

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

Summary Report

Republic of Indonesia

The Survey on the Enhancement of
Community Capacity for
Disaster Management
by Emergency Radio System

March, 2014

Wakiya Giken / Oriental Consultants
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 the FY 2013 and is carried out by the consortium (Wakiya Giken and Oriental Consultants Joint Venture). It does not represent the official view of the Ministry of Foreign Affairs.

Introduction

Republic of Indonesia (hereafter Indonesia) has historically been subject to numerous natural disasters every year, each leaving the country with extensive damage. Frequency of natural disasters in the past ten years (2001-2010) has doubled in comparison to the 10 years in 1990s, and the scale of the damage in terms of number of victims and deaths has also increased dramatically.

The Indian Ocean earthquake in December 2004 is responsible for one of the largest casualties in the history of natural disasters. Large scale natural disasters have since occurred repeatedly, including the Java Earthquake in May 2006, Sumatra Earthquake in 2007 and 2009, tsunamis in Mentawai Islands in 2010 and the eruption of Mt. Merapi also in 2010.

As described above, Indonesia, like Japan, is prone to destruction from earthquakes, tsunamis and volcanic eruptions, and the damage from tsunamis in the Indian Ocean earthquake of 2004 in particular, has prompted the Indonesian government to review its disaster prevention system (organization, legislation, budgets etc.). As a result, organizations responsible for disaster prevention was established, including the creation of the Indonesian National Board for Disaster Management (Badan Nasional Penanggulangan Bencana: BNPB) in 2008, followed by the establishment of the Regional Disaster Management Agency (Badan Penanggulangan Bencana Daerah: BPBD).

On the other hand, amidst the pursuit of stronger measures against tsunamis, volcanic eruption and rapid evacuation, communication infrastructure in rural areas remains insufficient, with people resorting to information being passed on from person to person directly, or through the use of loudspeakers and mobile phones. In reality, these measures are limited in terms of reliability of the information passed on and the speed of information transmission.

Against such background, Wakiya-Giken Co.,Ltd., with the belief that their “Emergency Radio System” can contribute to strengthening people’s disaster response by providing them with improved means to transmit information during a disaster, has decided to introduce the “Emergency Radio System” in Indonesia through an ODA scheme.

This study aims to (1) by understanding the current status of communication during disaster, confirm that the “Emergency Radio System” (here after referred to as: The system) can contribute to the improvement of the current status, (2) examine the marketability and establish the business model for dissemination of the system in Indonesia, (3) by piloting the system in Indonesia, identify issues, and (4) study the content of the project to be deployed under an ODA scheme.

Summary of each chapter are as follows.

I. Description of the current situation and development needs of the concerned development issues in the surveyed country(ies)

Development of the early-warning system in Indonesia began from a reflection on the lack of “systematic measures to issue a tsunami warning and evacuation call” in Indian Ocean Earthquake in December 2004.

As a result, National Tsunami Warning Center (NTWC) was set up under Indonesian Meteorological,

Climatological and Geophysical Agency (Badan Meteorologi, Klimatologi, dan Geofisika: BMKG) and the operation of the early-warning system began in October 2010. NTWC was now able to transmit with high reliability, information such as tsunami warnings to local governments and the BPBD using the Indonesian Tsunami Early Warning System (InaTEWS).

Although reliable transmission of information on tsunamis from the central government to the local government was now possible through InaTEWS, communication of information to the people by local governments responsible for issuing an evacuation warning and instructions remains insufficient. Currently, information is dispatched from local governments and BPBD to regional leaders using a mobile phone or a transceiver. The regional leaders then pass on the information to local residents using a loudspeaker. In some cases, the information is passed on to residents face-to-face by local government workers.

As described, the current state of information transmission system is limited in terms of reliability and speed, thence development of measure to transmit information to local residents reliably and rapidly during disaster is an urgent matter. In terms of reliability, the inability to deliver information to each resident using a loudspeaker needs be addressed, and in terms of the speed, the current status where information from the BPBD is passed on through several officials before reaching the loudspeaker needs to be improved so that the information is directly communicated from BPBD to residents or through loudspeakers.

