Climate resilient action plans

for Coastal urban areas in Sri Lanka (CCSL)

Implementation of CRASSAPs

(Activity 1.3 - Activity 1.5)

Lessons Learnt Training Manual

for Sri Lankan Coastal Cities

Prepared By:

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Batticaloa Municipal Council (BMC)

Negombo Municipal Council (NMC)

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Executive Summary

This report was developed by the project team of Climate Resilient Action Plans of Coastal Areas of Sri Lanka (CCSL) to provide recommendations to the Sri Lankan cities to develop action plans to build disaster resilient cities based on the lessons learnt in the implementation of different project activities.

Climate resilient action plans for Coastal urban areas in Sri Lanka is important since **70% of Sri Lanka's urban population and 80% of its economic** infrastructure networks are concentrated in coastal cities and particularly they are highly vulnerable to climate change impacts (sea-level rise/flooding, storm surges, cyclones, droughts) which disproportionately affect urban poor communities who tended to live in the most vulnerable areas. Therefore, vulnerability/adaptation and Green House Gas assessments were conducted in Batticaloa Municipal Council (BMC) and Negombo Municipal Council (NMC) in 2010, prioritizing four strategic response areas during broad based stakeholder City Consultations.

This project supported key stakeholders in BMC and NMC to develop and implement the four climate resilient adaptation strategies and supportive action plans in a participatory manner. The four CRASSAPs under this project are:

a. Water resource management, and especially drainage and sanitation impacts from more intense rainfall events, supported by a Pre-Feasibility Study (PFS) for funding support from the SIDA supported City Development Initiative for Asia (CDIA);

b. A multi-purpose green belt (12 km in length) was established to protect the lagoon and coastal areas, restore mangrove eco-systems & coastal bio-diversity in BMC area;

c. GIS-based Rapid Response Systems (RRS) & two Knowledge Management centers for climate exacerbated disasters were established at BMC & NMC with a training (1 month for selected 50 participants) and equipments (building, Software, 20 computers, 10 GPS, printers, scanners, broadband facilities);

d. Disaster resilient; energy efficient; low-cost shelter adaptation training, supported by local resource based- livelihood diversifications options for 100 participants live in vulnerable areas.

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Abbreviations

IPCC   : Intergovernmental panel on climate change

EM DAT   : Emergency events database

CRED   : Center for research on environmental decisions

UN   : United Nations

NGO   : Non-Governmental Organizations

LSS   : Logistics Support Systems

SLDRN   : Sri Lanka Disaster Resource Network

GIS   : Geographical Information Systems

QGIS   : Quantum Geographical Information Systems

GN   : Grama Niladari

BMC   : Batticaloa Municipal Council

NMC   : Negombo Municipal Council

GPS   : Global Positioning System

KMC   : Knowledge Management Center

DS Division   : Divisional Secretariat Division

PFM   : Participatory Flood Mapping

PGIS   : Participatory Geographical Information Systems

CRS   : Coordinate Reference System

CCSL   : Climate resilient action plans for coastal urban areas of Sri Lanka

CRASSAP   : Climate Resilient Adaptation Strategies & Supporting Action Plans

LIDAR   : Light Detection and Ranging

DTM   : Digital Terrain Model

SAR   : Synthetic Aperture Radar

Introduction

The 4 CRASSAPs under the project titled Climate Resilient Action Plans for Coastal Urban Areas are; Water resource management, and especially drainage and sanitation impacts from more intense rainfall events, supported by a Pre-Feasibility Study (PFS) for funding support from the SIDA supported City Development Initiative for Asia (CDIA); A multi-purpose green belt (12 km in length) was established to protect the lagoon and coastal areas, restore mangrove eco-systems & coastal bio-diversity in BMC area; GIS-based Rapid Response Systems (RRS) & two Knowledge Management centers for climate exacerbated disasters were established at BMC & NMC with a training (1 month for selected 50 participants) and equipments (building, Software, 20 computers, 10 GPS, printers, scanners, broadband facilities); and Disaster resilient; energy efficient; low-cost shelter adaptation training, supported by local resource based-livelihood diversifications options for 100 participants live in vulnerable areas.

