

FINAL REPORT

Comprehensive Tsunami Disaster Prevention Training Course

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1. General Impression on Tsunami Counter Measures in Japan

Japan is a country having most of the natural hazards. Vulnerability to occur tsunami in Japan is very high as it is located on plate boundaries. The frequent earth quake gives warning of tsunami hazard and sever disasters had happened. Therefore, Japanese people have developed several mitigation measures to reduce the damage. It includes structural measures such as tsunami breakwaters, tsunami gates, embankments, coastal forests, resettlements beyond inundation area, establishment of evacuation site and efficient early warning systems. Similarly, effective awareness, evacuation planning, and tsunami drills are conducting as non structural measures.

Most of the coastal cities in Japan are locating in river valleys, bays and surrounded by the hills. The topography of the coast is almost mountainous. The almost all the people in coastal area are concentrated within the valleys. Most of coastal dwellers are engaging in fishing for their livelihood. Therefore, high tsunami vulnerability is exists in these bays. The coast of Japan experienced severe tsunami attacks such as Meiji Sanriku tsunami in 1896, Showa Sanriku tsunami in 1933 and Chillian earthquake tsunami in 1960. These disasters reveal the necessity of countermeasures to reduce damage caused by tsunami. Japanese peoples successfully utilized the existing topographical characteristics appropriately to reduced tsunami damage. One example is break waters constructed at the mouth of the bay without long span. Next is the embankments in coast of the bay. The third is the coastal forests along the coast of bay. Other one is the tsunami gate. It is appreciable the enhancement of esthetic appearance of the coast due to the proper planning and maintenance of these structural measures.

The topographical condition in coastal area of Sri Lanka is completely different to the Japan. Entire coastal area is flat and few bays. The population is not concentrated only to river valley bays and it is spread unevenly along the entire coastal belt. About 65percent of the urbanized area are located in coastal area. Most of the railway roads, highways, tourist infrastructures and the industrial output are situated in this area. Therefore, use of

structural measures to reduce the tsunami damage is limited. But it can be practice in some of the places situated in bays surround by hills with high population density. However, the high capital investment will be problem as a developing country. However, there is a proposal to establish tsunami break water at Galle harbor with the assistance of Japanese government.

Coastal forest can be established easily without much investment. Most of the coastal area consists of coconut cultivation. The coconut trees also have an effect to reduce the debris flow. Therefore most of the existing coconut lands along the coast can be improved as coastal forests which as multiple benefits. The *Pandaneous* trees can be grown under the coconut trees which has high effectiveness to reduce the tsunami wave energy and inundation height due to its aerial root system. The coconut trees are utilizing for tapping inflorescences to get juice, which is used to make alcohol and several other products. The leaves of the *Pandanous* are utilizing as a raw material for several products, so it also has an economical benefits to the peoples. Therefore the forest having Coconut and *Pandanus* combination has much more beneficial which will be help to sustainability and as one of livelihood.

The early warning system in Japan is very efficient due to sophisticated technology. The early warning in our country is also efficient for certain extent. Once the tsunami warning received from pacific tsunami warning center to the meteorological department and the Disaster Management Center, with in few minutes it will be disseminated through media, Emergency police communication system and the early warning towers. Already three early warning towers have established and further 50 towers will be established with in this year. However, there should be modification for alternative power supply and lighting mechanism for these towers. Fortunately we have about more than one and half hours lagging period before Tsunami reached to the countries beach.

Frequent awareness programs are conducting to all vulnerable people of the area and evacuation sites are identified. Evacuation drills also conducted as in Japan. Evacuation

plans developed for certain areas and it will be finished with in this year. Several discussions have held with authorities of Education to include Disaster management in to National School curriculum.

2. Outline of Action Plan

The disaster management center (DMC) in Sri Lanka was established after the 2004 tsunami incident. All the activities related to the tsunami counter measures are carried out by the DMC. The authorities of the government and DMC will be convinced about the knowledge gain form the training. The action plan will be submitted for their approval. After that the knowledge gain in this training will be disseminated to all DMC staff through a workshop. Then the staff of the DMC will be motivated and possibility of getting their cooperation for possible activities on mitigation measures also easy.

