

Country Name	Caribbean Disaster Management Project Phase 2
Barbados	

I. Project Outline

Background	<p>Greater Antilles and Lesser Antilles, located in eastern part of Caribbean Sea, are severely vulnerable regions to disasters including large scale hurricanes and floods. Since most Caribbean countries have difficulties to cope with those disasters due to their limited economic sizes, in 1991, the Caribbean Disaster Emergency Response Agency (CDERA) was established in Barbados. Under an agreement on cooperation by Japan for disaster management in the Caribbean region, the Caribbean Disaster Management Project (referred to as “the Phase 1”) aiming at establishment of CDERA to be centered for disaster management system and capacity development for community-based disaster management in the pilot countries of Barbados, Trinidad and Tobago, and Saint Vincent, was implemented with support of the government of Japan for the period from 2002 to 2006. However, the Caribbean countries needed to enhance capacity for flood control and mitigation of damages because of expanded flood damages by large scale hurricanes, including Hurricane Ivan in 2004. Under those situations, the government of Barbados and the pilot states of Belize, Dominica, Grenada, Guyana, Saint Lucia and Caribbean Community (CARICOM) requested the government of Japan to support the Caribbean Disaster Management Project Phase 2 in order to further promote disaster management, in particular flood risk management, in other CDEMA states than the pilot countries for the Phase 1. In September, 2009, CDERA was transformed to the Caribbean Disaster Emergency Management Agency (CDEMA).</p>						
Objectives of the Project	<p>Through preparation of Flood Hazard Maps (FHMs) and establishment of Flood Early Warning Systems (FEWSs) as well as promotion of Community-based Disaster Risk Management (CDRM) activities in the 5 pilot states including preparation of Community Based Disaster Management Plans (CBDMPs) and establishment of hydrological database in the Caribbean Institute of Meteorology and Hydrology s (CIMH), the project aimed at increase in capacity of CDEMA and the pilot states for managing the flood risk, thereby contributing to mitigation of disaster damages in the pilot states through enhancement of community resilience to flood hazard.</p> <ol style="list-style-type: none"> Overall Goal: Disaster damages in CDEMA participating States are mitigated through enhancement of community resilience to the flood hazard (Similar project is implemented in flood vulnerable areas other than pilot sites of CDEMA participating states). Project Purpose: Capacity of CDEMA and five pilot states for managing the flood risk is increased (RT* has the capacity to establish FEWS in a flood vulnerable area with use of FHM and CBDMPs prepared by RT with the cooperation of NT**). <p>*RT: RT was composed of the members from CDEMA, the University of West Indies (UWI), UG (University of Guyana) and CIMH. **NT: NT was composed of the members from a national disaster management organization and other stakeholders at community level in each pilot state.</p>						
Activities of the project	<ol style="list-style-type: none"> Project site: Barbados and the pilot states of Belize, Dominica, Grenada, Guyana and Saint Lucia Main activities: 1) Flood and land survey and flood analysis for the pilot sites, 2) Compiling Geographic Information System (GIS) data and Preparation of FHMs for the pilot sites, 3) Installation of hydrological gauges for establishment of FEWS, preparation of FEWS manual and implementation of seminars on FEWS, 4) Promotion of CBDRM activities in the pilot sites, 5) GIS data preparation, trainings on GIS and establishment of hydrological database in CIMH <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> Japanese Side <ol style="list-style-type: none"> Experts: 7 persons Acceptance of trainees in Japan: 9 persons Trainings in Caribbean region: 20 persons Equipment: PC, printer, GIS software, transceivers, hydrological gauges, etc. Local cost: travel expenses, staff cost, etc. </td> <td style="width: 50%; border: none;"> Barbados Side <ol style="list-style-type: none"> Staff allocated: 7 persons and 15 NT members in each pilot state Land and Facilities: Office spaces for the Japanese experts in CDEMA. </td> </tr> </table>					Japanese Side <ol style="list-style-type: none"> Experts: 7 persons Acceptance of trainees in Japan: 9 persons Trainings in Caribbean region: 20 persons Equipment: PC, printer, GIS software, transceivers, hydrological gauges, etc. Local cost: travel expenses, staff cost, etc. 	Barbados Side <ol style="list-style-type: none"> Staff allocated: 7 persons and 15 NT members in each pilot state Land and Facilities: Office spaces for the Japanese experts in CDEMA.
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Ex-Ante Evaluation	2008	Project Period	January 2009 - June 2012 (Extension: January 2012 - June 2012)	Project Cost	(Ex-ante) 230 million yen (Actual) 325 million yen		
Implementing Agency	Caribbean Disaster Emergency Management Agency (CDEMA), Civil Defense Commission (CDC, Guyana), National Disaster Management Agency (NaDMA, Grenada), National Emergency Management Organization (NEMO, Belize), National Emergency Management Organization (NEMO, Saint Lucia), and Office of Disaster Management (ODM, Dominica)						
Cooperation Agency or Contract Agency in Japan	IDEA Consultants, Inc., EARTH SYSTEM SCIENCE Co., Ltd.						

