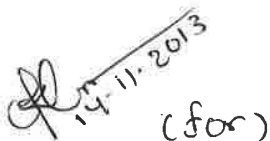


(b) Minutes of JCC meeting, etc.

- 1st JCC meeting (November 14th, 2013)
- 2nd JCC meeting (November 17th, 2014)
- 3rd JCC meeting (May 28th, 2015)
- 4th JCC meeting (February 18th, 2016)
- Final JCC meeting (January 24th, 2017)

Minutes of Meeting
on
the 1st JCC meeting
of
The Project on Establishment of End-to-End Early Warning System
For Natural Disaster
In the Republic of the Union of Myanmar
among
Relief and Resettlement Department,
Ministry of Social Welfare, Relief and Resettlement
and
Department of Meteorology and Hydrology,
Ministry of Transport
and
Japan International Cooperation Agency

Nay Pyi Taw, November 14, 2013


14-11-2013
(for)

Mr. Soe Aung
Director General, Relief and
Resettlement Department (RRD),
Ministry of Social Welfare, Relief
and Resettlement



Mr. Kyaw Moe Oo
Deputy Director General
Department of Meteorology and
Hydrology (DMH), Ministry of
Transport



Mr. Ichiro Kobayashi
Chief Advisor, The Project on
Establishment of End-to-End
Early Warning System for
Natural Disaster in the Republic
of the Union of Myanmar, Japan
International Cooperation
Agency



Mr. Kyosuke Inada
Senior Representative
Japan International Cooperation
Agency Myanmar Office

On the occasion of concluding 1st year's activities, Joint Coordination Committee (hereinafter called as JCC) of "the Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar" was held on November 14, 2013 at Amara Hotel in Nay Pyi Taw.

Relief and Resettlement Department (RRD) of the Ministry of Social Welfare, Relief and Resettlement, Department of Meteorology and Hydrology (DMH) of the Ministry of Transport, Japan International Cooperation Agency (JICA) and relevant parties of the Project joined JCC, chaired by Mr. Win Htein Kyaw, Director of RRD and co-chaired by Mr. Kyaw Moe Oo, Deputy Director General of DMH, on 14 November 2013. The list of the participants is shown in Appendix 1.

It was followed by the explanation of the progress of the project by Mr. Yoshihiko Uchikura, Deputy Chief Advisor of the Project. Presentation file of the JCC is attached as Appendix 2.

All parties basically agreed to the JICA Expert Team's proposal for 2nd year's activities. The followings are the main points discussed and/or agreed in the meeting.

1. Progress of the project

JICA Expert Team reported progress of the Project to all participants, and Myanmar side confirmed its progress.

2. Selection of pilot villages

Following pilot villages of the Project were proposed by JICA Expert Team, and Myanmar side agreed to its proposal.

- 1) Hlwa Zar Village, Hlwa Zar Village Tract, Labutta Township
- 2) Kwa Kwa Lay Village, Hlwa Zar Village Tract, Labutta Township
- 3) Shwe Kyun Thar Village , Hlwa Zar Village Tract, Labutta Township

3. Selection of communication and information equipment

JICA Expert Team proposed communication and information equipment for early warning to be installed in the pilot area from the second year, and Myanmar side agreed to its proposal. Both Japanese side and Myanmar side confirmed that installation fee of the equipment is covered by Japanese side and operation and maintenance cost of the equipment is covered by Myanmar side.



The owner of communication equipment between DMH and MRTV is DMH.

4. Tidal gauge

JICA Expert Team proposed the location of tidal gauge station as Haing Gyi Kyun in Pathein district and Myanmar side agreed to the location. Japanese side requested Myanmar side to make necessary arrangements for its installation, and Myanmar side noted the request.

Myanmar side requested operation and maintenance trainings and manuals for tidal gauge operation such as technology for data analysis and processing of tidal level data.

5. Submission of A4 Form

Japanese side requested to finalize the A4 Form which is the official request form for procuring the equipment to the Japanese government should be started to circulate within the Myanmar government by the end of November. It is expected to submit to the Japanese government by the end of February, 2014.

6. 2nd Pilot state

Both Japanese side and Myanmar side agreed that the second pilot state of the Project is Rakhine State. Japanese side requested Myanmar side to make recommendations of pilot areas, and Myanmar side noted the request and will inform to Japanese side before the commencement of the second year activity.

Japanese side concerned the security condition of Rakhine State, and requested Myanmar side to monitor its condition and make necessary arrangement for site visit and project implementation. Myanmar side confirmed these requests and agreed to cooperate and negotiate with relevant ministries for security.

7. Office space for the Expert Team

Japanese side requested office space for JICA Expert Team in Nay Pyi Taw and Pathein. Myanmar side agreed to provide office space in DMH Ayeyarwaddy Region, and to arrange the space in Nay Pyi Taw.

8. Necessary Data and Information

Japanese side requested Myanmar side to provide necessary data and information for activities in Rakhine state, and Myanmar side noted the request.



9. Other matters

JICA Myanmar office questioned the following items:

- 1) Selection criteria of pilot village in Rakhine state
- 2) Target area of expansion plan
- 3) Measurement of project output

JICA Expert Team answered each question for the following:

- 1) For the selection criteria, regional characteristic of Rakhine State will be considered.
- 2) Target of the expansion area is Ayeyarwaddy Region and Rakhine State according to overall goal of PDM. Detailed target will be further discussed with Myanmar side.
- 3) Capacity Assessment and time of warning transmission from national level to community level will be measured again by the end of the pilot activities.

Myanmar explained the situation of Rakhine State such as past record of disaster.

These items mentioned above will be discussed during the 2nd year, and PDM will be revised according to the discussion.

End

Handwritten signatures and initials are present at the bottom right of the page. There are three distinct marks: a circled '5', a signature that appears to be 'D. Z.', and another signature that appears to be 'H. M.' with a long horizontal line extending to the right.

List of Participants

Myanmar Side

Relief and Resettlement Department (RRD)

Win Htein Kyaw	Director
Than Htut Swe	Director
Win Zaw Htay	Assistant Director
Thurein Tun	Assistant Director
Nobuyuki Ichihara	JICA Long Term Expert

Department of Meteorology and Hydrology (DMH)

Kyaw Moe Oo	Deputy Director General
Chit Kyaw	Director
Daw Tin Yi	Deputy Director
Kyaw Lwin Oo	Deputy Director
Daw Htay Htay Than	Deputy Director
U Kyaw Kyaw Lin	Assistant Director
Dr Yin MyoMin Htue	Assistant Director

General Administration Department (GAD)

Hla Than Aung	Assistant Director
ThonHtun Aye	Staff Officer

Myanmar Radio and Television (MRTV)

Than Lwin	Deputy Director
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News and Periodicals Enterprise (NPE)

Tha Sein	Deputy Chief Editor
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Information and Public Relations Department (IPRD)

Aung Ngwe

Myanmar Fire Service Department

Kyaw Naing	Assistant Director
------------	--------------------

Japan Side

JICA

Kunio Akatsu	Advisor
Kai Kikuri	Deputy Director

JICA Myanmar Office

Kyosuke Inada	Senior Representative
Noriko Sakurai	PFA
Myo Min	Program officer

Expert Team

Ichiro Kobayashi	Chief Advisor / Disaster Management (1)
Yoshihiko Uchikura	Deputy Chief Advisor / Organizational Strengthening
Susumu Murata	Disaster Management (2)
Masahiro Satake	Procurement Planning
Yoshihiro Asano	Disaster Management Planning
Yoko Ota	Community-Based Disaster Risk Management
Zayar Win	Social Survey
Masato Fujimoto	Project Coordinator / Assistant for Organizational Strengthening / Capacity Assessment
Su Pyi Son	Japanese Interpreter
Aung Khaing	Disaster Management Planning



The Project for Establishment of End-to-End Early Warning System for Natural Disaster



JCC Meeting

Date: November 14, 2013

Place: Amara Hotel

No.	Time	Agenda	Presenter
1	8:30 - 9:00	Registration	
2	9:00 - 9:20	Opening Remarks	<i>Mr. Aung Khaing</i> <i>Deputy Director General, RRD</i> <i>Mr. Kyosuke Inada</i> <i>(JICA Myanmar Office)</i>
3	9:20 - 9:50	Communication and Information System in Japan	<i>Mr. Kunio Akatsu</i> <i>(JICA Mission Member)</i>
4	9:50 - 10:50	Progress of the Project	<i>Mr. Ichiro Kobayashi</i> <i>Mr. Yoshihiko Uchikura</i> <i>(JICA Experts Team)</i>
5	10:50 - 11:20	Tea Break	
6	11:20 - 12:00	Discussion	
7	12:00 - 12:10	Closing Remarks	<i>Mr. Kunio Akatsu</i> <i>(JICA Mission Member)</i> <i>Mr. Aung Khaing</i> <i>Deputy Director General, RRD</i>



Joint Coordinating Committee (JCC) Meeting

November 14, 2013
Nay Pyi Taw

JICA Expert Team

Agenda

1. Summary of the Project
2. Progress of the Project (Project Formulation)
3. 2nd pilot Region/State
4. Important Meeting
5. PDM
6. Schedule
7. Confirmation

Project Purpose

Overall Goal

End-to-end early warning systems for natural disaster are expanded to coastline area, especially in Ayeeyawaddy Region and Rakhine State, expansion plan based on the expansion plan

Project Purpose

The improved model of end-to-end early warning systems for natural disaster with an expansion plan is set up in pilot areas.

Output

Output 1
Information management system for natural disasters improved.

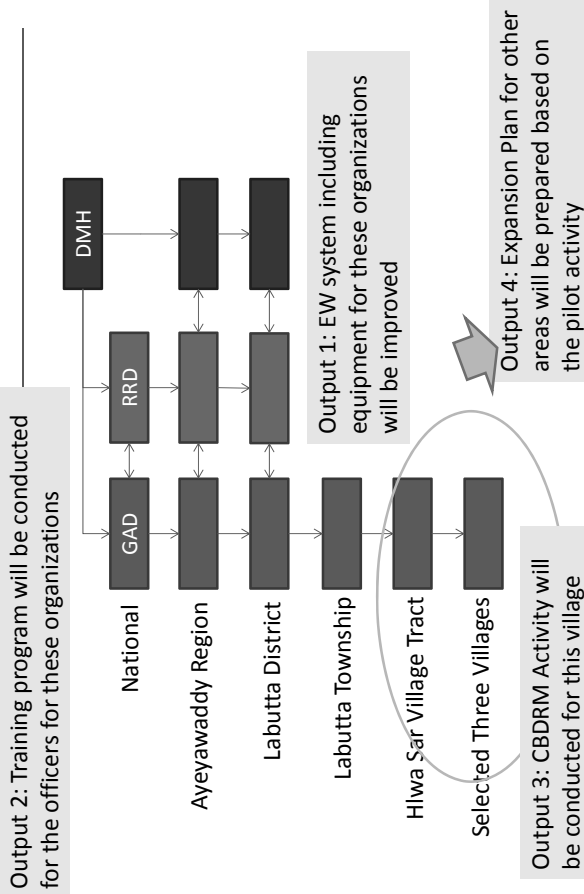
Output 2
Response capacity of national government officers improved.

Output 3
Response capacity of community people improved.

Output 4
The expansion plan to other regions is prepared.

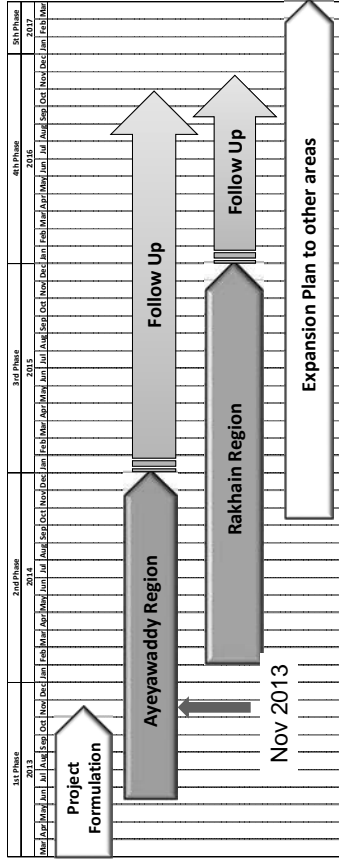
1. Summary of the Project

Project Image (Pilot Activity → Expansion Plan)



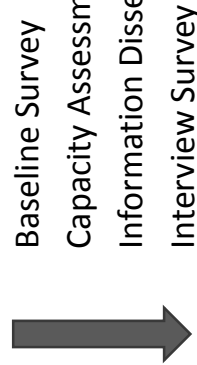
Schedule of Project

Overall Schedule



Project Formulation

Surveys: Site Survey



Implementation Plan

- Output 1: Early Warning System Improvement
- Output 2: Capacity Enhancement of Government Officers
- Output 3: Capacity Enhancement of Community People

2. Progress of the Project (Project Formulation)

- 2.1 Result of Survey
- 2.2 Implementation Plan

1) Site Survey

Date	Place	Objective
March 18 – 21	Patheingyi, Labutta	Interview to RRD, DMH and GAD Visit to villages in Labutta Township
April 5 – 17	Pyawon, Bogalay	Interview to RRD, DMH and GAD Visit to villages in Bogalay Township
April 8 – 12	Patheingyi, Labutta	Interview to RRD, DMH and GAD Visit to villages in Labutta Township
April 26 – 28	Patheingyi, Haing Gyi Kyun	Community Survey, Survey on locations for tide gauge station
July 7 – 11	Dedaye, Patheingyi, Labutta, Haing Gyi Kyun	Community Survey, Survey on locations for tide gauge station
November 2 – 7 November 8 - 11	Patheingyi, Labutta	Interview to RRD, DMH and GAD Pilot community survey

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2.1 Result of Surveys

- 1) Site Survey
- 2) Baseline Survey
- 3) Capacity Assessment Survey
- 4) Information Dissemination Survey (MAHASEN)


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Disaster Characteristics Carte (Village / Individual Profile)

Regional Characteristics: Name of the Village: Shwe Kyun Thar

Summary: Village Tract: Hmaw Zay

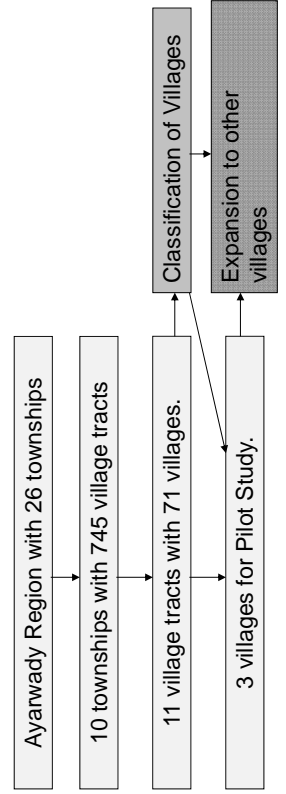
Item	amount/ number	Unit	Note/comment
Population before (before 10 years ago)	1200 persons		
Population after (after 10 years ago)	400 persons		
Current Population	800 persons		
Household	210		
100 household	20		
Religious group	200	of group	unaffected Christian
Ethnic group	200	of group	Burmese/Kyau
Major source of income (agriculture, forestry, fishery, etc.)	-		40% are from fishing, 30% from Agriculture and other are from other (education, seasonal workers)
Prevalence of land (barren, peasant)	-		50% are peasant, 15% are landless, 5% are merchant, 20% are laborer and 10% are other staff
Harvest of rice per year	1 time		during dry season, growing vegetables
Stock (Cattle, pig, goat, etc.)	100	heads	at least
House time and means of transportation to city during dry season	200	by boat	at least
House time and means of transportation to city during rainy season	200	by boat	at least



2) Result of Baseline Survey

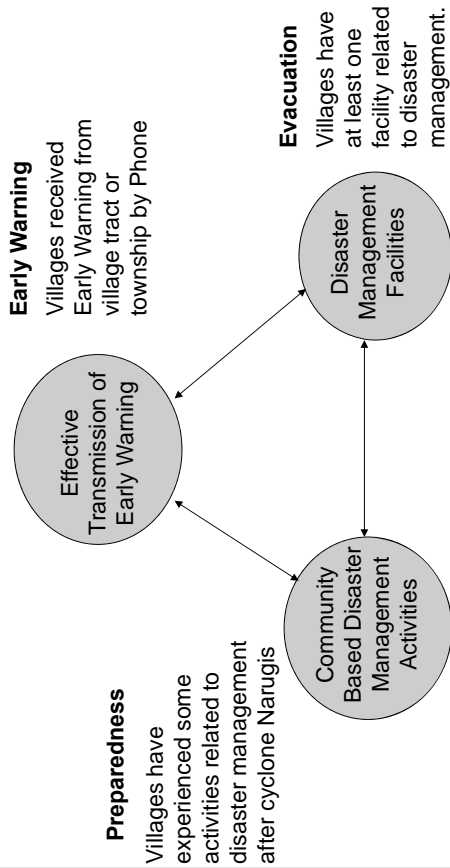
- Purpose**
- To identify characteristics of villages to conduct pilot study to enhance early warning system at community level
 - To expand lessons learnt from the pilot study at the selected villages to other villages

Selection of Villages for Pilot Study



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Criteria for Classification of Villages



The Project for Establishment of End-to-End Early Warning System for Natural Disaster

Characteristics of Villages in Terms of Disaster Management

Type	Characteristics of Villages in terms of Disaster Management
A	Villages have capacities and experience of all three aspects of disaster management, including effective transmission of early warning, DRR activities and evacuation facilities.
B, C & D	Villages have capacities of effective transmission of early warning, but need to enhance DRR activities and/or to establish evacuation facilities.
E, F & G	Villages have no capacity of effective transmission of early warning, although they have some capacities of DRR activities and/or evacuation facilities
H	Villages have no capacity and experience of all three aspects of disaster management. It is necessary to take fundamental efforts in disaster management.

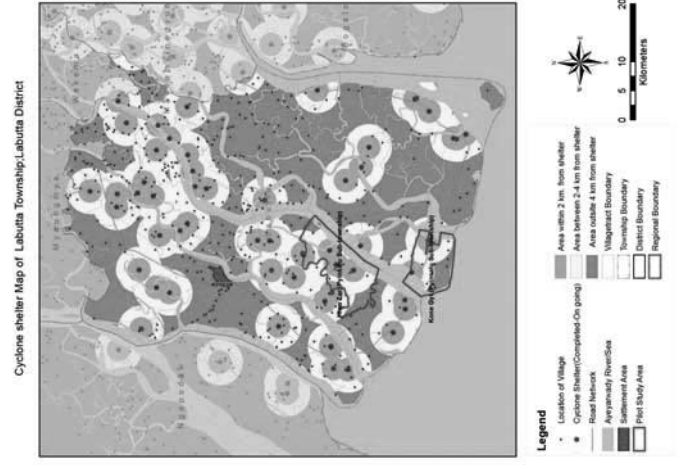
Classification of Villages by Three Criteria

Type of Village	Villages received early warning from village tract or township by Phone	Villages that have experienced DRR activities after cyclone Narugis	Villages with at least one facility related to disaster management.	No. of villages.
A	○	○	○	15
B	●	●		11
C	●	●	●	5
D	●			14
E		●	●	5
F		●		2
G			●	4
H				14

Location of Villages and Cyclone Shelters in Labutta Township

According to GIS data from MIMU,

- There are 54 cyclone shelters in Labutta Township: 15 completed and 39 on-going, as of February 2010.
- There are 496 villages in Labutta Township as of 2012.



Number of Villages by Distance from Cyclone Shelters

Selected Village Tract in Labutta Township	Within 2Km	Between 2-4Km	Beyond 4Km	Total Number of Villages
Hlwa Zar	10	4	0	14
Kone Gyi	1	5	4	10
Labutta Township	127	161	208	496

People in the villages can access to shelter within 1 hour by walk

People in the villages can access to shelter within 2 hours by walk

People in the villages are difficult to evacuate to shelter

Result of Selection

Township	Village tract	Village	Population	Access from major Town	Religious Group / Ethnic Group	Type
Labutta	Hlwa Sar	Hlwa Sar	1,476	2 hours from Labutta by Boat	Buddhist Barma	A
		Kwa Kwa Lay	602	3.5 hours from Labutta by Boat	Christian Kayin	A
		Shwe Kyun Thar	677	2 hours from Labutta by Boat	Buddhist Barma	B

Criteria to Select Pilot Village

- Village is included in the 11 village tracts which are selected for the baseline survey
- Village was affected by Cyclone Nargis
- Village represents the area
- Village, where Cyclone Shelter was constructed by Japanese Government
- Village, where effectiveness and issues of pilot activities are easily understood (size, ethnic, religion and Unity etc.)
- Village, where pilot activities are easily conducted (access, unity and leadership etc.)

3) Result of Capacity Assessment

- Capacity assessment was conducted in order to prepare and implement human resources development activities on EWS.
- Target officers are listed in the next slide.
- The same questionnaire was used for all interviews.

Number of officers interviewed

Departments		No. of Officers
National Government	Officers of RRD and DMH	10
	Officers of MDPA member organizations	20
Ayeyarwaddy Region	Officers of RRD and DMH	10
	Officers of member organizations of DM committee	5
Labutta District	Officers of RRD and GAD	5
	Officers of member organizations of DM committee	5
Labutta Township	Administrator and officers of township	2
	Officers of member organizations of DM committee	3
Hiwa Sar Village Tract	Administrator	1
	Members of DM committee	3
Village	Administrator, 100 households leader	2
	Total	66
		21

Key findings by capacity assessment

	RRD	DMH	other national agencies	Region	District	Township	Village Tract/ Village
Knowledge on DRM	A	B	D	C	C	C	C
Opportunity to participate DRM training	A	A	D	D	E	C	E
Understanding of Roles on DRM	A	A	E	E	E	E	E

A (High) ← → E (Low)

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Key challenges on EWS (major answers)

- Improvement of equipment / system to transmit accurate information to people
- Awareness enhancement of people
- Enhancement of forecasting capacity
- Enhancement of collaboration with related organizations
- Human resources development

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4) Survey Result of Warning Dissemination (in case of Cyclone MAHASEN)

- Actual condition of warning dissemination was surveyed through interviews to;
 - DMH (NPT, PTN), RRD (NPT, PTN, Labutta), GAD (NPT, PTN, Labutta District/TS, Hiwa Sar VT, some villages)
- Targeted warnings were the weather conditions and warning messages issued by DMH (NPT) from May 6 to May 16 2013

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Finding 1

Agencies	Number of Fax Received
DMH (NPT)	(Sent 28 Faxes)
RRD (NPT)	3
GAD (NPT)	0
DMH (Pathein)	26
RRD (Pathein)	7
GAD (Pathein)	7
RRD (Labutta District)	4
GAD (Labutta District)	14
GAD (Labutta Township)	8

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Finding 2

Sent from DMH (NPT)	Received by DMH (Pathein)	Time (min)	Sent from DMH (NPT)	Received by DMH (Pathein)	Time (min)
14:00	15:04	64	19:00	20:11	71
14:00	16:09	129	06:00	10:17	257
13:00	14:19	79	10:00	14:12	252
06:00	07:37	97	13:00	18:17	317
13:30	14:42	72	16:00	18:42	162
06:00	07:24	84	19:00	20:03	63
14:30	15:17	47	22:00	22:44	44
19:00	20:19	79	06:00	09:30	210
07:00	07:29	29	10:00	12:57	177
13:00	16:03	183	12:00	13:27	87
18:00	19:55	115	16:00	18:54	174
06:00	07:21	81	20:30	20:57	27
13:00	16:02	182	Average Time		123

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Finding 3

	Time of Receipt	Time of Dissemination
DMH (NPT)	-	May 11, 2013 6:00 am
DMH (Pathein)	7:37 am	??
GAD (Labutta District)	9:09 am	10:20 am
GAD (Labutta Township)	9:23 am	1:00 pm
GAD (Pyinsalu Sub-Township)	1:30 pm	2:00 pm
Village Tract	5:00 pm	5:30 pm
Village	5:50 – 6:30 pm	-

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2.2 Implementation Plan

Output 1 : Early Warning System Improvement

Output 2: Capacity Enhancement of Government Officers

Output 3: Capacity Enhancement of Community People

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Output 1: Early Warning System Improvement

- 1) Role and Responsibility
- 2) Contents of Warning Message
- 3) Route of Information Dissemination
- 4) Equipment for Communication

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1) Role and Responsibility

- National Natural Disaster Preparedness Central Committee (NNDPCC)
- National Natural Disaster Preparedness Management Work Committee
- DMH, Ministry of Transport
- RRD, Ministry of Social Welfare, Relief and Resettlement
- Ministry of Information
- Ministry of Foreign Affairs
- Region/State Natural Disaster Preparedness Committee
- GAD at Region/State, District, and Township level

Role and responsibility for EW will be further discussed and clarified in the 2nd Year.

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2) Contents of Warning Message

Cyclone Warning

Issued at (06:00) hours MST on (16- 5-2013)

According to the observations at (05:30) hrs. M.S.T today, Cyclonic Storm (MAHASEN) over North Bay of Bengal has moved to the Northeast direction and reached the North Bay of Bengal. It is centered at about (160)miles West - southwest of Maungdaw(Myanmar), (180)miles West of Sittwe(Myanmar), (160) miles southeast of Kolkata(India) and (180)miles Southwest of Chittagong (Bangladesh) It is forecast to move Northeast wards and likely to cross between Chittagong (Bangladesh) and Maungdaw (Myanmar) during (12) hours.

Current stage of cyclonic storm(MAHASEN) is coded as Red emergency color, it means cyclone is moving towards between Bangladesh and Myanmar border areas.

Maximum wind speed is estimated to be (60)mph, gusting (70)mph during landfall time. And probable maximum storm surge of about (8)to (10)feet in Maungdaw District, (6) to (8)feet in Sittwe District and (4)to (6)feet in Kyaukpaphyu District.

Isolated heavy rainfalls are likely in Sagaing, Mandalay, Magway, Bago, Yangon and Ayeerwady Regions, Kachin, Chin and Rakhine States. Due to heavy rainfall, landslides and flash floods may occur over kha.bhutan.gov.bt.

Frequent squalls with rough seas will be along Rakhine Coasts. Surface wind and along Rakhine Coasts. Surface wind

Maximum storm surge is 6 to 8 feet in Sittwe District.

All fishing boats, ship and vessels are advised to remain for safety.