Use of mobile phones to communicate with individuals are expected to be unavailable during disasters due to network congestions as experienced in Japan in the past, as well as being unavailable to certain age groups, and lack of systematic method to deliver information on evacuation from the local governments to mobile phones. A measure to provide for these issues is therefore required.

It is assumed that loudspeakers, which are currently the main means of information transmission, cannot deliver accurate information to every person in schools or shopping centers where a large number of people gather. Hence, a measure must be taken to deliver accurate information and to broadcast information in schools and shopping centers.

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

The system proposed in this study, the “Emergency Radio System (hereafter referred to as : The system)”, provides residents with information on disasters and emergency information such as evacuation call and instructions issued as necessary in an event of natural disaster through the radio using the FM wave. The system consists of 3 components, an “Emergency Radio”, a “Signal Generator” and a “Remote Controller”.

The system delivers emergency information in the event of a disaster accurately and rapidly to local residents through two routes.

In Japan, the first route is the nation-wide warning system “J-ALERT”, which broadcasts information on national disasters, or information to protect the Japanese population through each broadcasting stations or emergency radios equipped in each homes and facilities.

The second route is an evacuation call and instructions from municipalities, which interrupts radio broadcasts using a remote control installed in local government buildings.

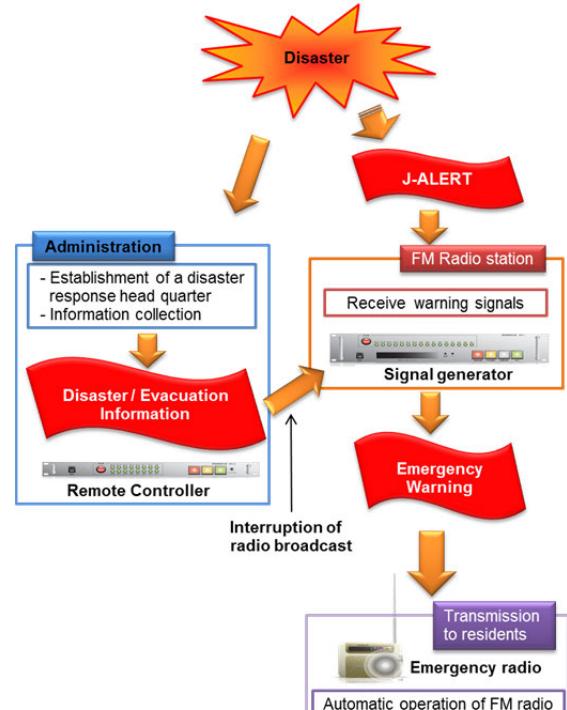
The project in Indonesia will utilize the second route to transmit emergency information to local residents reliably and rapidly.

Local authorities, institutions, and residents related to the deployment of the system in Indonesia were interviewed for their opinions of the system.

