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EFFECTIVENESS OF PARTICIPATORY PLANNING PROCESS AND EXERCISE IN CAPACITY DEVELOPMENT OF GOVERNMENTAL ORGANIZATIONS ON FLOOD EARLY WARNING SYSTEM

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ABSTRACT

As flood is one of the most frequent natural disasters in Sri Lanka and heavily affects people's lives, establishment of a flood early warning and evacuation system is a priority for this island. In this regard, an early warning and evacuation system planning has been implemented in "the Comprehensive Study on Disaster Management in Sri Lanka" (the Study), which is funded by Japan International Cooperation Agency (JICA). Aiming at establishing an effective system together with developing the capacity of the governmental organizations, the Study adopted the use of a "*participatory planning process*" and "*exercise implementation*". Based on the analysis of an actual case in which a flood warning was issued and the attitude change of government officials before and after its implementation, the effectiveness of the participatory planning process and exercise was confirmed. Accordingly, it proves that the JICA scheme can provide the opportunity for Sri Lankans themselves to improve their own capacity when the methods for this to happen are carefully considered. This approach is effective and can be applied to countries and areas that have similar issues and problems, and it will help to contribute to the disaster risk reduction in the world.

Keywords: early warning, capacity development, participatory planning process, exercise

1. INTRODUCTION

Natural disasters, especially flood, landslide and drought, heavily affect people's lives in Sri Lanka. After the Indian Ocean Tsunami Disaster in 2004, the Sri Lankan Government has changed its policy on disaster management from disaster relief to mitigation and preparedness, and the government has been taking efforts on strengthening the disaster management sector. These efforts include the enforcement of the basic act for disaster management, the establishment of the Disaster Management Centre (DMC) as a coordinating organization and the publication of the road map of disaster management (Matsumaru, 2006).

According to the "Road Map (DMC, 2005)", to protect the people living in disaster prone area, the establishment of a multi-hazard early warning and evacuation (EWE) system has been prioritized, as the implementation of structural measures require longer time and much higher costs. However the establishment of the EWE system, especially for the case of the flood early warning system, has not shown sufficient progress up to now.

Under these circumstances, the Japan International Cooperation Agency (JICA) has

been conducting “the Comprehensive Study on Disaster Management in Sri Lanka” (the Study) and the EWE system planning, which includes implementation of the pilot project, is one of the main components of the Study. Aiming at establishing an effective system together with developing the capacity of the governmental organizations, the Study adopted the use of a “*participatory planning process*” and “*exercise implementation*” as the principle of achieving this objective.

This paper presents an evaluation of the effectiveness of the participatory planning process and the exercise implementation for both the EWE system planning and the capacity development, based on the analysis of an actual case in which a flood warning was issued and the change in attitude of government officials before and after its implementation.

2. CAPACITY DEVELOPMENT OF GOVERNMENTAL ORGANIZATIONS FOR EFFECTIVE EWE SYSTEM

The Study has two main aims: 1) preparation of an effective EWE system plan for Sri Lanka and 2) capacity development in relation to the EWE system.

For the preparation of the EWE system plan, from past experiences, single organization or donor driven planning initiatives have a limited ability to establish an effective EWE system as many organizations are involved in the system. When single organisation plans the system it causes frictions with other organisations which eventually means the system will not be used and it leads a lack of sustainability of the system. Therefore, the Study Team considered the necessity of a collaborative and participatory planning approach with the concerned organizations in order to develop the coordinated plan.

For the planned EWE system to be effective, it is necessary for the governmental organizations to take appropriate actions to distribute information and evacuate the communities when the situation arrives. Thus, it is important to recognize that both the government and local people are required to perform their roles in the EWE system properly. To this end, capacity development at all levels is indispensable.

Furthermore, since the EWE system requires continuous improvement according to possible changes in the institutional and the local conditions, enhancing the planning capacity of the EWE system is also indispensable. DMC, as the appointed focal point, held repeated meetings with the concerned organisations for the establishment of the EWE system before the commencement of the Study. However, DMC have still not reached a certain agreement with other organizations even on restructuring the EWE system framework or on the preparation of a standard operation procedure to meet the current disaster management framework. The main reasons behind this situation are insufficient coordination capacity of DMC due to a lack of experience (too new to coordinate) and the inadequacy of the legal system with unconfirmed role allocations. Therefore the coordinating capacity of a leading agency (in this case, DMC) is considered to be directly related to the planning capacity and this should be enhanced in the course of the EWE planning in this Study.

