

Country Name	Disaster Management Capacity Enhancement Project Adaptable to Climate Change
Democratic Socialist Republic of Sri Lanka	

I. Project Outline

Background	<p>After the Indian Ocean Tsunami Disaster in 2004, a development study named “the Comprehensive Study on Disaster Management in Sri Lanka” (the Study) was conducted from October 2006 to March 2009 by the Government of Sri Lanka (GOSL) with the support of JICA. In parallel to the Study, the Government of Japan extended its support as a grant aid project to establish communication network to improve weather observation station and to enhance the capacity of real-time monitoring and communication for early warning (The Project for Improvement of Meteorological and Disaster Information Network) . During the Study, series of activities related to capacity development (CD) such as disaster risk reduction exercise, operation of monitoring and communication equipment were carried out. Yet the necessity of strengthening the acquired CD skills was identified by Sri Lankan side to secure sustainability of the skills developed.</p>					
Objectives of the Project	<p>By (1) enhancing leadership and coordination capacity of Disaster Management Center (DMC) through supporting development of National Emergency Operation Plan (NEOP) and development of training program for concerned parties, (2) enhancing weather analysis and monitoring capacity of Department of Meteorology (DOM) through transferring maintenance skills of Automatic Weather Station (AWS, procured under the grant aid project), and formulation of weather warning standards, (3) enhancing landslide analysis and monitoring capacity of National Building Research Organization (NBRO) through transferring techniques on sediment disaster measurement and landslide risk evaluation, (4) supporting DMC to develop warning transmission system and rules and conducts warning transmission training in the pilot areas, (5) enhancing disaster management capacities of districts, division and communities in pilot areas through supporting operation of disaster management coordination meeting and community-based disaster management activities, the project aimed that transmission speed and false report of disaster sent from disaster observation organization to pilot areas through DMC improve (project purpose level-indicator 1) and the disaster prevention activities and early warning alert are done in the pilot areas (project purpose level-indicator 2), and thereby project aimed that transmission speed and false report improve nationally and disaster prevention activities are disseminated to other districts (Overall goal level). The project objectives set forth are as follows:</p> <ol style="list-style-type: none"> 1. Overall Goal: The disaster management model is disseminated. 2. Project Purpose: A model for complete communication network in disaster observation, forecasting & community level activities including evacuation in the pilot areas are prepared. 					
Activities of the project	<ol style="list-style-type: none"> 1. Project site: (1) Colombo, (2) Pilot areas: Ratnapura, Kalutara, Nuwara Eliya, Additional pilot areas: Batticaloa and Matale (To support the revision of Prepared and Response Plan (PRP) nationally, Batticaloa and Matale were added as pilot areas in 2011 to review their existing PRP.) 2. Activities: <ol style="list-style-type: none"> (1) The project enhances leadership and coordination capacity of DMC through supporting development of NEOP, development of training program for concerned parties and others. (2) The project enhances weather analysis and monitoring capacity of DOM through transferring maintenance skills of AWS, formulation of weather warning standard and others. (3) The project enhances landslide analysis and monitoring capacity of NBRO through transferring techniques on sediment disaster measurement and landslide risk evaluation. (4) The project supports DMC to develop warning transmission system and rules and conducts warning transmission training in the pilot areas (5) The project enhances disaster management capacities of districts, division and communities in pilot areas through supporting operation of disaster management coordination meeting and community-based disaster management activities. 3. Inputs (to carry out above activities) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Japanese Side</p> <ol style="list-style-type: none"> 1. Experts: 12 persons 2. Training in Japan: 9 persons 3. Equipment: 42 items as planned. </td> <td style="width: 50%; vertical-align: top;"> <p>Sri Lankan Side</p> <ol style="list-style-type: none"> 1. Staff allocated: Approximately 30 persons 2. Land and facility: Project office, utility costs 3. Local cost: allowance and other operating expenses. </td> </tr> </table> 				<p>Japanese Side</p> <ol style="list-style-type: none"> 1. Experts: 12 persons 2. Training in Japan: 9 persons 3. Equipment: 42 items as planned. 	<p>Sri Lankan Side</p> <ol style="list-style-type: none"> 1. Staff allocated: Approximately 30 persons 2. Land and facility: Project office, utility costs 3. Local cost: allowance and other operating expenses.
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Ex-Ante Evaluation	2009	Project Period	March 2010–March 2013 (3 years)	Project Cost	(ex-ante) 260 million yen (actual) 339 million yen	
Implementing Agency	Disaster Management Center (DMC), National Building Research Organization (NBRO), Department of Meteorology (DOM), Department of Irrigation (ID)					
Cooperation Agency in Japan	Ministry of Land, Infrastructure, Transport and Tourism, Japan Water Agency					