II. Result of the Evaluation

<Constraints in ex-post evaluation>

[Changes of personnel involved in the project after the project completion]

- In Belize, one of the pilot states of the project, the personnel involved in the project have been totally changed after the project. It seemed that the current staffs deployed at the time of ex-post evaluation did not have any knowledge on the project. The fact constrained data and information collection for this ex-post evaluation and assessment of effects and impacts of this project for the post-project period. According to the questionnaire and field survey similar situations have also surfaced in Grenada, Dominica and St. Lucia. In addition to changes in personnel involved in the project, proper succession and transfer of project information was not enforced.

[Limited coverage of questionnaire survey on the pilot states]

- Although ex-post evaluation team sent questionnaire to all the implementing agencies in the five pilot states, NEMO (Belize) and ODM (Dominica) did not respond to it. Hence, evaluation judgements were based on the information and data provided by CDEMA and the implementing agencies of the three pilot states, NEMO (Saint Lucia), NaDMA (Grenada) and CDC (Guyana).

[Verification of achievement level of the Overall Goal]

- The Overall Goal is “Disaster damages in CDEMA participating states are mitigated through enhancement of community resilience to flood hazards. Namely, similar projects are expected to be implemented in flood vulnerable areas other than pilot sites of CDEMA participating states. However, “the flood vulnerable areas in CDEMA participating states” is not clearly defined in the Project Design Matrix (PDM) and they have not been identified by CDEMA and the CDEMA participating states. Because a robust methodology for the identification of the flood vulnerable areas is being developed at the time of ex-post evaluation, timeframe did not allow this to be considered during the implementation of this project.
- While the Overall Goal is “mitigation of flood damages in CDEMA participating states”, the indicators verify preparedness against flood hazard through preparation of FHMs and CBDMPs. Although this ex-post evaluation tried to assess it by cases of flood damages in the pilot states if any after the project completion, it was difficult to verify mitigation of flood damages due to the lack of data. The post-project situations of the pilot states are as follows:
 - Belize: flood on Oct. 2015 due to the tropical storm.
 - Dominica: flood on Dec. 2013 due to the heavy rain. And flood on Aug. 2015 due to the tropical storm which washed away the FEWS in the pilot site.
 - Grenada: No major damage
 - Guyana: No major damage
 - St. Lucia: flood on Dec. 2013 due to the heavy rain

1 Relevance

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

The project was consistent with the development policy of Caribbean Region of “the Caribbean Community Regional Programme Framework 2005-2015” and a policy document of CDEMA, “the Comprehensive Disaster Management (CDM) Strategy and Programme Framework (2007-2012)”, which aim at “enhancement of international support for CDM program implementation at national and regional level and enhancement of community resilience in CDEMA states/territories to mitigate and respond to the adverse effects of climate change and disasters”.

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

The project was consistent with the development needs of Caribbean Region for enhancement of flood preparedness and mitigation.