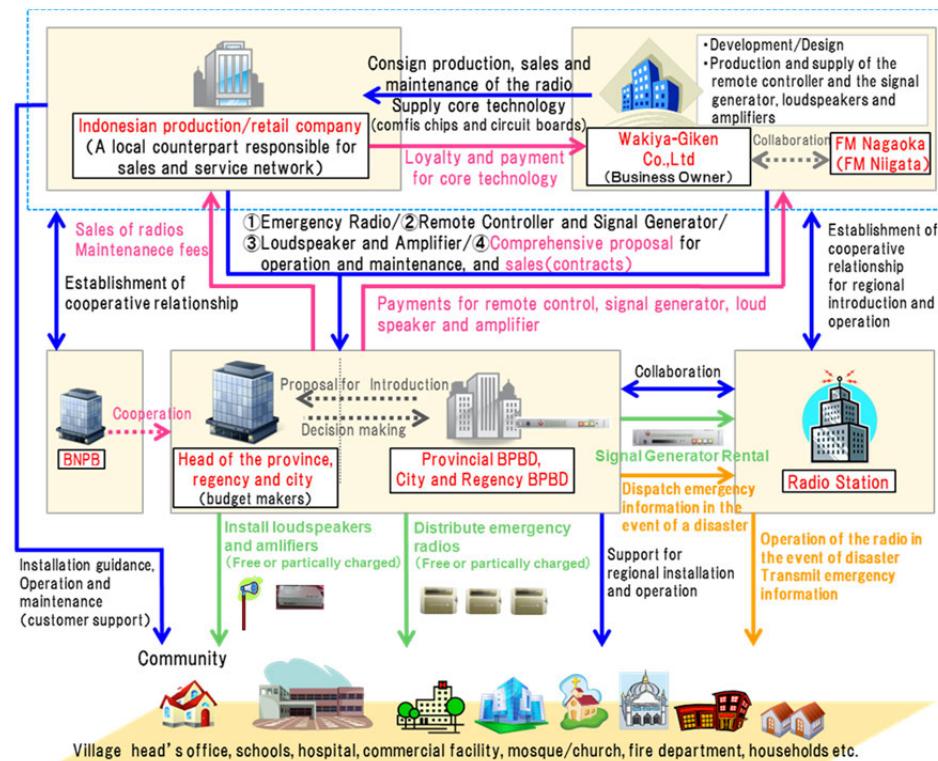
Very positive feedback was received from all stakeholders on the usefulness of the emergency radio, and the introduction and dissemination of the system in regions with high risks for disasters.

In particular, there were many comments highlighting the usefulness of the system in overcoming the weakness of existing disaster information system in terms of reliability, speed, and impartiality, reducing the information gap between the administration and the community, leading to early preparation for disaster response.

The business model for the dissemination of the system in Indonesia is as follows. Revenue streams are presumed as (1) sales of the emergency radio, (2) sales of the signal generator and the remote controller (infrastructure devices), (3) annual renewal of operation and maintenance contracts, and (4) sales of amplifier to connect the loudspeaker and the emergency radio.



Information Delivery Route by the System



Business Model
of the System

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

A pilot study was conducted to verify the operability of the system in Indonesia, identify challenges in introducing the system, and to identify the manner of use for the system based on local needs. The study was conducted in Tomohon City and Manado City in North Sulawesi, in disaster prone area of Indonesia. Volcanic eruption was simulated for Tomohon and flood for Manado.

In the pilot study, a total of 29 emergency radios were set up in the two cities: 11 in BPBD offices, 1 in Manado city mayor's office, 1 in North Tomohon County mayor's office, 13 in offices of town mayors, and 3 in schools. Another emergency radio connected to a loudspeaker was set up, bringing the total to 30 emergency radios.

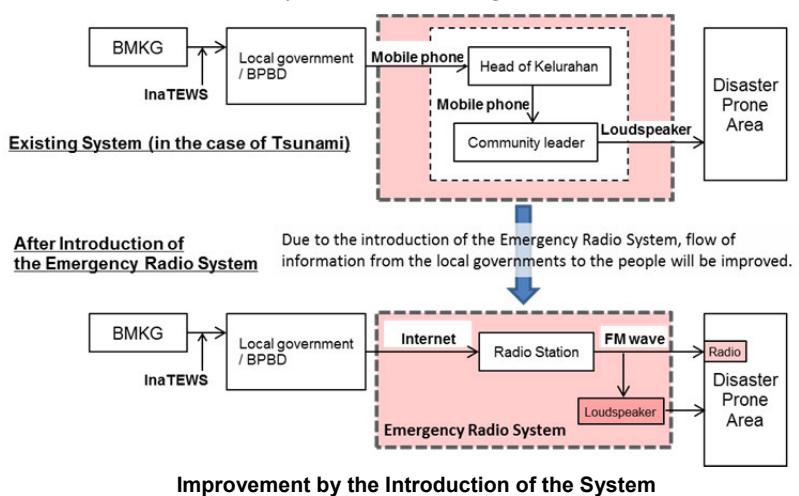
The pilot study was conducted on the 11th of December 2012 in Tomohon, and 13th of December in Manado. In the questionnaire conducted after the pilot study, it was found that apart from in two locations where signals were hard-to-reach, all emergency radios automatically turned on and off, and messages broadcasted were clearly heard. As for the emergency radio connected to the loudspeaker, the system turned on automatically on receiving a radio signal, and turned off automatically after the message was broadcast through the speaker.