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Recommendation

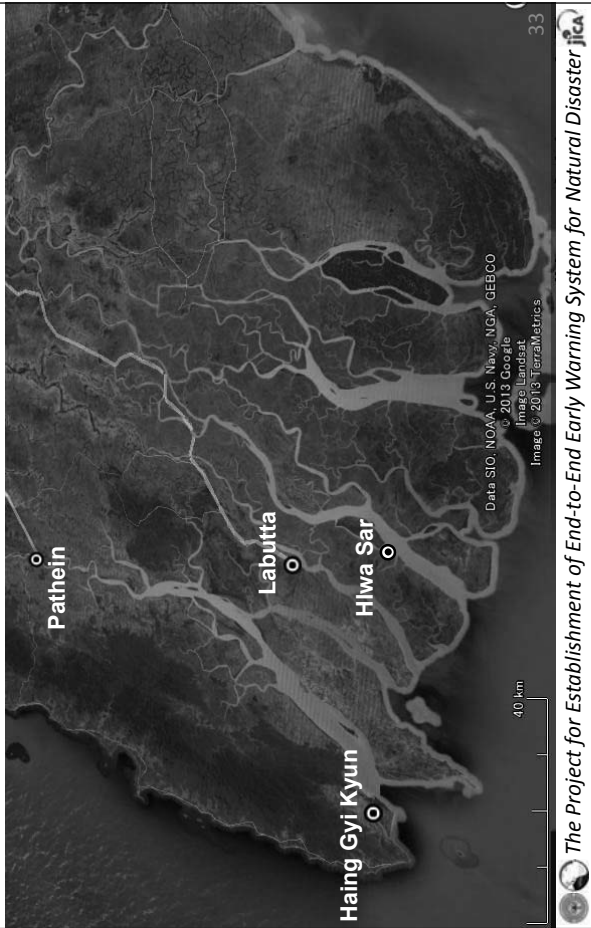
Essential Information in the Warning Message

- **WHERE** : Area, District, Region
- **WHEN** : Approximate time duration (from xxh to xxh)
- **HOW** : Estimated highest tide (m) against Mean Sea Level/Normal High Tide Level
- **Important Information**: High tide time (Source: Yamamoto)

Warning message will be improved through the project activity in the 2nd Year.

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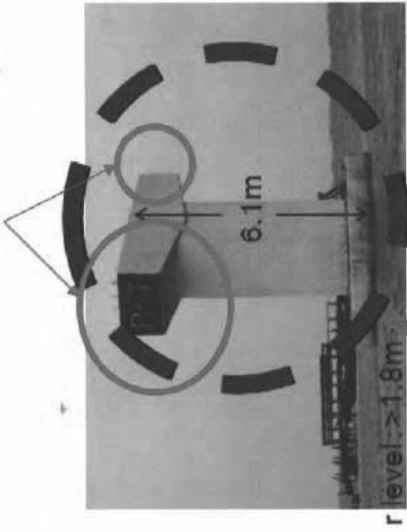
Tide Level Monitoring



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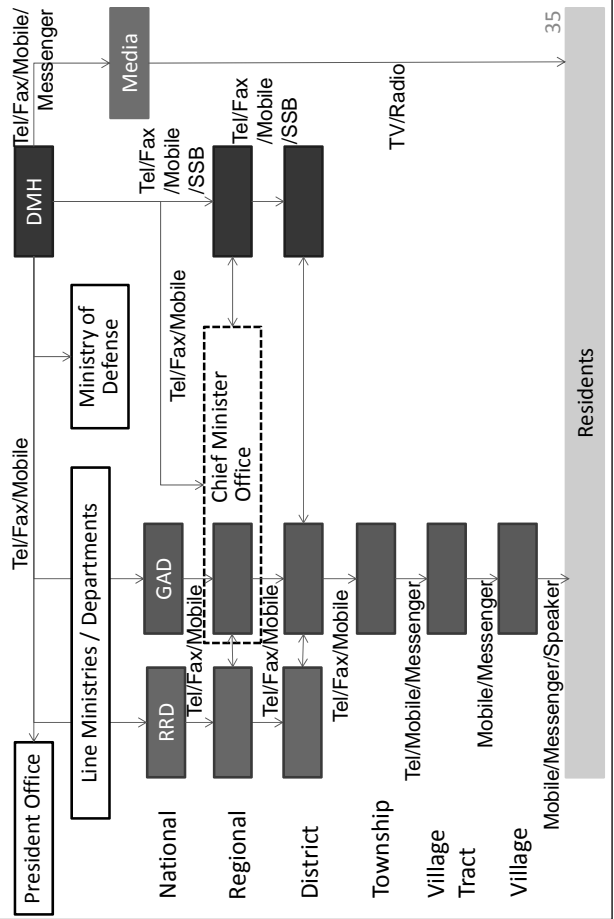
Installation of Tide Gauge Station at Haing Gyi Kyun

Tide gauge station at the pier
(Both side of the pier)



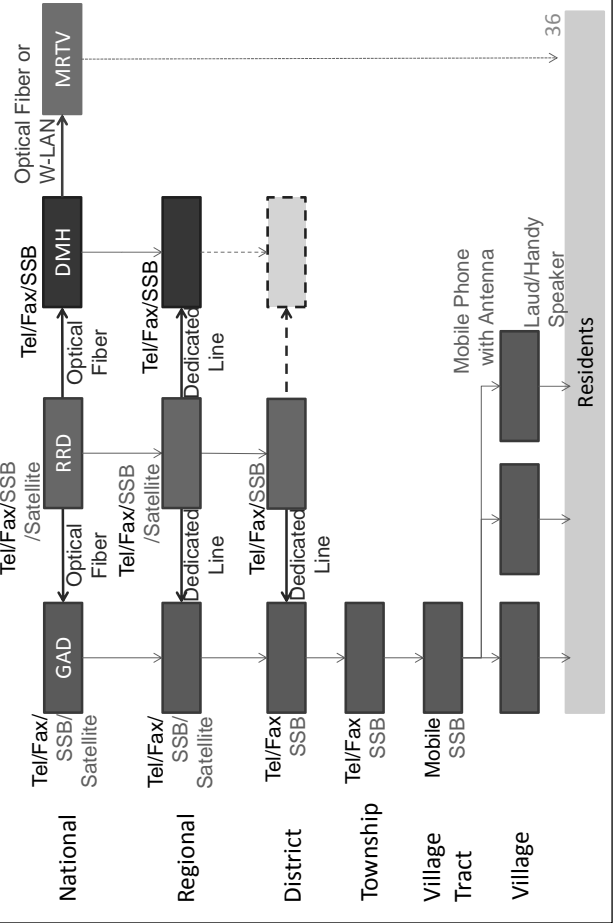
The Project for Establishment of End-to-End Early Warning System for Natural Disaster *jica*

3) Route of Information Dissemination



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4) Equipment for Communication



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List of Equipment

- Please refer to the list of equipment
- Equipment is purchased and installed by Japanese side. (Initial cost is owned by Japanese side)
- Operation/maintenance cost is owned by Myanmar side
- Power supply has to be secured by Myanmar side.
- Although the solar system is installed for the equipment at village tract and village level, power supply has to be secured by Myanmar side especially during rainy season.

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List of Equipment

	Satellite	SSB	Information Sharing
RRD (NPT)	IPSTAR contract/ PC/IP-Fax/IP-Phone O/M cost	SSB Equipment	Optical fiber contract PC/IP-Fax/IP-Phone O/M cost
RRD (PTN)	IPSTAR contract/ PC/IP-Fax/IP-Phone O/M cost	SSB Equipment	Dedicated telephone line contract O/M cost
RRD (Labutta)	-	SSB Equipment	Dedicated telephone line contract O/M cost
DMH (NPT)	-	-	Optical fiber contract PC/IP-Fax/IP-Phone O/M cost
DMH (PTN)	-	-	Dedicated telephone line contract O/M cost

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DMH (O/M cost, Electricity supply)

- Communication with MRTV
- Tide Gauge at Haing Gyi Kyun (with Solar System)

	Satellite	SSB	Information Sharing
GAD (NPT)	IPSTAR contract/ PC/IP-Fax/IP-Phone O/M cost	SSB Equipment	Optical fiber contract PC/IP-Fax/IP-Phone O/M cost
GAD (PTN)	IPSTAR contract/ PC/IP-Fax/IP-Phone O/M cost	SSB Equipment	Dedicated telephone line contract O/M cost
GAD (Labutta District)	-	SSB Equipment	Dedicated telephone line contract O/M cost
GAD (Labutta Township)	-	SSB Equipment	-
Village Tract	-	SSB Equipment Solar System Electricity supply	-
3 Villages	-	-	Mobile Phone Loud/Handy Speaker Solar System O/M cost Electricity supply

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Output 2: Capacity Enhancement of Government Officers

- 1) Target of Human Resources Development (HRD) Activity
- 2) On the Job Training of Working Group Members
- 3) HRD Seminar
- 4) Information Transmission Exercise
- 5) Schedule

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1) Target of Human Resources Development (HRD) Activity

- Capacity Enhancement of officers from National Gov., Ayeyarwaddy Regional Gov. and Pilot Area on Early Warning System
- Human Resources Development on DRM at Ayeyarwaddy Regional level.



1. On the Job Training of Working Group Members
2. HRD Seminar
3. Information Transmission Exercise

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2) OJT of Working Group Members

Member of Working Group (5 – 10 members)

- RRD: Patheingyi, Labutta District
- DMH: Patheingyi
- GAD: Patheingyi, Labutta District / Township
- Other officers

General

- OJT of officers to be in charge for DRM
- Work / discuss closely with JICA expert team
- Involve officers from national gov. agencies and pilot area

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Working Group Activities

Activities

- Establish / operate Early Warning System (RRD)
- Prepare manual / module for EWS (RRD)
- Improve warning message (DMH)
- Install / familiarize communication equipment (RRD)
- Install / maintain tide gauge station (DMH)
- Implement HRD seminar / exercise (RRD)
- Prepare expansion (promotion) plan (RRD)

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3) HRD Seminar

General

- 2 seminars in July 2014
- Seminar at Nay Pyi Taw: 50 participants
- Seminar at Patheingyi: 50 participants

Contents

- Mechanism of major disasters
- Lessons learned from past disaster experiences on EWS
- Established EWS at Ayeeyarwaddy Region
- Progress of activities at pilot area

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4) Information Transmission Exercise

General

- To evaluate validity of EWS / skills of officers on equipment and systems
- Scheduled in October 2014

Contents

- Exercise to transmit warning message issued by DMH Nay Pyi Taw to pilot community based on EWS manual
- Evaluation meeting to improve EWS and its manual

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5) Schedule of HRD Activity

2014	Working Group	Events	Outputs
February			
March		Preparation of Early Warning Manual	
April			
May			Early Warning Manual
June		Installation of Equipment / Preparation for Seminar	
July			HRD Seminar (Patheingyi) HRD Seminar (Nay Pyi Taw)
August		O & M of System / Preparation of Exercise	HRD Materials
September			
October		Preparation of Expansion Plan	Exercise Materials
November			Expansion Plan

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Output 3: Capacity Enhancement of Community People

- 1) Goal and Activities on CBDRM
- 2) TOT Workshop
- 3) CBDRM Workshop
- 4) Schedule

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1) Goal and Activities of CBDRM Activity

- **Goal**
 - To enhance the capacity of dissemination of the early warning and response to the disaster in the pilot villages
 - To develop expansion plan to other villages in pilot area by creating the model of TOT and CBDRM activities
- **Project Activities**
 1. TOT Workshop for Village Tract Disaster Management Committee
 2. CBDRM Workshops for pilot villages (5 times x 3villages)
 3. Preparation and revision CBDRM Material for TOT and CBDRM workshops
 4. Development of expansion plan

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2) TOT Workshop

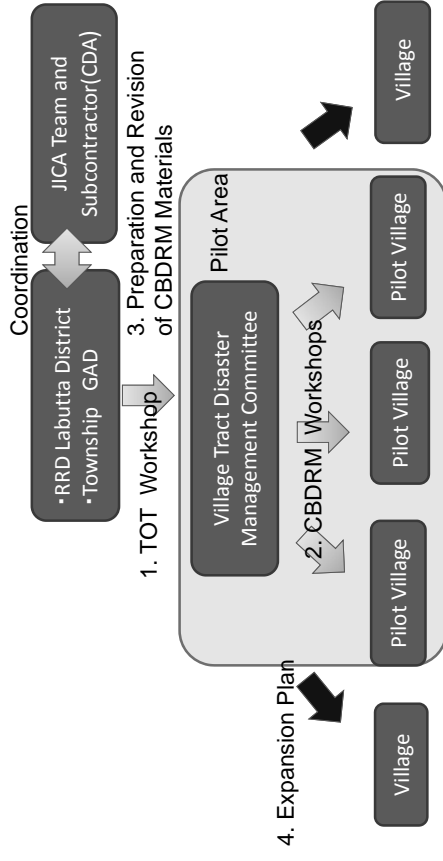
- Target: Village Tract Disaster Management Committee (VTDMC) members → Facilitator of CBDRM

Program of TOT Workshop

	Main Contents
1 st day	<ul style="list-style-type: none"> • Basic knowledge of disaster and disaster in Ayeyarwaddy region • Outline of CBDRM
2 nd day	<ul style="list-style-type: none"> • Participatory disaster management planning (evacuation plan etc.)
3 rd day	<ul style="list-style-type: none"> • Evacuation exercise • Mainstreaming of disaster management

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Design of Activities of CBDRM



3) CBDRM Workshops

- CBDRM workshops are designed to enhance the capacity of the resident on DRM
- Five times CBDRM workshops are conducted in each pilot village
- Target of CBDRM activities: 50 persons at each village
- Revision of CBDRM material
- Preparation of expansion plan through Study Visit

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Program of CBDRM Workshops

	Contents
1 st	<ul style="list-style-type: none"> ▪ Basic Knowledge of disaster and disaster in Ayeyarwaddy region ▪ Introduction of CBDRM activities
2 nd	<ul style="list-style-type: none"> ▪ Participatory community risk assessment ▪ Participatory disaster risk management planning
3 rd	<ul style="list-style-type: none"> ▪ Preparation of the evacuation exercise ▪ Community-based infrastructure planning
4 th	<ul style="list-style-type: none"> ▪ Training for evacuation exercise (First Aid, SAR, food aid) ▪ Evacuation exercise ▪ Evaluation of evacuation exercise
5 th	

4) Schedule of CBDRM Activities

2014	Overall schedule	Pilot Villages
Feb.	★ TOT Workshop	
Mar.	CBDRM Workshops	CBDRM WS for 1 st Village
Apr.		(Once a month)
May		
Jun.		CBDRM WS for 2 nd & 3 rd Village
Jul.		(Once a month)
Aug.		
Sep.		Community
Oct.	★ Information Transmission Exercise/Study visit	Activity based on DRM plan
Nov.		

*Expansion and Dissemination plan will be developed from 2015

Program of CBDRM Workshops

	Contents
1 st	<ul style="list-style-type: none"> ▪ Basic Knowledge of disaster and disaster in Ayeyarwaddy region ▪ Introduction of CBDRM activities
2 nd	<ul style="list-style-type: none"> ▪ Participatory community risk assessment ▪ Participatory disaster risk management planning
3 rd	<ul style="list-style-type: none"> ▪ Preparation of the evacuation exercise ▪ Community-based infrastructure planning
4 th	<ul style="list-style-type: none"> ▪ Training for evacuation exercise (First Aid, SAR, food aid) ▪ Evacuation exercise ▪ Evaluation of evacuation exercise
5 th	

2nd Pilot Region/State

- Rakhine State will be 2nd pilot state.
- The activities of Rakhine state will start in February 2014.
- Security condition will be monitored.

Meeting Record (1)

Name of Meeting	Date	Place	Contents	Remarks
Kickoff meeting	12 Mar	NPT	Discussion of the Inception report	ICR was accepted by JCC meeting
PIC Meeting	26 Jul	NPT	Selection of Pilot village Communication equipment Tidal gauge station	JICA team discussed with JICA HQ
PIC Meeting	29 Jul	PTN	Selection of Pilot village Communication equipment Tidal gauge station	

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4. Important Meeting

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Meeting Record (2)

Name of meeting	Date	Place	Contents	Remarks
PIC meeting	10 Oct	PTN	Progress of work	PIC in NPT was done RRD and DMH separately.
PIC meeting	31 Oct	NPT	Discussion of equipment, pilot village and activities	
PCI meeting	1 Nov	PTN	Discussion of equipment, pilot village and activities	
2 nd JCC meeting	14 Nov	NPT	Discussion of activities of 1 st year Approval of activities of 2 nd year	

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5. PDM

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Revision PDM

- Current PDM is agreed between Myanmar and Japanese sides on December 10th, 2012.
- Some of indicators and a term shall be determined by JCC.

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Project Design Matrix (PDM)

Overall Goal	Means of Verification		Important Assumption
Project Purpose			
Outputs	Indicators		Pre-Condition
Activities	Inputs		

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Indicators

Output 2

More than x% of government agencies related to disaster management participates in training/drill on early warning system for natural disaster organized by the project

Output3

More than x% of communities in the pilot areas participate in training/drills of evacuation for community
Evacuation centers and routes in more than y% of the pilot areas are designed and informed more than Z% of the communities

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Change the Terms

- Myanmar Disaster Preparedness Agency (MDPA)



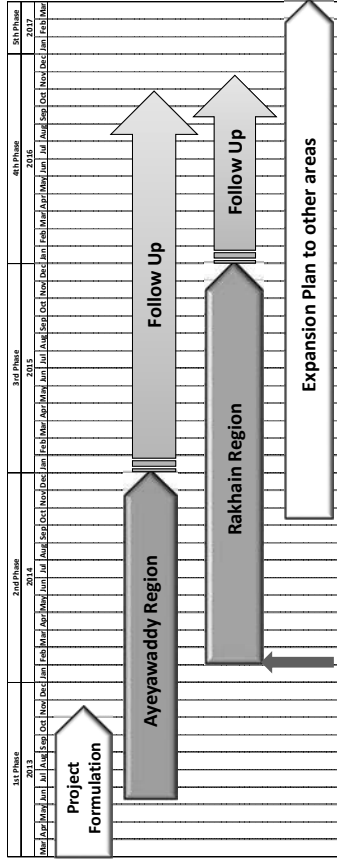
May 2013

- National Disaster Preparedness Central Committee
- National Disaster Preparedness Management Working Committee
- 10 sub-committee

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Schedule of Project

JICA Team will restart work in February 2014



Feb 2014

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6. Schedule

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Confirmation

- Selection of Pilot Community
Three villages
- Communication Equipment / System
List of equipment
Operation and maintenance
- Tidal Gauge Station in Haing Gyi Kyun
Installation of tidal gauge
Operation and maintenance
- 2nd year's activities

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7. Confirmation

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List of Initial Cost and O&M Cost for Early Warning Dissemination and Tide Gauge Station

Item	Contents	Initial Cost (equipment)				Initial Cost (except for equipment)				O&M Cost				Remarks			
		Unit Cost	Unit	Qty	Cost	Currency	Unit Cost	Unit	Qty	Cost	Currency	Unit Cost	Unit		Qty	Cost	Unit
1. Early Warning Dissemination																	
1. Backbone Communication Line	1.1 SSB Short Wave Radio System 8 Sets (GAD:5, RRD:3)	3,506	US\$/set	8	28,048	US\$											Electricity supply cost especially for village tract is necessary
		1,450	US\$/set	4	5,800	US\$	6,000	US\$/set	4	24,000	US\$	3,180	US\$/year	4	12,720	US\$/year	
	1,450	US\$/set	3	4,350	US\$						600	US\$/year	3	1,800	US\$/year		
						3,000	US\$/area	2	6,000	US\$	1,200	US\$/year	2	2,400	US\$/year		
2. Information Sharing at Each Level	2.1 Strengthening of Communication at NavPyITaw 3 Sets (GAD, RRD, DMH) 2.2 Strengthening of Communication at Pahtein and Labtta 2 Areas (Pahtein, Labutta)			-			20,000	US\$/set	1	20,000	US\$	5,000	US\$/time	2	10,000	US\$/year	2 times/year (in case of failure)
		10,553	US\$/set	1	10,553	US\$											
3. Communication with Media (Optical Fiber)	1) Installation of Optical Fiber Cable 2) Media Converter	404	US\$/set	6	2,422	US\$						600	US\$/year	6	3,600	US\$/year	
		2,799	US\$/set	6	16,791	US\$											
2. Tide Gauge Station																	
1. Tide Gauge Station	1.1 Installation 1.2 O&M	88,423	US\$/set	1	88,423	US\$	25,000	US\$/set	1	25,000	US\$						Electricity supply cost is necessary
Total					156,387	US\$				51,000	US\$						
Total (with 15% for setup)					15,649,694	Yen				5,103,570	Yen						
					179,846	US\$				75,000	US\$						
					17,997,148	Yen				7,505,250	Yen						

Equipment List

1 US\$ = 1090 kyat

1 US\$ = 100.07 yen

1. Early Warning Dissemination System

No.	Name of Equipment	Currency	Q'ty	Unit Price	Total	US\$
1	Backbone Communication Line					
1.1	SSB Shortwave Radio System					
	Immovable HF Radio (IC-7000)	JPY	8	176,400	1,411,200	14,102
	Outdoor Antenna (1/2 wavelength dipole)	JPY	8	41,700	333,600	3,334
	Outdoor Coaxial Cable (30m length)	JPY	8	6,600	52,800	528
	Stabilized DC power supply	JPY	8	26,040	208,320	2,082
	Solar power generation system	JPY	1	500,000	500,000	4,997
	15% for import					3,007
	Total					28,048
1.2	Satellite Communication System					
1)	IPSTAR Satellite Equipment					
	Antenna					
	ANT Mount					
	IDU(ATA)					
	ODU					
	Rental					
2)	Satellite Communication Device					
	Switch	USD	4	150	600	600
	IP Telephone/Fax	USD	4	300	1,200	1,200
	PC	USD	4	1,000	4,000	4,000
	Total					5,800
2	Information Sharing at Each Level					
2.1	Strengthening of Communication at NPT					
	Router	USD	3	150	450	450
	IP Telephone/Fax	USD	3	300	900	900
	PC	USD	3	1,000	3,000	3,000
	Total					4,350
3	Communication with Media					
3.1	Optical Fiber Network (DMH-MRTV)					
2)	Equipment for Media Converter (DMH)					
	7801 FR 1R Multi-Frame	JPY	1	242,000	242,000	2,418
	Redundance Power Supply for 7801 FR	JPY	1	87,000	87,000	869
	SD Elec to Opti	JPY	1	251,000	251,000	2,508
	(MRTV: ReBroadcast station)					
	7801 FR 1R Multi-Frame	JPY	1	242,000	242,000	2,418
	Redundance Power Supply for 7801 FR	JPY	1	87,000	87,000	869
	SD Opti to Elec	JPY	1	147,000	147,000	1,469
	Total					10,553
4	Communication with Village People					
4.1	MPT Mobile Phone Network					
	CDMA450 High gain antenna	kyat	6	80,000	480,000	440
	CDMA450 Immovable Phone	kyat	6	60,000	360,000	330
	CDMA450 Sim Card	kyat	6	300,000	1,800,000	1,651
	Total					2,422
4.2	Information Dissemination to Residents					
1)	Loud Speaker / Handy Speaker					
	Trumpet Speaker for outside installation	JPY	12	18,900	226,800	2,268
	Amplifier for Speaker	JPY	6	33,600	201,600	2,016
	Microphone	JPY	6	26,250	157,500	1,575
	Handy Speaker	JPY	6	18,900	113,400	1,134
	3m Pole	JPY	6	20,000	120,000	1,200
	Total					8,193
2)	Solar System Power Supply					
	Solar Panel (100w) with stand	JPY	6	60,000	360,000	3,600
	Solar Power contraller (Inverter)	JPY	6	80,000	480,000	4,800
	Battery (12V 120AH)	JPY	6	33,000	198,000	1,980
	Total					8,598
	Total					67,964
	Total (with 15% for setup)					78,159

Equipment List

1 US\$ = 1090 kyat

1 US\$ = 100.07 yen

2. Tide Gauge Station

No.	Name of Equipment	Currency	Q'ty	Unit Price	Total	US\$
1	Tide Gauge Station					
	Radiowave Tide Gauge (KRG-10)	JPY	1	1,080,000	1,080,000	10,792
	Data Logger (BL-5153)	JPY	1	990,000	990,000	9,893
	DCP Transmitter / Antena (GX-1.0J)	JPY	1	900,000	900,000	8,994
	Solar Power Generation System	JPY	1	1,800,000	1,800,000	17,987
	Installation Pole / Steel Case	JPY	1	1,620,000	1,620,000	16,189
	15% for import					9,578
	Supervisor from Japan	JPY	1	1,500,000	1,500,000	14,990
	Total					88,423
	Total					88,423
	Total (with 15% for setup)					101,687

Comparative Chart of Communication Method

Item	Tel/Fax	Mobile Phone	IP-SAT Ku—Band Satellite communications	IP-SAT C-Band Satellite communications	SSB Shortwave Radio System	VHF Radio System
Reliability	High	High - Medium	Medium	High	High - Medium	High
Initial cost	Low Cost: Network by MPT only terminal cost	Low Cost: Network by MPT	High Cost: USD 4,500/set	High Cost: USD 6,500/set	High - Medium Cost: USD3,000/set	Very High Cost: more than USD50,000
Maintenance cost /year	Low Cost: ** kyat/min (Call charge)	Low Cost: ** kyat/min (Call charge)	High Cost: USD 600 (Contract fee) 50 kyat/min (Call charge)	High Cost: USD 200 (Activation) USD 240x12months = USD2,880 (Dedicated, unlimited)	not necessary (Electricity supply is necessary)	not necessary (Electricity supply is necessary)
Installation	Installed by MPT	Installed by MPT	Installed by MPT Agent	Installed by MPT Agent	Installed by User	Installed by User / Construction work is necessary including relay station.
O&M	not necessary	not necessary	Operated by User / Maintenance support by MPT	Operated by User / Maintenance support by MPT	O&M by User / Training is necessary	O&M by User (Difficult) / Maintenance of high steel tower is necessary
Scalability	Easy	Easy	Easy but costly	Easy but constly	Medium (need technical know-how)	Difficult
Means of Transmission	Voice, Fax	Voice, Text	Voice, Fax, Data (192kbps)	Voice, Fax, Data (128kbps)	Voice	Voice
Merit	High Reliability / Easy / Low Cost (initial and O&M) / used as main line	Easy / Low Cost (initial and O&M)	used as main line	High reliability / used as main line	Low Cost (O&M) / used as support line	High reliability / used as support line
Demerit	unstable during emergency situaion due to congestion	unstable during emergency situation due to congestion / unstable at Ayeyarwaddy	unstable during heavy rainfall / High Cost (initial and O&M)	High Cost (initial and O&M)	noisy and unstable depending on state of space / need technical know-how	High Cost (initial and O&M) / need technical know-how

Minutes of Meeting
on
the 2nd JCC meeting
of
The Project on Establishment of End-to-End Early Warning System
For Natural Disaster
In the Republic of the Union of Myanmar
among
Relief and Resettlement Department,
Ministry of Social Welfare, Relief and Resettlement
and
Department of Meteorology and Hydrology,
Ministry of Transport
and
Japan International Cooperation Agency

Nay Pyi Taw, November 17, 2014



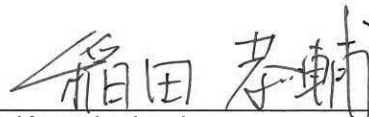
Mr. Soe Aung
Director General
Relief and Resettlement Department
(RRD)
Ministry of Social Welfare, Relief and
Resettlement



Mr. Ichiro Kobayashi
Chief Advisor
The Project on Establishment of
End-to-End Early Warning System for
Natural Disaster in the Republic of the
Union of Myanmar



Mr. Kyaw Moe Oo
Deputy Director General
Department of Meteorology and
Hydrology (DMH)
Ministry of Transport



Mr. Kyosuke Inada
Senior Representative
JICA Myanmar Office

On the occasion of concluding 2nd year's activities, Joint Coordination Committee (hereinafter called as JCC) of "the Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar" was held on November 17, 2014 at Amara Hotel in Nay Pyi Taw.