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

The project was consistent with the Japan’s ODA policy for Caribbean Region. Under “A New Framework for Japan-CARICOM (the Caribbean Community) Cooperation for the Twenty-First Century (2000)”, cooperation for economic and social development between Japan and CARICOM prioritized environment and disaster prevention, including strengthening the institutional capacity of the regional and national agencies concerned with disaster prevention, emergency response and management.

<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 achieved by the project completion. All the pilot sites prepared FHMs and CBDMPs and FEWSs were prepared by RT with the cooperation of NT (Indicator 1). The “Sustainability Plan” for sustaining the technical capacity and organizational system after the project were prepared and approved by the Joint Coordination Committee (JCC) of the project, in which the key implementing agencies participated, in June 2012 (Indicator 2). Also, the proposed implementation schedule (“Action Plan”) for preparation of FHMs and FEWSs in other flood vulnerable areas was approved by JCC as a part of “the Sustainability Plan” as well (Indicator 3).

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

The project effects have been partially continued since the project completion. Some of the key outputs and the key activities of the project have been continued. FHMs and CBDMPs developed by the project have been utilized in Granada, Guyana and Saint Lucia. Guyana has also continuously utilized the manuals developed by the project for flood hazard mapping, CDM planning and FEWSs establishment as a reference or guide when considering removal of the tool and its reinstallation to another community. On the other hand, FEWSs have not been functioning in three pilot states. In Grenada, although the National Water and Sewage Authority (NAWASA) is responsible for FEWS, FEWS has not been functioning more than one year due to lack of maintenance. CIMH is willing to deploy a team to support repairs as resources permit. In Guyana, since some of the equipment of FEWS was vandalized, the system has not been in use. CDC has made efforts to replace them in order to reactivate the system. In Saint Lucia, the Water Resource Management Agency (ARMA) is responsible for FEWS and it had been functioning until 2014. However, FEWS stopped to transmit the data in 2014. Although CIMH checked the system, the main cause has not been identified yet because of no problem on the sensor and the data logger, NEMO also tried

to fix the problem of data logger software but did not succeed. At the time of ex-post evaluation, they were waiting for an expert from the United Nations Development Programme (UNDP) to solve the problem.

According to NEMO (Saint Lucia), CDC (Guyana) and NaDMA (Grenada), CIMH has continuously provided technical support and necessary hydro-meteorological data. The hydrological database established by the project has been utilized by the CDEMA participating states. CIMH has invested in systems capturing data from stations in the CDEMA participating states through telemetry device¹. This limits the need for web-based data collection. CIMH has been supporting the expansion of more sustainable networks throughout the Caribbean region through various interventions and are willing to integrate the stations installed by the project if requested and as resources permit.

Although no pilot state prepared its own sustainability plan nor action plan based on the “Sustainability Plan” in order to promote activities related to CBDMP, FHMs and FEWSs by the project completion, each pilot state prepared their own action plans and presented them at the workshop held by the follow-up cooperation for the project in May, 2017 in Jamaica.

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

The Overall Goal was not able to be verified at the time of ex-post evaluation. The coverage of FHMs in each pilot state (Indicator 1) and the coverage of CBDMPs in each pilot state (Indicator 2) have not been verified because of insufficient data available. According to CDEMA, although identification of flood vulnerable areas in each pilot state is needed to assess the coverage of FHMs and CBDMPs, hydro meteorological analysis and identification have not been progressing even though the data has been collected in each state. CDEMA has just commenced to develop the Strategic Targeting Methodology to facilitate assessment and ranking of vulnerable communities under the partnership with the International Federation of Red Cross. At the time of ex-post evaluation, it was unclear whether flood damages in the pilot states had been mitigated through enhancement of community resilience to the flood hazard in the flood vulnerable areas though severe flood damages occurred in Saint Lucia in 2013, in Dominica in 2013 and 2015 and in Belize in 2015, as mentioned in the special perspective considered by the ex-post evaluation.

