Federal Republic of Brazil

Department of Disaster Management of Parana State

Collaboration Program with the Private Sector for Disseminating Japanese Technology for radar rain gauge in Parana State

Final Report

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Japan International Cooperation Agency (JICA)

Japan Radio Co., Ltd.

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Chapter 1. Summary

1.1. Summary

- Background of this Project

  In January 2011 in Brazil, a large scale of landslide disaster occurred at several hundred places around the mountainous areas in the State of Rio de Janeiro and caused the worst calamity in the Brazilian history in which a historical city known as a tourist resort from old times was swept away and recorded about 1,000 dead and missing persons. In taking the situation seriously, the Brazilian Government was motivated by this disaster to introduce the program specialized for disaster risk management and response into the multi-year plan (PPA: Plano Plurianual) as one of the national development plans. On the other hand, in May 2013, the Disaster Prevention Bureau of Plana State that had promoted the most advanced disaster-prevention programs in Brazil requested JRC to recommend some systems including an X-band dual-polarization radar system and a disaster forecasting and warning system. In response to this, JRC has made a presentation of the systems and provided technical assistance through TV conferences to the Disaster Prevention Bureau before the start of this Project. JRC has worked on the disaster prevention projects at home and overseas for many years and developed the solid-state X-band dual-polarization radar system with international competitiveness based on its supply record of rainfall radar systems to Meteorological Agency and Ministry of Land, Infrastructure and Transport and its remote sensing technology. This newly developed rainfall radar system and JRC's own accumulated know-how for disaster prevention solutions will contribute to mitigation of potential natural disasters in the country of Brazil and to further development of JRC's disaster prevention solution business.

- Technology to be Promoted by this Project

  The X-band dual-polarization radar using the pulse compression technology can realize more accurate rainfall intensity measurement. The high-precision rainfall measurement technology is not only applicable to the rainfall observation system, water resource control system and dam control system, but also developable to the disaster prevention solutions for the disaster prevention systems such as landslide-disaster risk assessment support system

- Objectives/Targets of this Project

  - Performance evaluation of X-band dual-polarization radar and collection of rainfall data in Prana State
  - Cooperation with reinforce of disaster prevention capacity of Brazil and contribution to building a disaster-resistant society
  - Grant of basic knowledge of X-band dual-polarization radar and technology for radar operation
  - Grant of flood and debris flow forecasting and warning models
  - Development to Brazil of the Japanese system standards in the disaster prevention field

- Acquisition of high evaluation for the technology and disaster prevention solutions unique to Japan
- Sales promotion of the X-band dual-polarization radar system to Meteorological System of Parana SIMEPAR (Sistema Meteorológioco do Paraná)

- Details of this Project

  Objectives of Acceptance Activities in Japan

  - Overview and case study of disaster prevention systems in Japan
  - Visits to operation sites of JRC products and technical guidance

  Objectives of Field Activities

  - Seminars and technical guidance on X-band dual-polarization radar system
  - Demonstration activities such as collection of rainfall data intended to promote the understanding of actual equipment

- Results of this Project

  This Project could achieve the original objectives to realize the modernized disaster prevention system having the configuration combining the wide-area rainfall observation sensor using the latest X-band dual-polarization radar with landslide disaster risk management software using the snake curve developed in Japan, to take control of the wide-area disaster risks under the jurisdiction of Disaster Prevention Bureau of Parana State, and to quick disaster prevention activity by the use of automatic alarm function.

- Prospect for Business Development in Current Stage

  Business Overview

  - Packaging of the forecasting and warning system using the rainfall radar as the core with the debris flow sensors
  - Linking with the flood forecasting and warning system that is in the JRC's area of expertise
  - Differentiation of debris flow disaster risk information
  - Linking with disaster prevention solutions which are not worked on by European and USA manufacturers

    The market targets are Parana State, Rio de Janeiro State, Sao Paulo State, Santa Catarina State, Minas Gerais State, and National Disaster Monitoring Center (CEMADEN: Centro Nacional de Monitoramento e Alertas de Desastres Naturais), etc.

- Decisive ground for Business Development Prospect

  Estimated total project cost in the market:

  Parana State, Rio de Janeiro State, Sao Paulo State, Santa Catarina State, Minas Gerais State, and National Disaster Monitoring Center (CEMADEN) are the market targets. The market scale of 7 billion yen is predicted including 4 X-band dual-polarization radar

systems for each State, 10 systems for Federal Government, and flood forecasting, and warning systems, broadcast radio systems and debris flow sensors.

Financing:

Each State's own fund is anticipated.

- Remaining Problems and Countermeasures/Policy for Business Development

Brazil has many problems including complicated legislation and high taxation, called "Brazil cost", and shortage of human resources having technical expertise and skills. In particular, the high customs are heavy burdens for the business development in export of equipment from Japan. If it is determined that the future business development is prospective, it is necessary to realize the total cost reduction, manufacture of low-cost equipment, higher rate of local procurement, and local production for local consumption and to build the system to win through the competitions with other manufacturers.