Relief and Resettlement Department (RRD) of the Ministry of Social Welfare, Relief and Resettlement, Department of Meteorology and Hydrology (DMH) of the Ministry of Transport, Japan International Cooperation Agency (JICA) and relevant parties of the Project joined JCC, chaired by Mr. Soe Aung, Director General of RRD and co-chaired by Mr. Kyaw Moe Oo, Deputy Director General of DMH, on 17 November 2014. The list of the participants is shown in Appendix 1.

It was followed by the explanation of the progress of the project by Mr. Yoshihiko Uchikura, Deputy Chief Advisor of the Project. Presentation file of the JCC is attached as Appendix 2.

All parties basically agreed to the JICA Expert Team's proposal for 3rd year's activities. The followings are the main points discussed and/or agreed in the meeting.

1. Progress of the 2nd year activity

JICA Expert Team reported progress of the Project to all participants, and Myanmar side confirmed its progress.

2. Selection of pilot area in Rakhine state

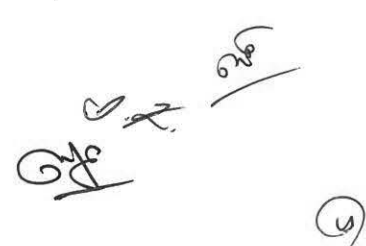
Following pilot villages of the Project were proposed by JICA Expert Team.

Department of Education inquired the reasons of selecting the pilot area. RRD and JICA Expert Team explained that the pilot area was selected from the point of security, accessibility, vulnerability, and existence of RRD and DMH offices.

RRD inquired the ethnicity of the pilot village tract and JICA Expert Team answered these are the villages of Rakhine Buddhist.

JICA Expert Team will conduct the CBDRM workshops in Thea Tan village and Kon Baung village at one time because of their adjacent locations.

- 1) Thea Tan Village, Thea Tan Village Tract, Kyauk Phyu Township
- 2) Kon Baung Village, Thea Tan Village Tract, Kyauk Phyu Township
- 3) Tan Kha Yoe Village, Thea Tan Village Tract, Kyauk Phyu Township
- 4) Let Nyot Ngon Village, Thea Tan Village Tract, Kyauk Phyu Township



3. Selection of communication and information equipment

JICA Expert Team proposed communication and information equipment for early warning to be installed in Rakhine state in the third year, and Myanmar side requested to install additional SSB in the DMH offices in Sittwe and Kyauk Phyu in Rakhine state, Pathein and Labutta in Ayeyarwaddy region for conducting project activities since the frequency of SSB for regular use of DMH is different. JICA Expert Team reported the request from a PIC member in Rakhine state that generator should be installed in village level as well as solar panel due to its unstable weather condition during rainy season. Both Myanmar side and Japanese side confirmed its necessity and JICA Expert Team will finalize the list of equipment in consultation with JICA Headquarter. Both side confirmed that installation fee of the equipment is covered by Japanese side and operation and maintenance cost of the equipment is covered by Myanmar side.

4. Submission of A4 Form

Japanese side requested Myanmar side to draft A4 form, which is the official request form for procuring the equipment in Rakhine state, by the end of November 2014. It is expected to be submitted to the Japanese government by the end of February 2015.

5. Installation of SSB

JICA Expert Team explained the progress of installing SSB in Ayeyarwaddy region and estimated that the installation will not complete by the end of November due to its prolonged process of procurement. JICA Expert Team will resume the installation from February 2015 after the commencement of the 3rd year activities.

6. Office space for the Expert Team

Japanese side requested office space for JICA Expert Team in Nay Pyi Taw, Sittwe and Kyauk Phyu. DMH agreed to provide temporary office space in Rakhine state, and to arrange the space in Nay Pyi Taw.

7. Amendment of Project Design Matrix(PDM)

Japanese side proposed to amend the indicators of PDM to be in line with the current activities. Regarding to its explanation, JICA Myanmar office inquired the following three points about the indicator of overall goal:

1. Clarification of the coverage area of the indicator; whether to include some border areas which are politically unstable

2. Definition of introduction of the improved early warning system
3. Clarification of the scope of the works of HRD and CBDRM to be conducted during follow up period of the Project and to be conducted after the Project

JICA Expert Team clarified that definition of introduction is to show the methodology which was implemented in the pilot state/region. JICA Expert Team added the explanation that the follow up activities are designed to verify the effectiveness of the model proposed by the Project.

Myanmar side recognized the necessity to expand the proposed model by the Project to other areas and showed their intentions to conduct the activities by their own initiatives. Myanmar side will seek the funding from donors and parliament to secure the budget.

The amended PDM is shown in Appendix 3. Both sides will continue to review and amend the PDM during the Mid-term Review which is planned to be implemented in May 2015.

8. Tsunami early warning

After being informed the time for information dissemination from national level to village level Myanmar side recognized necessity to improve tsunami warning and dissemination to the public. Japanese side understood the concern and will provide trainings for improving tsunami early warning.

9. Next JCC

Japanese side and Myanmar side confirmed to hold the next JCC either 27th or 28th of May 2015, or 3rd or 4th of June 2015. The main topic of the next JCC is to report the result of Mid-term Review of the Project and to reach an agreement with the amended PDM in result of the Mid-term Review.

End

List of Participants

Myanmar Side

Relief and Resettlement Department

Mr. Soe Aung	Director General
Mr. Aung Khaing	Deputy Director General
Mr. Thurein Tun	Assistant Director
Ms. HOUNG HLEE	LD
Ms. Ni Ni Win	LD
Ms. Tin Tin Myat	Staff Officer

Department of Meteorology Hydrology

Mr. Kyaw Moe Oo	Deputy Director General
Ms. Nyein Nyein Naing	Assistant Director
Mr. Aung Yin	Assistant Director
Dr. Yin Myo Min Htwe	Assistant Director
Ms. Pa Pa Tun	Staff Officer

General Administration Department

Mr. Thein Htike	Management
-----------------	------------

Myanmar Radio and Television

Mr. Kyaw Naing	Assistant Director
----------------	--------------------

Information and Public Relations Department

Mr. Aung Ngwe	Deputy Director
---------------	-----------------

Myanmar Posts and Telecommunications

Ms. Myat Thandar Win	Assistant Manager
----------------------	-------------------

Myanmar Fire Services Department

Mr. Hla Myo	Staff Officer
-------------	---------------

Department of Health

Mr. Nay Zar Maung	Staff Officer
-------------------	---------------

Japanese Side

JICA Myanmar Office

Mr. Kyosuke Inada

Senior Representative

Ms. Noriko Sakurai

PFA

Ms. Thet Thet Zaw

Secretary

The Expert Team

Mr. Ichiro Kobayashi

Chief Advisor

Mr. Yoshihiko Uchikura

Deputy Chief Advisor

Ms. Yoko Ota

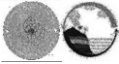
CBDRM

Mr. Masato Fujimoto

Project Coordinator

Ms. Ngwe Zin Hlaing

Project Assistant



Joint Coordinating Committee (JCC) Meeting

Report of 2nd Year Activity

November 17, 2014

Nay Pyi Taw

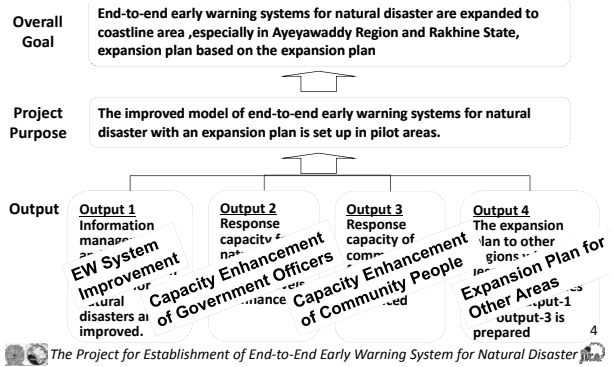
JICA Expert Team

Agenda

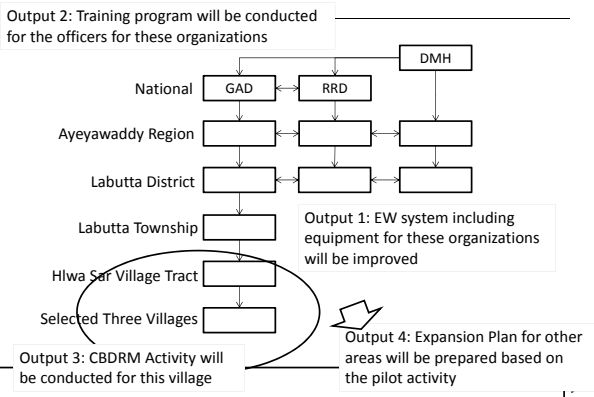
1. Summary of the Project
2. Report of 2nd Year Activity
3. Report of Information Transmission Exercise and Evacuation Drill

1. Summary of the Project

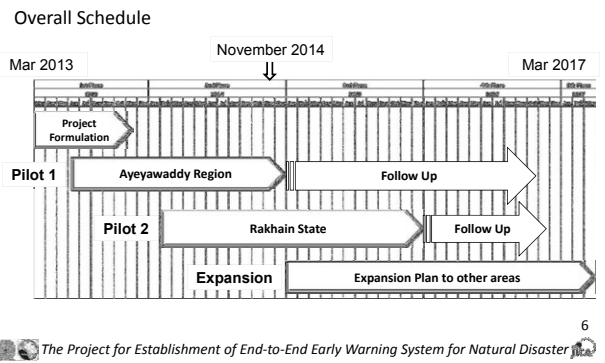
Project Purpose



Project Image (Pilot Activity → Expansion Plan)



Schedule of Project



2. Report of 2nd Year Activity

(Pilot Activity in Ayeyawaddy Region)

- Output1: Early Warning System Improvement
- Output2: HRD activity
- Output3: CBDRM activity
- Other Activity

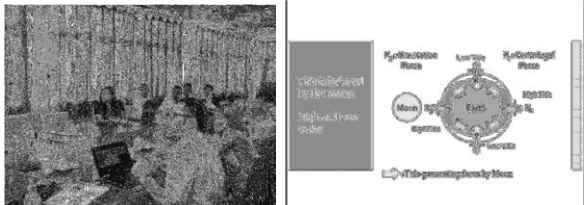
Output 1: Early Warning System Improvement

- 1) Improvement of Warning message
- 2) Installation of communication Equipment

1) Improvement of Warning message

Training for Tidal Analysis

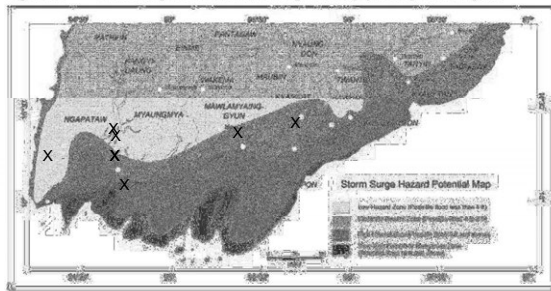
In order to improve the warning message for storm surge, basic trainings on tidal analysis have been conducted for DMH officers.



The Project for Establishment of End-to-End Early Warning System for Natural Disaster

1) Improvement of Warning message

Figure 26 Storm Surge Hazard Potential Map of the Ayeyarwady Delta Region***

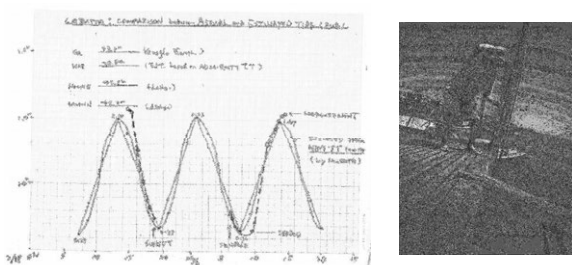


*** Map (version 1.2; 2008) by Myanmar Engineering Society; township boundaries are displayed for disaster management purpose X: Target Points

The Project for Establishment of End-to-End Early Warning System for Natural Disaster

1) Improvement of Warning message

Verification of Suggested Estimation Method of Tide Level



The Project for Establishment of End-to-End Early Warning System for Natural Disaster

1) Improvement of Warning message

Contents of Cyclone, Storm surge, Heavy Rain, Tsunami warning were discussed by Mr. Akatsu (JICA Advisor) and DMH HQs.

Proposed points

- Chart information (Cyclone tracking, storm area etc.)
- District wise caution level
- The concrete action to be taken by public



Discussion about warning message at DMH HQs from July 1st - 9th

The Project for Establishment of End-to-End Early Warning System for Natural Disaster

1) Improvement of Warning message

Proposed Storm Warning to Modify

The Project for Establishment of End-to-End Early Warning System for Natural Disaster

1) Improvement of Warning message

Movement and Storm wind area	At the time of early formation of 2nd stage, 300 "kmph" into a direction to ... with the speed of 20 mph. ...
Landfall point (Where, When)	At the time of approach of 2nd stage, it is expected to be landfall on ...
Storm wind area (How)	When, English storm ... with near 30 mph. ...
Squally weather for Affect Coast	Specific, frequent squalls with rough seas will be experienced in ...
Storm Surge	The probable maximum storm surge is about 1.2-1.4 feet at the ...
General caution	It is advised to take caution ...
Advisory	It is advised to take caution ...

The Project for Establishment of End-to-End Early Warning System for Natural Disaster

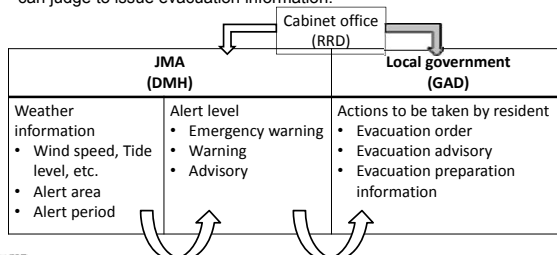
1) Improvement of Warning message

Proposed Heavy Rainfall Warning to Modify

The Project for Establishment of End-to-End Early Warning System for Natural Disaster

1) Improvement of Warning message

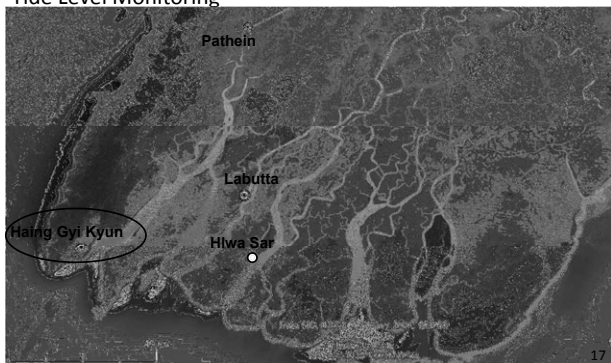
- Role of DHM ⇒ Clarification of alert level
 - Role of GAD ⇒ Clarification of actions to be taken
 - Role of RRD ⇒ Clarification of actions to be taken
- It is necessary for DMH and RRD to define the alert level by which GAD can judge to issue evacuation information.



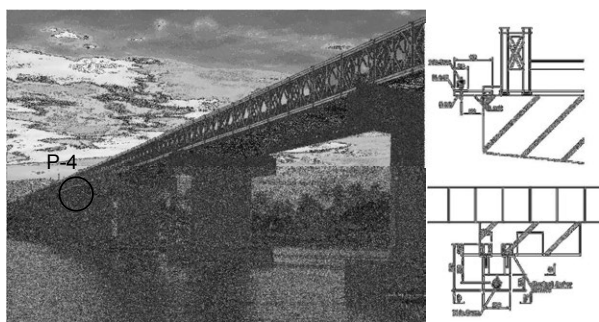
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1) Improvement of Warning message

Tide Level Monitoring



Tide Gauge

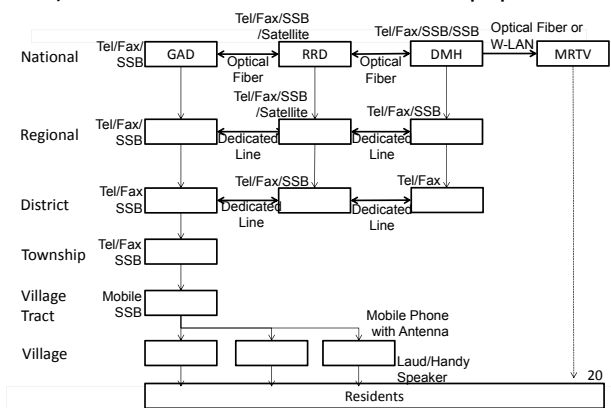


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Tide Gauge



2) Installation of communication Equipment

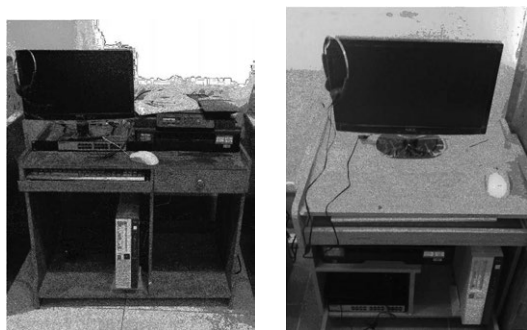


Satellite Communication (RRD)



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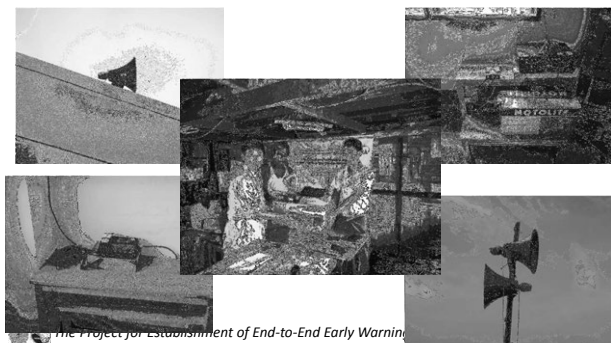
Optical Fiber Network (NPT)



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Village Level Communication

Loud/Handy Speaker , CDMA Telephone for village



The Project for Establishment of End-to-End Early Warning System for Natural Disaster

SSB

- Equipment will be imported soon.
- Installation will be conducted together with DMH.
- Due to the limitation of the contract period (Japanese side), installation (this year) can be done by the end of November. Installation will be continued next year (from February).

The Project for Establishment of End-to-End Early Warning System for Natural Disaster

Horizontal Communication (PTN, LBT)

- There is no service of “Dedicated Line” for the telephone line by MPT.
- Possibility to introduce the transceivers for the horizontal communication is being studied.

25

DMH-MRTV Network

- DMH has discussed on the system with MPT and MRTV.
- JICA Team has received the proposal and comments on the system from Myanmar side.
- Now, Japanese side is under consideration.

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Output 2: Capacity Enhancement of Government Officers (HRD Activity)

- 1) Outline of HRD Activity
- 2) Schedule of HRD Activity
- 3) Report of HRD Activity
- 4) Output of HRD Activity

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1) Outline of the Activities

Human Resource Development (HRD) Activities

- Capacity Enhancement of officers from National Gov., Ayeyarwaddy Regional Gov. and Pilot Area on Early Warning System
- Human Resources Development on DRM at Ayeyarwaddy Regional level.



1. On the Job Training of Working Group Members
2. HRD Seminar
3. Information Transmission Exercise

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1) Outline of the Activities

Member of Working Group in Ayeyarwaddy Region

- | | |
|-------------------------|-----------------------|
| RRD | GAD |
| • Ms. Win Da Da Kyaw | • Ms. Myat Myat Khine |
| • Mr. Han Lin Htut | • Mr. Kyaw Thet Htoo |
| • Mr. Kyaw Kyaw Win San | • Mr. Soe Myat Thu |
| • Ms. Htay Myat Mon | |
| DMH | |
| • Mr. Tin Maung Yi | |
| • Mr. Aung Myint Kyi | |
| • Mr. Than Htike Ko | |

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1) Outline of the Activities

Activities of Working Group

- Establish / operate Early Warning System
- Prepare manual / HRD materials for EWS
- Implement HRD seminar / exercise
- Discussion on expansion (promotion) plan

Schedule

- Every 2 months (Kick off: 18 March 2014)

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2) Schedule of HRD Activity

2014	Working Group	Events	Outputs
February			
March	Preparation of Early Warning Manual	● 1 st WG Meeting (Mar 18)	
April			
May	Preparation HRD Program	● 2 nd WG Meeting (May 6)	
June			
July		● 3 rd WG Meeting ● HRD Seminar (Patheingyi)	● Early Warning Manual ● HRD Materials
August	Preparation of Exercise		
September		● 4 th WG Meeting	
October	Discussion on Expansion Plan	● HRD Seminar (Nay Pyi Taw) ● Exercise	● Exercise Materials
November			● Expansion Plan (Concept)

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2) Report of HRD Activity

1st Working Group Meeting (March 18)

Proposal to HRD materials (IEC materials)

- As a teaching materials of DRM education
- To acquire knowledge of disaster (Cyclone, Strom surge, Tsunami, etc)
- For government officers and community



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3) Report of HRD Activity

Suggested Contents of Information, Education and Communication (IEC) Materials

- Video files on recent disasters
- Animation of disaster mechanism
- Interview record on disaster experience
- Lessons learned from recent disasters



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3) Report of HRD Activity

2nd Working Group Meeting (May 6)

Proposal to EW manual

- To enhance Dissemination & Communication
- To enhance Response Capability
- For government officers

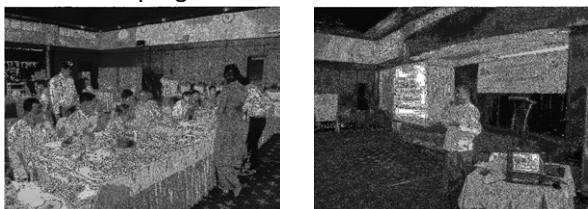


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3) Report of HRD Activity

3rd Working Group Meeting (July 22)

- Finalization of EW manual
- Rehearsal of presentation of HRD program on EW

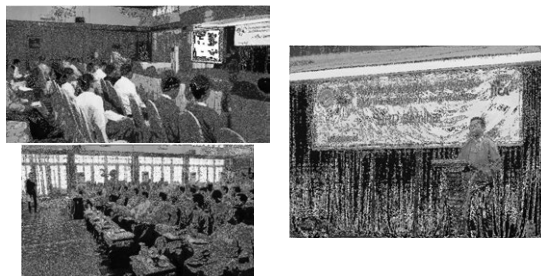


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3) Report of HRD Activity

HRD Seminar in Pathein (July 24)

- Proposal of HRD Program on EW

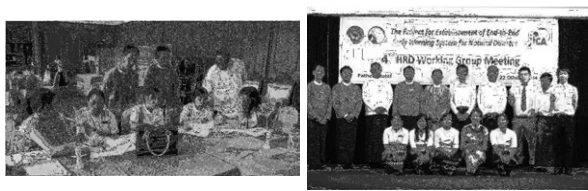


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3) Report of HRD Activity

4th Working Group Meeting (Oct 22)

- Preparation for Information Transmission Exercise



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3) Report of HRD Activity

HRD Seminar in Nay Pyi Taw (Oct 27)

- Introduction of HRD Program on Early Warning
- Preparation for Information Transmission Exercise



The Project for Establishment of End-to-End Early Warning System for Natural Disaster

3) Report of HRD Activity

Information Transmission Exercise and Evacuation Drill (Oct 30)

Information	DMH (NPT)	Village	Time
Yellow	9:00	9:40	0:40
Orange	9:35	10:03	0:28
Red	10:05	10:54	0:49
Brown	10:35	11:34	0:59
Green	10:55	12:03	1:08

Information	Village	RRD (NPT) GAD (NPT)	Time
No. of Evacuees	12:02	13:03 12:47	1:01 0:45

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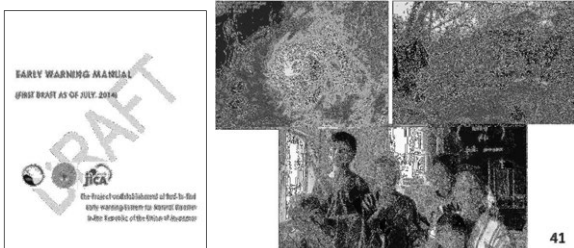
3) Report of HRD Activity



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4) Output of HRD Activity

- HRD Program
- Early Warning Manual (Ayeyarwaddy)
- Exercise Material



The Project for Establishment of End-to-End Early Warning System for Natural Disaster

Output 3: Capacity Enhancement of Community People

- 1) Outline of CBDRM Activities
- 2) Schedule of CBDRM Activities
- 3) Report of CBDRM Activities
- 4) Output of CBDRM Activities

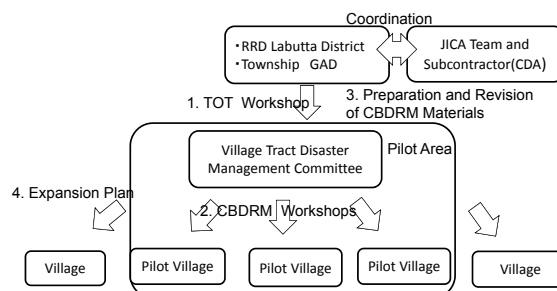
The Project for Establishment of End-to-End Early Warning System for Natural Disaster

1) Outline of CBDRM Activities (1)

- **Goal**
 - To enhance the capacity of dissemination of the early warning and response to the disaster in the pilot villages
 - To develop expansion plan to other villages in pilot area by creating the model of TOT and CBDRM activities
- **Project Activities**
 1. TOT Workshop for Village Tract Disaster Management Committee
 2. CBDRM Workshops for pilot villages (5 times × 3villages)
 3. Preparation and revision CBDRM Material for TOT and CBDRM workshops
 4. Development of expansion plan

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1) Outline of CBDRM Activities (2)



The Project for Establishment of End-to-End Early Warning System for Natural Disaster

2) Schedule of CBDRM Activities

2014	Overall schedule	Pilot Villages
Feb.		
Mar.	★ TOT Workshop CBDRM Workshops	CBDRM WS for 1 st Village
Apr.		
May		
Jun.		CBDRM WS for 2 nd & 3 rd Village (Once a month)
Jul.		
Aug.		Community Activity based on DRM plan
Sep.	Information Transmission	
Oct.	★ Exercise/Study visit	
Nov.	Present	

*Expansion and Dissemination plan will be developed from 2015

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3)Report of TOT Workshop (1)