II. Result of the Evaluation

1 Relevance

<Consistency with the Development Policy of Sri Lanka at the time of ex-ante evaluation and project completion>

The project was consistent with development policy of Sri Lanka both at the time of ex-ante evaluation and project completion. At the time of ex-ante evaluation, Sri Lanka Disaster Management Act No.13 was enacted in 2005 and DMC was established accordingly. National Disaster Management Plan 2009-2013 was scheduled to be developed. At the time of project completion, the project objectives remained consistent with the development policy. In particular, the Disaster Management Act No. 13 of 2005, was in line with the Hyogo Framework for Action 2005-2015 and the disaster management remains to be a priority of GOSL.

<Consistency with the Development Needs of Sri Lanka at the time of ex-ante evaluation and project completion >

The project was consistent with the needs for disaster management in Sri Lanka both at the time of ex-ante evaluation and project completion. At the time of ex-ante evaluation, main natural disasters in Sri Lanka are floods and landslides. Selecting three districts that were most affected by those disasters as pilot districts was appropriate. At the time of project completion, the pilot areas selected under the project remained at high risk of floods and/or landslide.

<Consistency with Japan's ODA Policy at the time of ex-ante evaluation>

The project was consistent with Japan's ODA policy. Basic policy of ODA to Sri Lanka includes support for disaster management, according to ODA Country Databook 2010.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

The project purpose was mostly achieved by the time of project completion as indicators set to measure the achievement of the project purpose such as "Improvement of transmission speed and decrease of false report of disaster information which has been sent from disaster observation organization to pilot areas through Disaster Management Centre" (indicator 1) and "the disaster prevention activities and early warning alert are done in the pilot areas using information which DMC transmitted" (indicator 2) were mostly attained. Compared to before the commencement of the project, the speed of information transfer from disaster observation agencies via DMC increased, and false alarm decreased. -Management capacity of the disaster management committee meetings was enhanced to a certain extent through DDMC and other meetings. Community Based Disaster Management (CBDM) activities (drawing up of hazard maps and mock drills) were carried out at 7 selected communities.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

After the project was completed, the effects of the project have continued. Though it is difficult to quantify the speed of information, DMC and District Disaster Management Community Units (DDMCUs) in the pilot areas confirmed that the transmission speed and accuracy of disaster reports have been improved.

Outputs produced under the project have mostly continued and contributed to improvement in transmission speed and accuracy of the disaster information report: In DMC, skills on top down and bottom up approach on information sharing is practiced in other projects as well. DOM does not have data on the accuracy of forecasts. However, they have a general impression that the accuracy has improved. Moreover, by utilizing Numerical Weather Prediction (NWP) system installed by the project and AWS, the forecast period has become longer than before. Monitoring and evaluation of landslide risk is carried out by NBRO based on the Manual for Landslide Monitoring, Analysis and Countermeasure developed by the project. And the warning system proposed by the project is adopted. However, the warning standards developed by the project are not utilized as they are presently being revised by a new technical cooperation project. And the information is not transmitted based on the warning official announcement rule stipulated in Warning issuance and information sharing manual developed by the project, and Intra Government Network (ING) does not function based on the ING operation rule. The original ING system which was introduced by the project could not continue after the project, due to high cost of network usage fee. However, GOSL revived the ING by switching to a lower-cost network, and it is functioning well.

Disaster prevention activities and early warning alert have continued in the pilot areas. District Disaster Management Committees (DDMCs) are functioning in all the pilot districts. Every year, before the monsoon rainy season starts, DDMCs are held in order to discuss and confirm the emergency response plan, role of each organization, stocks of necessary items etc. In addition to such regular meetings, emergency meetings are held when actual disasters occur, to discuss and decide on any matters necessary to counter the disasters at district level. DDMCs make requests to solve the issues to the central government when necessary. Specially at the monsoon preparedness DDMC Meetings, committee discussed on existing early warning systems and if any faults of communication are found, district secretary requests the DMC representative to rectify system.