When implementing these activities at ground level, the project team learnt various lessons. These lessons consist of appreciation factors as well as factors to be improved. This document consists of these factors in a descriptive manner.

1. Activity 1.2:

Water resource management, and especially drainage and sanitation impacts from more intense rainfall events, supported by a Pre-Feasibility Study (PFS) for funding support from the SIDA supported City Development Initiative for Asia (CDIA)

Norwegian Institute of Water Research (NIVA), the main responsible partner of the project carried out a rapid assessment on the drainage and sanitation impacts in Batticaloa with the support of Norwegian experts. University of Moratuwa also supported to perform the activities. The study team recognized the need of a wastewater treatment plant for the Batticaloa town area and focused on carrying out an initial assessment as per the suggestions at the consultative discussions with the Baticaloa Municipal Council (BMC).

In the case of Negombo Municipal Council (NMC), it was focused for an assessment and proposal development for improvement of the sanitation **facilities in a selected low income settlement as a model.** 'Monaco Gama, located in NMC was selected as the case study area. There were about 88 houses located in this village and frequently encountered the issue of poor sanitation since most the houses are located close to water logging area of the Negombo Lagoon. The Norwegian expertise team with the assistance of University of Moratuwa carried out the household survey at the case study area. Along the assessment of the situation of the case study area, a comprehensive proposal was developed in order to overcome prevailing sanitary issues and to improve the sanitary condition of the village.

Main Activity:

Assess the drainage and sanitation impacts during the   intensive rainfalls

Sub Activity 01: Drainage network and a waste water treatment plant in BMC

Description

☐ After analyzing the last 40 years rainfall and temperature data of BMC area, the impacts from possible changes of the temperature and rainfall on the drainage and sanitary condition were assessed;

☐ The entire activity was divided into 3 main phases; i. reconnaissance survey (to identify the specific locations that the problem severely occurred), ii. Stakeholder consultation (the responsible persons, institutions and organizations which deals with the matter), iii. Household survey (to identify the exact problem at the ground level);

☐ After analyzing the collected data and information, it was identified that the most parts of the Batticaloa Town is inundated during floods because of the poor drainage network which has constructed without considering the required capacity and gravity as well as due to the poor maintenance;

☐ The next identified issue was that there is no piped sewerage in Batticaloa (except at teaching hospital and prison) which leads to severe problems during the rainy season as sewage contamination to fresh water sources which is most important as well as rare resource to Batticaloa; and

☐ After identifying above two as main issues, the team decided to introduce a detailed design for the drainage network and for a waste water treatment plant in BMC.

Lessons learnt   **Appreciation factors**

☐ Designing a proper drainage network and a waste water treatment plant was identified as an option for existing drainage and sanitation impacts at the intensive rainfalls;

☐ Before we are going to start a detail investigation, a proper case study area should be selected that can experience the acute problem;

☐ When selecting a case study area the available resources to perform the action should be ensured, such as time allocation, labour requirement and availability, budget allocations;

☐ The stakeholder consultation is the most important part of this kind of project since these types of activities mostly deals with the community and the community should be benefitted by these activities. Hence, all the stakeholders who are responsible for the activity have to be identified, coordinated and incorporated to the activity at the all levels (municipal officers, NGOs, other respective organizations, general public); and

☐ Before initiating household survey, the survey team has to have general idea about the existing situation at the field by conducting a reconnaissance survey. Then, the survey team will be able to conduct and collect the relevant information at the field as they have basic understanding about the magnitude of the context of the issue.