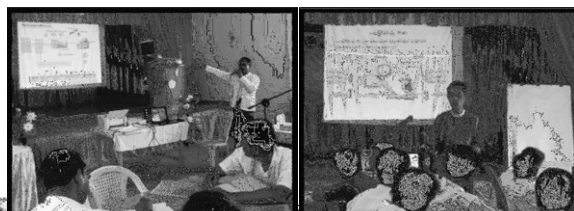
- Date: March 5-7 (3days)
- Place: Labutta Township
- Target: Village Tract Disaster Management Committee (VTDMC) members → Facilitator of CBDRM

	Main Contents
1 st day	• Basic knowledge of disaster and disaster in Ayeyarwaddy region • Outline of CBDRM
2 nd day	• Participatory disaster management planning (evacuation plan etc.)
3 rd day	• Evacuation exercise • First Aid and Search and Rescue

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3)Report of TOT Workshop (2)

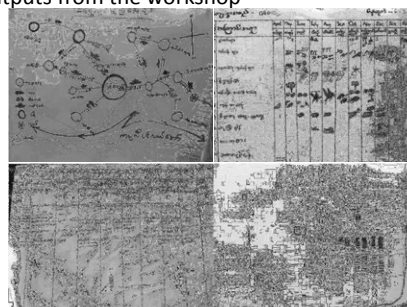
- RRD, DMH, and GAD from Labutta district provided lecture to the VTDMC and village leaders from disaster prone areas
- Township GAD and Labutta District RRD officers participated in the WS



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3) Report of TOT Workshop (3)

Outputs from the workshop



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3) Report of 1st and 2nd CBDRM WS (1)

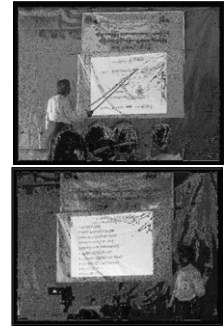
- Date: March 13-14, July 12-13, July 16-17 (2 days)
- Place: Each three village
- Target: Villagers from pilot villages

Main Contents	
1 st	<ul style="list-style-type: none"> • Basic Knowledge of disaster and disaster in Ayeyarwaddy region • Introduction of CBDRM activities
2 nd	<ul style="list-style-type: none"> • Participatory community risk assessment • Participatory disaster risk management planning

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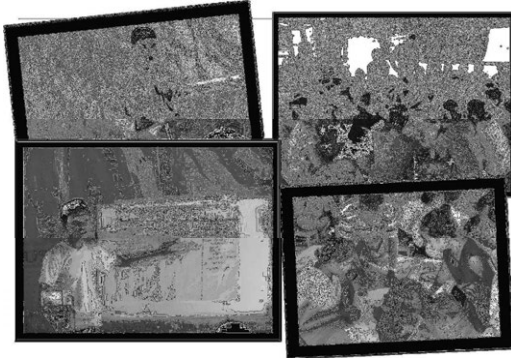
3) Report of 1st and 2nd CBDRM WS (2)

- Three facilitator from VTDPDC made presentations in the workshop
- Through participatory workshops, villagers prepared base of community disaster management plan
- RRD Labutta district and GAD Labutta and Pinsalu sub township officer observed the workshop



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3) Photos from CBDRM WS (1st day) (3)



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3) CBDRM Workshop(2nd day) (4)



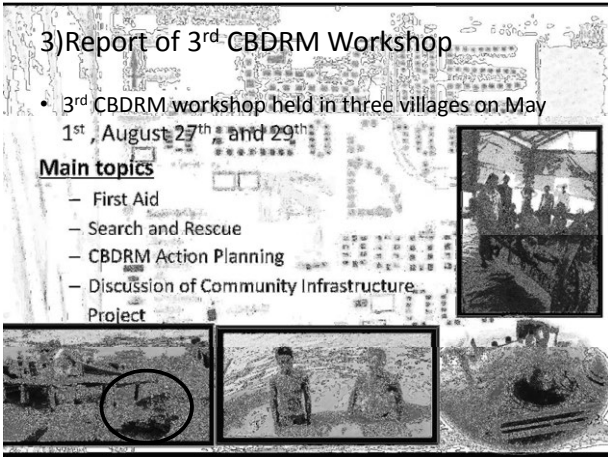
52

3) Report of 3rd CBDRM Workshop

- 3rd CBDRM workshop held in three villages on May 1st, August 27th and 29th

Main topics

- First Aid
- Search and Rescue
- CBDRM Action Planning
- Discussion of Community Infrastructure Project



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3) Report of 4th and 5th CBDRM workshop (1)

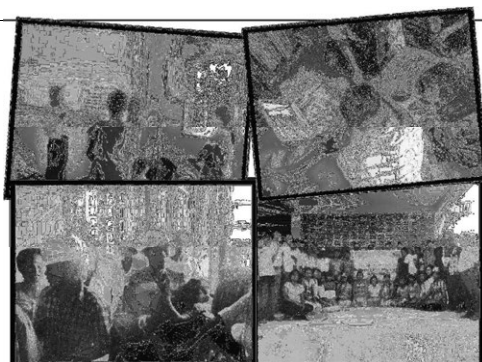
- 4th Workshop –Held in May 22nd October 16th, 18th 2014

Main topic: Preparation of Community Evacuation Drill

- Forming Teams for Community Evacuation Drill
- Discussion for Evacuation Plan
- Implementation of Community Infrastructure Project

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3) Photos from 4th Workshop (2)



55

3) Progress of CBDRM Activities

Report of 5th CBDRM workshop

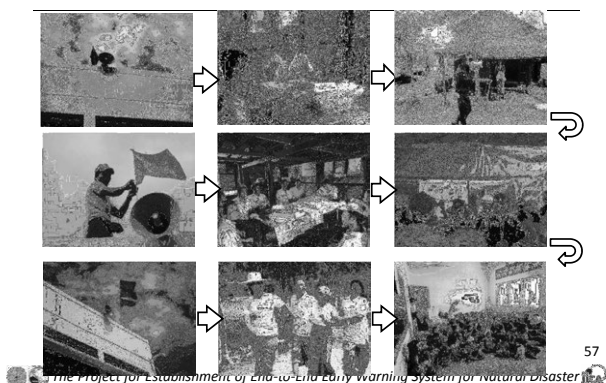
- 5th Workshop on June 2nd and October 30th, 2014

Main topic: Community Evacuation Drill

- Village-level evacuation drill
- Evaluation of the drill
- Revision of action plan/evacuation plan

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3) Progress of CBDRM Activities



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4) Output of CBDRM Activities

Community Disaster Management Planning

- With combining the result of workshop and discussion with villagers, JICA Expert Team is preparing village disaster management plan

Contents (Extracted)

- Village profile
- Village action plan
- Evacuation plan
- Disaster management committee



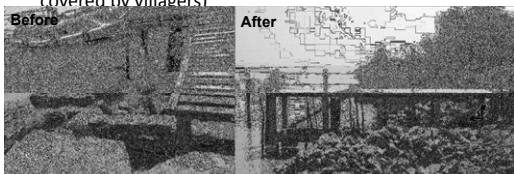
58

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4) Output of CBDRM Activities

Community Infrastructure Project

- Villagers developed action plan for DRM and the community infrastructure project in three village
 - Period : May- August, 2014
 - Cost: 5 million Kyat will be funded by JICA and rest will be covered by villagers)



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Other Activities

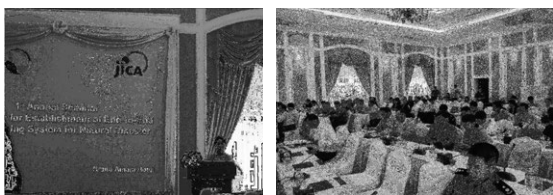
- 1) Annual Seminar
- 2) Counterpart Training Program in Japan
- 3) Meeting Record

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1) Annual Seminar

Annual seminar was successfully conducted on 8th July 2014 at Grand Amara Hotel in Nay Pyi Taw with 100 participants.



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2) Counterpart Training Program in Japan



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3) Meeting Record

Name of Meeting	Date	Place	Contents	Remarks
PIC Meeting	24 Feb	NPT	Procurement of the equipment	MM signed
PIC Meeting	26 Feb	STW	Selection of counterpart in Rakhine state	
PIC Meeting	19 Mar	PTN	Discussion of HRD, CBDRM activity in Ayeyarwaddy	
PIC Meeting	20 May	PTN	Discussion of Annual Seminar, HRD Seminar, C/P Training in Japan	
PIC Meeting	27 May	NPT	Procurement of the equipment, Discussion of Annual Seminar, C/P Training in Japan	

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3) Meeting Record

Name of Meeting	Date	Place	Contents	Remarks
PIC Meeting	23 Jul	PTN	Overall Progress of the Project, HRD, CBDRM activity in Ayeyarwaddy	
PIC Meeting	28 Jul	NPT	Procurement of the equipment	MM signed
PIC Meeting	4 Aug	STW	Overall Progress of the Project, Selection of Pilot Villages in Rakhine State	

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3. Report of Information Transmission Exercise and Evacuation Drill

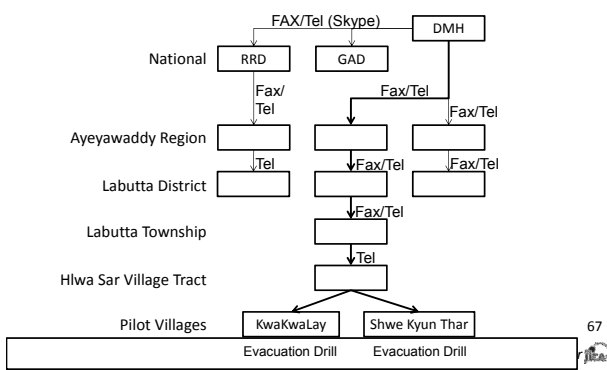
Scenario of Exercise

Date: October 30, 2014

Disaster: Cyclone

Information	NPT	Village	
Yellow	9:15	⇒	10:00
Orange	9:35	⇒	10:20
Red	10:05	⇒	10:50
Brown	10:35	⇒	11:20
Evacuation Situation	12:15	⇐	11:30
Green	10:55	⇒	11:40

Information Flow (DMH=>Village)



Information Flow (Village=>RRD)

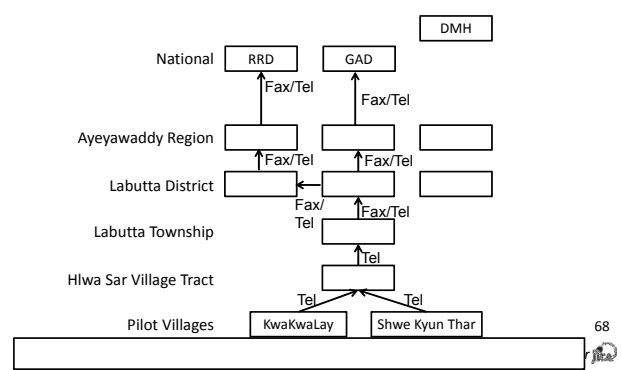


Photo of Exercise

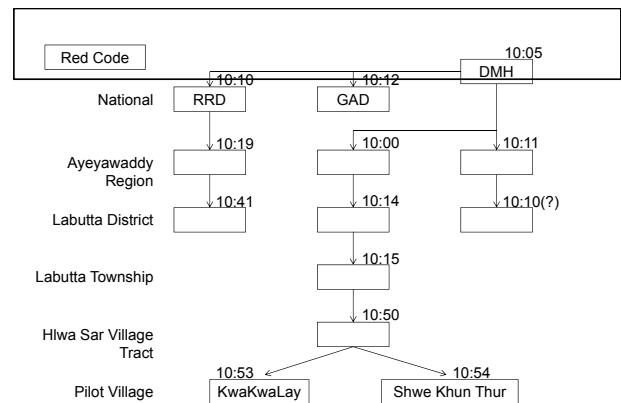
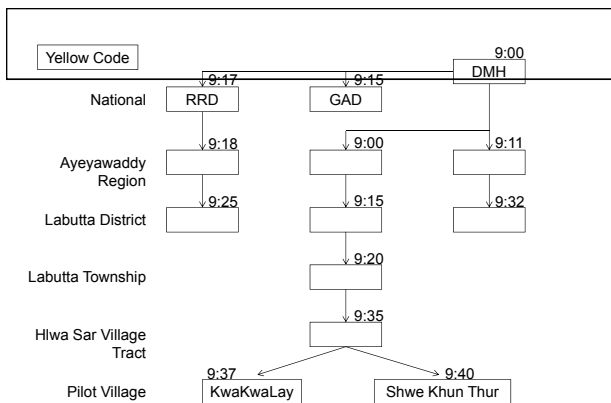


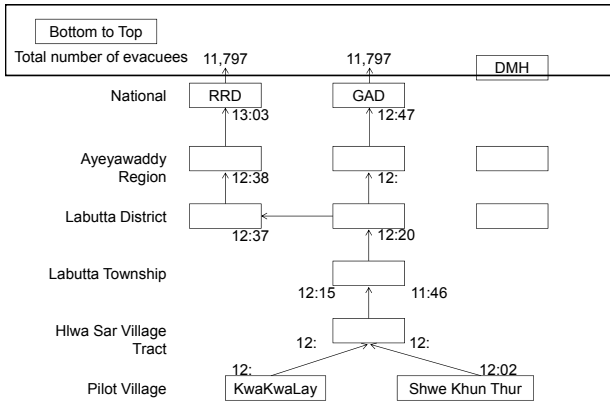
Result of the Exercise

Record of Time

Information	DMH (NPT)	Village	Time	
Yellow	9:00	⇒	9:40	0:40
Orange	9:35	⇒	10:03	0:28
Red	10:05	⇒	10:54	0:49
Brown	10:35	⇒	11:34	0:59
Green	10:55	⇒	12:03	1:08

Information	Village	RRD (NPT)	GAD (NPT)	Time
No. of Evacuees	12:02	⇒	13:03	1:01
			12:47	0:45





Result of Exercise

Finding (Unexpected Condition)

- Blackout at Nay Pyi Taw
 - GAD has a power supply.
 - DMH used other fax in other building with generator.
 - RRD used only telephone and mobile phone.
- No GSM connection at Pathein and Labutta
 - Telephone, FAX and CDMA were used.
- FAX problem at Labutta District GAD
 - FAX at other agency was used.

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Result of Exercise

Finding (Positive Evaluation)

- Understanding of the objectives of exercise
 - Smooth information transmission
 - Utilization of Send/Receive format
 - Same number of evacuees (record by GAD and RRD)
- Flexible actions for information transmission
 - Utilization of alternative ways for communication
- Observation from NPT and Pathein
 - Officers from DMH NPT and RRD Pathein observed the exercise at village level.

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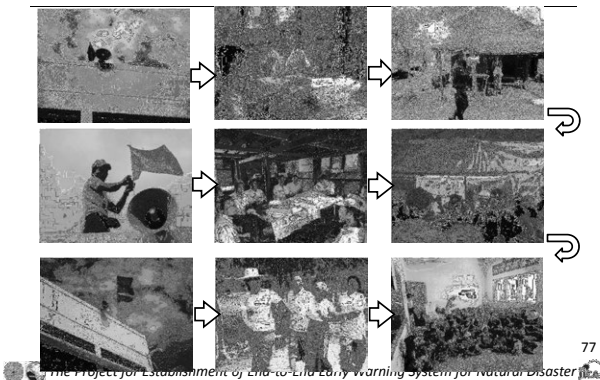
Result of Exercise

Finding (for Discussion)

- Warning messages to be disseminated
 - Necessity to transmit the "same" message by telephone
 - Only "Color Code" from Township to Village Tract
 - Contents of message from DMH
- Alternative ways for communication (Redundancy)
 - Not ready to use "Skype" before exercise
 - Necessity of electricity (generator)
- For next exercise

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Evacuation Drill at Pilot Villages



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From Villages...



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Feedback from Villagers

- Involving students and children is good practice for next generation
- Search and rescue group should have list of disaster-vulnerable persons in advance
- Kwa Kwa Lay village is so long that 2 loud speaker from JICA could not cover all but utilizing existing speakers and phone, villagers could transmit the message
- In case of heavy rain, wind and thunder, sound of loud-speaker and phone will not be sufficient, so the village should have alternatives such as walkie-talkie

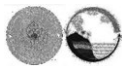
79

Observation from JICA Expert Team

- Good Points
 - Active participation from villagers (more than 250 villagers in each village)
 - Utilization of multiple ways of information transmission devices (phone, loud speakers, hand speakers)
- Points to be improved
 - Inefficient way of head counting evacuees
 - Misunderstanding of color message from village tract

Conducting drill is not the end of CBDRM, feedback and update the DM Plan is crucial!!!

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Joint Coordinating Committee (JCC) Meeting

Plan of 3rd Year Activity

November 17, 2014
Nay Pyi Taw

JICA Expert Team

1

Agenda

1. Plan of 3rd Year Activity
2. Revision of PDM
3. Schedule
4. Confirmation

2

1. Plan of 3rd Year Activity

(Pilot Activity in Ayeyarwaddy Region)

1.1 Follow up Activity

(Pilot Activity in Rakhine State)

1.2 Result of Survey

1.3 Implementation Plan

3

Activity in Ayeyarwaddy Region

1.1 Follow up Activity

- 1) O&M of installed equipment
- 2) HRD Activity
- 3) CBDRM Activity

4

1) Operation & Maintenance of Installed Equipment

- Installation of remaining SSBs
- Preparation of O&M manual of SSBs
- Monitoring of O&M of installed equipment
- Technical support for monitoring tide gage data at Haing Gyi Kyun

5

Support for Monitoring Tide Gauge Data

Daily work by DMH officers

- Check the tide data for last 24 hours at Sittwe and Mawlamyine
- Calculate the deviation from tide table
- Consider the reason for deviation
- O&M of tide gauge station at Haing Gyi Kyun

Support by Project

- Support for analysis of deviation at Sittwe and Mawlamyine
- Support for O&M of tide gauge station at HGK

6

2) HRD Activity

Policy of follow-up activity and expansion plan

- Activities to be disseminated (expanded) after / during the project:
 - Implementation of **HRD program** in other areas
 - Dissemination of **EW manuals** to other areas (incl. Implementation of **Information Transmission Exercise**)



- Follow-up activities shall be conducted in order to know **the effective measures and issues** to prepare the realistic expansion (dissemination) plan

7

2) HRD Activity

Follow-up Activities

- Improvement of HRD program and EW manual (by Project)
- Implementation of HRD program at the periodic meetings at each government level (by Counterpart)
- Implementation of HRD program at the existing training programs (by Counterpart)
- Implementation of Information Transmission Exercise (by Project)

8

2) HRD Activity

Detailed Plan of Follow up Activity (HRD Activity)

Activity	Location	Target	Responsibility	Expected Period
HRD Program	Periodical Meeting at Pathein	Officers from DRM related agencies at Regional level	RRD (Presented by WG Members)	February-May 2015
HRD Program	Periodical Meeting at Pathein	District / Township Administrators	GAD (Presented by WG Members)	February-May 2015
Information Transmission Exercise	(NPT-)Pathein-LabuttaD-T-HiwaSarVT	Without Evacuation Drill (for testing SSB)	RRD	May 2015
Information Transmission Exercise	NPT-Pathein-LabuttaD-T-HiwaSarVT-Villages	Including Evacuation Drill of CBDRM Activity	RRD / JICA Team with Rakhine State Activity	October 2015

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Schedule of Follow up Activity (HRD Activity)

2015	HRD Program	Information Transmission Exercise	Others
February	HRD Program at Pathein (for Regional officers) (for District / Township Administrators)	○ Information Transmission Exercise	Installation of SSB / Preparation of Manual
March			O&M of Equipment
April			Improvement of HRD Program / EW Manual
May			
June			
July			
August			
September			
October		○ Information Transmission Exercise	
November			Discussion on Expansion Plan

3) CBDRM Activity

Policy of follow-up activity and expansion plan

Goal of the follow-up activities is

- To develop a model to expand the output of the Project to outside pilot village and village tracts
- To redesign the program of CBDRM sustainable and affordable for Township and Village tract level



The findings of the activities will be utilized to develop expansion plan for CBDRM

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3) CBDRM Activity

Major findings from the experience of Ayeerwaddy region

- Importance of village tract to understand EW and evacuation activities of member villages
- Importance of the role of village administrator or 100 HH leader in terms of EW and evacuation
- Small number of VTDPD facilitator
- High motivation of VTDPD members and mutual assistance within villages

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3) CBDRM Activity

Pre-condition for the activities

- Budget constraint of RRD

	National	Ayeerwaddy Region
2009-2010	954 millions	
2010-2011	575 millions	
2011-2012	965 millions	
2012-2013	2912 millions	42.46 millions
2013-2014	1941 millions	43.12 millions

2012-2013	42.46 millions
2013-2014	43.12 millions

(39 Townships in Ayeerwaddy region, so, approx. 1 million kyat/ township)

- No budget for DRR in Township level
 - Disaster response cost will be reimbursed after occurrence of disaster
 - Township arranges DRR lectures to village tract administrators before cyclone season and dry season (for fire)

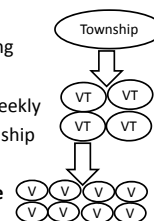
Need to conduct CBDRM within current budget for sustainability!

The Project for Establishment of End-to-End Early Warning System for Natural Disaster

3) CBDRM Activity

Follow up activities for expansion plan

- Workshop for TS officers about implementing CBDRM (By Project)
- TS instructs VT administrators during by-weekly village tract administrator meeting with township GAD (By Township)
- Village tract administrators instructs village administrators during regular village head meeting plus inviting additional leaders (By Village Tract)
- One village from Hlwa Zar village tract other than pilot villages conducts evacuation drill as a part of information transmission exercise (By Village Tract and Village)



The Project for Establishment of End-to-End Early Warning System for Natural Disaster

Schedule of Follow up Activity (CBDRM Activity)

2015	Township	Village tract	Village
February			
March	○ Workshop to instruct CBDRM to village tract		
April			
May		By weekly workshop to village tract level	By weekly workshop to village level
June			
July			
August			
September			
October		○ Village evacuation drill	
November			

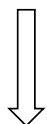
The Project for Establishment of End-to-End Early Warning System for Natural Disaster

Activity in Rakhine State

The Project for Establishment of End-to-End Early Warning System for Natural Disaster

Pilot Activity in Rakhine State

Surveys: Site Survey



- Baseline Survey
- Capacity Assessment Survey
- Interview Survey

Implementation Plan

- Output 1: Early Warning System Improvement
- Output 2: Capacity Enhancement of Government Officers
- Output 3: Capacity Enhancement of Community People
- Other Activities

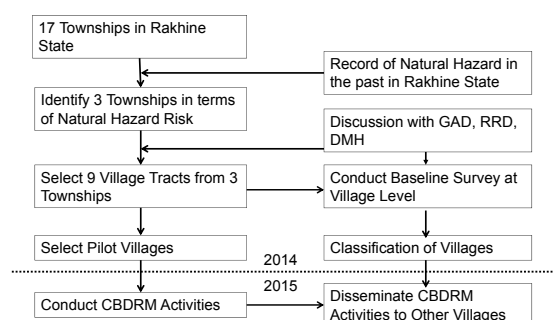
17

1.2 Result of Surveys

- 1) Baseline Survey
- 2) Capacity Assessment Survey

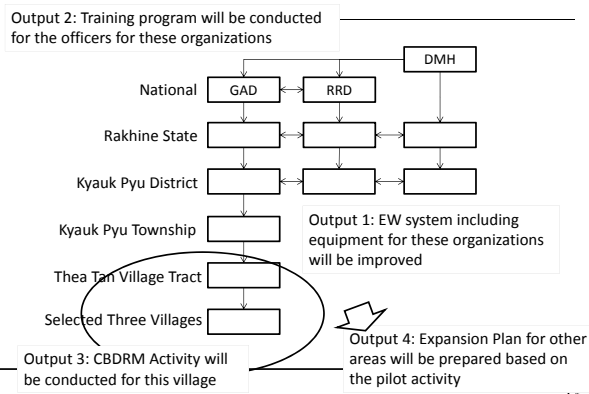
18

Selection Process of Pilot Area in Rakhine State



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Project Image (Pilot Activity → Expansion Plan)



Baseline Survey and Activities for Selection of Pilot Area in Rakhine State

2015	Overall schedule	Pilot Villages
Feb.		
Mar.	★ Kick off Meeting at Sittwe	Field trip to Sittwe, Pauktaw, Kyaupyu and Thandwe Townships
Apr.		
May	Meeting at Sittwe	Baseline Survey in Myebon, Kyaupyu and Thandwe Townships
Jun.		
Jul.		
Aug.	Meeting at Sittwe	Detailed Questionnaire Survey in selected 9 Village Tracts
Sep.		
Oct.		
Nov.	★ PIC, JCC Meeting	★ Selection of Pilot Villages

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Points of View to Select Pilot Area

- Security / Accessibility
- Existence of District Office of RRD and DMH
- Past record of Natural Disaster, including cyclone, storm surge, flood, tsunami & earthquake
- Discussion with officials of GAD, RRD, DMH and other relevant organizations
- Participation of village in DRR Activities after cyclone Giri
- Field visits by JICA team including CDA
- Socioeconomic condition
- Geographical characteristics

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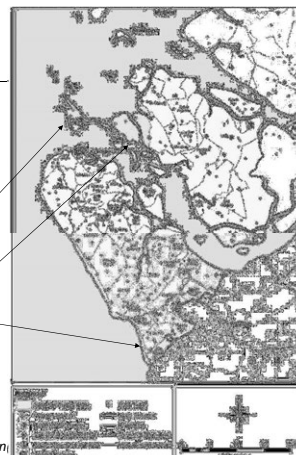
List of Village Tracts for Baseline Survey

District	Township	Village Tract	No. of Population	No. of Village
Kyaukpyu	Kyaukpyu	Thea Tan	1,010	4
		Thea Chaung	2,456	5
		Kin Myauk	1,473	7
Sittwe	Myebon	Ah Lei Kyun	835	1
		Kyet Yae Gyi	2,430	1
		Nga Man Ye Gyi	754	3
Thandwe	Thandwe	Sin Gaung	7,492	5
		Kha Maung Tone	1,879	3
		Zee Hpyu Kone	5,025	4

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Candidate Village Tracts in Kyaukpyu Township

Candidate village tract	Population	No. of Villages
Thea Tan	1,010	4
Thea Chaung	2,456	5
Kin Myauk	1,473	7

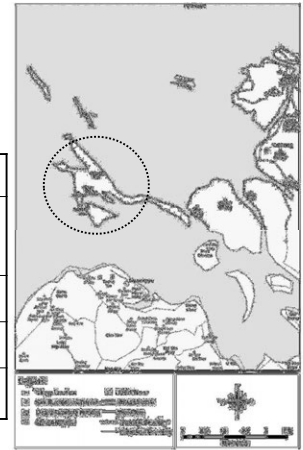


Criteria for selection of Pilot Village Tract

- **Typical disaster prone area in Rakhine state**, small islands in coastal area
- **Recommendation from local government (GAD)**
- Inactive Disaster Management Committee
- **No previous DRR activities by donors or NGOs**
- **Develop model for CBDRM activities with shelter**

Characteristics of Selected Villages for conducting CBDRM ACTIVITIES

Name of Village	Major Characteristics
Thea Tan	Main village in the village tract; cyclone shelter will be constructed by the Government
Kon Baung	Adjacent to Thea Tan village
Tan Kha Yoe	Widespread population Monastery is available
Let Nyot Ngon	Isolated island No evacuation facilities



3) Result of Capacity Assessment

- Capacity assessment was conducted in order to know the present capacity of target government officers and to prepare and implement human resources development activities on EWS.
- Target officers are listed in the next slide.
- The same questionnaire was used for all interviews.