Community disaster management activities have continued in most of the pilot areas. Evacuation trainings (Mock drills) at national and district levels are held every year in December (Tsunami memorial month). In addition, the pilot areas hold mock drills periodically. After the project implementation, there were actual cases of disasters in Kalutara and Batticaloa Districts. The evacuation and other emergency response activities were conducted smoothly utilizing the items provided by the project.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The overall goal has been mostly achieved. Disaster management activities and information transmission system have been improved and expanded to other districts with support of other JICA technical cooperation projects as well as through the initiatives of GOSL.

According to EOC (Emergency Operation Centre) of DMC, they have an impression that the communication speed of flood and tsunami warning has increased by 20% through the project, though they do not have statistical data. EOC considers that the improvement of transmission of disaster information from Districts to DMC is an important achievement of the project.

DDMCUs have expanded the activities to other high-risk communities (GN¹ level), too as shown below: Community disaster

¹ GN stands for "Grama Niradali Division", which means an administrative village in Sri Lanka, functioning at community level.

management committees have been organized in most of the high-risk communities in the pilot districts. Development of village disaster management plan and awareness raising activities are being implemented in the high-risk communities.

Pilot District	Numbers of community-level (GN village level) disaster management committees
Matale	Community disaster management committees have been organized in 50% out of the 545 villages in the district. The rest of the villages will also have such committees gradually.
Batticaloa	Community disaster management committees have been organized in all of the 468 villages in the district.
Kalutara	Community disaster management committees have been organized in all of the 762 villages in the district.
Ratnapura	Community disaster management committees have been organized in all of the 180 high-risk villages as identified by NBRO, out of the 578 villages in the district. The rest of the villages will also have such committees gradually.
Nuwara Eliya	Community disaster management committees have been organized in all of the 92 high-risk villages as identified by NBRO, out of the 490 villages in the district. The rest of the villages will also have such committees gradually.

Matale and Batticaloa District Disaster Management Plans (DDMPs) were revised in year 2012 with the support of JICA and based on that revision, preparedness planning division of DMC revised all the other district plans for 2012-2017 (Number of districts in Sri Lanka: 25). Also, divisional disaster management plans and GN plans were revised accordingly. The status of actual practice of community disaster management activities in every district is unknown because the information needs to be obtained from each district DDMCU. However, various activities such as community planning, hazard mapping, awareness seminar, mock drills etc. have been disseminated in communities in high-risk areas such as Badulla District through other project². Based on these achievements, GOSL has officially recognized community-based disaster management as one of the main pillars of "Sri Lanka Comprehensive Disaster Management Programme 2014-2018 (SLCDMP)", and GOSL is in the process of expanding the results of pilot project to all the high-risk GNs as a part of the national programme. The progress monitoring system of SLCDMP started operation in October 2016 with the support of UNDP, to facilitate the smooth implementation of SLCDMP.

<Other Impacts at the time of Ex-post Evaluation>

No land acquisition and resettlement occurred under this project, and no negative impacts on natural environment were observed.

<Evaluation Result>

In light of the above, the project purpose was mostly achieved at the time of project completion as transmission speed and accuracy of report of disaster information improved, and the disaster prevention activities and early alert were carried out in the pilot areas. These effects somewhat have continued after the project completion. Overall goal was mostly achieved, as the disaster management model has been disseminated to areas other than the pilot areas. Therefore, the effectiveness/impact of the project is high.

Achievement of project purpose and overall goal

Aim	Indicators	Results
(Project Purpose) A model for complete communication network in disaster observation, forecasting & community level activities including evacuation in the pilot areas are prepared.	Indicator 1: Improvement of transmission speed and decrease of false report of disaster information sent from disaster observation organization to pilot areas through Disaster Management Centre.	<p>Status of the achievement: mostly achieved (continued)</p> <p>(Project completion)</p> <p>Compared to before the commencement of the project, the speed of information transfer from disaster observation agencies via DMC increased, and false alarm decreased.</p> <p>(Ex-post Evaluation)</p> <p>Though it is difficult to quantify the speed of information, DMC and DDMCUs confirmed that the transmission speed and accuracy of disaster reports have been improved.</p>
	Indicator 2: The disaster prevention activities and early warning alert are done in the pilot area using information which DMC transmitted.	<p>Status of the achievement: mostly achieved (continued)</p> <p>(Project completion)</p> <ul style="list-style-type: none"> - More than one DDMC meeting was held in Nuwara Eliya district and Ratnapura district. Divisional-level disaster management committee meetings were held in Kalutara though they were not official. Thus, management capacity of the disaster management committee meetings was enhanced to a certain extent. - Community Based Disaster Management (CBDM) activities (drawing up of hazard maps and mock drills) were carried out at 7 selected communities. Through the implementation of community activities, the community's awareness on disaster management has been increased. This can be confirmed by the fact that the community people desired disaster management training for the leaders in the discussion of the small-scale disaster management measures. Also, the community members discussed priority measures and managed the given budget to address the facing issues. It was also confirmed that awareness in participation and ownership of the discussion were increased if their ideas lead to actual solutions.