3. PARTICIPATORY PLANNING PROCESS AND EXERCISE

With the aim of establishing an effective system together with the developing the capacity of the governmental organizations, such as improving the coordinating and planning capacity of DMC and other concerned organizations and the disseminating capacity of early warning messages, the Study adopted the participatory planning process and exercise implementation.

The advantages of the participatory planning process and exercise implementation in terms of effective planning and capacity development are considered to be the following:

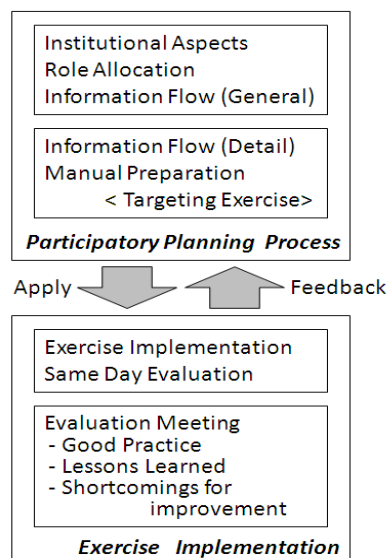
A participatory planning process with the organization concerned is considered to be an effective way to determine the proper information flow and the method of transferring it, as well as to develop the coordinating and planning capacity.

- An early warning system will only properly function if the system conforms with the institutional framework.
- As a variety of organizations are concerned with the early warning, the system will not function if a single agency (e.g. DMC) drives the planning process.
- DMC needs to coordinate with other organisations when it issues an early warning, and therefore it should lead the planning process with the other concerned organizations.

Since the key issue of early warning is the proper and timely transfer of information, the capacity to achieve this is the most crucial point. On the other hand, without an early warning plan, it is not possible to achieve the exercise. Taking into account these things, the implementation of the exercise was considered to have following advantages both for the EWE planning and the capacity enhancement of the organisations involved.

- The limits for the EWE system planning will arise only by discussing without a specific target (in this case, the target was the exercise implementation).
- An image of the exercise implementation helps smoothen the project and allows a more detailed discussion during the planning process,
- The government officials can learn the actual procedure to issue and disseminate the early warning information.
- The effectiveness of the planned early warning system can be checked during the exercise implementation.

In order to obtain a synergistic effect between the participatory planning process and exercise implementation, the activities were carefully designed as shown in Figure 1.



Source: Prepared by the author based on Takahashi and Komura (2006)

Figure 1 Process and Relationship of Participatory Planning Process and Exercise Implementation

3.1 Participatory Planning Process

The participatory process taken in the EWE system planning consisted of two major meetings, namely a “joint meeting” which is the place for discussion of common aspects and

an “individual meeting” which is the place for detailed discussion with the DMC and the concerned organizations individually. The objectives of the joint meeting are to create consensus and establish a common direction of the EWE system planning among all the organizations concerned, while the individual meeting gives an opportunity to consider detailed procedures and action by the individual organization themselves. The DMC initiated the joint meetings and brought the concerned organizations into discussion for the EWE system planning. The Department of Irrigation (DOI), Department of Meteorology (DOM), National Building Research Organization (NBRO), Police, Government Agent and District Disaster Management Coordinating Unit (DDMCU), Divisional Secretariat (DS) and G.N. (Grama Niladari) were invited to this participatory planning process.

During the participatory planning process, attention was paid to the following points:

- Create the environment where active discussion could be made by Sri Lankan initiatives.
- Appoint officials in each organization to the EWE system planning and request them to participate in the meetings continuously.
- Set a target activity of the planning process in order to start discussion and to make detailed consideration of the problems.
- The Study Team only gave information and ideas based on the Japanese experience when the participants were seeking the best alternative on the role of organizations, information flow, method of information transfer, etc., and did not give solutions to the problems.

