlike existing technologies, such as icepacks and dry ice, Icebattery can maintain low temperature that has been set for many hours. Thus, it can fortify the medical cold chain in

India.



Graph 1: Comparison between Icebattery and icepacks

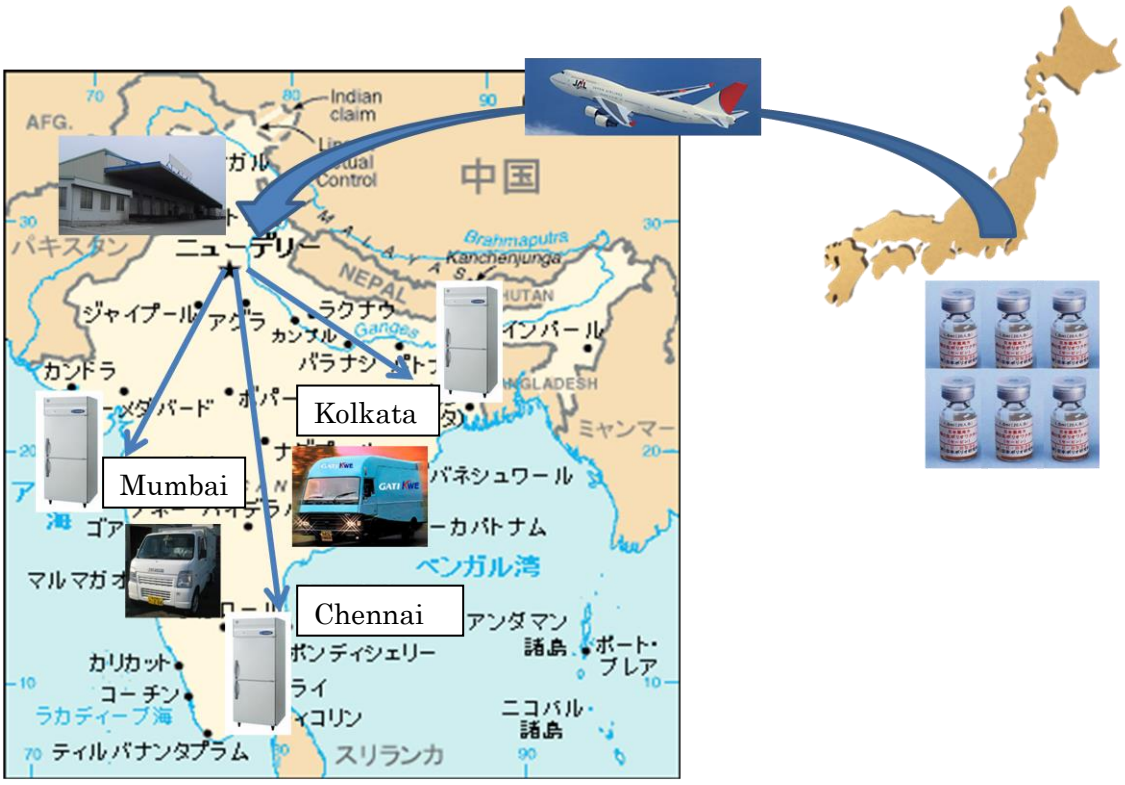


Graph 2: Comparison between Icebattery and dry ice

ITE Co., Ltd will carry out its business operations in India and try to significantly improve the medical cold chain in India. GOI spends approximately 2 billion Rupees every year for 6 kinds of vaccines, but it can reach only half of the target population of 26 million new born babies. Introducing Icebattery can improve GOI's cost effectiveness. Besides, it can meet the growing and diversifying needs of medical services as incomes of the Indian population grow.

Expected development impact and effect on business development of ITE Co., Ltd in India through proposed ODA projects

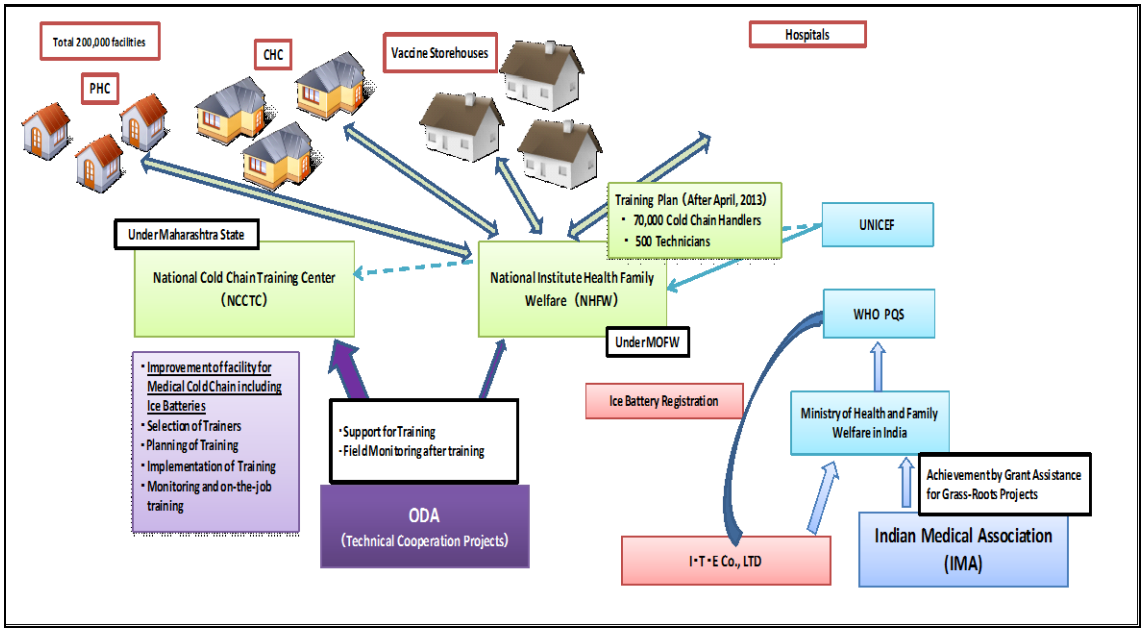
ITE Co., Ltd's business operation in parallel with the implementation of an ODA project will develop the medical cold chain using Icebattery in India. By doing so, it will become possible to transport medical supplies including vaccines all the way to peripheries. Consequently, Japanese pharmaceutical companies and wholesalers can also approach the Indian market. For instance, a drug for cancer treatment named "Gliadel" that Nobelpharma Co., Ltd. and Eisai Co, Ltd have newly developed needs to be preserved under -25C to 15 C and thus has had no way to be transported to India. However, Icebattery can make it possible. Airlines flying between Japan and India can now expect potential demands of cargoes delivering medical supplies to India. Makers of refrigerators, freezers and vehicles that jointly develop Icebattery system with ITE Co., Ltd. can now approach the emerging market of India. Besides, Japanese logistic companies that have already started business operations in India can benefit from new transportation needs of medical supplies.