² "Comprehensive project for enhance real time landslide forecasting and early warning capacity by strengthen the automated rain gauge network and introducing manual rain gauges to vulnerable communities in landslide prone areas in Sri Lanka" Implemented by : NBRO, Funded by : GOSL, UNDP

		(Ex-post Evaluation) Regular meetings of DDMCs																								
		<table border="1"> <tr> <th rowspan="2">District</th> <th colspan="2">Monsoon preparedness meetings (organized Annually)</th> </tr> <tr> <th>Southwest Monsoon preparedness (Apr-May)</th> <th>Northeast Monsoon preparedness (Oct-Nov)</th> </tr> <tr> <td>Matale</td> <td>(Not affecting this area)</td> <td>1</td> </tr> <tr> <td>Batticaloa</td> <td>(Not affecting this area)</td> <td>1</td> </tr> <tr> <td>Ratnapura</td> <td>1</td> <td>1</td> </tr> <tr> <td>Kalutara</td> <td>1</td> <td>1</td> </tr> </table>	District	Monsoon preparedness meetings (organized Annually)		Southwest Monsoon preparedness (Apr-May)	Northeast Monsoon preparedness (Oct-Nov)	Matale	(Not affecting this area)	1	Batticaloa	(Not affecting this area)	1	Ratnapura	1	1	Kalutara	1	1							
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District	Mock Drills (Annually)																									
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		disaster risk profile of each district. Note: Among the pilot districts, information on Nuwara Elia could not be obtained.																								

(Overall goal) The disaster management model is disseminated.	Indicator 1: Improvement of transmission speed and decrease of false report of disaster information sent from disaster observation organization to district, divisions, and communities through DMC.	<u>Status of the achievement: mostly achieved</u> (Ex-post Evaluation) According to EOC (Emergency Operation Centre) of DMC, they have an impression that the communication speed of flood and tsunami warning has increased by 20% through the project, though they do not have a statistical data. In particular, transmission speed of information from DMC to Districts as well as from Districts to DMC have improved. They consider that the improvement of transmission of disaster information from Districts to DMC is an important achievement of the project.
	Indicator 2: The disaster prevention activities and early warning alert are done in districts, divisions, and communities using information which DMC transmitted.	<u>Status of the achievement: mostly achieved</u> (Ex-post Evaluation) Matale and Batticaloa DDMPs were revised in year 2012 with the support of JICA and based on that revision, preparedness planning division revised all the other district plans for 2012-2017 (Number of districts in Sri Lanka:25). Also divisional disaster management plans and GN were revised accordingly. GoSL formulated and has been implementing “Sri Lanka Comprehensive Disaster Management Programme 2014-2018 (SLCDMP)”, which includes “up-scaling of the community disaster management plan and activities which have been test-piloted by many agencies”, such as hazard map, risk profile, mitigation measures, early warning etc., to all the high-risk GN Divisions.

Source : SLCDMP, JICA internal documents, questionnaires and interviews with DMC, DOM and NBRO, DDMCU of Kalutara, Ratnapura and Batticaloa Districts and the communities of Kalutara, Ratnapura, Batticaloa, Matale and Nuwara Eliya Districts

3 Efficiency

Although the project period was as planned (ratio against the plan: 100%), the project cost exceeded the plan (ratio against the plan: 130%). The increase of cost was due to additional response to the disasters which occurred during the project period, and also due to the sharp increase in the cost of items caused by inflation regarding local procurement of equipment as well as local staff cost after the end of war in Sri Lanka during the project period. Therefore, efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

All the key policy documents to promote mainstreaming the disaster management are being established or finalized. National Disaster Management ACT is being amended, and under the amendment, it has been proposed to provide the regulation power for disaster management authorities. National Disaster Management Plan (NDMP) which covers the period of 2014–2017 was finalized in 2015. NEOP was completed in 2016 and needs to be submitted to the Cabinet of Ministers and National Council for Disaster Management for approval. NBRO establishment act has been at drafting stage.