Joint meetings were held as shown in Table 1. These meetings were intensively held from the end of September to October for preparing the exercise scenario and manual.

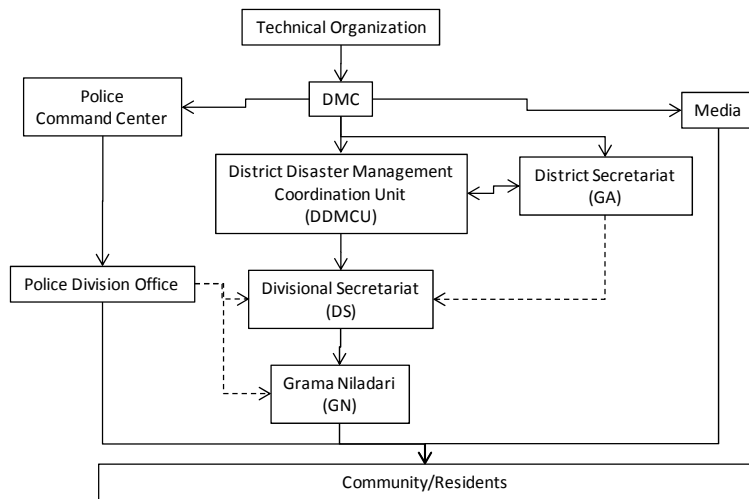
Table 1 Joint Meeting for Early Warning System Planning

Date	Participated Organizations	Items Discussed
June 13	DMC, DOI, DDMCU Divisional Secretary SLRC(Media),	<ul style="list-style-type: none"> • Early Warning System Planning and Information Transfer • Exercise Kick-off meeting
July 13	DMC, DDMCU	<ul style="list-style-type: none"> • General discussion on Early Warning System Planning and Information Transfer Exercise
Sep. 20	DMC, DOI, DOM, NBRO, Police, DDMCU, DS, GN Media	<ul style="list-style-type: none"> • Outline of exercise • Role of organization, information flow and transferring methods • Actions to be taken by each organization
Sep.27		<ul style="list-style-type: none"> • Role of organization, information flow and transferring methods • Actions to be taken by each organization
Oct.4		<ul style="list-style-type: none"> • Actions to be taken by each organization • Documents for information dissemination • Staff assignment for exercise
Oct. 11		<ul style="list-style-type: none"> • Confirmation on the actions to be taken at the exercise and documents for information dissemination • Confirmation of items previously discussed
Oct. 15		<ul style="list-style-type: none"> • Final confirmation of schedule, staff assignment, etc. for the ITE
Oct.16		<ul style="list-style-type: none"> • Evaluation of the Information Transfer Exercise (Just after the exercise)
Nov. 1		<ul style="list-style-type: none"> • Evaluation of the Information Transfer Exercise

Source: JICA (2007)

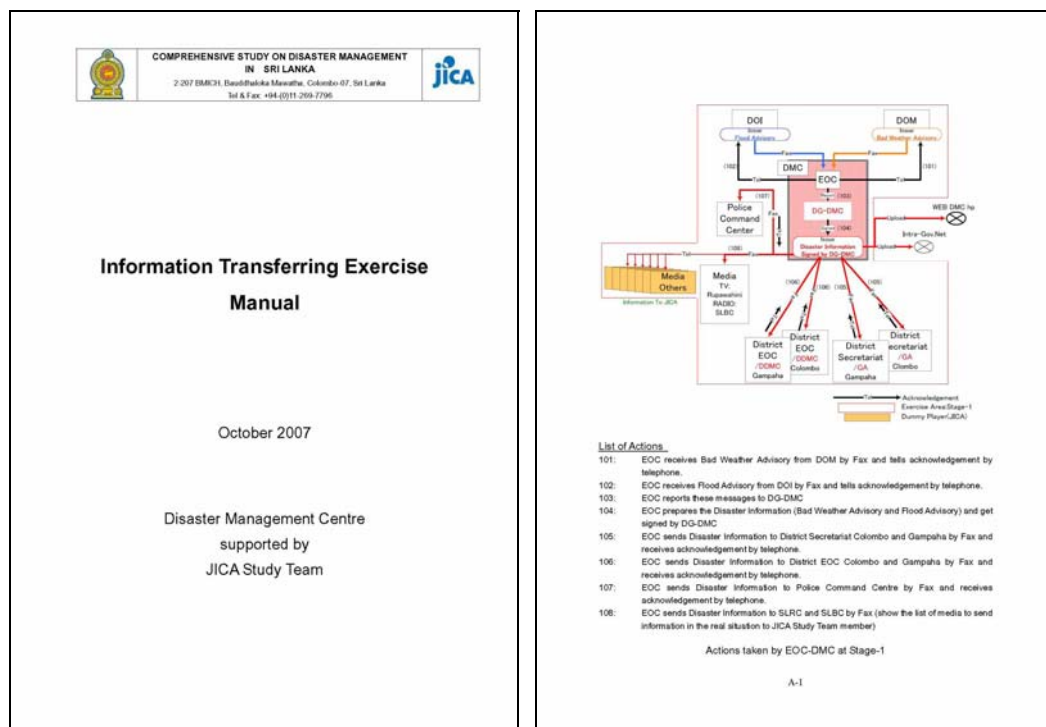
Active discussions took place in the joint meetings, especially regarding role allocation and the responsibility of each organization, information flow and method of information transfer. The early warning plan was tentatively established for the exercise.