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

Some positive impacts were confirmed at the time of ex-post evaluation. Since CIMH compiled experiences and knowledges obtained by the establishment of the FEWSs by the project, those experiences and knowledge have contributed to advancement of sustainable networks in the region commissioned by CIMH through various regional initiatives after the project completion. No negative impact was confirmed at the time of ex-post evaluation.

<Evaluation Result>

In light of the above, the project achieved the Project Purpose through preparation of FHMs, CBDMPs and FEWSs and the three pilot states of Granada, Guyana and Saint Lucia have continuously utilized FHMs and CBDMPs. However, the Overall Goal was not able to be verified because the flood vulnerable areas have not been identified yet in the CDEMA participating states and there was lack of data. Therefore, the effectiveness/impact of the project is fair.

Achievement of project purpose and overall goal

Aim	Indicators	Results
(Project Purpose) Capacity of CDEMA and five pilot states for managing the flood risk is increased (RT has the capacity to establish FEWSs in a flood vulnerable area with use of FHMs and CBDMPs prepared by RT with the cooperation of NT).	(Indicator 1) At more than half of the pilot sites FHMs and CBDMPs are prepared and FEWSs are prepared by RT with the cooperation of NT	<u>Status of the achievement: Achieved</u> (Project Completion) <ul style="list-style-type: none"> ● All the pilot sites prepared FHMs and CBDMPs. ● FEWSs were prepared by RT in all the pilot sites. (Ex-post evaluation) Partially continued. <ul style="list-style-type: none"> ● Three of the five pilot states (Granada, Guyana and Saint Lucia) have utilized FHMs and CBDMPs for managing the flood risks. ● FEWSs have not been functioning in the five pilot states. ● CIMH has continuously provided technical supports for three of the five pilot states (Granada, Guyana and Saint Lucia). ● Guyana has continuously utilized the manuals developed by the project for flood hazard mapping, CDM planning and FEWS establishment.
	(Indicator 2) Concrete sustainability plans* of RT and NT for maintaining the technical capacity and organizational system are prepared. *Sustainability plans aimed at promotion of activities related to CDMPs, FHMs and FEWSs in each CDEMA state.	<u>Status of the achievement: Achieved</u> (Project completion) <ul style="list-style-type: none"> ● Proposed “Sustainability Plan” was approved in JCC meeting in June 2012. (Ex-post Evaluation) Not continued <ul style="list-style-type: none"> ● The “Sustainability Plan” approved during the project implementation has been effective.

¹Telemetry is an automated communications process by which measurements and other data are collected at remote or inaccessible points and transmitted to receiving equipment for monitoring. It uses fixed line or wireless communication.

	(Indicator 3) Action plan is prepared for preparation of FHM, CDMPs and FEWSs in flood vulnerable area other than the pilot sites.	<u>Status of the achievement: Achieved</u> (Project completion) ● Proposed implementation schedule (Action Plan) as a part of “Sustainability Plan” was approved in JCC meeting in June 2012. (Ex-post Evaluation) Continued ● Although no pilot state developed own action plan based on the “Sustainability Plan” developed by the project by the project completion, they prepared their own action plans and presented them at the workshop held by the follow-up cooperation in May, 2017
(Overall goal) Disaster damages in CDEMA participating States are mitigated through enhancement of community resilience to the flood hazard (Similar project is implemented in flood vulnerable areas other than pilot sites of CDEMA participating states).	(Indicator 1) Among the flood vulnerable areas in CDEMA participating states, FHMs are prepared for areas of more than 10%.	<u>Status of achievement: Not verified</u> (Ex-post Evaluation) ● The flood vulnerable areas in the CDEMA member states have not been clearly identified and the achievement level was not able to be verified. ● CDEMA has just started to develop the Strategic Targeting Methodology to facilitate assessment and ranking of vulnerable communities under the partnership with the International Federation of Red Cross.
	(Indicator 2) Among the flood vulnerable areas in CDEMA participating states, CBDMPs are prepared for areas of more than 10%.	<u>Status of the achievement: Not verified</u> (Ex-post Evaluation) ● The flood vulnerable areas in the CDEMA member states have not been clearly identified and the achievement level was not able to be verified. ● CDEMA has just started to develop the Strategic Targeting Methodology to facilitate assessment and ranking of vulnerable communities under the partnership with the International Federation of Red Cross.