Sub Activity 02: *Improved sanitary facilities for a low income community considering the effects of climate change in NMC.*

Description	☐ In case of the NMC with regard to climate change, the sanitation issues are at considerable level as it is also a coastal town;
	☐ As a model village to investigate the actual situation, **'Monako gama' located within the NMC domain was** selected. All together there were about 88 houses located in the village and all the toilets are simple squat type toilets which connected to 18 septic tanks. The location of the septic tanks is inaccessible for a municipal gully-sucker;
	☐ In rainy seasons these septic tanks overflow and mix with the Lagoon waters of the Negombo Lagoon and even flows in the drainages of the area. Therefore the **residents in 'Monako gama' have found ways to handle** overflowing septic tanks by their own by constructing individual tanks. Hence, this situation seemed as a potential risk for health problems as well as the pollution of the lagoon, caused by the contamination of untreated wastewater; and
	☐ Hence, it was decided to introduce and implement dry toilets **with simple principal: Don't mix! human urine** and faeces; faeces and water. By keeping urine and faeces, it can reduce or even eliminate problems of bad odder and fly breeding. Then facilitate to storage treatment and transport.
Lessons learnt	☐ Before implementing any project, it should aware the focus community regarding the project intension and give a proper and complete idea on what is going to be

done under the project. If it is a completely new concept to the community, then that concept has to be convinced to the community in a strategic manner;

☐ **In the case of 'Monaco Gama'**, it was identified that the main causes for the hesitation for accepting the dry toilets, were the less promotion, education and training of the intended users. Thus, proper plans have to be prepared to make familiarize the concept to the people before the implementation of such concepts;

☐ The other factors were that cultural factors, ethics and beliefs also influenced the acceptance of the introduced concept;

☐ Personal or cultural response to the fact that human faeces are malodorous and potentially dangerous. Mostly this comes with the culture of different societies. Especially in the Asian context, it is hard to change the traditional methods of cleaning of human excreta without mixing water with the excreta; and

☐ Mostly, addititive materials which want to be use after using the toilet as ash, burned paddy husk, lime etc is hard to find in urban context. Finding of ash also become difficult since majority is using gas for cooking purpose. Hence, these addititive materials seem to be a problem to them in terms of availability.

2. Activity 1.3:

Multi-purpose green belt (12 km in length of BMC coast) established to protect the lagoon and coastal areas, restore mangrove eco-systems & coastal bio-diversity

Redesigning of the multipurpose green belt was identified as the activity 1.3 of **'Climate resilient action plans for Coastal urban areas in Sri Lanka' (CCSL)** project. Redesigning of the multipurpose green belt is the first CRASSAP formulated under the above task which was implemented exclusively on BMC.

Presence of green network could significantly contribute in reducing the vulnerability to local communities with the impacts of the natural disasters exacerbated by climate change. The project concept and the need of green network for Batticaloa were evolved by the opinions of local stakeholders during **the previous project titled 'City Development Strategies to respond climate** change in coastal urban **areas of Sri Lanka', undertaken by UN**-Habitat, Sri Lanka in partnership with University of Morattuwa in 2010. Owing to the importance of the coastal areas, redesigning the green belt of the 12km coastal belt in BMC area was demading action.

After reviewing the present vegetation pattern in the area, the redesigning of the multipurpose green belt action plan was initiated its activities adhering to the design considerations of resilience to multi-disaster situations, facilitate the community activities through spatial re-arrangements, enhance the Bio diversity of coastal eco-systems, protect the coastal beaches and other geo-morphological forms from sudden wind and wave processes, strengthen the economic benefit transfers to local community.

Redesigning of the multipurpose green belt, CRASSAP is based on a series of rapid assessments including Plant inventory of coastal belt, Land cover mapping, activity survey and a comprehensive local stakeholder consultation process. The findings of baseline studies the coastal belt of the area revealed mismatch areas of existing green belt particularly there were some stretches where the green

belt discontinued and some other stretches have disturbed after tsunami (2004) and flood (2010/11).