Number of officers interviewed

Departments	No. of Officers	
Rakhine State	Officers of RRD and DMH	10
	Officers of member organizations of DM committee	5
Kyauk Pyu District	Officers of RRD, DMH and GAD	5
	Officers of member organizations of DM committee	5
Kyauk Pyu Township	Administrator and officers of township	2
	Officers of member organizations of DM committee	3
Thea Tan Village Tract	Administrator	1
	Members of DM committee	3
Village	Administrator, 100 households leader	6
Total		40

Basic Knowledge on DRM and EW

(No. of Interviewees)	State (15)	District (10)	Township (5)
RRD	8.0	6.5	-
DMH	7.3	6.0	-
GAD	6.3	9.0	7.0
Others	5.2	5.4	3.0

Averaged number of correct answers (total 10 questions)

Key Findings from Capacity Assessment

- RRD and DMH have more chances to participate in training programs on DRM.
- Number of years in current position is less than 10 years for most of the officers (except for DMH), and less than 2 years for GAD officers.
- There are not much equipment of DRM and EW.
- District and Township level have more awareness in their roles on DRM.
- Meetings on DRM are conducted at each level periodically and if necessary.

Key Challenges on EW

State Level

- Information Communication
- Transportation / Shelter for Evacuation
- Awareness of Community / Community Participation
- Coordination among agencies including NGOs

District Level

- Awareness of Community
- Training / Drill / IEC Material
- Information Communication

Key Challenges on EW

Township Level

- Information Communication
- Accurate and Immediate Information (People do not believe information and do not evacuate)
- Transportation for Evacuation
- Training / Drill
- Awareness of Community

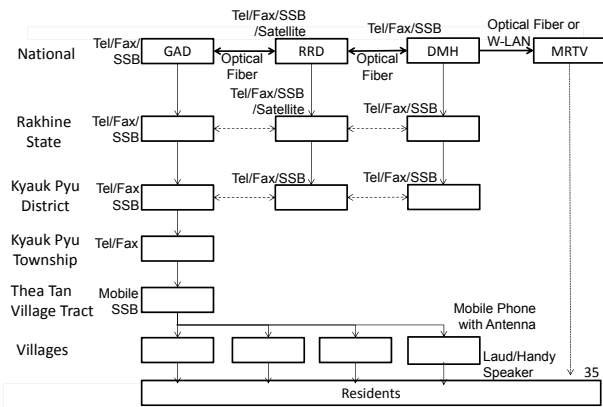
Output 1: Early Warning System Improvement

1) Equipment for Communication

1.2 Implementation Plan

- Output 1: Early Warning System Improvement
- Output 2: Capacity Enhancement of Government Officers
- Output 3: Capacity Enhancement of Community People
- Other Activities

1) Equipment for Communication



List of Equipment

- Equipment is purchased and installed by Japanese side (Initial cost is owned by Japanese side), and O & M cost is owned by Myanmar side
- Power supply has to be secured by Myanmar side.
- Although the solar system is installed for the equipment at village tract and village level, power supply has to be secured by Myanmar side especially during rainy season.
- **There was a request from PIC member in Rakhine State to provide generators to pilot villages to secure the electricity during rainy season. Fuel cost shall be owned by villagers.**

List of Equipment

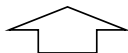
	Satellite	SSB	Information Sharing
RRD (STW)	IPSTAR contract/ PC/IP-Phone/Printer O/M cost	SSB Equipment	-
RRD (KYP)	-	SSB Equipment	-
DMH (STW)	-	-	-
DMH (KYP)	-	-	-
GAD (STW)	-	SSB Equipment	-
GAD (KYP District)	-	SSB Equipment	-
GAD (KYP Township)	-	-	-
Village Tract	-	SSB Equipment Solar System Electricity supply	-
4Villages	-	-	Mobile Phone Loud/Handy Speaker Solar System O/M cost Electricity supply
No. of Equipment	1 set	5 sets	7 sets

Output 2: Capacity Enhancement of Government Officers

- 1) Target of Human Resources Development (HRD) Activity
- 2) On the Job Training of Working Group Members
- 3) HRD Seminar
- 4) Information Transmission Exercise
- 5) Schedule

1) Target of Human Resources Development (HRD) Activity

- Capacity Enhancement of officers from Rakhine State Gov. and Pilot Area on Early Warning System
- Human Resources Development on DRM at Rakhine State level.



1. On the Job Training of Working Group Members
2. HRD Seminar
3. Information Transmission Exercise

2) OJT of Working Group Members

Member of Working Group (10 - 15 members)

- RRD: Sittwe, Kyauk Pyu District
- DMH: Sittwe, Kyauk Pyu District
- GAD: Sittwe, Kyauk Pyu District / Township
- Other officers

Concept

- OJT of officers to be in charge for DRM
- Work / discuss closely with JICA expert team
- Involve officers from national gov. agencies

Working Group Activities

Activities

- Discuss / improve / operate Early Warning System
- Prepare / improve EW Manual
- Improve warning message
- Install / familiarize communication equipment
- Prepare / improve HRD Program
- Implement HRD seminar / exercise
- Discuss / prepare expansion (promotion) plan

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3) HRD Seminar

General

- 2 seminars in July and October 2015
- Seminar at Sittwe: 30 participants
- Seminar at Kyauk Pyu: 30 participants

Contents

- HRD Program
- Mechanism of major disasters
- Lessons learned from past disaster experiences on EWS
- Early Warning Manual at Rakhine State
- Progress of activities at pilot area

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4) Information Transmission Exercise

General

- To evaluate validity of EWS / skills of officers on equipment and systems
- Scheduled in October 2014

Contents

- Exercise to transmit warning message issued by DMH Nay Pyi Taw to pilot community based on EW manual
- Evaluation meeting to improve EW system and its manual

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5) Schedule of HRD Activity

Month	Working Group	Events	Outputs
February			
March		1 st WG Meeting	
April	Discussion on HRD Program and EW Manual		
May		2 nd WG Meeting	
June	Installation of Equipment		
July		3 rd WG Meeting HRD Seminar (Sittwe)	Early Warning Manual HRD Materials
August	Preparation of Exercise		
September		4 th WG Meeting	
October	Dissemination Expansion Plan	HRD Seminar (Kyauk Pyu) Exercise	Exercise Materials
November			Expansion Plan

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Output 3: Capacity Enhancement of Community People

- 1) Goal and Activities on CBDRM
- 2) TOT Workshop
- 3) CBDRM Workshop
- 4) Schedule

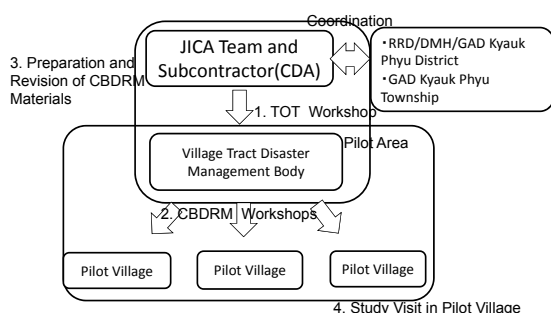
45

1) Goal and Activities of CBDRM Activity

- **Goal**
 - To enhance the capacity of dissemination of the early warning and response to the disaster in the pilot villages
 - To develop expansion plan to other villages in pilot area by creating the model of TOT and CBDRM activities
- **Project Activities**
 1. TOT Workshop for Village Tract Disaster Management Organization
 2. CBDRM Workshops for pilot villages (5 times × 3villages)
 3. Revision CBDRM Material for TOT and CBDRM workshops
 4. Development of expansion plan

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Design of CBDRM



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2) TOT Workshop

- Target: Village Tract Disaster Management Body (VTDMB) members → Facilitator of CBDRM

Program of TOT Workshop

	Main Contents
1 st day	• Basic knowledge of disaster and disaster in Rakhine State • Outline of CBDRM
2 nd day	• Participatory disaster management planning (evacuation plan etc.)
3 rd day	• Skills on CBDRM (First Aid, Search and Rescue)
4 th day	• Evacuation exercise • Mainstreaming of disaster management
5 th day	• Organizing workshop, facilitation skills

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3) CBDRM Workshops

- CBDRM workshops are designed to enhance the capacity of the resident on DRM
- Five times CBDRM workshops are conducted in each pilot village
- Target of CBDRM activities: 50 persons at each village



- Revision of CBDRM material
- Preparation of expansion plan

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Program of CBDRM Workshops

	Contents
1 st	• Basic Knowledge of disaster and disaster in Rakhine state • Introduction of CBDRM activities
2 nd	• Participatory community risk assessment • Participatory disaster risk management planning
3 rd	• Preparation of the evacuation exercise • Community-based infrastructure planning
4 th	• Training for evacuation exercise (First Aid, SAR, food aid)
5 th	• Evacuation exercise • Evaluation of evacuation exercise

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4) Schedule of CBDRM Activities

2015	Overall schedule	Pilot Villages
Feb.		
Mar.	★ TOT Workshop	CBDRM WS for 1 st Village
Apr.	CBDRM Workshops	(Once a month)
May		
Jun.		CBDRM WS for 2 nd & 3 rd Village
Jul.		(Once a month)
Aug.		
Sep.		Community Activity based on DRM plan
Oct.	★ Information Transmission	
Nov.	Exercise/Study visit	

*Expansion and Dissemination plan will be developed from 2015

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Other Activities

- Annual Seminar
 - July 2015 at NPT
 - Expecting 100 participants
- Counterpart Training Program in Japan
 - From end of August to September 2015 (two weeks)
 - About 12 people

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2. Revision of PDM

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Revision of PDM

- Current PDM is agreed between Myanmar and Japanese sides on December 10th, 2012.
- Some of indicators and a term shall be determined by JCC.
- PDM will be reviewed at the Mid Term Review, which will be conducted jointly by JICA and Myanmar side in May 2015.

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Project Design Matrix (PDM)

Overall Goal	Indicators	Means of Verification	Important Assumption
Project Purpose			
Outputs	Inputs	Pre-Condition	
Activities			

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Indicators to be defined

Overall Goal

Improved end-to-end early warning systems are introduced in x % of coastal lined areas, especially in Ayeyarwaddy Region and Rakhine State

Output 2

More than x % of government agencies related to disaster management participates in training/drill on early warning system for natural disaster organized by the project

Output 3

More than x % of communities in the pilot areas participate in training/drills of evacuation for community

Evacuation centers and routes in more than y % of the pilot areas are designed and informed more than z % of the communities

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Overall Goal

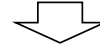
Improved end-to-end early warning systems are introduced in x % of coastal lined areas, especially in Ayeyarwaddy Region and Rakhine State



Improved end-to-end early warning systems are introduced to all coastal Regions/States

Output 2

More than x % of government agencies related to disaster management participates in training/drill on early warning system for natural disaster organized by the project



More than 80 % of government agencies related to disaster management participates in seminar/training/drill on early warning system for natural disaster organized by the project

Output 3 (1)

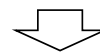
More than x % of communities in the pilot areas participate in training/drills of evacuation for community.



Villagers from all villages in the pilot village tract participate in training/evacuation drills

Output 3 (2)

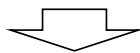
Evacuation centers and routes in more than y % of the pilot areas are designed and informed more than z % of the communities



Evacuation centers and routes of all the pilot villages are designated and presented to the villagers

Change the Term

- Myanmar Disaster Preparedness Agency (MDPA)



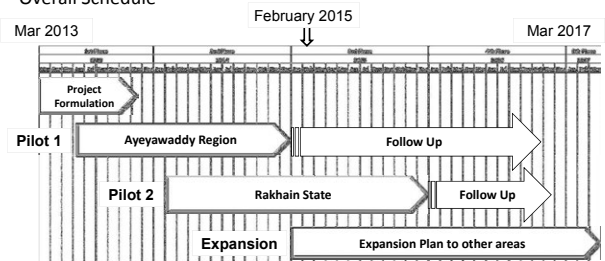
May 2013

- National Disaster Preparedness Central Committee (NDPCC)

3. Schedule

JICA Team will restart work in February 2015

Overall Schedule



4. Confirmation

- Report of 2nd Year Activity
- Plan of 3rd Year Activity
 - Follow up activity
 - Selection of Pilot Community in Rakhine State
 - Communication Equipment / System
 - HRD / CBDRM Activity
 - Other activity
- Revision of PDM
- **Next JCC will be held on 27 or 28 May 2015 or 3 or 4 June 2015.**

Necessary Arrangement

- Handover of equipment for Ayeyarwaddy Region
- Confirmation of Minutes of Meeting
- Request form of equipment for Rakhine State

Project Design Matrix (PDM1) November 17, 2014

Project Title: Project on Establishment of End-to-End Early Warning System for Natural Disaster
 Project Duration: (4 years) Project Site: Ayeeyawaddy Region and Rakhine State

Target Group: (1) Staff of RRD; (2) Staff of DMH;

(3) Local Disaster Management Committee members at each level (local government level, district level, township level and community level);
 (4) District, township officers where the pilot site is located; and (5) Community(ies) in the target area.

Narrative Summary		Objectively Verifiable Indicators	Means of Verification	Important Assumption
[Overall Goal] End-to-end early warning systems for natural disaster are expanded to coastal lined areas, especially in Ayeeyawaddy Region and Rakhine State, based on the expansion plan.			a. Data from NDDPC	
[Project Purpose] The improved model of end-to-end early warning systems for natural disaster with the expansion plan is set up in pilot areas.		a. Improved end-to-end early warning systems are introduced to all coastal Regions/States. a. Early warning is delivered surely to community in the pilot areas through more than two routes in a drill to be conducted before the Terminal Evaluation. b. Appropriate evacuation warning is delivered to community in the drill. c. The expansion plan to other regions is approved by NDDPC.	a. Drill report b. Record of JCC meetings	- Necessary budget of RRD for establishing the Early Warning System is secured. - Government policy on disaster management does not change significantly. - Employees who participated in trainings by the Project will continuously work for RRD and DMH.
[Outputs] 1. Information management and emergency communication system for natural disaster is improved.		a. Simultaneous information distribution system installed is confirmed to work normally. b. A model of information distribution system for community in a township or in a lower level areas is proposed. c. Improvement model of information distribution through mass media is proposed.	a-c Project documents	
2. Response capacity for natural disasters at various levels (central level including National Disaster Preparedness Central Committee (hereinafter referred to as "NDPCC"), local government level and township level) is enhanced.		a. More than 80% of government agencies related to disaster management participates in seminar/training/drill on early warning system for natural disaster organized by the project. b. Manuals for early warning system at various level are developed. a. Villagers from all villages in the pilot village tract participate in training/evacuation drills b. Evacuation centers and routes of all the pilot villages are designated and presented to the villagers c. More than two means of electricity generation at community level is proposed.	a. Training/drill reports b. Manuals a. Training reports b. Project documents c. Project documents	
3. Response capacity of community for natural disaster is enhanced.				
4. The expansion plan to other regions which include lessons learnt through activities under Output-1 to Output-3 is prepared.		a. The draft of expansion plan is proposed.	a. Expansion plan documents	
Activities				
<Output1> [1-1 Early warning information distribution through an administrative line is improved] 1-1-1 Identify the responsibilities and roles of each organization related with early warning dissemination in Myanmar and their problems. 1-1-2 Clarify appropriate mandates/responsibility for each organization related with early warning system in Myanmar based on the Activity 1-1-1. 1-1-3 Review the current weather forecast and early warning contents such as standards for issuing/clearing early warning, and identify the bottleneck. 1-1-4 Improve the current weather forecast and early warning contents such as standards for issuing/clearing early warning based on the Activity 1-1-3. 1-1-5 Make clear the early warning information distribution route for natural disaster to the members of NDPCC at various levels (central level, local government level, district level and township level) 1-1-6 Install a simultaneous information distribution system through the administrative line. [1-2. Information distribution system for community in a township or in a lower level areas is developed] 1-2-1 Select target township(s) and community(ies) as pilot project sites, village tracts and villages, in order to conduct the pilot project. 1-2-2 Provide communication facilities to the community(ies). 1-2-3 Consider or study the means of electricity generation at community level for securing the sustainability of early warning system for natural disaster. 1-2-4 Conduct drills on information distribution in pilot project sites. [1-3. Information distribution through mass media from DMH is improved] 1-3-1 Review the current information distribution system to community through mass media from DMH and the contents of information, and identify and improve the bottleneck. 1-3-2 Cooperates with a FM station which has been jointly established by the Government of Myanmar and private companies for early warning. 1-3-3 Prepares a certain line for broadcasting real-time disaster information, and assist DMH to make an agreement with TV station for information distribution.	[Japanese side] (1) Dispatch of Experts > Short-term Experts(6): -Chief Advisor/Disaster Management Structure -Early Warning System (EWS) Operation Planning -Wireless Communication System -Community-based Disaster Risk Management -Disaster Management Planning -Project Coordinator > Lecturer(s): -Disaster Management System of Local Government -Disaster Management System on Tsunami (2) Provision of equipment through the implementation of the Project. Following equipment are under consideration: -Early Warning system (SSB, Wireless LAN, I-com, speaker, etc.) -Tide gage -Solar panel (3) C/P Training in Japan including: -Comprehensive Disaster Management in Local Governments -Disaster Management in Local Governments -Community-Based Disaster Risk Management (4) Local cost shared by Japanese side - Costs for enlightenment programs and implementation of evacuation drills. - Costs for social surveys.	[Myanmar side] (1) Assignment of counterpart personnel(C/P) -Project Director -Co-Project Director -Project Manager -Regional Project Manager -Regional Project Coordinator -Necessary number of C/P (2) Office space and facilities for the Project -in the buildings of RRD in Nay Pyi Taw -in the buildings of DMH in Yangon -Regional Administration Office in target area (the detail will be decided after the Commencement of the Project.) (3) Expenses for conducting awareness program, emergency simulation exercises and evacuation drills (4) Provision of necessary data (5) Expenses for operation and maintenance of the Project office (6) Others, if any	Necessary budget for the Project is allocated without any significant delay. [Pre-condition] Political situation of Myanmar is stable.	
<Output2> 2-1 Identify needs of training based on activities through 1-1-1 to 1-1-4. 2-2 Conduct trainings on natural disaster and end-to-end early warning system, including a simulation exercise, for the staff of RRD and DMH from central government, and for the member of State/Region disaster management committee. 2-3 Develop manuals and other Information, Education and Communication (IEC) materials on end-to-end early warning system at all levels (central level, local government level, district level, township level and community level) 2-4 Reflect lessons learned from 2-2 into manuals and other IEC materials.				
<Output3> 3-1 Prepare/revise the community-based disaster management plan including guidance on how to utilize early warning such as when, where, how to evacuate, what items should be brought with in pilot project sites selected 1-2-1. 3-2 Prepare a manual for drafting a community-based disaster management plan. 3-3 Select and secure evacuation centers and routes. 3-4 Conduct community-based disaster management activities such as evacuation drills based on the community-based disaster management plan. 3-5 Implement training of township officers to improve community-based disaster risk management.				
4-1 Summarize and compile a model on information distribution system through the administrative line into the expansion plan to other regions, through 1-1-1 to 1-1-6. 4-2 Summarize and compile a model on information distribution system at township/village level into the expansion plan to other regions, through 1-2-1 to 1-2-4. 4-3 Compile the manuals drafted in 2-3 and 2-4 into the expansion plan to other regions. 4-4 Summarize and compile lessons learnt in 3-1 and 3-4 into the expansion plan to other regions. 4-5 Finalize the expansion plan.				

Minutes of Meeting
on
the 3rd JCC meeting
of
The Project on Establishment of End-to-End Early Warning System For
Natural Disaster
In the Republic of the Union of Myanmar
among
Relief and Resettlement Department,
Ministry of Social Welfare, Relief and Resettlement
and
Department of Meteorology and Hydrology,
Ministry of Transport
and
Japan International Cooperation Agency

Nay Pyi Taw, May 28, 2015



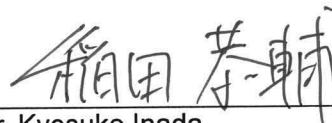
Mr. Soe Aung
Director General
Relief and Resettlement Department
(RRD)
Ministry of Social Welfare, Relief and
Resettlement



Mr. Ichiro Kobayashi
Chief Advisor
The Project on Establishment of
End-to-End Early Warning System for
Natural Disaster in the Republic of the
Union of Myanmar



Mr. Kyaw Moe Oo
Deputy Director General
Department of Meteorology and
Hydrology (DMH)
Ministry of Transport



Mr. Kyosuke Inada
Senior Representative
JICA Myanmar Office

On the occasion of conducting Mid-term Review, Joint Coordination Committee (hereinafter called as JCC) of “the Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar” was held on 28 May 2015 at RRD office in Nay Pyi Taw.

Relief and Resettlement Department (RRD) of the Ministry of Social Welfare, Relief and Resettlement, Department of Meteorology and Hydrology (DMH) of the Ministry of Transport, Japan International Cooperation Agency (JICA) and relevant parties of the Project joined JCC, chaired by Mr. Soe Aung, Director General of RRD and co-chaired by Mr. Kyaw Moe Oo, Deputy Director General of DMH, on 28 May 2015. The list of the participants is shown in Appendix 1.

It was followed by the explanation of the progress of the project by Mr. Turein Tun, Assistant Director of RRD, Dr. Yin Myo Min Htwe, Assistant Director of DMH, and Mr. Maung Maung Gyi, Staff Officer of RRD Kyauk Phyu District.

The followings are the main points discussed and/or agreed in the meeting.

1. Confirmation of the counterpart officers

Both Myanmar side and JICA Expert Team confirmed the counterpart officers of RRD, DMH and GAD attached as Appendix 2. Based on the recommendation from the Mid-term Review mission, Japanese side requested Myanmar side to nominate the counterpart of Output 4 to discuss the contents of the expansion plan.

2. Selection of candidates of counterpart workshops in Japan

Myanmar side confirmed to finalize the selection of candidates of counterpart workshops in Japan by 5 June 2015 and commence necessary application process.

3. Operation and maintenance of the procured equipment

Based on the recommendations of the Mid-term Review, Myanmar side in cooperation with JICA Expert Team will accelerate the procedure for obtaining the frequency of SSB and develop a feasible operational framework of the procured equipment in each level of the government organization. Both sides will validate the framework by conducting information transmission exercise immediately after obtaining the frequency of SSB. DMH will undertake the operation and maintenance of the tide gauge installed in Haing Gyi Kyun.

4. Procurement of communication and information equipment

JICA Expert Team initiated the procurement of equipment in Rakhine State in accordance with the request from Myanmar side. Myanmar side confirmed to undertake necessary arrangements for the procuring the equipment.




5. Annual seminar

Japanese side is planning to hold the annual seminar on 7 July 2015 in Grand Amara Hotel in Nay Pyi Taw, and requested Myanmar side to adjust the schedule and make necessary arrangements for inviting resource persons and related agencies.

6. Amendment of PDM

Japanese side proposed the amendment of PDM to Myanmar side. Both side confirmed to finalize the amendment by the next JCC.

End

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*The Project for Establishment of End-to-End Early Warning System
for Natural Disaster*

Attendance List of the 3rd JCC Meeting

	Name	Agency, position
1	Mr. Soe Aung	Director General, RRD
2	Mr. Kyaw Moe Oo	Deputy Director General, DMH
3	Mr. Aung Khaing	Deputy Director General, RRD
4	Mr. Win Htein Kyaw	Director, RRD
5	Mr. Chun Hre	Director, RRD
6	Mr. Turein Tun	Assistant Director of RRD
7	Mr. Maung Maung Gyi	Staff Officer, RRD Kyauk Phyu District
8	Ms. Nwe Ni Hlaing	Upper Divisional Clerk ,RRD
9	Mr. Hla Htun	Deputy Director, DMH
10	Dr. Yin Myo Min Htwe	Assistant Director, DMH
11	Ms. Nyein Nyein Hlaing	Assistant Director, DMH
12	Ms. Pa Pa Tun	Staff officer, DMH
13	Ms. Pa Pa Swe	Assistant Engineer, DMH
14	Mr. Than Tun Aye	Staff Officer, GAD
15	Mr. Kyaw Swar Nyunt	Staff Officer, GAD
16	Mr. Tin Htut Oo	Senior Engineer, MRTV
17	Ms. Sun Sun Oo	Assistant Director, MRTV
18	Mr. Ye Win Tun	Staff Officer, MPT
19	Mr. Mg Mg	Assistant Director, Information and Public Relations Department
20	Mr. Hlaing Win Aung	Assistant Director, RSD
21	Mr. Don Price	RRD Advisor, USAID
22	Mr. Yukihiko EJIRI	Senior Assistant Director, Water Resources and Disaster Management Group, Global Environment Department, JICA
23	Mr. Kunio AKATSU	JICA Senior Advisor
24	Mr. Atsushi SOMA	Deputy Director, Global Environment Department, JICA Headquarters
25	Mr. Kyosuke INADA	Senior Representative, JICA Myanmar Office
26	Ms. Noriko Sakurai	PFA, JICA Myanmar Office
27	Mr. Kaneyasu IDA	Senior Consultant, Tekizaitekisho Organization
28	Mr. Ichiro KOBAYASHI	Chief Advisor, JICA Expert Team
29	Mr. Yoshihiko UCHIKURA	Deputy Chief Advisor, JICA Expert Team
30	Ms. Yoko OTA	CBDRM Expert, JICA Expert Team
31	Mr. Masato FUJIMOTO	Project Coordinator, JICA Expert Team
32	Ms. Ngwe Zin Hlaing	Project Assistant, JICA Expert Team
33	Ms. Thet Thet Zaw	Secretary, JICA Myanmar Office

Appendix 2

List of Counterpart

Output	Organization	Position	Name
1 EW system improvement	RRD	Deputy Director, Administrative section	U Aye Min Thu
		Assistant Director	Win Ohnmar
		Upper Division Clark	Daw Nwe Ni Hlaing
	DMH	Deputy Director	U Hla Htun
		Executive Engineer	U Ye Htut
		Officer	U Htun Lin Kyaw
	GAD	Director	U Ye Naing
		Staff officer	U Than Tun Aye
		Staff officer	U Nay Myo Tun
2 HRD activity	RRD	Director, Relief Section	U Chum Hre
		Assistant Director	Su Su Tun
		Assistant Director, CR Section	U Thurein Htun
	DMH	Assistant Director	Dr. Yin Myo Min Htwe
		Officer	Daw Han Swe
	GAD	Director	U Ye Naing
		Staff officer	U Nay Myo Tun
		Staff officer	U Nay Zaw Aung
	3 CBDRM Activity	RRD	Director, Relief Section
Staff Officer, Relief Section			Daw Aye Nandar Win
Assistant Director, Relief Section			Daw Htwe Kyi
DMH		Assistant Director,	Daw Nyein Nyein Hlaing
		Superintendent	Dr Wah Wah Thein
GAD		Deputy Director	Daw Ohn Khin
		Staff officer	U Nay Zaw Aung
		Deputy Staff officer	U Zaw Myo Htet





CP in Regional Level


Output	Organization	Position	Name
All outputs	RRD	Director, Ayeyarwaddy Region	U Than Soe
		Director, Rakhine State	U Myint Soe
		Deputy Director, Labutta District	U Win Zaw Htay
		Staff Officer, Rakhine State	Daw Nan Moe New
		Staff Officer, Kyauk Phyu District	U Maung Maung Gyi
	DMH	Assistant Director, Ayeyarwaddy Region	U Tin Maung Yee
		Officer	U Hla Myint
		Staff Officer, Labutta District	U Than Zin Oo
		Assistant Director, Rakhine State	U Hla Yin Tun
		Staff Officer, Rakhine State	U Tun Aye Kyaw
		Assistant Engineer, Kyauk Phyu District	U Than Tun Win
	GAD	Director, Ayeyarwaddy Region	U Tun Min Zaw
		Director, Rakhine State	U Myint Lwin
		District Administrator, Labutta District	U Tin Oo
		District Administrator, Kyauk Phyu District	U Soe Thein
		Township Administrator, Labutta Township	U Toe Toe Tun
		Township Administrator, Kyauk Phyu Township	U Nyi Nyi Lin

Minutes of Meeting
on
the 4th JCC meeting
of
The Project on Establishment of End-to-End Early Warning System For
Natural Disaster
In the Republic of the Union of Myanmar
among
Relief and Resettlement Department,
Ministry of Social Welfare, Relief and Resettlement
and
Department of Meteorology and Hydrology,
Ministry of Transport
and
Japan International Cooperation Agency

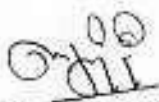
Nay Pyi Taw, February 18, 2016



Mr. Soe Aung
Director General
Relief and Resettlement Department
(RRD)
Ministry of Social Welfare, Relief and
Resettlement



Mr. Ichiro Kobayashi
Chief Advisor
The Project on Establishment of
End-to-End Early Warning System for
Natural Disaster in the Republic of the
Union of Myanmar



Mr. Kyaw Moe Oo
Deputy Director General
Department of Meteorology and
Hydrology (DMH)
Ministry of Transport



Mr. Kotaro Nishigata
Senior Representative
JICA Myanmar Office

The 4th Joint Coordination Committee (hereinafter called as JCC) of "the Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar" was held on 5th February 2016 at Amara Hotel in Nay Pyi Taw.