Source : CDEMA, NEMO (Saint Lucia), NaDMA (Grenada), community of Balthazar (Grenada)

3 Efficiency

Both the project cost and the project period exceeded the plan (ratios against the plan: 141% and 117%, respectively) because the project period was extended to recover the delay of establishment of FEWSs caused by the delayed installation of hydrological gauges at the pilot sites in each pilot state. The main reason of the delays was the delayed procurement of equipment due to the relocation of manufacturer and the flood seasons in the pilot states. Therefore, efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

[CDEMA]

CDEMA has developed the Community Resilience Framework in 2015-2016 and this was accepted at the level of its Ministerial Council in June, 2016. CDEMA has established more clear policy framework to support the participating states in order to identify risk information including flood hazard and to enhance FEWSs.

[The Pilot State]

The three pilot states of Grenada, Guyana and Saint Lucia, which answered to the questionnaire survey conducted by the ex-post evaluation, had no policy change in disaster management. Saint Lucia has been preparing the National Disaster Risk Reduction Work Plan for 2017-2020 based on the CDEMA CDM Strategy and Sendai Framework which will contribute to enhancement of Disaster Risk Reduction (DRR). In Grenada, the community disaster management activities have been less prioritized compared with other areas of disaster management.

<Institutional Aspect>

[CDEMA and RT]

Mission of CDEMA includes standard setting of disaster management and capacity building of the participating states. In order to cover the broad area of disaster risk management, organizational restructuring was undertaken in September, 2015. Support to the areas of Disaster Risk Management has been provided in the form of a Specialist by support from a development partner as the Senior Programme Officer position which is assigned with the role of Disaster Risk Management Specialist has not been filled due to financial constraints. While CDEMA has focused on training of trainers, CIMH has incorporated the hydrological database developed by the project into its regional data management strategy. CIMH is recognized as a data archiving centre for its Member States. Therefore, the budget for monitoring networks and database management is supported through both internal and external resources. In the future, users will be able to update the database remotely whereas the CIMH will verify the records and provide quality assurance. In order to enhance capacity building activities, the GIS Specialist has supported trainings of flood hazard mapping by on-line course based on some training materials developed by the project. There was no organizational change in UWI.

RT has been composed of the sufficient number of the members from the related agencies in order to support the participating states: 2 staffs from CDEMA, 2 staffs from UWI, and 3 staffs from CIMH.

[The Pilot States]

At the national level, there was no organizational change in NaDMA of Grenada. NaDMA is responsible for enhancing communities and has 14 staff members, including 3 government permanent staffs. However, the number of staff is not sufficient to implement activities. Also, NAWASA, a responsible organization for FEWSs, does not have necessary staffs with expertise. CDC of Guyana has been restructured to deal with disaster risk management, including community based risk disaster management. Although CDC deploys 30 staffs for disaster management organizations (DMOs) but the limited funds do not allow hiring technical experts and highly qualified personnel. NEMO of Saint Lucia enhanced activities related to flood hazards. NEMO has 11 staffs including 5 technical officers. While the number of staffs is not sufficient, NEMO expanded systems introduced by the project with support by other donors including UNDP. Saint Lucia has launched a new NT including the existing NT members and has been expanding their activities after the project completion. No information

about NEMO (Belize) and ODM (Dominica) was obtained due to no response to the questionnaire for the ex-post evaluation.