Need of redesigning of the green belt was well recognized by local stakeholders. Five sites along the 12 km stretch were selected to undertake pilot projects. The project prepared five action plans with detailed designs of the green belt for Poonachchimunai, Kallady, Thiruchchendur, Dutch Bar and Navallady areas.

The detailed designs were prepared after consultation with the local communities and the designs were verified at a multi-stakeholder validation meeting with the common consensus supported by local political will and commitment on way forward. This text comprises with the summarized project process and design solutions validated at the participatory approach of the project implementation.

Main Activity:

Multi-purpose green belt (12 km) established in BMC area to protect the lagoon and coastal areas, restore mangrove eco-systems & coastal bio-diversity

Sub Activity 01: *Formulation of the activity 1.3 based on a technical analysis*

Description

☐ A technical analysis carried out by the UOM project team revealed that changes recorded in the climatic conditions in the BMC area. Basically the reconnaissance surveys and the stakeholder mapping was carried out at the initial stage. Focus group discussions and the techniques such as Delphi techniques were adopted later.

Lessons learnt

Appreciation factors

☐ Multi-purpose green belt is a defense mechanism to reduce exposure to climate exacerbated disasters as frequent storm surges and strong winds, sea level rise and coastal floods. It reduces the exposure; and aims to strengthen the adaptive capacity of local community through incorporating economic-benefits into the proposed green belts. Further, the ecosystem resilience can be considered as the recent trends evident rapid loss of bio-diversity and disturbance to coastal habitats. Therefore, the green belt reduce the intrinsic vulnerability to climatic disasters aiming at a resilient coastal city

Sub Activity 02: Formulating the project concept for the redesigning a multipurpose green belt

Description ☐ The necessity of actions deal with the climate change impacts were discussed with the stakeholder groups in BMC at the workshop held on 12.12.2011 at the Library auditorium, Batticaloa. Further considering the published literature on the subject, project team formulated the project concept for the redesigning the multipurpose green belt.

Lessons learnt **Appreciation factors**

☐ Different techniques such as reconnaissance survey, stakeholder mapping, focus group discussion and delphi technique were used to develop a better project concept rather than using one technique.

Sub Activity 03: Analyzing the green network in Batticaloa and the formulation of green plan

Description ☐ Identification of the most important sections of the green network in BMC was done by conducting a brainstorming session among the project team. The team considered the exposure to the impacts of climate change, sensitivity to the impacts of climate and adaptive capacity to the impacts of climate.

Lessons learnt **Appreciation factors**

☐ By using the brainstorming technique, a set of criteria could be developed to identify the most important sections of the green network; and

☐ In the selecting samples to conduct the survey, the sampling should be based on proper set of criteria.

Factors to be improved

☐ Only a 500 m belt along the shoreline was studied in this activity. If a large area could have been studied the results would be much better.

Sub Activity 04: *Studying the 12 km coastal green belt*

Description   ☐ Green network of BMC was studied by conducting field reconnaissance Survey/ windscreen surveys/ brainstorming sessions among the project team, study of the activities, stakeholder workshops / local community and developing a plant inventory for the coastal belt between 01st December 2011 and 31st January 2012.

Lessons learnt   **Appreciation factors**

☐ To develop a better result and document on the green belt on BMC, public participation was a key factor. Primary data collection based on field reconnaissance Survey/ windscreen surveys and consultation with the local community and officials were conducted to develop a proper document. Adaptation of different channels for the primary data collection enabled the validation of gathered information and could grasp some native information specific for particular group of people; and

☐ The study was carried out by the experts of the field, to generate.