Relief and Resettlement Department (RRD) of the Ministry of Social Welfare, Relief and Resettlement, Department of Meteorology and Hydrology (DMH) of the Ministry of Transport, Japan International Cooperation Agency (JICA) and relevant parties of the Project joined JCC, chaired by Mr. Soe Aung, Director General of RRD and co-chaired by Mr. Kyaw Moe Oo, Deputy Director General of DMH, on 5th February 2016. The list of the participants is shown in Appendix 1.

It was followed by the explanation of the progress of the project by Mr. Yoshihiko Uchikura, Deputy Chief Advisor of the Project.

The followings are the main points discussed and/or agreed in the meeting held on 5th February 2016.

1. Progress of the activities in the third year

JICA Expert Team reported the progress of the third year's activities and Myanmar side confirmed its progress.

2. Schedule of activities in the fourth year

JICA Expert Team presented the proposed activities in the fourth year and inquired CP officers for the comments including Ayeyarwaddy Region and Rakhine State. Myanmar side confirmed the planned activities and schedule.

3. Report the flood analysis and the interview survey, and arrangement of the "Lessons Learned Workshop on 2015 Floods and Landslide Response"

JICA Expert Team presented the overview of the result of flood analysis and interview survey which were conducted from December 2015 to January 2016 and requested Myanmar side to arrange the facilitators and participants of "Lessons Learned Workshop on 2015 Floods and Landslide Response" which will be held on February 9th in Aureum Hotel in Nay Pyi Taw.

4. Expansion Plan in Ayeyarwaddy Region

JICA Expert Team presented the overview of expansion plan which is the result of discussion between JICA Expert Team and CP organizations in Nay Pyi Taw and Ayeyarwaddy Region. Both side confirmed the contents of expansion plan.

Both side also confirmed the contents of letter issued by Ayeyarwaddy Regional Government stating that the Ayeyarwaddy Regional Government is trying to allocate the budget of implementing expansion plan. JICA Expert Team will monitor the implementation of expansion plan with the initiative of CP officers during the fourth year of the project.





5. Amendment of PDM

Japanese side proposed the amendment of PDM to Myanmar side. Both sides agreed the amendment and confirmed that this amendment will be finalized by another Minutes of Meeting after the authorization of JICA Head Quarters.

Amended PDM (draft) is attached as Appendix 2.

End




The Project for Establishment of End-to-End Early Warning System

For Natural Disaster

Attendance List of the 4th JCC Meeting

No.	Name	Agency, position
1	Mr. Kyaw Moe Oo	Deputy Director General, DMH
2	Ms. Lei Lei Aye	Director, RRD
3	Ms. Myat Moe Thwe	Deputy Director, RRD
4	Ms. Khine Mon Mon Ei	Assistant Director, RRD
5	Ms. Su Su Tun	Assistant Director, RRD
6	Mr. Aung Kyaw Khaing	Assistant Director, RRD Rakhine Regional Office
7	Ms. Win Pa Pa Kyaw	Staff Officer, RRD Ayeyarwaddy Regional Office
8	Ms. Thandar Aung	Deputy Staff Officer, RRD
9	Ms. Ei Shwe Zin Win	Deputy Staff Officer, RRD
10	Ms. Nwe Ni Hlaing	Upper Divisional Clerk, RRD
11	Mr. Min Soe Han	Upper Divisional Clerk, RRD
12	Ms. Khin Nyein Nyein Ko	Lower Divisional Clerk, RRD
13	Ms. Zin Mar Htay	Lower Divisional Clerk, RRD
14	Ms. Khine Wah Thinn	Lower Divisional Clerk, RRD
15	Mr. Hla Tun	Deputy Director, DMH
16	Dr. Yin Myo Min Htwe	Assistant Director, DMH
17	Mr. Lin Zaw Htwe	Staff Officer, GAD
18	Mr. Zay Naw Win	Staff Officer, GAD
19	Mr. Aung Myo Sett	Staff Officer, GAD
20	Mr. Tin Htut Oo	Senior Engineer, MRTV
21	Ms. Nan Htike Htike Aung	Staff Officer, MRTV
22	Mr. Ngwe Thaug	Executive Engineer, MPT
23	Mr. Myint Zaw	Assistant Engineer, MPT
24	Mr. Than Naing	Staff Officer, Information and Public Relations Department
25	Ms. Win Win Maw	Staff Officer, Information and Public Relations Department
26	Mr. Hlaing Win Aung	Assistant Director, Fire Service Department
27	Mr. Aung Ko Ko Oo	Staff Officer, Fire Service Department
28	Ms. Khin Myo Lwin	Assistant Director, Department of Human Resource & Educational Planning
29	Ms. Tin Ma Latt	Staff Officer, Department of Human Resource & Educational Planning
30	Mr. Kotaro NISHIGATA	Senior Representative, JICA Myanmar Office
31	Ms. Noriko Sakurai	PFA, JICA Myanmar Office
32	Ms. Thet Thet Zaw	Secretary JICA Myanmar Office
33	Mr. Yoshihiko UCHIKURA	Deputy Chief Advisor, JICA Expert Team
34	Ms. Yoko OTA	CBDRM Expert, JICA Expert Team
35	Dr. Zayar Win	Social Survey, JICA Expert Team
36	Ms. Ngwe Zin Hlaing	Project Assistant, JICA Expert Team

Project Design Matrix

February 18, 2016 (draft)

Project Title: Project on Establishment of End-to-End Early Warning System for Natural Disaster
 Project Duration: (4 years) Project Site: Ayeyarwaddy Region and Rakhine State

Target Group: (1) Staff of RRD; (2) Staff of DMH;
 (3) Local Disaster Management Committee members at each level (local government level, district level, township level and community level);
 (4) District, township officers where the pilot site is located; and (5) Community(ies) in the target area.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>[Overall Goal] End-to-end early warning systems for natural disaster are expanded to coastal lined areas, especially in Ayeyarwaddy Region and Rakhine State, based on the expansion plan.</p> <p>[Project Purpose] The improved model of end-to-end early warning systems for natural disaster with the expansion plan is set up in pilot areas.</p>	<p>a. Improved end-to-end early warning systems are introduced to all coastal Regions/States.</p> <p>a. Early warning is delivered surely to community in the pilot areas through more than two routes in a drill to be conducted before the Terminal Evaluation b. Appropriate evacuation warning is delivered to community in the drill. c. The expansion plan to coastal lined areas is approved by JCC.</p>	<p>a. Data from NNDMC</p> <p>a. Drill report b. Record of JCC meetings</p>	<p>- Necessary budget of RRD for establishing the Early Warning System is secured. - Government policy on disaster management does not change significantly</p>
<p>[Outputs] 1. Information management and emergency communication system for natural disaster is improved.</p>	<p>a. Simultaneous information distribution system installed is confirmed to work normally. b. A model of information distribution system for community in a township or in a lower level areas is proposed. c. Tide data is monitored by installed tide gauge and analyzed for improving early warning system. d. Improvement model of information distribution through mass media is proposed.</p>	<p>a-c Project documents</p>	<p>- Employees who participated in trainings by the Project will continuously work for RRD and DMH.</p>

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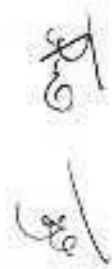

<p>2. Response capacity for natural disasters from central government level to local government level is enhanced.</p>	<p>a More than 80% of government agencies related to disaster management participates in seminar/training/drill on early warning system for natural disaster organized by the project. b Manuals for early warning system at various level are developed.</p>	<p>a. Training/drill reports b Manuals</p>		
<p>3. Response capacity of community for natural disaster is enhanced.</p>	<p>a Villagers from all villages in the pilot village tract participate in training/evacuation drills b Evacuation centers and routes of all the pilot villages are designated and presented to the villagers</p>	<p>a. Training reports b Project documents c Project documents</p>		
<p>4. The expansion plan to coastal lined areas which include lessons learnt through activities under Output-1 to Output-3 is prepared.</p>	<p>a The expansion plan to coastal lined areas is approved by JCC.</p>	<p>a. Expansion plan documents</p>		
<p><Output1></p>		<p>Input</p>		
<p>1-1 Early warning information distribution through an administrative line is improved 1-1-1 Identify the responsibilities and roles of each organization related with early warning dissemination in Myanmar and their problems. 1-1-2 Clarify appropriate mandates/responsibility for each organization related with early warning system in Myanmar based on the Activity 1-1-1. 1-1-3 Review the current contents of early warning for natural disaster such as standards for issuing/clearing early warning, and identify the bottleneck. 1-1-4 Improve the current contents of early warning for natural disaster such as standards for issuing/clearing early warning based on the Activity 1-1-3. 1-1-5 Make clear the early warning information distribution route for natural disaster to the members of disaster management related organizations from national and local level (region/state government level, district level and township level) 1-1-6 Install communication equipment including simultaneous system through administrative lines. 1-1-7 Install tide gauge for improving early warning system. 1-1-8 Conduct flood analysis and interview survey of the flood disaster in 2015 and compile its lessons learned.</p>		<p>【Japanese side】 (1) Dispatch of Experts ➢ Short-term Experts(6): -Chief Advisor/Disaster Management Structure -Early Warning System (EWS) Operation Planning -Wireless Communication System -Community-based Disaster Risk Management -Disaster Management Planning -Project Coordinator ➢ Lecturer(s): -Disaster Management System of Local Government</p>	<p>【Myanmar side】 (1) Assignment of counterpart personnel(C/P) -Project Director -Co-Project Director -Project Manager -Regional Project Manager -Regional Project Coordinator -Necessary number of C/P (2) Office space and facilities for the Project -in the buildings of RDD in Nay Pyi Taw -in the buildings of DMH in Yangon -Regional Administration Office in target area (the detail will be decided after the Commencement of the</p>	<p>- Necessary budget for the Project is allocated without any significant delay.</p>

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<p>1-2 Information distribution system for community in a township or in a lower level areas is developed</p> <p>1-2-1 Select target township(s) and community(ies) as pilot project sites, village tracts and villages, in order to conduct the pilot project</p> <p>1-2-2 Provide communication equipment to the community(ies).</p> <p>1-2-3 Consider or study the means of electricity generation at community level for securing the sustainability of early warning system for natural disaster.</p> <p>1-2-4 Conduct drills on information distribution in pilot project sites</p> <p>1-3 Information distribution through mass media from DMH is improved.</p> <p>1-3-1 Review the current information distribution system to community through mass media from DMH and the contents of information, and identify and improve the bottleneck.</p> <p>1-3-2 Cooperates with a FM station which has been jointly established by the Government of Myanmar and private companies for early warning.</p> <p>1-3-3 Propose a certain line for broadcasting real-time disaster information.</p> <p><Output2></p> <p>2-1 Identify needs of training based on activities through 1-1-1 to 1-1-4.</p> <p>2-2 Conduct trainings on natural disaster and end-to-end early warning system, including a simulation exercise, for the staff of RRD, DMH and GAD from central, state/region, district and township level.</p> <p>2-3 Develop manuals and other information, Education and Communication (IEC) materials on end-to-end early warning system at all levels (central level, local government level, district level, township level and community level)</p> <p>2-4 Reflect lessons learned from 2-2 into manuals and other IEC materials through conducting Pilot activities and Follow up activities.</p> <p><Output3></p> <p>3-1 Prepare/revise the community-based disaster management plan including guidance on how to utilize early warning such as when, where, how to evacuate, what items should be brought with in pilot project sites selected 1-2-1.</p> <p>3-2 Prepare a manual for drafting a community-based disaster management activity including developing community disaster management plan.</p> <p>3-3 Select and secure evacuation centers and routes.</p> <p>3-4 Conduct community-based disaster management activities such as evacuation drills based on the community-based disaster management plan.</p> <p>3-5 Implement training of township officers for instructing village tract administrators about community-based disaster risk management as follow up activities.</p>	<p>Disaster Management System on Tsunami</p> <p>(2) Provision of equipment</p> <p>*Detailed contents will be determined through the implementation of the Project. Following equipment are under consideration:</p> <ul style="list-style-type: none"> -Early Warning system (SSB, Wireless LAN, I-com, speaker, etc.) -Tide gage -Solar panel <p>(3) C/P Training in Japan</p> <p>Comprehensive Disaster Management including,</p> <ul style="list-style-type: none"> - Disaster Management in Local Governments - Early Warning System Operation - Community-Based Disaster Risk Management <p>(4) Local cost shared by Japanese side</p> <ul style="list-style-type: none"> - Costs for enlightenment programs and implementation of evacuation drills. - Costs for social surveys. 	<p>Project.)</p> <p>(3) Expenses for conducting awareness program, emergency simulation exercises and evacuation drills</p> <p>(4) Provision of necessary data</p> <p>(5) Expenses for operation and maintenance of the Project office</p> <p>(6) Others, if any</p>	<p>[Pre-condition]</p> <p>Political situation of Myanmar is stable.</p>
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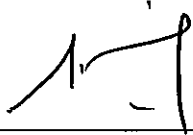
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		<p><Output4></p> <p>4-1 Summarize and compile a model on information distribution system through the administrative line into the expansion plan to coastal lined areas, through 1-1-1 to 1-1-6.</p> <p>4-2 Summarize and compile a model on information distribution system at township/village level into the expansion plan to coastal lined areas, through 1-2-1 to 1-2-4.</p> <p>4-3 Compile the manuals drafted in the activities of 2-3 and 2-4 into the expansion plan to coastal lined areas.</p> <p>4-4 Summarize and compile lessons learned in the activities of 3-1 and 3-4 into the expansion plan to other coastal lined areas.</p> <p>4-5 Finalize the expansion plan.</p>
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Minutes of Meeting
on
the Final JCC meeting
of
The Project on Establishment of End-to-End Early Warning System
For Natural Disaster
In the Republic of the Union of Myanmar
among
Relief and Resettlement Department,
Ministry of Social Welfare, Relief and Resettlement
and
Department of Meteorology and Hydrology,
Ministry of Transport and Communication
and
Japan International Cooperation Agency

Nay Pyi Taw, January 24, 2017



Dr. Ko Ko Naing
Director General
Relief and Resettlement Department
(RRD)
Ministry of Social Welfare, Relief and
Resettlement



Mr. Ichiro Kobayashi
Chief Advisor
The Project on Establishment of
End-to-End Early Warning System for
Natural Disaster in the Republic of the
Union of Myanmar



Dr. Kyaw Moe Oo
Deputy Director General
Department of Meteorology and
Hydrology (DMH)
Ministry of Transport and
Communication



Mr. Kotaro Nishigata
Senior Representative
JICA Myanmar Office

Final Joint Coordination Committee (hereinafter called as JCC) meeting of “the Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar” was held on 24 January 2017 at PARKROYAL Nay Pyi Taw.

Relief and Resettlement Department (RRD) of the Ministry of Social Welfare, Relief and Resettlement, Department of Meteorology and Hydrology (DMH) of the Ministry of Transport and Communication, Japan International Cooperation Agency (JICA) and relevant parties of the Project joined JCC meeting, chaired by Dr. Ko Ko Naing, Director General of RRD and co-chaired by Dr. Kyaw Moe Oo, Deputy Director General of DMH. The list of the participants is shown in Appendix 1.

Mr. Ichiro Kobayashi, Chief Advisor of JICA Expert Team presented the overview of project activities and outputs.

The followings are the main points discussed and/or agreed in the meeting.

1. Completion of the project activities

Both Myanmar side and JICA side confirmed that all planned project activities were completed in January 2017 as scheduled in Record of Discussion signed on 10 December 2012.

2. Approval of the Expansion Plans

Both Myanmar side and JICA side discussed and agreed the Expansion Plans for Ayeyarwaddy Region and Rakhine State which had been discussed and agreed by Project Implementing Committee (PIC) meetings held in Ayeyarwaddy Region on 12 December 2016 and in Rakhine State on 13 December 2016. As a part of implementation of the Expansion Plan, with collaboration of RRD, DMH and GAD, the information transmission exercise will continue at least once a year, and DMH will initiate this exercise by sending the test information to related agencies.

3. Update of the result of the Terminal Evaluation

Both Myanmar side and JICA side updated result of the terminal evaluation. Both parties confirmed the achievement of the Project Purpose, evaluation by Five Criteria, and recommendations in the Terminal Evaluation Report agreed in the JCC held on 3 November. The summary of the update is shown in the Appendix 2.

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4. Results of Input

The inputs from Japanese side and Myanmar side for the implementation of project were confirmed such as assignment of experts and C/Ps, provision of equipment and project budget. List of inputs are shown in Appendix 3. Myanmar side agreed that each organization in the list is responsible for operation and maintenance of listed deliverables and equipment properly.

End

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Appendix 1: List of Participants

Myanmar Side

Relief and Resettlement Department

Mr. Win Htut Oo	Deputy Director General
Mr. Win Htein Kyaw	Director
Ms. Myat Moe Thwe	Deputy Director
Ms. Ei Shwe Zin Win	Deputy Staff Officer
Ms. Ei Khaing San	Deputy Staff Officer
Ms. Lai Yin Win	Deputy Staff Officer
Ms. Aye Mar Thin	Staff Officer
Ms. Thidar Aung	Staff Officer
Ms. Kay Thi Htay	Deputy Staff Officer
Ms. Moe Sandar	Assistant Staff Officer
Mr. Aung Zaw Win	Upper Division Clerk
Ms. Houg Hlee	Upper Division Clerk
Mr. Ye Htut Paing	Lower Division Clerk
Mr. Arkar Sann Lwin	Lower Division Clerk
Mr. Aung Ko Oo	Lower Division Clerk

Department of Meteorology Hydrology

Dr. Kyaw Moe Oo	Deputy Director General
Ms. Han Swe	Staff Officer

General Administration Department

Mr. Zay Naw Win	Staff Officer
Mr. Soe Moe Oo	Staff Officer

Myanmar Radio and Television

Ms. Moe Thuzar Aung	Director
Mr. Satoshi Hamanaka	MRTV-NEXT
Ms. May Thin Zaw	MRTV-NEXT
Mr. Yazar Kyaw	MRTV-NEXT

Information and Public Relations Department

Ms. Myint Myint Kyi	Assistant Director
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Myanmar Fire Services Department

Mr. Saw Hla Tun San Staff Officer

Mr. Kaung Myat Naing Staff Officer

Department of Rural Development

Mr. Win Oo Assistant Director

Department of Agriculture

Dr. Aung Moe Myo Tint Deputy Director

Education research and planning

Ms. Tin Ma Lat Staff Officer

Department of Irrigation and Water Utilization

Dr. Aung Than Oo Assistant Director

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Japanese Side

JICA Myanmar Office

Mr. Kotaro Nishigata	Senior Representative
Ms. Noriko Sakurai	PFA
Mr. Lu Kyee Noe	Secretary

The Expert Team

Mr. Ichiro Kobayashi	Chief Advisor
Mr. Yoshihiko Uchikura	Deputy Chief Advisor
Ms. Yoko Ota	CBDRM
Mr. Masato Fujimoto	Project Coordinator
Ms. Ngwe Zin Hlaing	Project Assistant
Ms. Tin Tin Oo	Project Assistant
Ms. Thin Thin Wei	Project Assistant

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Appendix 2: Update of the result of the Terminal Evaluation

1. Achievement of the Project Purpose

Summary of the achievement of the Project Purpose" The improved model of end-to-end early warning systems for natural disaster with the expansion plan is set up in pilot areas" is summarized as follows:

	Verifiable indicator	Condition of the achievement
(a)	Early warning is delivered surely to community in the pilot areas through more than two routes in a drill to be conducted before the Terminal Evaluation.	It had been verified already at the time of Terminal Evaluation Survey conducted from 17 October to 3 November 2016.
(b)	Appropriate evacuation warning is delivered to community in the drill.	It was observed that the warning message was appropriate in that it made community people take necessary actions such as evacuation in the Community Evacuation Drills held on 13 December 2016 as well as on 2 Feb 2016.
(c)	The expansion plans to Ayeyarwaddy Region and Rakhine State are approved by JCC.	Both Myanmar side and JICA side approved the Expansion Plans for Ayeyarwaddy Region and Rakhine State which include concrete plans of activities and their necessary budget, which had been already approved by Project Implementing Committee (PIC) meetings held in Ayeyarwaddy Region on 12 December 2016 and in Rakhine State on 13 December 2016.

2. Update of Five Evaluation Criteria

Both side confirmed the actions taken after the Terminal Evaluation to improve the evaluation pointed out in the Terminal Evaluation Report.

	Criteria(evaluation)	Update/Actions taken before the completion of the Project
1	Relevance(high)	These criteria was already evaluated as "high" during the Terminal Evaluation
2	Effective(high)	
3	Efficiency(medium)	Challenges about the frequent transfer of the CPs and communication with HQs seemed to be improved because both parties strived to increase communications at Nay Pyi Taw and pilot areas.
4	Impact(medium)	Two more tangible impacts of the Project have been emerged after the Terminal Evaluation. 1) 3 sets of SSB radio were installed in Ayeyarwaddy Region as a part of expansion plan 2) DMH and MRTV decided to increase the number of weather forecast TV program by using latest information through optical fiber network installed by the project.
5	Sustainability(medium)	The prospect of sustainability is still "medium" from the financial aspect. However, it may be improved if the disaster management fund will be available for each local government to implement the expansion plan.

3. Update of Recommendations

Both parties confirmed the necessary actions to be taken before the completion of the Project which were presented in the Terminal Evaluation Report.

	Recommendation	Update/Actions taken before the completion of the Project
1	The Project needs to address such issues caused by the personnel relocation of the project C/Ps as the lack of necessary handover from predecessors to successors, and the lack of timely information sharing and communication in NPT on project activities.	JICA expert team stayed in Nay Pyi Taw as much as possible to communicate with C/Ps, and tried to communicate with newly assigned C/Ps and new ministers especially in Ayeyarwaddy Region and Rakhine State for better mutual understandings on the project. The expansion plans have been understood by more C/Ps and ministers through these efforts.
2	The Project need to explain the importance to the PIC meeting of the Expansion Plans, and advocate these plans to other disaster risk areas than the pilot sites of the Project in Ayeyarwaddy region and Rakhine State	The PIC meetings were held in Ayeyarwaddy Region on 12 December 2016 and in Rakhine State on 13 December 2016, and in Nay Pyi Taw on 16 December 2016 to share and discuss on the expansion plan, and the expansion plan was agreed by PICs.
3	The Project tries to secure or get necessary financial resources for 2017 to continue the project activities and implement the expansion plans.	In the PIC meetings, securing necessary financial resources for implementing the expansion plan was one of the main topics discussed. RRD explained that RRD understood the importance to implement expansion plan, but the budget was limited and had to be allocated not only to Ayeyarwaddy Region and Rakhine State but to whole country. However, RRD also explained that 30 sets of SSB radios were newly purchased by 100 days plan of RRD, and 3 radios of them were installed and operated already in Ayeyarwaddy Region as a part of expansion plans, and the disaster management fund of local government could be utilized for implementing expansion plan, which was recently allocated to each local government.
4	The Project is requested to explore the possibility to share the achievements to other JICA projects.	There are two on-going JICA projects related to the project, such as "Development of a Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar" (SATREPS) and "The Project for Capacity Development of the Myanmar Radio and Television" (MRTV Next Project). The project shared the project achievements with these related projects not only by the meetings but through inviting SATREPS members to the Workshop of discussing "TIMELINE" and the final seminar in the project, and through inviting MRTV Next Project C/Ps as a presenter of the final seminar. Outputs of the project especially "TIMELINE" and optical fiber connection between MRTV and DMH will be utilized and improved by

		these projects.
5	RRD should include the expansion plans into revising the MAPDRR.	The review workshop of MAPDRR was held in Patheingyi on 22-23 November 2016, and RRD explained about the project and expansion plan to be included in new MAPDRR. RRD will continue to try to include the expansion plans into new MAPDRR.

4. Recommendations after the Project completion

Both Myanmar side and JICA side confirmed the necessity to continue the following recommendations agreed in the Terminal Evaluation Report for further improvement of early warning system in Myanmar after the cooperation period.