The outcome of the discussions was the allocation of roles, the determination of the information flow (Figure 2) of the EWE system and the preparation of the “Information Transfer Exercise Manual” (Figure 3).



Source: Prepared by the author based on JICA (2007)

Figure 2 Agreed Information Flow (General)



Source: JICA (2007)

Figure 3 Exercise Manual (Cover and Sample Page)

The manual is a good tool to identify issues in the system by applying it to the exercise implementation. Furthermore, this manual can be modified easily once these issues have been found in order to improve it.

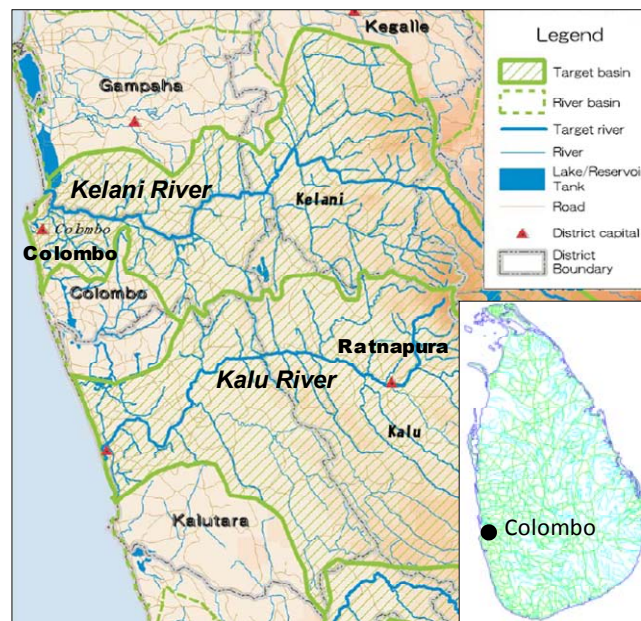
Through these processes, the officers in charge of each organization understood “what they should do” and “how important their roles are” in the EWE system, and DMC was recognized as the focal point of the system by other organizations.

3.2 Exercise Implementation

1st Exercise on October 16, 2007:

To confirm the information flow and develop the capacity for information distribution in government organizations, an exercise referred to as the Information Transfer Exercise

(ITE) targeting the downstream of Kelani River Basin (Figure 4) was conducted on October 16th, 2007.



Source: Prepared by the author

Figure 4 Target River Basins for the Exercise

The ITE was done for the Case Scenario of the flood of 1989, which was the biggest flood in recent years. The three information flow cases shown in Table 2 were checked through the exercise implementation. The scenario and objective of the each exercise case are also shown in Table 2. DMC, DOI, DOM, NBRO, Police, GA and DDMCU of Colombo and Gampaha, two DS of Kolonnawa and Byagama, and two G.N. Grama Niladari of Kittampahuwa and Malwana Town participated in the exercise (Figure 5).