Sub Activity 05: *Selecting sites for detailed participatory designs and the preparation of designs*

Description
 A detailed activity study was conducted by the project team between the 01st Jan 2012 to 25th Jan 2012 to obtain an in-depth understanding on the 12km coastal stretch. Further, by considering the study findings with the project concept, 5 sites were finalized for detail participatory design. Sessions were conducted with the key government agencies, namely Batticaloa Municipal Council, Coast Conservation Department, Central Environment Authority and the Forest Department to understand on future initiatives that each institution keen to take in future.

Lessons learnt

Appreciation factors

 Identification of right stakeholders was much important rather considering only an immediate stakeholder in the selecting sites.

Factors to be improved

 If the activity study was conducted to the total area, the study could have been more successful.

Sub Activity 06: *Study on the vegetation pattern in Batticaloa with respect to the concept of 'green networking*

Description
 After analyzing the present green network in the area, the green plan was prepared adhering to the project concept.

Lessons learnt

Appreciation factors

 Multi stakeholder participation is important when developing a green plan

Sub Activity 07:   *Detailed participatory designs on selected sites*

Description   ☐ Based on the findings of the activity study, the sites were comparatively analyzed and community discussions were carried out in the developing participatory designs. Design verification session and the steering committee meeting was conducted According to the these designs,

Lessons learnt   **Appreciation factors**

☐ At the final stage of the development of the green belt, continuous participation of the same members in the series of workshops was identified important;

☐ Consultation of pubic/ stakeholders through the GN officers was experienced much effective than conducting such a event alone by the project team;

☐ Representation of a cross cut of the stakeholders of the green belt was identified as the most effective mode of developing a plan for the green network of BMC; and

☐ Furthermore, when developing a plan for the green belt of BMC, visual presentations were the most effective mode of communication rather than other modes.

3. Activity 1.4:

GIS-based Rapid Response System (RRS)& Knowledge Management centre for climate exacerbated disasters established at BMC & NMC with training (1 month for selected 50 participants) and equipments (building, Software, 20 computers, 10 GPS, printers, scanners, broadband facilities)

Establishment of a Geographical Information System based rapid response system and two knowledge management centers for climate exacerbated disasters at BMC and NMC with a training were the completed action 1.4 of the **project on 'Climate resilient action plans for Coastal urban areas in Sri Lanka'** (CCSL). For the long term sustainability of the response for climate exacerbated disasters two knowledge management centers was established in BMC and NMC. Furthermore, social media and the project website were incorporated to the project activity in order to promote active participation of the youth generation in the disaster response.

The components of action 1.4 are:

- To train 25 participants of each municipality to use QGIS, an open source geographical information system software;
- To establish two knowledge Management Centers at BMC and NMC;
- To conduct participatory flood mapping technique to produce the maps and database of vulnerability to floods in BMC; and
- To use social media and networks to aware community on project activities and to use them as modes of disaster response.

Main Activity:

GIS-based Rapid Response System (RRS) & two Knowledge Management Centers for climate exacerbated disasters established at BMC & NMC with a training

Sub Activity 01:	*Train 25 participants of each municipality to use QGIS, an open source geographical information system software*

Description
- Introduce QGIS, a open source software to various stakeholders of BMC and NMC by conducting a proper training program and distribution of certificates to the participants who successfully completed the training program.

Lessons learnt

Appreciation factors

- Representation of cross cut of line agencies in the training program facilitated successful knowledge sharing;

- Dedication of the participants is vital to conduct a successful training program; and

- These types of training programs are important to develop spatial information databases to facilitate the decisions at local government level.

Factors to be improved

- Training was done on a fixed schedule. The participated officials were busy officials with a hectic carrier. **Therefore, they didn't have ti**me to do their homework on time;

- 90% of the trained officials did not use the training (QGIS) for their daily activities;

- Lack of basic knowledge of using computers among local

authority officials were a major constrain in conducing the training program;

☐ Low capacity of the officials to adopt new technologies; and

☐ QGIS 1.5 software did not facilitate some of the exercises of the training program. For an instance, **spatial data projection couldn't be done using the QGIS** 1.5 software. Therefore, the officials were taught by using QGIS 1.7. The computers at BMC did not support the installment of QGIS 1.5. Setup issues occurred when trying to install QGIS 1.5. Instead QGIS 1.7 was installed and taught to the officials.