- 1) RRD and region/state governments try to mobilize or get necessary financial resources to implement expansion plans.
- 2) RRD continues to seek an opportunity to include the expansion plans into higher polices and/or plans.
- 3) Facilities such as evacuation shelters and access routes need to be developed more in the pilot areas and other high-risk areas to make the early warning system effective.

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Appendix 3: List of Inputs

1. Deliverables

No.	Name	Type
1	Expansion Plan for Ayeyarwaddy Region	Document
2	Expansion Plan for Rakhine State	Document
3	HRD Program	Document / DVD
4	CBDRM Manual	Document / DVD
5	Early Warning Manual	Document
6	2015 Flood Survey Report	Document
7	TIMELINE for Cyclone Disaster	A0 Document

2. Provided Equipment

Type	Location		Quantity	Total
SSB Radio communication	Nay Pyi Taw	RRD	1	15
		DMH	1	
		GAD	1	
	Pathein	RRD	1	
		GAD	1	
	Labutta	RRD	1	
		DMH	1	
		GAD (District)	1	
		GAD (Township)	1	
	Sittwe	Hlwa Sar Village	1	
		RRD	1	
	Kyauk Phyu	GAD	1	
GAD (District/Township)		1		
Thea Than Village		1		
Satellite Communication Equipment	Nay Pyi Taw	RRD	1	3
	Pathein	RRD	1	
	Sittwe	RRD	1	
PC (Communication through optical fiber network)	Nay Pyi Taw	RRD	1	3
		DMH	1	
		GAD	1	
Loud Speaker, Handy Speaker	Labutta	Hlwa Zar Village	2	13
		Kwa Kwa Lay Village	2	
		Shwe Kyun Thar Village	2	
	Kyauk Phyu	Thea Tan Village	2	
		Kon Baung Village	2	
		Than Kha Yae Village	2	
		Let Nyot Ngon Village	1	

Type	Location		Quantity	Total
Strengthened CDMA Telephone	Labutta	Hlwa Zar Village	2	6
		Kwa Kwa Lay Village	2	
		Shwe Kyun Thar Village	2	
Strengthened GSM Telephone	Kyauk Phyu	Thea Tan Village	2	7
		Kon Baung Village	2	
		Than Kha Yae Village	2	
		Let Nyot Ngon Village	1	
Solar System Power	Labutta	Hlwa Zar Village	3	15
		Kwa Kwa Lay Village	2	
		Shwe Kyun Thar Village	2	
	Kyauk Phyu	Thea Tan Village	3	
		Kon Baung Village	2	
		Than Kha Yae Village	2	
		Let Nyot Ngon Village	1	
Diesel Engine / Generator	Kyauk Phyu	Thea Tan Village	2	7
		Kon Baung Village	2	
		Than Kha Yae Village	2	
		Let Nyot Ngon Village	1	
Automatic Tide Gauge Station	Haing Gyi Kyun	DMH	1	1
Manual Tide Gauge Staff	Pyapone	DMH	1	3
	Labutta	DMH	1	
	Gwa	DMH	1	
Optical Connection Fiber	Nay Pyi Taw	Between DMH and MRTV	1	1

3. Office equipment to be provided

Name	Quantity	Agency
Satellite Image	1	RRD HQs
Arc GIS	1	RRD HQs
Laptop PC	1	RRD HQs
Desktop PC	1	RRD HQs
Copy Machine	1	RRD HQs

4. Dispatch of Experts

Number of Experts	Days of Stay in Myanmar				Total Days
	JFY2013	JFY2014	JFY2015	JFY2016	
19	775	830	778	379	2,762

As of January 2017

5. Counterpart Training

Date	Participants	Visited Sites
27 Aug – 7 Sep 2013	RRD 4, GAD 4, DMH 2	Gifu Prefectural Gov., Nagoya Municipal Minato Disaster Prevention Center, Nagoya City office, DRI, MLIT, JMA, etc.
24 Aug – 6 Sep 2014	RRD 3, GAD 3, DMH 4	Honjo Bosai Kan, MLIT, JMA, Tono Magokoro Net, Kamaishi City, Disaster Management Drill in Sagamihara, DRI, etc.
22 Aug – 5 Sep 2015	RRD 4, DMH 3, GAD 3, MRTV 2, Pyinsawadi FM 1	MLIT, JMA, Nine Prefectures City Joint Emergency Drill, Great East Japan Earthquake affected areas, Nippon TV Network, etc.

6. Project Local Cost (Japanese Side)

JFY2013	JFY2014	JFY2015	JFY2016	Total
38,697,647	76,988,365	68,782,362	TBC	184,468,374

(Currency: JPY)

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(c) Reference documents on CBDRM activities

Table AN 2.5.1 Major comments from the participants during the evaluation session

Item	Comment
Hlwa Zar Village	
Early warning	<ul style="list-style-type: none"> • Since there is only one hand speaker in the village, it took time to disseminate the warning messages • Roles and responsibilities within the information transmission team were not clearly discussed and the team could not transmit the message effectively
SAR	<ul style="list-style-type: none"> • Life jackets are necessary for water rescue • It is necessary to secure the safety of the volunteers who conduct SAR • Assistance in the evacuation of elderly persons was not efficient. It would be better to use stretchers rather than having several persons supporting them.
First aid	<ul style="list-style-type: none"> • A village midwife who is the only medical specialist is dispatched from another village and she will be evacuated first during a disaster, so no one with medical knowledge will be left during the disaster.
Shelter and evacuation	<ul style="list-style-type: none"> • It turned out that the capacity of the shelter was absolutely insufficient. One more shelter is necessary. • If more than expected villagers from other villages came to our facilities, there would not be adequate space to accommodate our villagers. • The damage and loss form for reporting to the township was not fully shared within the evacuation team
Kwa Kw a Lay Village	
Early warning	<ul style="list-style-type: none"> • The group should consider the situation that the message delivery from the government could be delayed • The area of the village is so large that the loud speakers installed by JICA cannot cover the entire village. The group could coordinate with the facilities which have speakers and disseminate the message efficiently • The timing of the warning message in the scenario and actual time of the warning message was different, so the instruction to the villagers became confused
SAR	<ul style="list-style-type: none"> • It is better to list the persons who need assistance in the evacuation
First aid	<ul style="list-style-type: none"> • There are no medical professionals in the village, so everyone feels anxious about their medical condition in case of emergency
Shelter and evacuation	<ul style="list-style-type: none"> • It is necessary to investigate the measures to protect properties such as furniture and boats • Even though the VDPC only invited 150 villagers, more than 250 villagers participated in the drill, so it is confirmed that awareness of villagers regarding DRR activities is high.
Report of evacuation	<ul style="list-style-type: none"> • The way of counting the evacuees was inefficient so that it took approximately 40 minutes to count 250 persons (Observation from JICA Expert Team)
Shwe Kyun Thar Village	
Early warning	<ul style="list-style-type: none"> • Since it is necessary to disseminate the message to the other side of the river by boat, more manpower than expected is required for the task of the team.
SAR	<ul style="list-style-type: none"> • Since the communities are divided by a river, efficient allocation of team members is essential.
First aid	<ul style="list-style-type: none"> • Medical equipment, especially medicine for injury, is insufficient. • Team members are interested in advanced skills for first aid.
Shelter and evacuation	<ul style="list-style-type: none"> • Six persons are not enough to collect food and emergency supplies from all over the village and bring them to the shelter. • Storage of water and food is not adequate for an emergency

Item	Comment
	<ul style="list-style-type: none"> Participation of children and students is good for conveying the knowledge and experience to the next generations.
Report of evacuation	<ul style="list-style-type: none"> The way of counting the evacuees was inefficient so that it took approximately one hour to count 250 persons (Observation from JICA Expert Team)
Thea Tan Village	
Early warning	<ul style="list-style-type: none"> In case mobile phone connection is not available, EW group should walk to Kon Baung Village. It takes 25 minutes to get there, so the bridge should be completed as soon as possible.
SAR	<ul style="list-style-type: none"> Villagers were not cooperative with SAR activities. In particular, many villagers did not want to engage with mock-injured persons.
First aid	<ul style="list-style-type: none"> During the drill, all of them could handle the care, but members are anxious whether they can do the same thing in case of a real injury.
Shelter and evacuation	<ul style="list-style-type: none"> Villagers were not cooperative during head counting. Some villagers insisted on going home and that made head counting difficult.
Kon Baung Village	
Early warning	<ul style="list-style-type: none"> In case mobile phone connection is not available, it is better to send a messenger to Thea Tan Village to collect information. When the communication is cut off, the EW team needs to pay closer attention to the condition of the rain, wind and waves. If danger is felt, it is necessary to evacuate.
First aid	<ul style="list-style-type: none"> There are no medical professionals in the village, so everyone feels anxious about their medical condition in case of an emergency. The team needs more practical training.
Shelter and evacuation	<ul style="list-style-type: none"> When we actually evacuated to the hill, it turned out that evacuating to the hill is dangerous. The evacuation route to get to the hill is inundated during the rainy season, and no buildings are built on the hill, which means there is nothing to protect evacuees from strong winds and rain. A temporary building on the hill is necessary. This time, the villagers evacuated to two places. It turned out that three persons were not enough to conduct the headcount and report to the village leader. We need to reconsider the number of the committee members.
Than Kha Yae Village	
Early warning	<ul style="list-style-type: none"> The hand speakers were not functioning properly, so it was uncertain that villagers could understand the message. 【JICA Expert Team instructed that it is the responsibility of the early warning team to check the condition of the equipment before the drill】
SAR	<ul style="list-style-type: none"> The team recognized the necessity of helmets, life jackets, and safe shoes. During the water rescue, it is necessary to secure the safety of the SAR team.
First aid	<ul style="list-style-type: none"> The three-hour first aid training session was not long enough and further training will be necessary. The team recognized that the medicine was insufficient.
Shelter and evacuation	<ul style="list-style-type: none"> Children started to cry while they were staying the shelter and the villagers decided to distribute the food and drink earlier than according to the original schedule. In case of an actual disaster, the same thing should be considered. The total population of the village is 193 persons, and 121 persons participated in the drill. By conducting the drill, it turned out not all of the villagers could evacuate to the monastery. Therefore, pregnant women, children and elderly persons should evacuate to the monastery and young people should evacuate to the hill. We understand it is necessary to prioritize evacuees in case of an actual disaster. The team miscalculated the number of evacuees and ended up counting twice. Head-counting of evacuees has room for improvement.
Let Nyot Ngon Village	
Early warning	<ul style="list-style-type: none"> It is more understandable for village to use different colored flags based on the color code

Item	Comment
	<p>than just using red flags to show the intensity of cyclone.</p> <ul style="list-style-type: none"> • The phone connection to Thea Tan Village Tract was cut off. The mobile phone of the village tract administrator was also out of service. To be prepared for such cases, additional emergency contact numbers should be prepared.
SAR	<ul style="list-style-type: none"> • SAR team should share the information about evacuees with the shelter management team.
First aid	<ul style="list-style-type: none"> • Further training for treating injured persons is necessary such as how to use bandages.
Shelter and evacuation	<ul style="list-style-type: none"> • Since the members consisted of only women, it took a long time to carry the emergency stockpile to the hill. Assistance from the young men from SAR is necessary.

Source: JICA Expert Team

Table AN 2.5.2 Workshop Program for Township Officers

Time	Description	Lecturer
9:30 - 10:30	Introduction of Project	JICA Expert Team
10:40 - 11:40	Introduction of disaster management	RRD District
13:00 - 14:00	Disaster in Ayeyarwaddy Region	DMH District
14:10 - 15:40	Introduction of CBDRM	Local NGO (CDA)
15:50 - 16:20	CBDRM in Japan	GAD Labutta Township

Source: JICA Expert Team

Table AN 2.5.3 Workshop for Village Tract Administrator

	Topic	Lecturer
March	Disaster at the Village level	DMH
April	Introduction of CBDRM	RRD
May	Creation of evacuation map	Hlwa VTDC
June	Information transmission during disaster	GAD
July	Group activities regarding CBDRM	Hlwa VTDC
August	Community evacuation exercise	RRD

Source: JICA Expert Team

Table AN 2.5.4 Training Program for Zin Phyu Gone Village

Time		Description	Lecturers
1st day			
09:00	09:30	Opening the Training Ceremony	Village Administrator
09:30	09:45	Rule at the training for the trainers	All Trainers
10:00	10:30	Explain about occur the disaster risk in Labutta District.	U Than Htike
10:30	11:30	To explain and scoring disaster risk in Zin Phyu Gone Village	U Sein Win
11:30	12:00	Basic glossary of DRR management	U Sein Win
01:30	03:30	Disaster Risk (DMH) - Before cyclone condition - During cyclone condition - After cyclone condition - Color sign of early warning relates the cyclone	U Sein Win, U Than Htike and U Po Po
03:45	04:45	Analyze the risk for participatory of various ways (Divided by 6 Groups) - Historical background of village - Village Map - Evaluation Map. - Venn Diagram - Problem Tree	U Than Htike
04:45	05:00	Review of the training	U Sein Win
2nd Day			
09:00	10:00	Explain the homework for each group and refill by necessary from other groups. (20 minutes for each groups)	U Than Htike
10:15	11:15	Continues to explain left 3 groups for homework	U Than Htike
11:15	12:00	Explain the theory of First Aid	U Thein Htwe
01:30	02:30	Cycle of disaster risk management. (RRD)	U Sein Win
02:30	03:15	Transect walk in the village. (Divided into 2 groups)	
3:30	04:15	Find out to input the map at Transect walk in the village.	U Po Po
04:15	04:45	Drawing the Evaluation Map	U Sein Win
04:45	05:00	Review of the training	U Than Htike
3rd day			
09:00	09:30	Founded by the disaster risk management group (11 sub-committees)	U Po Po
09:30	10:30	Explain the name of the disaster risk management group, its duties and responsibility - News and Information Sub-Committee - First Aid Sub-Committee - Search and rescue Sub-Committee - Shelter Management Sub-Committee - Loss and Damage Management Sub-Committee Explain the action of Before, During, After of these 5 groups.	U Than Htike Department of Health
10:45	12:00	Review of 5 Sub-Committees	U Sein Win
01:30	02:00	Explain the risk of fire knowledge	U Than Htike
02:00	03:00	Review of 3 days training	U Po Po, U Than Htike and U Sein Win
03:15	03:30	Review training for trainers	All Trainers
03:30	04:00	Closing the Training Ceremony	

Source : Original program was prepared by Hlwa Zar VTDPB and the JICA Expert Team translated it into English.

Note: Names shown in the program are members of Hlwa Zar VTDPB.

Table AN 2.5.5 Major Comments from the Participants during the Evaluation Session

Item	Comment
Early warning	<ul style="list-style-type: none"> There is only one loudspeaker, which is installed in the school, so more hand speakers are necessary to transmit the messages to all the villagers. It took 20 minutes from the shelter to the jetty, which is at the end of the village, so it was difficult to transmit the message to the entire village within a short time. (Note: the drill set timing for each color code as 20 minutes for drill)
SAR	<ul style="list-style-type: none"> This time, the drill targets only humans, but it is also necessary to conduct the drill for cattle. As the SAR material, life jackets and wheels are necessary.
First aid	<ul style="list-style-type: none"> Lecture and practical training of DoH officer in Hlwa Zar was very useful. First aid group can utilize the knowledge in other occasions.
Shelter and evacuation	<ul style="list-style-type: none"> This season, many villagers go out to fish, so participants were fewer than the capacity of shelter, but in the case of an actual disaster, villagers from other villages will come to our village. We would like to conduct the drill coordinating with other villages.

Source: JICA Expert Team

Table AN 2.5.6 The first and second CBDRM follow up workshop

Date	Item of the lecture	Lecturer
7/8	<ul style="list-style-type: none"> Basic information regarding disasters Disasters in Rakhine State Story telling of Cyclone Nargis Overview of CBDRM 6 steps of CBDRM (2) Building Rapport and Understanding the Community 	Participants of the TOT workshop
7/9	<ul style="list-style-type: none"> 6 steps of CBDRM (3) Participatory Community Risk Assessment (lecture and implementation of town watching, creation of community hazard map) 6 steps of CBDRM (4) Participatory Disaster Risk Management Planning (Creation of community action plan) 	Participants of the TOT workshop

Source: JICA Expert Team

Table AN 2.5.7 Comments from the participants in Kin Myauk Vvillage

Item	Comment
Early warning	<ul style="list-style-type: none"> • Before conducting the drill, there was a concern about information transmission within the village because the area of the village is wide and houses are separate from each other. However, using motorbikes to move around the village effectively worked. • Since the village is wide, the group decided to locate its members in various places. That effectively worked to assure that information was surely transmitted. .
Search and rescue	<ul style="list-style-type: none"> • Some villagers were not so cooperative to conduct the drill and this should be improved.
First aid	<ul style="list-style-type: none"> • Some members who practiced more than one time could act without any trouble, but other members who could not practice enough was not confident to perform in front of other villagers. The team needs to practice more often.
Shelter management	<ul style="list-style-type: none"> • By conducting the drill, the team could confirm the roles and knowledge about disaster response before actual disaster. Members are satisfied with the result.

Source; JICA Expert Team

Table AN 2.5.8 Program of the workshop for township officers

Time	Program	Lecturers
8:30 - 9:00	Registration	
9:00 - 9:20	Opening ceremony	
9:30 - 10:30	Introduction of Project Lesson learned from flood in 2015 for township and village level	JICA Expert Team
10:30 - 10:40	Coffee break	
10:40 - 11:40	Disaster in Rakhine State	DMH District
11:40 - 12:40	Lunch Time	
12:40 - 13:40	Introduction of CBDRM Manual -Roles of township officers for CBDRM-	JICA Expert Team
13:40 - 14:10	Report of pilot activities	TBN CDA
14:10 - 14:20	Coffee break	
14:20 - 16:20	Discussion	All participants
16:20 - 16:40	Closing ceremony	

Source : JICA Expert Team

(d) Dispatch of Experts

Name	Belonging	Period (days)	In charge
Ichiro KOBAYASHI	Oriental Consultant Global Co., Ltd.	267	Chief Advisor/Disaster Management (1)
Yoshihiko UCHIKURA	Oriental Consultant Global Co., Ltd.	431	Deputy Chief Advisor/Organizational Strengthening
Susumu MURATA	Pacific Consultant Global Co., Ltd.	200	Disaster Management (2)
Takashi ITO	Pacific Consultant Global Co., Ltd.	200	Disaster Information Communication System
Masahiro SATAKE	Oriental Consultant Global Co., Ltd. (Japan Telecommunications Engineering and Consulting Service)	151	Procurement Planning
Yoshihiro ASANO	Oriental Consultant Global Co., Ltd. (International Development Initiative, INC)	295	Disaster Management Planning
Yoko OTA	Oriental Consultant Global Co., Ltd.	439	Community-based Disaster Risk Management
Zayar WIN	Oriental Consultant Global Co., Ltd.	302	Social Survey
Tatsuro SAIKI	Fukken Co., Ltd.	90	Hazard Map/Vulnerability Assessment
Azusa OKUNO	Oriental Consultant Global Co., Ltd.	30	Project
Masato FUJIMOTO	Oriental Consultant Global Co., Ltd.	236	Coordinator/Organizational Strengthening/Capacity Assessment
		14	Disaster Survey
Angelito Ong ARJINA	Oriental Consultant Global Co., Ltd.	30	GIS/Database
Hiroshi	Pacific Consultant Global Co., Ltd.	82	Installation of Tide Gauge

SHIMADA			
Daiki TSUJIO	Pacific Consultant Global Co., Ltd.	15	Tide Data Analysis
Koji MURAYAMA	Oriental Consultant Global Co., Ltd. (Japan Meteorological Business Support Center)	5	Disaster Information Dissemination
Hiromasa AOKI	Oriental Consultant Global Co., Ltd.	14	Flood Analysis
Hiroichi KURIHARA	Oriental Consultant Global Co., Ltd. (Japan Meteorological Business Support Center)	8	Weather Analysis
Tatsuya NIWA	Pacific Consultant Global Co., Ltd.	9	Tide Date Analysis

(e) List of the procure equipment

Type of equipment	Installed place		Number	Total number
SSB wireless radio	Nay Pyi Taw	RRD	1	15
		DMH	1	
		GAD	1	
	Pathein	RRD	1	
		GAD	1	
	Labutta	RRD	1	
		DMH	1	
		GAD (District)	1	
		GAD (Township)	1	
	Sittwe	RRD	1	
		GAD	1	
		RRD	1	
Kyauk Phyu	GAD (District/Township)	1		
	Thea Tan village	1		
Satellite communication	Nay Pyi Taw	RRD	1	3
	Pathein	RRD	1	
	Sittwe	RRD	1	
PC (Communication through optical fiber)	Nay Pyi Taw	RRD	1	3
		DMH	1	
		GAD	1	
Loud speaker, Handy speaker	Labutta	Hlwa Zar village	2	13
		Kwa Kwa Lay village	2	
		Shwe Kyun Thar village	2	
	Kyauk Phyu	Thea Tan village	2	
		Kon Baung village	2	
		Tan Kha Yae village	2	
		Let Nyot Ngon village	1	
CDMA telephone with strengthened antenna	Labutta	Hlwa Zar village	2	6
		Kwa Kwa Lay village	2	
		Shwe Kyun Thar village	2	
GSM telephone with strengthened antenna	Kyauk Phyu	Thea Tan village	2	7
		Kon Baung village	2	
		Tan Kha Yae village	2	
		Let Nyot Ngon village	1	
Solar power system	Labutta	Hlwa Zar village	3	15
		Kwa Kwa Lay village	2	
		Shwe Kyun Thar village	2	
	Kyauk Phyu	Thea Tan village	3	
		Kon Baung village	2	
		Tan Kha Yae village	2	
Diesel engine	Kyauk Phyu	Let Nyot Ngon village	1	7
		Thea Tan village	2	
		Kon Baung village	2	
		Tan Kha Yae village	2	

Automatic tide gauge	Ayeyarwaddy	Haing Gyi Kyun	1	1
Manual tide gauge	Ayeyarwaddy, Rakhine	Labutta, Pyapon, Gwa	3	3
Optical fiber connection between DMH and MRTV	Nay Pyi Taw	DMH, MRTV	1	1

Source; JICA Expert Team

(f) The Project related information

List of subcontract

Title of contract	「Baseline survey and CBDRM activities」 「Capacity Assessment and HRD Activity」
Contractor	Community Development Association
Contents of contract	Implementation of baseline survey and capacity assessment in Ayeyarwaddy Region
Planned amount and Contract amount	Planned amount : 8,915,504 yen Contract amount : 90,974,000 Kyat (8,915,452 yen)
Contract procedure	Selective bidding
Contract period	May 7 th 2013 to November 30 th 2013
Date of payment and amount	May 16 th 2013 (27,292,200 Kyat)、September 2 nd 2013 (27,292,200 Kyat)、November 11 th 2013 (36,389,600 Kyat) : Total 90,974,000 Kyat

Title of contract	Sub-Consulting Agreement for JICA aided “The Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar (2nd Year)”
Contractor	Community Development Association
Contents of contract	CBDRM activity and HRD activity in Ayeyarwaddy Region
Planned amount and Contract amount	Planned amount : 13,520,618 yen Contract amount : 107,150 USD (10,978,000 yen)
Contract procedure	Negotiated contract
Contract period	February 28 th 2014 to November 30 th 2014
Date of payment and amount	March 4 th 2014 (32,145 USD)、September 26 th 2014 (32,145 USD)、December 12 th 2014 (42,860 USD) : Total 107,150 USD

Title of contract	Sub-Consulting Agreement for JICA aided “The Project on Establishment of End-to-End Early Warning System for Natural Disaster in The Republic of The Union of Myanmar” Activity in Rakhine State (1st Year)
Contractor	Community Development Association
Contents of contract	Implementation of baseline survey and capacity assessment in Rakhine State
Planned amount and Contract amount	Planned amount : 11,595,790 yen Contract amount : 97,276 USD (9,978,552 yen)
Contract procedure	Selective bidding
Contract period	May 21 st 2014 to October 31 st 2014
Date of payment and amount	June 23 rd 2014 (29,183 USD) 、 December 5 th 2014 (29,183 USD) 、 December 5 th 2014 (38,910 USD) Total : 97,276 USD

Title of contract	Installation of Stage for Tide Gauge Station
Contractor	Samayri Fuji Construction Co., Ltd.
Contents of contract	Installation of Stage for Tide Gauge Station at Haing Gyi Kyun
Planned amount and Contract amount	Planned amount : 2,474,224 yen Contract amount : 18,165 USD (1,884,982 yen)
Contract procedure	Negotiation with estimates
Contract period	September 1 st 2014 to October 31 st 2014
Date of payment and amount	September 26 th 2014 (7,266 USD) 、 November 18 th 2014 (10,899 USD) : Total 18,165 USD

Title of contract	Installation of tide gauge
Contractor	Tec International Inc.
Contents of contract	Installation of tide gauge
Planned amount and Contract amount	Planned amount : 10,175,809 yen Contract amount : 10,135,000 yen
Contract procedure	General public bidding
Contract period	August 18 th 2014 to November 10 th 2014
Date of payment and amount	October 24 th 2014 (8,605,000 yen) 、 December 10 th 2014 (1,530,000 yen) : Total 10,135,000 yen

Title of contract	Sub-Consulting Agreement for JICA aided “The Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar” Activity in Rakhine State (2nd Year)
Contractor	Community Development Association
Contents of contract	CBDRM activity and HRD activity in Rakhine State
Planned amount and Contract amount	Planned amount : 14,052,440 yen Contract amount : 116,219 USD (13,705,795 yen)
Contract procedure	Negotiated contract
Contract period	Before amendment: February 12 2015 to November 27 th 2015 After amendment: February 12 2015 to February 29 th 2016
Date of payment and amount	February 20 th 2015 (34,866 USD)、 July 24 th 2015 (34,866 USD)、 March 11 th 2016 (46,487 USD) : Total 116,219 USD

Title of contract	Installation of Lightning Rod for Tide Gauge Station
Contractor	CIVIL SOLUTION CONSULTANTS LTD.
Contents of contract	Installation of Lightning Rod for Tide Gauge Station
Planned amount and Contract amount	Planned amount : 833,450 yen Contract amount : 6,947 USD (819,259 yen)
Contract procedure	Negotiation with estimates
Contract period	February 24 th 2015 to March 31 st 2015
Date of payment and amount	March 20 th 2015 (6,947 USD)

Title of contract	SALES CONTRACT OF THE PROJECT FOR ESTABLISHMENT OF END-TO-END EARLY WARNING SYSTEM FOR NATURAL DISASTER IN THE REPUBLIC OF THE UNION OF MYANMAR
Contractor	Demo Trade International Ltd.,
Contents of contract	Procure SSB equipment to be installed in Sittwe and Kayuk Phyu
Planned amount and Contract amount	Planned amount : 2,924,050 yen Contract amount : 23,940 USD (2,967,602 yen)
Contract procedure	Selective bidding
Contract period	June 18 th 2015 to September 30 th 2015
Date of payment and amount	October 21 st 2015 (23,940 USD)

Title of contract	SALES CONTRACT OF THE PROJECT FOR ESTABLISHMENT OF END-TO-END EARLY WARNING SYSTEM FOR NATURAL DISASTER IN THE REPUBLIC OF THE UNION OF MYANMAR
Contractor	Tun Electronic Trading Co., Ltd.,
Contents of contract	Procure loud speaker etc to be installed in Kayuk Phyu
Planned amount and Contract amount	Planned amount : 1,092,980 yen Contract amount : 4,597 USD (569,844 yen)
Contract procedure	Negotiation with estimates
Contract period	June 18 th 2015 to July 31 st 2015
Date of payment and amount	August 21 st 2015 (4,597 USD)

Title of contract	Sub-Consulting Agreement for JICA aided “The Project on Establishment of End-to-End Early Warning System for Natural Disaster in The Republic of The Union of Myanmar” Interview Survey
Contractor	MYANMA CHAYYAR CO., LTD. (MMCY)
Contents of contract	Interview survey for 2015 floods
Planned amount and Contract amount	Planned amount : 2,891,520 yen Contract amount : 22,000 USD (2,702,700 yen)
Contract procedure	Selective bidding
Contract period	December 11 th 2015 to February 29 th 2016
Date of payment and amount	December 18 th 2015 (8,800 USD) , March 11 th 2016 (13,200 USD) : Total 22,000 USD

Title of contract	Sub-Consulting Agreement for JICA aided “The Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar (4th Year)”
Contractor	Community Development Association
Contents of contract	HRD and CBDRM follow up activity in Rakhine State
Planned amount and Contract amount	Planned amount : 49,742,310 kyat Contract amount : 49,322,820 kyat (42,347 USD)
Contract procedure	Selective bidding
Contract period	June 17 th 2016 to January 31 st 2017
Date of payment and amount	July 1 st 2016 (16,939 USD)、February 11 th 2017 (25,408 USD) : Total 42,347 USD

Title of contract	Establishment of communication network system between DMH and MRTV
Contractor	Linn IT Solution Co., LTD
Contents of contract	Establishment of communication network system between DMH and MRTV
Planned amount and Contract amount	Planned amount : 1,979,748 yen Contract amount : 16,570 USD (1,694,779 yen)
Contract procedure	Selective bidding
Contract period	August 1 st 2016 to September 30 th 2016
Date of payment and amount	August 5 th 2016 (4,971 USD)、October 21 st 2016 (11,559 USD) : Total 16,570 USD

Amendment of subcontract

Title of contract	Sub-Consulting Agreement for JICA aided “The Project on Establishment of End-to-End Early Warning System for Natural Disaster in the Republic of the Union of Myanmar” Activity in Rakhine State (2nd Year)
Contractor	Community Development Association
Contents of contract	CBDRM activity and HRD activity in Rakhine State
Amendment day	November 27 th 2015
Amendment contents	Extension of subcontract period (No amendment of contract contents) Before amendment: February 12 2015 to November 27 th 2015 After amendment: February 12 2015 to February 29 th 2016
Reason	The Project period was extended to conduct additional survey for 2015 floods. So it was necessary for this subcontract also to extend the contract period from the view point of supervision.