Thereafter introductory program to National disaster management committee will be carried out to aware the possible mitigation measures. This committee represents the higher authorities in all the governmental and non governmental institutions dealing with disaster management. The aim is to get the national level cooperation for possible mitigation measures and to incorporated mitigation measures for activities carried by individual organizations.

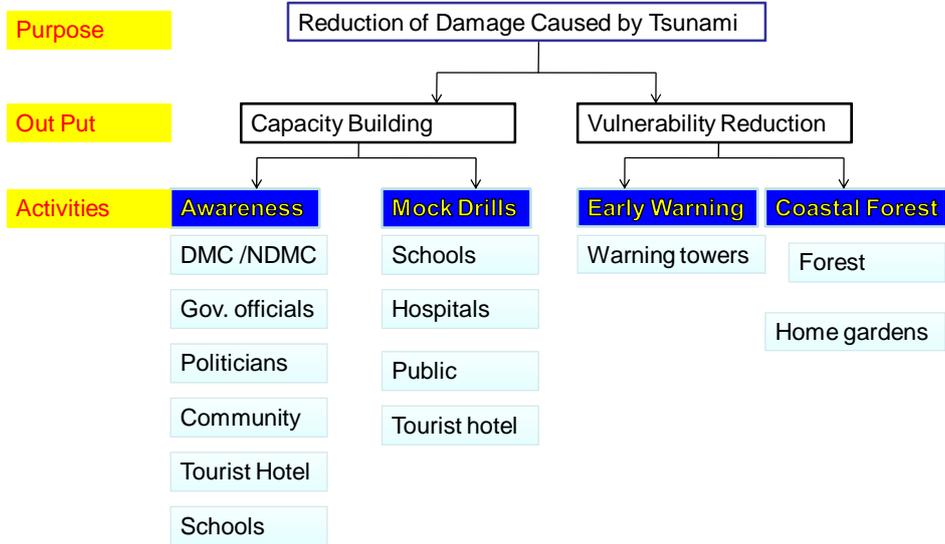
Awareness programs will be conducted to highly vulnerable districts with the consent of DMC officials. The awareness is for the all government officials and the politicians of the respective districts having the responsibility of decision making, planning, implementing and management in development activities. The main aim is to motivate these officials to incorporate possible mitigation measures for their development activities. After that the feasibility studies will be carried out for possible structural measures with respective authorities. Feasible mitigation measures will be established based on the fund availability.

Multi language sign boards will be established based on the necessity. Tsunami monuments will be established in vulnerable areas to send the message to future generation.

Awareness programs for the vulnerable community of selected districts will be conducted to motivate and establish coastal forests along the coast, establish tree crops in their home gardens and to improve the existing coconut plantations. Coastal forest will be established along the coastal belt of the districts of Galle, Matara, Kaluthara, Ampara and Hambanthota as a community based participatory pilot project. After that the further improvement will be carried out based on success of this project. Existing coconut cultivation lands will be improved to increase the thickness of the cultivations and *Pandanous* species will introduce as undergrow. Home gardens of the residence in inundation area will be improved with establishment of tree crops (fruit crops).

Awareness programs to the school children of the vulnerable area will be conducted through different modes. The aim is to motivate the students to establish and maintain coastal forest along coastal belt, incorporate tree species in their home gardens and to serve as volunteer of their area. The possible coastal conservation measures will be established with these voluntary groups.

Action Plan



Operation	indicator	1st year	2nd Year	3rd Year
Capacity Building to Reduce Damages Caused by Tsunami	Number of Peoples got awareness .Organizations perform drills			

Activities	In charge		1st year	2nd Year	3rd Year
1. Awareness			-	-	-
1. Design program	D	AD	-	-	-
2. Preparation of Training Materials	D	AD	-	-	-
3. Preparation of budget	D	AD	-	-	-
4. Forward for budget approval	DG	D	-	-	-
5. Conduct Awareness programs	D	AD	_____	_____	_____
6. Feed back	D		-	-	-
1. Mock Drills			-	-	-
1. Evaluation of lapses in drills conducted	D	AD	-	-	-
2. Design drill with modifications	D	AD	-	-	-
3. Preparation of budget & approval	DG	D	-	-	-
4. Conduct mock Drills	D	AD	_____	_____	_____
5. Feed back	D		-	-	-