Sub Activity 02:	*Establishment of two Knowledge Management Centers at BMC and NMC*

Description	☐ This center consists of hardware, software and humanware.

Lessons learnt

Appreciation factors

☐ Existences of a center for knowledge management not only facilitate to response climate exacerbated disasters, but also facilitate the availability of knowledge and information on local level; and

☐ The incorporation of knowledge which lies with different stakeholders of local authorities could be successfully done by using this type of a center.

Factors to be improved

☐ Due to the unavailability of a carder position to maintain the KMC the centers were not properly maintained after it was handed over to the local authority of BMC, visual presentations were the most effective mode of communication rather than other modes.

Sub Activity 03: *Conduct participatory flood mapping technique in BMC to produce the maps and database of vulnerability to floods in BMC and NMC*

Description
- Participatory flood mapping technique was conducted to a selected case study in BMC to develop a spatial database to respond climate exacerbated flood disaster in a successful manner.

Lessons learnt

Appreciation factors

- The knowledge which lies with the local community with regard to past and existing floods could be extracted in a proper manner;

- To increase and enhance the accuracy and validity of data, they should be gathered using several techniques;

- In a low elevated study area where no information on the floods is available, the adopted PGIS technique was most suitable to map the flood hazard of the study area;

- Conducting a survey to the total population of the study area is time and resource consuming. Therefore, selection of a proper sample to ease the survey should be done;

- Random discussions with the individuals, further validates the survey conducted;

The lessons learnt in the use of GIS software in conducting participatory GIS based flood mapping:

- Elevation/ coordinate change and attribute change when extracting GPS points to ArcGIS: When extracting GPS points to ArcGIS, the exact geographical location where the coordinates were taken was not clearly shown on the map. Therefore, original GPX files gathered in the GPS was extracted to Google earth as a KML file. Then

the exact location where the GPS points were taken was shown in the Google Earth;

☐ Attribute change in extraction of GPS points to ArcGIS: The KML to SHP converter was used to convert this file because when converting these files using GPS plugin/ GPS tool in GIS, in the attribute table, and the statistical / numerical data subjecting to change;

☐ Coordinate change when opened the converted GPS points (shape files) in ArcGIS: When the converted shape files using the KML to SHP converter was added to the GIS database and opened in the map layer, a coordinate error occurred. This error was about 100m distance error from the exact geographical location. To reduce this error and to bring the shape files to the exact location on ground, spatial adjustment tools and editing tools of GIS were used. This error adjustment **couldn't be done usin**g the coordinate systems of GIS;

☐ Misplaced GPS data: Each and every GPS point which **was taken on field wasn't available as shape files when** opened as a GIS layer. Research team recognized that this could be due to an error in the GPS equipment or the KML to SHP converter used for the file conversion; and

☐ The data entering format of the excel sheet: The data should be entered in number format when entering to the excel sheet. Otherwise, further analysis of this data in GIS to create elevation maps using flood heights cannot be done.

Factors to be improved

☐ **This technique can't be used for flood modelling due to** inaccuracy of data.

Sub Activity 04:   *Use of social media and networks to aware community on project activities and to use them as modes of disaster response*

Description   ☐   Facebook and twitter network was used to facilitate response and awareness on climate exacerbated disasters to youth generation. Furthermore, a webpage was developed by the project team to facilitate the access of the community to information on project activities and climate change.

Lessons learnt   **Factors to be improved**

☐   These types of networks are only accessible to a separate social class. The youth 30 - 45 are not accessible by these networks. Therefore, target group of this sort of action should be only the youths and information technology accessible population.