<Technical Aspect>

[CDEMA and RT]

For supporting the participating states in preparation and revisions of CBDMPs, due to financial constraints, CDEMA has limited technical staff to support the pilot states in preparation and revision of CBDMPs. In order to compensate for limited technical staff, CDEMA has been delivering seven training courses, such as “Exercise Design, Incident Command System”, “Damage Assessment and Needs Analysis”, “EOC (Emergency Operation Center) Management”, Proposal Writing, Regional Security System (RSS) Basic Course Disaster Management Module and the CARICOM Disaster Rescue Unit (CDRU) Training. In particular, several staffs of CIMH are well experienced in data collection and analysis and database management. The staffs of UWI have sufficient knowledge and skills about FHMs, CBDMPs and FEWSs.

[The Pilot States]

While the staffs of CDC and NEMO (Saint Lucia) have sufficient level of knowledge and skills for preparation and revisions of FHMs and CBDMPs but not sufficient knowledge and skills for operation and maintenance of the FEWSs. NaDMA (Grenada) recognizes that their skills and knowledge have not been sufficient. On the other hand, RT has not provided continuous technical support for the participating states. However, CDEMA and DMOs in the pilot states have been supported by ACP/EU project (ACP-EU Natural Disaster Risk Management Project) ²in strengthening Disaster Risk Management capabilities. Also, CIMH offers the Flood Hazard Mapping online course and an introductory GIS courses as preparation for the flood hazard mapping course. No information for NEMO (Belize) and ODM (Dominica) was available due to no response to the questionnaire for the ex-post evaluation.

<Financial Aspect>

[CDEMA and RT]

CDEMA has not allocated specific budget for the activities related to enhancement of community resilience and preparedness by FHMs, CDMPs and FEWSs due to the lack of their own financial resource but is seeking financial support through donors. Since delivery of trainings is one of the core responsibilities of CIMH, resources are taken from the general operation budget as necessary. Also, CIMH has invested to establish an integrated database using telemetry and transferred the database developed by the project. The financial resources for database construction and management come from the existing regional initiatives. For example, CIMH is designated as a regional hub organization of the World Meteorological Organization (WMO), the budget for construction of database on the regional hydro meteorological observation network and obtained data input work has been provided by WMO. The cost for database management has been covered by CIMH since the database can be updated online by pilot states and CIMH only carries out the confirmation work of the data.

[The Pilot States]

According to the questionnaire survey to the DMOs of the pilot states conducted by the ex-post evaluation, for each DMO of the three pilot states, Grenada, Guyana and Saint Lucia, no specific budget has been allocated. As for NaDMA (Grenada), it is because community disaster management activities have not been prioritized compared with other areas since NAWASA has been in charge of maintenance and management of FEWS, and it has been unnecessary to allocate a lot of budgets to NaDMA. As for NEMO (Saint Lucia), it is because of financial constraints but maintenance cost for equipment provided by the project has been covered by the budget for general maintenance cost. NEMO (Belize) and ODM (Dominica) did not respond to the questionnaire.

<Evaluation Result>

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

5 Summary of the Evaluation

The project achieved the Project Purpose and the project effects have been partially continued through preparation and continuous utilization of FHMs and CDMPs in the three pilot states under the support by CDEMA and CIMH. However, the Overall Goal for mitigation of disaster damages in the CDEMA participating states has not been verified since the flood vulnerable areas in the participating states have not been identified yet. As for sustainability, CDEMA and DMOs in the pilot states do not have sufficient resources including human resources with sufficient technical capacity and financial resources in order to promote enhancement of community resilience and preparedness against disaster in the participating states. As for efficiency, both the project cost and period exceeded the plan due to the delay of installation of hydrological gauges at the pilot sites in each pilot state.

In the light of above, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

[DMOs in the pilot states]

- Utilization of other donors' financial support, could be used to offset the lack of funds for securing a budget. For example, CDC in Guyana and NEMO in Saint Lucia have utilized the funding support from UNDP in order to compensate for the lack of budget. In that regard, securing human resources with the skills and knowhow in preparing proposals might be necessary to apply for these funds. In order to tackle this point, CDEMA already has been providing the training for writing funding proposals. Therefore, DMOs need to participate in those trainings. The result of this ex-post evaluation indicated that DMOs face the lack of human resources with skill and knowledge on comprehensive disaster risk management including planning and implementation of national policy. CDEMA is aware this problem and will provide sustained and standardized training to support the development and maintenance of the capacity for comprehensive disaster risk management of member states by functionalizing the current regional training center (RTC). The functionalization of the training system is expected to resolve the gaps in capacity and benefit actors in participating states, staff of the RT member organizations. People in each community will also get the secondary benefit. As stated above, CDEMA are working on the functionalization of the training center for comprehensive disaster management. As stated above, CDEMA are working on the