Although this exercise was conducted for the first time in Sri Lanka and several issues were identified, generally, the information was transferred correctly and quickly. As a consequence of the ITE, the appropriateness of information flow determined in the participatory process was confirmed.

After the exercise implementation, two evaluation meetings were held. One was just after the exercise and the other was two weeks later, and some issues to be improved (e.g. standardization of the wording for disaster information and reporting sheet, necessity of checklist for activities and technical issues on the information transfer method) were identified.

2nd Exercise on February 26, 2008:

The 2nd exercise was conducted on February 26, 2008. At this time, the exercise was composed of two parts of 1) the 2nd ITE to confirm the information transfer procedures, which was modified according to the result of 1st ITE, from national level to GN level, and 2) Community Level Evacuation Drill to confirm the information transfer from GN level to the community people and evacuation activities. The exercise expanded its target area to Ratnapura and DDMCU, GA, selected divisions and GNs in Ratnapura District participated.

Prior to the exercise, a series of preparation meetings (Joint Meeting) led by DMC were held to discuss the lessons learned from the 1st ITE and to make necessary modifications on the information flow and the manual by incorporating the lessons learned as the next step of the participatory planning process. In this process, some participants participated much actively than before and took more time for arranging their parts of the exercise in advance.

Table 2 Three Cases for First Exercise on October 16, 2007

Case	Scenario	Objectives
1	<ul style="list-style-type: none"> - Bad weather advisory and flood advisory are issued by DOM and DOI - These information are transferred to local level through related organizations 	<ul style="list-style-type: none"> - To confirm the information flow from national level to local level.
1	<ul style="list-style-type: none"> - Bad weather advisory and minor flood warning are issued by DOM and DOI - These information are transferred to local level through related organizations 	<ul style="list-style-type: none"> - To confirm the information flow from national level to local level.
2	<ul style="list-style-type: none"> - DDMCU (GA) conducts discussions and issues the evacuation instruction. - This information is transferred to the national level and local level through related organizations 	<ul style="list-style-type: none"> - To confirm the procedure to issue the evacuation instruction. - To confirm the information flow from district level to national and local level.
3	<ul style="list-style-type: none"> - Local conditions are reported from GN to DMC through related organizations. - DMC consolidates all the information and report them at the press conference. 	<ul style="list-style-type: none"> - To confirm the information flow from local level to national level. - To exercise consolidation of various information. - To exercise holding of a press conference.

Source: JICA (2007)



Source: Photo taken by the author

Figure 5 Appearance of the ITE (EOC at DMC HQ)

To conduct the 2nd exercise, the exercise scenario was set as “there was a danger of flood in Kelani and Kalu rivers, and landslide in Ratnapura district”. In line with the scenario, in this exercise, the disaster warning and the evacuation instruction were prepared by DMC and DDMCU based on the information from DOM, DOI and NBRO, and it was transferred to the Police, DS and GN. In consequence, the information was disseminated in a more proper manner than in the previous exercise.

4. EFFECTS IDENTIFIED:

CHANGE ON ATTITUDE OF GOVERNMENTAL OFFICIALS ON EWE SYSTEM

The followings are the effects identified as results of the participatory planning process and exercise.

- All organizations have increased their awareness on the EWE system
- DMC was recognized as the focal point organization on the EWE system.
- Each organization had proper understanding on not only its own role but also the entire EWE system.
- Exercises helped in the activities carried out to react to actual disaster events.

These effects were proved at the actual events of heavy rainfall in November 2007 and the floods in April 2008. The flood warning and the landslide warning were actually issued by the technical organizations at these events. Furthermore, the warning messages were transferred properly from the national level to the local level governmental organizations through DMC in line with methods agreed upon the meeting and described in the manual. Some analytical results are presented in the following paragraphs.

On 22nd and 23rd of October 2007, heavy rainfall in the Ratnapura area and Kelani River basin were observed. During this heavy rainfall event, DOI and NBRO issued a flood and landslide warning (see Figure 6), and it was transferred to the sub-national level government organizations (DS and G.N.) through DMC.