- Plan for Future Business Development

It is planned to cooperate with the Parana State Government as the counterpart of Japan Radio Co. and its local subsidiary JDB/JRC do Brasil and to promote the business development aiming at promoting the X-band dual-polarization radar in Brazil.

- Possibility of Linking with ODA Projects

The "Project for Strengthening National Strategy of Integrated Natural Disaster Risk Management" by JICA technical cooperation was implemented for the period from July 2013 to November 2017 for the purpose of contributing to strengthening the national strategy of integrated natural disaster risk management in Brazil. The Project will be able to solve the problem of vulnerability to natural disasters that the country of Brazil has at present by linking with this Project because the synergistic effect of landslide disaster risk mitigation and enhancement of disaster response capacity is obtained.

1.2. Project Overview

The overview of this Project is shown in Fig. 1-1.

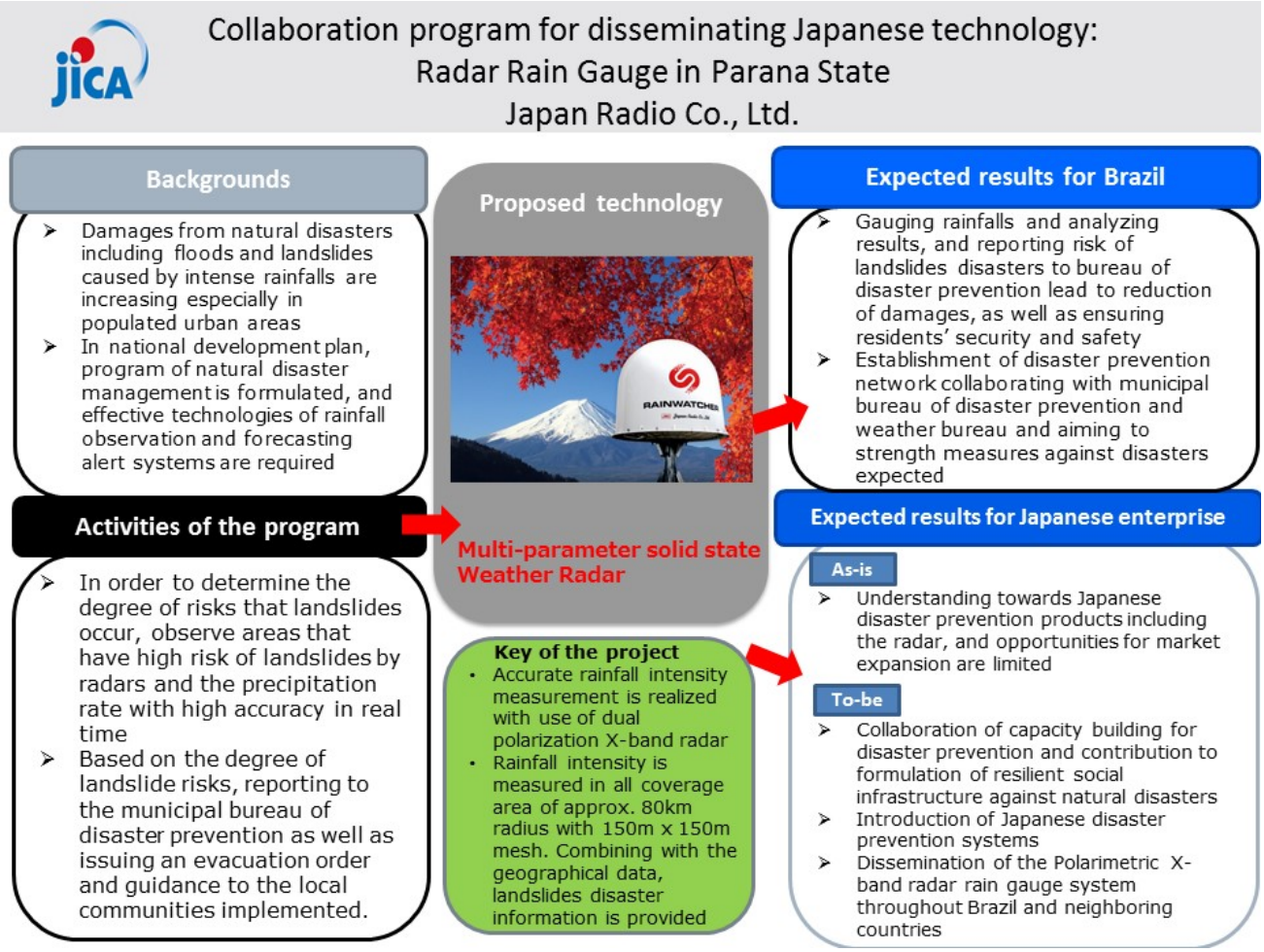

Fig. 1-1 Project Overview