²<https://www.gfdrr.org/acp-eu>

functionalization of the training center for comprehensive disaster management. A “training needs analysis” has also been conducted by UWI to identify the needs and problem in each member state, and based on the analysis, CDEMA is proceeding to the mid-term activities plan until 2020. CDEMA is required to implement the plan steadily financial resources permitting.

Lessons learned for JICA:

[Case of the project covering several countries to implement for implementing agencies in each target country]

- The project implemented activities in several target countries and there are a number of related organizations such as NTs, RTs, etc. and each of these participating stakeholders has their own problems such as financial aspects, technical aspects, and so on. At the time of planning stage, the management capacity, operation system, and fiscal situation of RT organizations including CDEMA should be identified. Also, strengthening the capacity of the executing agency should be also included as necessary and it is necessary to formulate a customized project design to cope with the problems of each institution to the upmost extent.

[Case of project aiming at capacity development on comprehensive disaster management, in particular flood risk management]

- Technical level, in particular in hydro-meteorological area related to flood risk management, of the responsible agencies in the pilot states, should have been properly assessed during the project implementation. Necessary capacity development should have been done in accordance with their technical level in order to enhance their understanding of important instructions on comprehensive disaster management or also that is to be considered when making a Sustainability Plan to be implemented after the project completion. In addition, in particular in case where the project plans to install monitoring equipment, it is preferable for counterpart organizations and other relevant agencies to address future sustainability of the project effects at the earlier stage of project implementation rather than the time close to the project completion in order to ensure more time for preparation and consideration feasible sustainability plan for each key organization in place. Also, to avoid halts in the key activities introduced by the project after the project completion and to sustain the project effects, seamless supports, including dispatching experts or implementing follow up cooperation in the early years after completion of the project are preferable.

[Setting of the verifiable indicators for the Overall Goal to ensure evaluability and to verify contribution of the project]

- In case where a project impact, such as “the proportion of flood vulnerable areas with FHM” is verified by an indicator for the Overall Goal, it is highly impossible to verify data of the indicator at the time of ex-post evaluation when the “flood vulnerable areas” are not clearly defined. Also, in case where “flood vulnerable areas” are not identified by results of hydrological data, it is not possible to identify target areas for development of FHM. It is necessary to clearly define the flood vulnerable areas to be surveyed by indicators during the project implementation. In addition, it is preferable to set the indicators to clearly verify linkage between the Overall Goal and the activities and or the systems introduced by the project, such as “Flood vulnerable areas to prepare FHM are identified by using the hydrological database established by the project.

[Abbreviation]

CBDMPs: Community Based Disaster Management Plans	NaDMA: National Disaster Management Agency (Grenada)
CDC: Civil Defense Commission (Guyana)	NAWASA: National Water and Sewage Authority (Grenada)
CDEMA: Caribbean Disaster Emergency Management Agency	NEMO: National Emergency Management Organization (Belize)
CDERA: Caribbean Disaster Emergency Response Agency	NEMO: National Emergency Management Organization (Saint Lucia)
CDM: Comprehensive Disaster Management	ODM: Office of Disaster Management (Dominica)
CDRM: Community-based Disaster Risk Management	NT: National Team
CIMH: Caribbean Institute of Meteorology and Hydrology	RT: Regional Team
FEWS: Flood Early Warning System	UNDP: United Nations Development Programme
FHMs: Flood Hazard Maps	UWI: University of West Indies
GIS: Geographic Information System	WMO: World Meteorological Organization
JCC: Joint Coordination Committee	