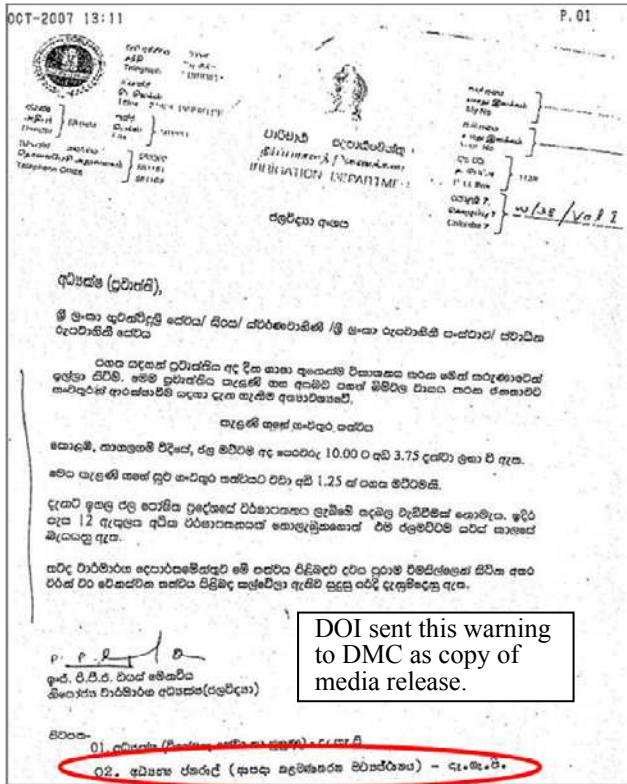
Before conducting the Joint Meeting and exercise, as no standard procedure to handle such information existed, technical organizations individually issued warning and distributed it to the media and local level organizations in their own way. However, in this particular event, both DOI and NBRO gave their warnings to DMC. The warning issued by NBRO (Figure 6 right) was addressed to DMC properly while the address of the DOI warning was given to the media and carbon copied to DMC (Figure 6 left). In doing so, DOI did not follow the agreed procedure, but this fact shows that DMC has been recognized as the focal point of the EWE system by both organizations, and it can be judged that the presence of DMC in the EWE system was enhanced.

After receiving the flood and landslide information from technical organizations, DMC prepared the “disaster information” (Figure 7) to inform DDMCU about the situation.

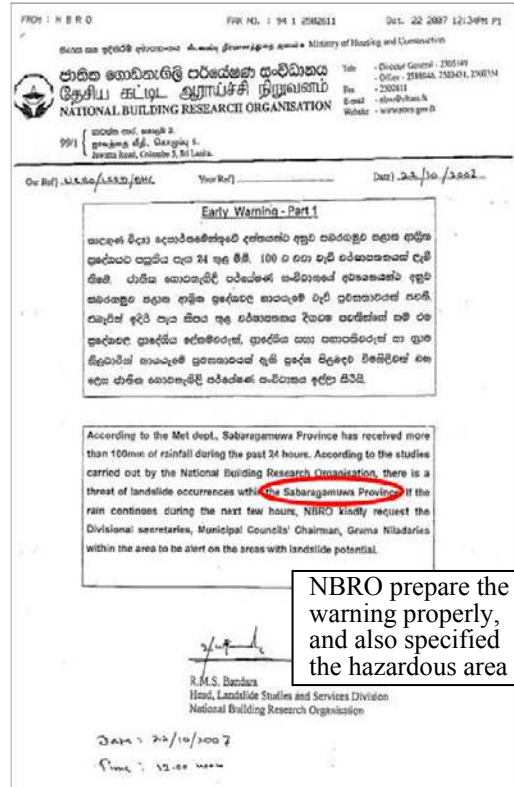
As shown on the figure, DMC prepared each area’s respective warning message in a proper way (different address and different contents) and it was confirmed by the interview to the local level government officials that these messages were properly distributed to the communities.

Since DMC had no such rule and did not respond in the same way before the exercise, this change is considered to be triggered by the exercise.

These actual cases shows that the participatory planning process and the exercise implementation are effective to increase the awareness on early warning and enhance the government capacity to distribute disaster information.