Graph 3: Image of business operation in India

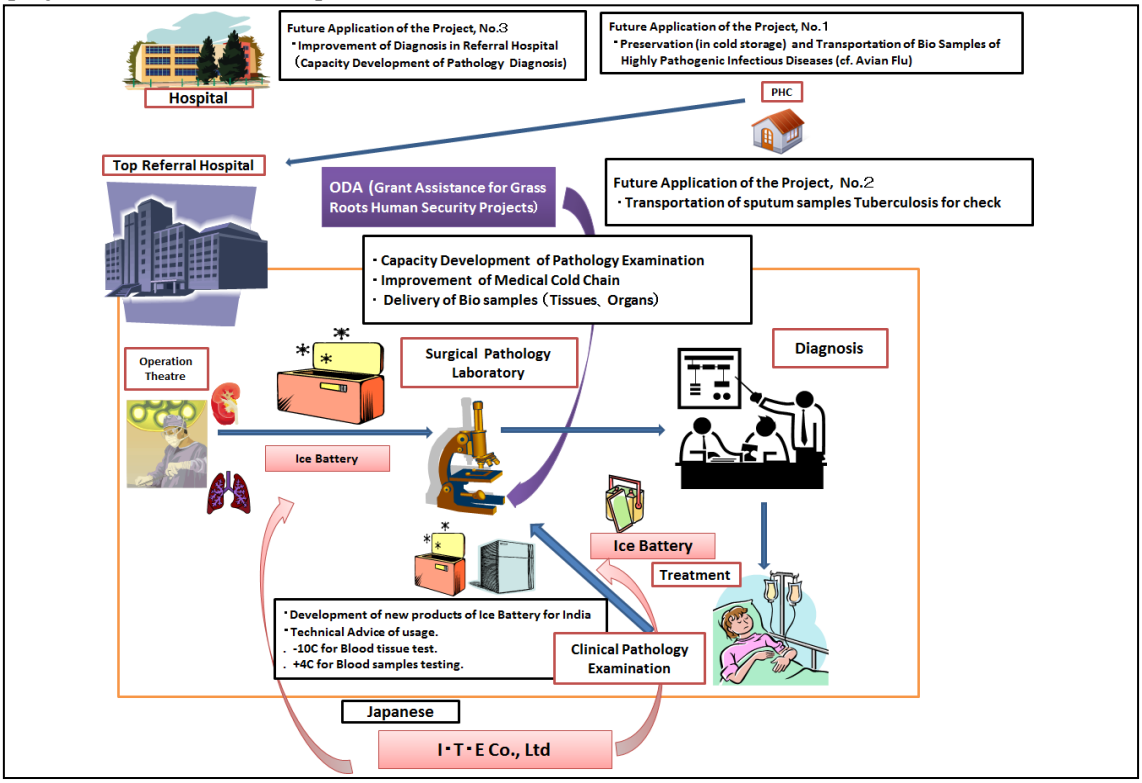
Proposals for formulating ODA projects

【Technical cooperation project】Training project for cold chain technicians



Graph 4: Image of a technical cooperation project

【Grass-roots grant project】Medical Instrument for Medical Pathology in urban area Hospital project with G.B.Pant Hospital



Graph 5: Image of a grass-roots grant project

Project Formulation
India, Study for Fortifying Medical Cold Chain by Icebattery System

SMEs and Counterpart Organization

- Name of SME: ITE Co., Ltd; Value Frontier Col., Ltd; Fujita Planning Co., Ltd
- Location of SME: Tokyo
- Survey Site・Counterpart Organization: Delhi, India

Concerned Development Issues

- Fragility of Cold Chain System for Vaccines
- Fragility of Cold Chain System for Blood

Products and Technologies of SMEs

- Cold preservation by Icebattery System
- Monitoring of temperature by Data Logger

Proposed ODA Projects and Expected Impact

- The project aims at improving the supply system of vaccines and blood by introducing Icebattery through a grass-roots grant project or a technical cooperation project, and thereby contribute to enhancing the health of Indian nationals.

Future Business Development of SMEs

- By developing cold chain using Icebattery in India, it becomes possible to transport Japanese medical supplies to India. Japanese pharmaceutical companies, wholesalers and airline companies can also newly approach the Indian market. Makers of refrigerators, freezers and vehicles that jointly develop Icebattery system with ITE Co., Ltd can also strengthen their business operations in India.