Many monitors "felt they had to evacuate" however, comments requesting for more information such as "clarify the destination of evacuation", "clarify the origin of the message and target group subject to evacuation warning", and "requires information on evacuation route and contact details for inquiry" were received.

On the usefulness of the emergency radio, all participating monitors such as city mayor, BPBD, county mayor, town mayors and schools commented on the emergency radio to be highly useful.

IV. Expected development impact and effect on business development of the proposing SME(s) in the surveyed country(ies) through proposed ODA projects

Introduction of the emergency radio system using the FM wave will improve the reliability and speed of the existing information transmission system for a local government to local residents



By introducing the emergency radio system under the ODA scheme, following effects in Indonesia are anticipated.

1. Speedy transmission of accurate information will improve the coordination of residents' response, and result in the reduction of damage by the disaster in the region.
2. For managers of facilities where a large number of people gather such as a school or a hospital, guiding students and patients based on accurate information is a very important issue. The accuracy and the speed of the delivery of disaster information by the emergency radio is an extremely effective measure in managing such facilities.
3. In facilities such as a shopping center where an unspecified large number of people gather, speedy and accurate provision of information is crucial. Panics induced by rumors and incorrect information enhanced by imagination in the event of a disaster is easily predictable. From this perspective, managers of facilities are required to quickly gather and disseminate accurate information. Introduction of the emergency radio will provide a solution to such needs.

Furthermore, by disseminating the emergency radio under an ODA scheme, Wakiya-Giken Co.,Ltd. can anticipate following effects.

1. Conveying the effect of the emergency radio system installed under an ODA scheme across Indonesia will identify candidates for second and third installation of the system, leading to efficient deployment of the business.
2. By installing the system in various places, Wakiya-Giken Co.,Ltd. can accumulate further know-hows of system installation and experience to respond to wide variety of needs, leading to further advancement of the system.
3. Installing the emergency radio in Indonesia under an ODA scheme will lead to increased recognition of the Comfis-Emergency Radio and its system in Japan, thence can lead to advantages in business development within Japan.

V. Proposals for formulating ODA projects

Based on the result of the pilot study described above, in order to realize the project with high public interest, "*Feasibility Survey and Pilot Project for Disseminating SME's Technologies to Developing Countries*" under the Governmental Commission on the Projects for ODA Overseas Economic Cooperation (hereafter referred to as the ODA scheme) will be used. The outline of the pilot project is described in Table 1.

A) Short term plan (ODA scheme)

With North Sulawesi BPBD as a local counterpart, and with cooperation of the Radio Republic of Indonesia Manado Broadcasting Branch, infrastructure devices (the signal generator and the remote controller), loudspeakers for regional notification, and radio receivers will be installed, as well as system design including assistance for the development of a disaster prevention plan and an

operation manual.

Table 1 Short term plan (tentative) under the ODA scheme

Local counterpart	<ul style="list-style-type: none"> • North Sulawesi BPBD <p>Cooperation: RRI Manado Broadcasting Branch</p>
Objective	By introducing the Emergency Radio System using FM wave developed by Wakiya-Giken, the disaster response capacity of the target region will improve. Furthermore, oversea deployment of the Emergency Radio System and the technology will help stimulate local economy in Niigata.
Current Issues	<ul style="list-style-type: none"> • Issues concerning the speed and the reliability of information transmission passed through several persons. • Efficient means of information transmission to places such as schools and hospitals where vulnerable population may congregate during a disaster is not established. • Fast and reliable means to transmit emergency information to places such as a shopping center where a large number of people congregate is not established.
Anticipated Project Impacts	<ul style="list-style-type: none"> • Project Area: Improvements in disaster response capacity as follows is anticipated across the North Sulawesi Province: <ul style="list-style-type: none"> • Maintenance of equipment deemed necessary for development and implementation of the disaster prevention plan • Establishment of measures for accurate and speedy transmission of emergency information in each region • Establishment of measures to transmit emergency information to previously hard-to-reach areas such as remote areas and islands • Development of awareness towards disaster prevention through training of stakeholders and disaster prevention organizations • Proponent: <ul style="list-style-type: none"> • Accumulation of know-how on oversea deployment of business, and establishment of a market strategy • Increased motivation, improved name value of the company and its location (Niigata)
Project Term	Approx. 30 months
Project Area	Audible range of FM wave from the RRI Manado Broadcasting Branch including the islands of North Sulawesi Province
Project Contents	<ul style="list-style-type: none"> • Development of the disaster prevention plan for the North Sulawesi BPBD • Development of the operation plan for the North Sulawesi BPBD • Development of the operation manual and the training of people involved • System design, design of corresponding equipment, production (in Japan)