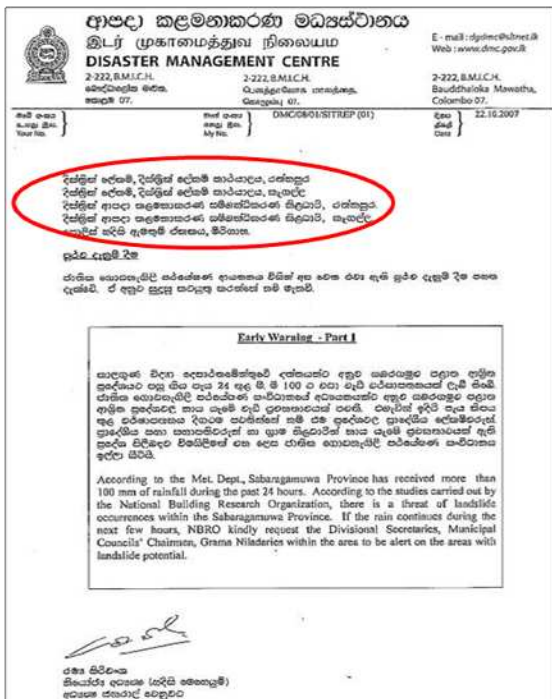
Flood Information Issued by DOI



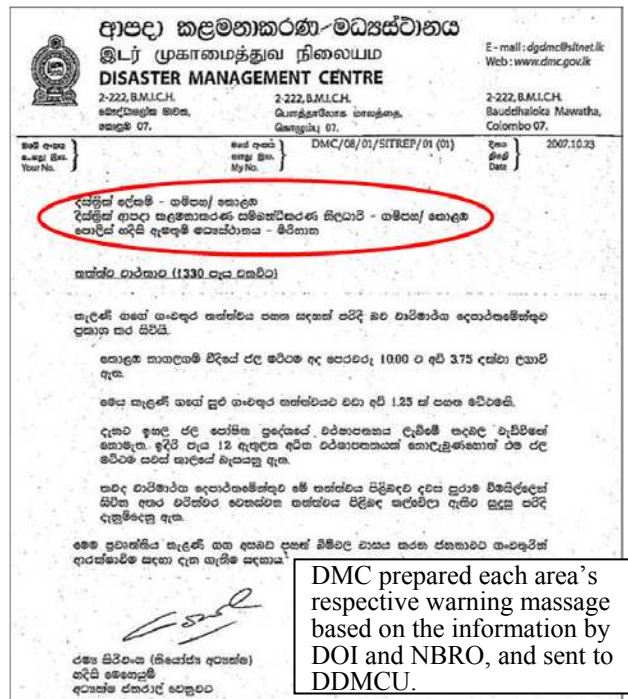
Landslide Information Issued by NBRO

Source: Prepared by the author

Figure 6 Flood and Landslide Information Issued by DOI and NBRO after Exercise



Disaster Information on Sep.22



Disaster Information on Sep.23

Source: Prepared by the author

Figure 7 Disaster Information Issued by DMC after Exercise

5. CONCLUSIONS

The effectiveness of participatory planning process and exercise implementation in planning of the EWE system and the capacity development have confirmed through the analysis done in this research. It proves that the JICA scheme could provide such an opportunity to improve disaster preparedness when the methods to do so are carefully considered. This approach is effective and can be applied to other countries and areas that have similar issues and problems, and it finally will help to contribute to the disaster risk reduction in the world.

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REFERENCES

- Disaster Management Centre: DMC (2005), Towards a Safer Sri Lanka: A Road Map for Disaster Risk Management
- Takahashi Hiroshi and Komura T. (2006), Bousai-Kunren no Guide: “Zunou no Bousai Kunren no Susume”, Bousai Shuppansha, Japan ,ISBN:4-434-08263-9
- Japan International Cooperation Agency, Pacific Consultants International and Asian Disaster Reduction Center (2007), Interim Report for the Comprehensive Study on Disaster Management in Sri Lanka
- Matsumaru Ryo (2006), Change in National Level Disaster Management System of Sri Lanka after the Indian Ocean Tsunami Catastrophe, *The Proceeding of the 61th JSCE Annual Meeting (CD-ROM)*