4. Activity 1.5:

Disaster resilient; energy efficient; low-cost shelter adaptation training, supported by local resource based- livelihood diversifications options for 100 participants live in vulnerable areas

Disaster resilient; energy efficient; low-cost shelter adaptation training, supported on a local resource basis - livelihood diversifications options for 100 participants living in vulnerable areas was identified and mentioned as the activity 1.5 of the project **on 'Climate resilient action plans for Coastal urban areas in Sri Lanka' (CCSL**). It was understood that the importance of the awareness about the vulnerabilities of the local communities to the impacts of the natural disasters exacerbated by climate change.

The main focus of the activity 1.5 is to raise the awareness on impacts of the climate change within the local communities and find out the low cost adaptations practices for the impacts of the climate change through the community. There are two types of programs within the activity 1.5 which were conducted in Batticaloa Municipality in Eastern province and Negombo Municipality in Western province of Sri Lanka.

Main Activity:

Disaster resilient; energy efficient; low-cost shelter adaptation training, supported by local resource based- livelihood diversifications options for participants live in vulnerable areas by conducting an inter school competition at NMC

Sub Activity 01: *Preparation of key activities for the program*

Description

- Selection of schools and teachers (selected 36 schools located within the NMC limits);

- Informing the schools about the program and related activities;

- Selection of a place to conduct the meeting; and

- Inviting medical officers and resource people to make them aware about the post health hazards (dengue).

Lessons learnt

Appreciation factors

- When conducting this type of program, informing the zonal education department and the other relevant stakeholders are important to facilitate successful completion and smooth flow of the project.

Sub Activity 02:   *Teachers awareness program*

Description   ☐   Organization of a meeting for 36 school teachers and to aware them about the program (Discussion about the importance of climate change and the relationship with the post health hazards, discussion about the importance of adaptation and mitigation to response the Dengue, discussion about the competition which launch at the schools, discussion about the issues and clarifications)

Lessons learnt   **Appreciation factors**

☐   The teachers are important when conducting a school level competition. Therefore, when conducting this kind of a project, aware the teachers about the project is important to successfully carry out the project.

Sub Activity 03:   *Monitoring the progress of the competition and coordination*

Description   ☐   Monitoring the progress of the competition by the members of MOH office, PHIs and UOM team members fortnightly.

Lessons learnt   **Appreciation factors**

☐   If the project activities are not successfully monitored and evaluated, the activities may not take place and the program will not deliver the best results. Therefore, monitoring and continuous evaluation is important for better results.

Sub Activity 04: *Organization of a ceremony to select best schools which has been most creative in their practices and ideas to convene the massage about dengue awareness based on the selected criterions*

Description ☐ Distribution of the prizes to schools; Use of the outputs for project activities.

Lessons learnt **Appreciation factors**

☐ At least 3 months should be allocated for this type of activity for the flow and continuation When preparing the presentations to the students, those should be simple, attractive and understandable to the students. The explanations should be short and scheduled to 20 - 30 minutes.

Factors to be improved

☐ This kind of competitions should be aligned with the school curricular. it must be thoroughly keep in mind to organize at the terms which they do not have busy schedules. (End of the year is academically busiest period in schools in Sri Lankan context) so the organizers have to organize their works and activities, after considering about the school terms; and

☐ Panel of judges for this kind of competition should be from the outside

> **Main Activity:**
>
> Disaster resilient; energy efficient; low-cost shelter adaptation training, supported by local resource based- livelihood diversifications options for participants live in vulnerable areas by conducting an inter school competition at BMC

Sub Activity 01: *Preparation of key activities for the program*

Description

☐ Selection of schools and teachers (selected 12 schools located within the BMC limits); Informing the schools about the program and related activities; Selection of a place to conduct the meeting; and Invitations to resource people to make them aware about the climate change adaptation and mitigation.

Lessons learnt

Appreciation factors

☐ When conducting this kind of a program, informing the zonal education department and the other relevant stakeholders are important to facilitate successful completion and smooth flow of the project.