	<p>and installation</p> <ul style="list-style-type: none"> • Market study for full scale deployment after the ODA scheme
Input	<ul style="list-style-type: none"> • Experts for the development of the disaster prevention plan and the operation plan: a project manager, sub-manager (disaster prevention plan), equipment operations plan, training, equipment design, installation and calibration of equipment, network facility and cost estimation, market and socio-environmental study, project coordination and public relations, 1~3 local researchers. • Equipment: emergency signal generator (central system to be set up in the broadcasting station), remote controller (to be set up in the BPBD), a set of communication line to connect the equipment loudspeaker systems (for regional announcement), radio receivers (to be installed in disaster prevention facilities such as schools and hospitals), other (e.g. equipment to improve audibility)
Estimated Project Costs (borne by the Japanese ODA)	Approx. JPY 100 million(Equivalent to IDR 11.5 billion)
Input by the local counterpart	<ul style="list-style-type: none"> • Decisions on the roles and cooperation among BPBD, local authorities, and broadcasting stations and their implementation • Appointment of operation and maintenance staff in each institutions (some of the staff can fulfill concurrent posts with existing role, with exception of full-time key staff)

B) Medium to long term plan (full scale business deployment)

Local production and nation-wide business deployment (supply to provinces, regencies, cities and BPBDs) after the completion of the ODA, around within 5 years from now will be considered.

In order to market radio receivers and disseminate the Emergency Radio System in Indonesia, localization of production and distribution is crucial. However, Wakiya-Giken Co., Ltd., the developer of the Emergency Radio System, anticipates securing revenue streams by supplying local producers with memory chips that control the Comfis Signal, a key component for the radio receiver.

Attachment : Outline of the survey

Project Formulation Survey
Republic of Indonesia, Study on Enhancement of Community Capacity
for Disaster Management by Emergency Radio System

SMEs and Counterpart Organization

- Name of SME: Wakiya Giken Co., Ltd.
- Location of SME: Nagaoka City, Niigata Prefecture, Japan
- Survey Site • Counterpart Organization : North Sulawesi Province, Indonesia • BPBD

Concerned Development Issues

- Measures to communicate information such as evacuation call in the event of a disaster from the local authorities to the residents are insufficiently developed.
- Currently, information is communicated by means of mobile phones and loudspeakers, and in some cases through face-to-face interaction. Such situation has caused delay in the evacuation of residents.

Products and Technologies of SMEs

- “Comfis” signal turn on an emergency radio in one second automatically.
- Use of remote controller allows direct transmission of information from the local authorities to the residents via emergency radio, enabling speedy and accurate communication of information.
- By utilizing the radio's auto on/off function, loudspeakers already available in each regions can be operated more efficiently.

Proposed ODA Projects and Expected Impact

- Installation of the Emergency Radio System and development of disaster prevention plan and operation manual under the ODA scheme “Feasibility Survey and Pilot Project for Disseminating SME’s Technologies to Developing Countries.”
- Effect: Development of disaster information transmission system using an emergency radio enables prompt evacuation and strengthens disaster response capacity in area of installation and minimize the scale of damage.

Future Business Development of SMEs

- By accumulating know-hows required for business development in Indonesia through the installation and dissemination of the Emergency Radio System, facilitate deployment of the technology in other regions .