<Institutional Aspect>

Each of DMC, DOM and NBRO has proper organizational structure to undertake duties of coordination of concerned parties and transmission of information, weather prediction and issuance of weather warning, and landslide measures respectively. The legislative power is provided to DMC by the Disaster Management Act no 13 of 2005, however, it provides only coordination power to DMC under National Disaster Management Coordination Committee but not the regulatory power, which are being amended to some extent. NBRO establishment act, which was expected to clarify the responsibilities of authority of NBRO, has still been at drafting stage and has not been enacted.

Vacancies in each organization have mostly been filled as planned. However, DOM and DMC require more number of staff in order to fully sustain and expand the outcomes of the project, such as community level disaster management activities, data analysis etc.

NDMP facilitates the coordination among the concerned parties by clarifying the roles and responsibilities of each party. And NEOP was being approved with the support of the project. However, practically, coordination problem remains. According to DMC, during the emergencies, being more emotional, agencies are not following activates specified under NDMP or NEOP and do not pay much attention on humanitarian aspects. Standard Operating Procedures are going to be discussed again and guideline for preparing disaster management plan mandate for all the ministries, department and semi government institution is prepared and going to be practiced in more systematic

way.

<Technical Aspect>

All the counterpart organizations have internal training systems, and basically have skills to fulfill their mandates. However, in order to fully sustain and develop the outcomes of the project, some more technical skills are required for DMC and DOM, including data analysis and system upgrade. Except rain gauges, most of the equipment items procured by the project to NBRO such as inclinometer, data logger, extensometer were broken at a landslides and due to the movement of the slide. Through the field survey, it was confirmed that rain gauges are mostly in good condition and utilized by the community people. However, the rain gauges need to be replaced with new ones after 3-4 years of continuous use, because the colour of plastic cylinder becomes dark, making difficult to measure the rainfalls properly.

<Financial Aspect>

The budget data provided by DMC and DOM shows that they have mostly obtained the applied amount of budget, or more than the applied amount. However, according to DMC and DOM, not all the necessary cost is included in the applied budget and more budget allocation is necessary. NBRO requires more budget to meet the increasing requirement for its activities. NBRO expects financial assistance from development partners such as JICA, World Bank and United Nations Development Programme to carry out landslide risk management effectively.

<Evaluation Result>

In light of the above, problems have been observed in terms of the, policy, institutional, technical and financial aspects. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project purpose was mostly achieved at the time of project completion, as transmission speed and accuracy of report of disaster information improved, and the disaster prevention activities and early alert were carried out in the pilot areas. These effects somewhat have continued after the project completion. Overall goal was mostly achieved. As for sustainability, there are some challenges in the policy, institutional, technical and financial aspects. For efficiency, the project cost exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory

III. Recommendations & Lessons Learned

Recommendations to Implementing Agency

It is recommended that the DMC, DOM and NBRO make plans for sustaining the outcomes of the project, such as community disaster management activities including the replacement system of rain gauges, data analysis skills improvement, system upgrading etc. under the guiding national programme of SLCDMP, and apply for the budget either from GOSL or other sources.

Lessons Learned for JICA:

- Community level disaster management activities: The villagers and relevant village/ district officers have highly appreciated the project for improving their knowledge about disaster, early warning and evacuation, saying that it enhanced disaster preparedness of the community. The Project utilized local human resources for facilitating the community disaster management activities, who could mobilize the villagers and coordinate with administrative officers at village, divisional and district levels to get their support and cooperation for the activities. Community disaster management activities involving everyone and giving knowledge to all villagers were highly effective for increasing the awareness and disaster preparedness of the people. JICA must utilize human resources who can perform such facilitating role in future project, too.
- Handover arrangements at the completion of a project: Some equipment like rain gauges need replacement after some years. JICA and consultant should have carefully facilitated detail understandings among community, DDMCU and JICA about handover arrangements after the project completion, especially the procedures when a follow-up is necessary such as replacing of rain gauges. Utilizing human resources in pilot villages in future projects by JICA could have also been considered



Community Disaster Management Committee and the rain gauge maintained by the community in Landupita pilot village, Nuwara Eliya District



Evacuation boat maintained by the community in Patakada pilot village, Kalutara District