To be improved

☐ Only 1 AB and 1 C schools were selected to this competition. Because of this other schools were marginalized and they did not participate in this program. When conducting this kind of a program, all schools should be selected; and

☐ Disaster Management Center was not involved in this program.

Sub Activity 02:   *School awareness meeting (Principal and teachers)*

Description

☐ Organizing a meeting for two (2) school teachers and the principals of the selected 12 schools to aware them about the program (Discussion about the importance of climate change, adaptation and mitigation and discussion about school level competition to raise awareness among school children about climate change adaptation and mitigation in BMC); and

☐ Organizing a second meeting only for the responsible teachers to select a theme to carry out the project. (The themes are: preparation for disaster, use of indigenous knowledge, save energy at home and school, safe home/ schools for disasters, using tree plants for climate change adaptation and post disaster health hazards).

Lessons learnt

Appreciation factors

☐ The active participation and support of the teachers and principal are important when conducting a school level competition. Therefore, when conducting this kind of a project, aware the teachers about the project is important to carry out the project successfully and continuously;

☐ Appointing a committee of 8 - 12 students and 2 teachers to carry on the project within a school premises facilitated fruitful implementation and sustainability of the projects; and

☐ Facilitation of developing innovative activities based on the given 5 themes and guidelines.

To be improved

- Teachers were appointed to facilitate the project and guide the students to successful implementation of the project. When teachers try to do the project the awareness, the focus of the project collapse;

- Restriction of 5 thematic areas restrained the students to carry out more activities; and

- Appointing a 8 - 12 committee made other children irresponsible for the project activities.

Sub Activity 03: *Monitoring the progress of the competition and coordination*

Description
- Monitoring the progress of the competition by the members of zonal education department, BMC, UN habitat and UoM team members fortnightly.

Lessons learnt

Appreciation factors

- By conducting continuous evaluation, project team can ensure a successful implementation of the program; and

- Evaluation of the project activities through several stakeholders made biasness of the program minimized.

To be improved

- If the project activities are not successfully monitored and evaluated, the activities may not take place and the program will not deliver the best results. Therefore, monitoring and continuous evaluation is important for better results; and

- Different schools carried out different activities. Some schools did dramas, some produced flood maps, some developed story books. The evaluation of these activities was difficult as they took a heterogeneous character and values. Therefore, proper evaluation criteria should have been developed.

Sub Activity 04: *Organization of a ceremony and final evaluation to select best schools which has been most creative in their practices and ideas to convene the massage about dengue awareness based on the selected criterions*

Description
- Distribution of the prizes to schools; Use of the outputs for project activities.

Lessons learnt   <u>**Appreciation factors**</u>

- This kind of competitions should be aligned with the school curricular. it must be thoroughly keep in mind to organize at the terms which they do not have busy schedules. (End of the year is academically busiest period in schools in Sri Lankan context) so the organizers have to organize their works and activities, after considering about the school terms;

- Panel of judges for this kind of competition should be from the outside. These members should have a thorough knowledge about the particular study area;

- Parties/ Schools who/which showed a dedication from the beginning of the program won the competition;

- By giving a presentation criteria and guidelines for the panel presentation and allocation of a time for schools to present their activities helped the successful completion of the final program;

- Children were given a chance to present their activities in their mother language. Therefore, they were comfortable and presented confidently in the final session;

- Providing an encouragement fee of Rs. 3,750/= helped the students to carry out the program well; and

☐ By appointing a committee, sustainability of the program to carry out and develop a resilient city could be attained.

To be improved

☐ Conducting a 10 minutes presentation constrained the schools from presenting the total activities they did in the project;

☐ When conducting this kind of a program, it should be published and the people should be aware and should be published in the local language media; and

☐ All the participant student in the projects and program should be participated in the final event. This couldn't be done during this program due to resource limitations.