Procured equipment

Type of equipment	Installed place		Number	Procured country	Operation start date	Working condition (frequency)
SSB wireless radio	Nay Pyi Taw	RRD	1	Myanmar	2015/4/7	Every day
		DMH	1		2015/4/8	
		GAD	1		2015/4/6	
	Pathein	RRD	1		2014/12/1	
		GAD	1			
	Labutta	RRD	1		2015/4/1	
		DMH	1		2016/1/15	
		GAD (District)	1		2015/4/1	
		GAD (Township)	1			
		Hlwa Zar village	1			
	Sittwe	RRD	1		2016/1/15	
		GAD	1			
	Kyauk Phyu	RRD	1			
		GAD (District/Township)	1			
Thea Tan village		1				
Satellite communication	Nay Pyi Taw	RRD	1	Myanmar	2014/10/1	Every week
	Pathein	RRD	1		2014/10/8	
	Sittwe	RRD	1		2016/2/22	
PC (Communication through optical fiber)	Nay Pyi Taw	RRD	1	Myanmar	2014/10/1	Every week
		DMH	1			
		GAD	1			
Loud speaker, Handy speaker	Labutta	Hlwa Zar village	2	Myanmar	2014/9/18	
		Kwa Kwa Lay village	2		2014/9/20	
		Shwe Kyun Thar village	2		2014/9/19	
	Kyauk Phyu	Thea Tan village	2		2016/1/15	
		Kon Baung village	2			
		Tan Kha Yae village	2			
		Let Nyot Ngon village	1			
CDMA telephone with strengthened antenna	Labutta	Hlwa Zar village	2	Myanmar	2014/9/18	During disaster
		Kwa Kwa Lay village	2		2014/9/20	
		Shwe Kyun Thar village	2		2014/9/19	
GSM telephone with strengthened antenna	Kyauk Phyu	Thea Tan village	2	Myanmar	2016/1/15	
		Kon Baung village	2			
		Tan Kha Yae village	2			
		Let Nyot Ngon village	1			
Solar system power	Labutta	Hlwa Zar village	3	Myanmar	2014/9/18	
		Kwa Kwa Lay village	2		2014/9/20	
		Shwe Kyun Thar village	2		2014/9/19	
	Kyauk Phyu	Thea Tan village	3		2016/1/15	

		Kon Baung village	2			
		Tan Kha Yae village	2			
		Let Nyot Ngon village	1			
Diesel engine	Kyauk Phyu	Thea Tan village	2	Myanmar	2016/1/15	
		Kon Baung village	2			
		Tan Kha Yae village	2			
		Let Nyot Ngon village	1			
Automatic tide gauge	Ayeyarwaddy	Haing Gyi Kyun	1	Japan	2014/10/17	Observation at all time
Manual tide gauge	Ayeyarwaddy, Rakhine	Labutta, Pyapon, Gwa	3	Myanmar	2016/1/25	Observation at all time
Optical fiber connection between DMH and MRTV	Nay Pyi Taw	DMH, MRTV	1	Myanmar	2016/12/16	Every day

Troubles in the procured equipment

Equipment	Automatic tide gauge
Trouble contents	The observed data by the automatic tide gauge was not recorded properly.
Causes of troubles	There was a fissure on conduit pipe for antenna cable. There was a possibility to have some troubles inside DCP transmitter or logger.
Trouble period	Irregular from 2014 to 2016
Repaired period	2015/11/1, 2016/11/10
Repair agent	Service by Oriental Electronics, Inc.
Cost	Labor cost and its transportation, etc.

(g) Counterpart list

No	Output	Organization	Position (As of Nov. 2016)	As of Feb. 2014	As of May 2015	As of May 2016	As of Oct. 2016
1	1. EW system improvement	RRD	Deputy Director, Administrative Section	U Aye Min Thu	U Aye Min Thu	U Aye Min Thu	-
2			Assistant Director	-	Win Ohnmar	-	-
3			Upper Division Clerk	-	Daw Nwe Ni Hlaing	-	-
4			Director, CR Section	-	-	-	U Win Htein Kyaw
5			Deputy Director EOC Section	-	-	-	Daw Thiri Maung
6			Staff officer	-	-	-	Daw Su Nandar Myint
7	DMH	Deputy Director	Executive Engineer	-	U Hla Htun	U Hla Htun	U Hla Htun
8			Officer	-	U Ye Htut	U Ye Htut	U Ye Htut
9			Officer	-	U Htun Lin Kyaw	U Htun Lin Kyaw	U Htun Lin Kyaw
10	GAD	Director	Staff officer	-	U Ye Naing	U Ye Naing	U Ye Naing
11			Staff officer	-	U Than Tun Aye	U Than Tun Aye	U Than Tun Aye
12			Staff officer	-	U Nay Myo Tun	U Nay Myo Tun	U Nay Myo Tun
13	2. HRD activity	RRD	Director, Relief Section	-	U Chum Hre	U Chum Hre	-
14			Assistant Director	-	Daw Su Su Tun	Daw Su Su Tun	-
15			Assistant Director, CR Section	-	U Thurein Htun	U Thurein Htun	-
16			Director, Training Section	-	-	-	Dr. Min Thein
17			Deputy Director	-	-	-	Dr. Aung Thurein
18			Assistant Director	-	-	-	Daw Khaone Mon Mon Ei
19	DMH	Assistant Director	Officer	-	Dr. Yin Myo Min Hwe	Dr. Yin Myo Min Hwe	Dr. Yin Myo Min Hwe
20			Officer	-	Daw Han Swe	Daw Han Swe	Daw Han Swe
21			Officer	-	U Ye Naing	U Ye Naing	U Ye Naing
22	GAD	Staff Officer	Staff Officer	-	U Nay Myo Tun	U Nay Myo Tun	U Nay Myo Tun
23			Staff Officer	-	U Nay Zaw Aung	U Nay Zaw Aung	U Nay Zaw Aung
24			Staff Officer	-	Daw Phyu Lai Lai Htun	Daw Phyu Lai Lai Htun	Daw Phyu Lai Lai Htun
25	3 CBDRM activity	RRD	Director, Relief Section	-	Daw Phyu Lai Lai Htun	Daw Phyu Lai Lai Htun	-
26			Staff Officer, Relief Section	-	Daw Aye Nandar Win	Daw Aye Nandar Win	-
27			Assistant Director, Relief Section	-	Daw Htwe Kyi	Daw Htwe Kyi	Daw Htwe Kyi
28	DMH	Deputy Director	Staff Officer	-	Daw Nyein Nyein Naing	Daw Nyein Nyein Naing	Daw Nyein Nyein Naing
29			Staff Officer	-	Dr. Wah Wah Thein	Dr. Wah Wah Thein	Dr. Wah Wah Thein
30			Deputy Director	-	Daw Ohn Khin	Daw Ohn Khin	-
31	GAD	Staff Officer	Staff Officer	-	U Nay Zaw Aung	U Nay Zaw Aung	U Nay Zaw Aung
32			Staff Officer	-	U Zaw Myo Htet	U Zaw Myo Htet	U Zaw Myo Htet
33			Staff Officer	-	U Win Htein Kyaw	U Win Htein Kyaw	-
34	4 Expansion Plan	RRD	Director	-	Daw Htwe Kyi	Daw Htwe Kyi	-
35			Assistant Director	-	U Than Kyaw Htay	U Than Kyaw Htay	-
36			Junior Officer	-	-	-	Daw Lai Lai Aye
37			Director	-	-	-	U Win Zaw Htay
38			Deputy Director	-	-	-	Daw Khaing Manlar Kyaw
			Assistant Staff Officer	-	-	-	Daw Khaing Manlar Kyaw

39							U Sein Win	-		-	
40			Deputy Director				Daw Sein Than	-			
41			Assistant Director				U Phyo Maung Maung	-			
42			Staff Officer					-			Daw Pa Pa Swe
43			Assistant Engineer					-			Dr Tin Mar Htay
44			Staff Officer					-			Daw Pa Pa Tun
45			Director				U Ye Naing	-			U Ye Naing
46			Staff Officer				U Zay Naw Win	-			U Zay Naw Win
47			Deputy Staff Officer				U Thein Htike	-			U Thein Htike

JICA PROJECT BRIEF NOTE

The Project on Establishment of End-to-End Early Warning System for Natural Disaster In the Republic of the Union of Myanmar



1. Background and Challenge of the Project

Myanmar is experiencing a number of natural disasters every year in various regions that cause casualties, and damage has occurred accordingly. Cyclone Nargis in 2008 struck in the south western edge of Ayeyawaddy delta and crossed the delta to Yangon. Nargis caused around 13.8 thousand deaths and missing people and destroyed people’s lives. The ASEAN Secretariat reported that the total financial damage was more than 40 billion US dollars. Additionally, “Giri”, the cyclone that hit Rakhine State in western Myanmar, caused

45 deaths and 10 million refugees. Its financial damage is calculated at 5.7 million US dollars.

After Nargis, JICA conducted a project formulation survey in August 2008. As a result of the survey, it was found that information regarding the cyclone had not been provided to people in the affected area because of insufficient communication systems. It is recognized that the need for establishment of a natural disaster early warning system is urgent.

Weather warning messages are issued by the Department of Meteorology and Hydrology, Ministry of Transport (DMH). Information transfer to the community level is under the responsibility of the Relief and Resettlement

Department, Ministry of Social Welfare, Relief and Resettlement (RRD). Preparation and enhancement of the cooperation system by both agencies is essential.

As mentioned above, the appropriate warning issuance and end-to-end early warning system for natural disasters is an urgent issue. The Myanmar government requested assistance from the Japanese Government on the capacity enhancement for weather forecasts and warning issuance, community based disaster management etc. In response to the official request of the GOM, JICA conducted a Detailed Planning Survey for the Project and confirmed and signed the minutes of meetings (M/M) and held a meeting on the Project Description on the 23rd of August 2012, and signed the Record of Discussion (R/D) on the 10th of December 2012. The JICA Expert Team contracted with JICA on the 1st of March 2013 and agreed on the content of an IC/R and activity plan with the Myanmar side on the 12th of March.

2. Approach to problem solving

(1) Project Period

4 years: March 2013 to March 2017

(2) Target Areas

Ayeyarwady Region and Rakhine State of Myanmar

(3) Counterparts

Implementing Agencies

- Relief and Resettlement Department, Ministry of Social Welfare, Relief and Resettlement (RRD).

- Department of Meteorology and Hydrology, Ministry of Transport (DMH)

Relevant Agencies

- Local Disaster Management Committee members at each level (local government level, district level, township level and community level)

(4) Target Disasters

- The Project basically targets all disasters caused by climatic phenomena (mainly cyclones, high tides and floods) and tsunami.
- Pilot projects target those that occur in the target areas from among the disasters mentioned above.

(5) The Project Framework

The improved model of end-to-end early warning systems for natural disaster with an expansion plan is set up in pilot areas.

Output 1: Information management and emergency communication systems for natural disaster are improved.

Output 2: Response capacity for natural disasters at various levels (central level including NDMC), local government level and township level is enhanced.

Output 3: Response capacity for natural disasters of the community is enhanced.

Output 4: The expansion plan to other regions, which includes lessons learned through activities under Output-1 to Output-3, is prepared.

The Project framework is shown in Figure 1.

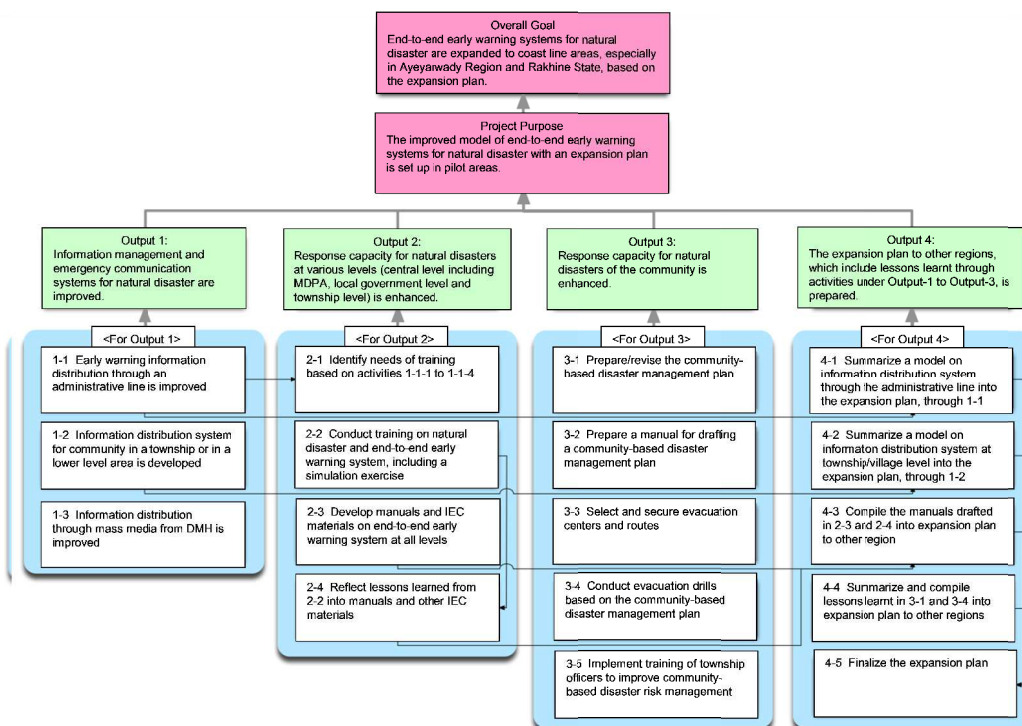


Figure 1 The Project Framework

3. Practice result of the approach

The overall schedule is shown as below.

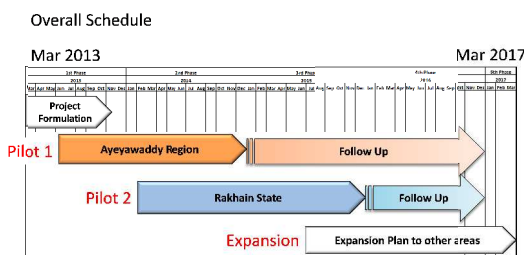


Figure 2 The Project schedule

The pilot activity plans in Ayeyarwaddy Region and Rakhine State were prepared. Then, the pilot activities and follow up activities were conducted. Finally, the expansion plans were prepared.

The summary of each output activity is shown below.

[Output1: Improvement of Early Warning System]

(1) Clarification of Role Allocation

The disaster management activities which

require close coordination among disaster management organizations both at national and local (state/region as well as district and township) levels are subdivided into concrete actions to take in the event of a cyclone impact, and the TIMELINE is prepared so that it will show the differentiation of responsible and supporting organizations for those actions in a time series both in the preparedness and emergency response stages.

(2) Capacity Enhancement of Tide Monitoring and Analysis

Automatic tide gauge was installed at Haing Gyi Kyun and three simple tide gauges were installed at Labutta, Pyapon and Gwa. The following capacities of DMH were enhanced through the project activities.

- Installation and maintenance of the real time radio wave tide gauge and simple tide gauge
- Prediction of the astronomical tide level using observed tide data by the harmonic analysis (10 constituent and 60 constituent)
- Clarification of the storm surge and an astronomical tide level every day, and recognition of the storm surge at the time of a cyclone.

- Understanding of the necessary actions to be taken to improve storm surge forecast and relation with the above actions



Photo 1 Installed automatic tide gauge

(3) Improvement of Warning Messages
 Since the previous contents of warning messages issued by DMH did not specifically mention when and where to give a warning and its danger level, the information was not always useful for the recipients. Improvement of the contents of cyclone warning was discussed with the officers of DMH HQs in this project. The procedure to improve the warning message continuously and the system in which RRD, DMH and GAD will cooperate each other were also discussed.

(4) Improvement of information dissemination system

The system to disseminate the information issued by DMH HQs to residents was proposed and established in the pilot areas by installing the equipment.

Table 1 Installed information transmission equipment

Type of equipment	Installed place	#
SSB wireless radio	Nay Pyi Taw, RRD, Pathein, Labutta, Sittwe, Kyauk Phyu	15
Satellite communication	Nay Pyi Taw, Pathein, Sittwe	3
PC (Communication)	Nay Pyi Taw	3

through optical fiber)		GAD	
Equipment for village level (Loud speaker, Handy speaker, telephone with strengthened antenna, etc.)	Labutta, Kyauk Phyu	Pilot villages	13
Optical fiber connection between DMH and MRTV	Nay Pyi Taw	DMH MRTV	1

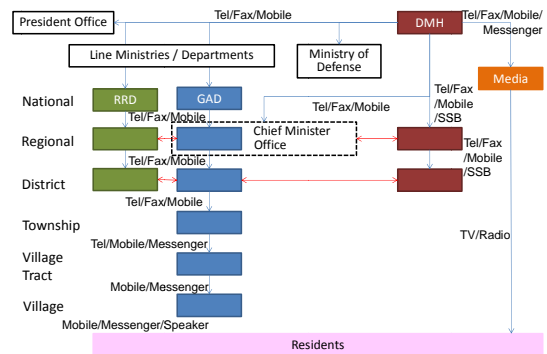


Figure 3 Information Dissemination System



Photo 2 Satellite communication (Left), SSB wireless radio (Right)



Photo 3 Equipment for village level

The installed equipment is operated and maintained properly by using the operation and maintenance manual prepared by this project.

Responsible officers could get used to use the equipment through the information transmission exercises.

(5) Utilization of mass media for DRR

Awareness for DRR of officers of MRTV and Pyinsawadi FM, especially the officers who had participated in the training program in Japan, was enhanced through the project activities. In the meeting held after the training program in Japan, some ideas to improve their activities were raised such as the real time broadcasting from the affected areas by disasters, interviews to affected people, improvement of programs to be understood easily, and awareness enhancement program during normal period etc. Some of the officers presented their ideas actively in the PIC and JCC meetings and “Improvement of Disaster Broadcasting” was selected as one of the major activities in the on-going “MRTV Capacity Enhancement Project” conducted by JICA.

(6) Implementation of Storm Surge Simulation

In order to improve the awareness of people in the pilot areas in Rakhine State, a storm surge simulation was implemented to make people understand what will happen in the villages if a strong cyclone like Nargis hits the villages.

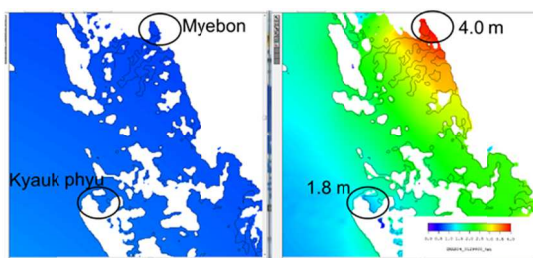


Figure 4 Plan View of Storm Surge Anomaly

It has been understood very well by the DMH officers that the scientific based risk assessment is very effective for the education of people, and the effects of the normal tidal changes to the inundation by the storm surge are very big. Therefore, the understanding of the importance of tide monitoring has been increased.

(7) Implementation of Flood Survey 2015

Survey report on 2015 floods was prepared consisting of “Hydro-Meteorological Survey” and the “Interview Survey”. The importance to prepare and accumulate the disaster reports after the disasters, and to utilize the reports to the next disasters was understood by the participants very well through the workshop participated by related agencies.

[Output 2 : Capacity enhancement of government officer]

(8) Human Resource Development activity

In the 2nd and 3rd year, the human resource deployment activities related to early warning including some meetings, seminars, and exercises were conducted as pilot activities targeting Working Group members (ten officers in the Ayeyarwaddy Region and nine officers in Rakhine State from RRD, DMH, and GAD).

By preparing the Early Warning manual, the Working Group members received the necessary knowledge on the information transmission route and equipment for early warning, and actions to be taken at each stage before a cyclone approaches. Also, it is expected that the related organizations have the common understanding for the Early Warning System.

Contents	
1.	Purpose of Early warning manual
2.	Information transmission route and equipment
2.1	Information transmission route
2.2	Contact list
2.3	Manual of equipment
3.	Actions to be done by each organization
3.1	Decision and implementation of actions
3.2	Consideration of actions to be taken
4.	Send / Receive Format of EW information
4.1	Warning message from DMH
4.2	Instruction of action
4.3	Local situation

Figure 5 Contents of Early Warning manual

By preparing the HRD Program, the Working Group members received the general knowledge on DRM, Early Warning System, and lessons learned from recent huge disasters in Japan, the Philippines, and Myanmar. Also, through the implementation of the follow up activity, they came to be able to work as the lecturer of the HRD Program.

Table 2 Contents of HRD Program

Time	Contents of program
15min	Introduction of HRD Program
15min	IEC Material-1: Cyclone Nargis
20min	Program 1: General overview of Disaster Risk Reduction
15min	IEC Material-2: Interviews with Victims
20min	Program 2: General overview of Early Warning System
15min	IEC Material-3: Typhoon Yolanda
10min	(Coffee break)
15min	IEC Material-4: Great Indian Ocean Tsunami
20min	Program 3: Lessons Learned from Recent Disasters
15min	IEC Material-5: Great East Japan Earthquake
20min	Program 4: Simulation for Inundation due to Storm Surge, and Tsunami simulation

(9) Implementation of information transmission exercise

The information transmission exercise was conducted with the following objectives.

- Confirmation of information transmission routes and processes
- Familiarization with the installed communication equipment
- Utilization and improvement of Early Warning manual prepared by HRD activity
- (Evacuation Drill) Community people understand the meaning of warning messages and take proper actions

Table 3 Results of information transmission exercise

Year	Average time (from Nay Pyi Taw to village level)
Second	49 minutes
Third	36 minutes
Fourth	31 minutes

It is observed that the average time from Nay Pyi Taw to village level is getting shorter year by year. Also, it was confirmed that the information could be disseminated promptly by SSB since it was taking about ten minutes to disseminate the information from Nay Pyi Taw to the village level by SSB in the information transmission exercise.

[Output 3 : Capacity enhancement of community people]

(10) CBDRM activity

In the 2nd and 3rd year, the CBDRM activity in Ayeyarwaddy Region and Rakhine State was conducted as follows:

- TOT Workshop (3 days/5days) targeting VTDPC members
- CBDRM Workshop by trained VTDPC members (5 days*3 villages)(In Rakhine State a sub-contracted NGO mainly conducted)
- Implementation of Community Infrastructure Support Project
- Implementation of Evacuation Drill with the information transmission exercise.



Photo 4 CBDRM Workshop



Photo 5 Evacuation route constructed by Community Infrastructure Support Project (Before: Left, After: Right)



Photo 6 Evacuation drill

The outputs of the CBDRM activities of the Project are the DM plan of the pilot villages which include evacuation map, information transmission flow and actions to be taken during a disaster. Considering the expansion to other regions, the Project developed a manual which includes the methodology of the CBDRM activities conducted in the pilot areas and an educational DVD of the CBDRM workshops and evacuation drills for residents.



Figure 6 Educational material for villagers for cyclones

[Output 4 : Expansion Plan]

(11) Preparation of Expansion plan

By the activities for Output 4, the model of early warning system was established and the expansion plan was prepared to disseminate the established model to other areas in Ayeyarwaddy Region and Rakhine State based on the experiences of pilot activities for Output 1, Output 2 and Output 3.

The expansion plans were prepared for Ayeyarwaddy Region and Rakhine State respectively. Three kinds of model activities such as installation of information dissemination equipment, human resources development activity, and community based disaster risk management activity were described, and the five years plan to cover

whole townships in Ayeyarwaddy Region and Rakhine State and their necessary budget were described in the expansion plan. Necessary budget is 294 million Kyat for Ayeyarwaddy Region and 214 million Kyat for Rakhine State.

The effects by the implementation of expansion plan are shown below.

Installation of Information Dissemination Equipment

- All GAD / RRD local offices in Rakhine (16 offices) and Ayeyarwaddy (34 offices) will be able to communicate simultaneously through SSB radio network.
- 16 villages in Rakhine and 26 villages in Ayeyarwaddy will be equipped with speakers and telephones.

Implementation of HRD Activity

- Government officers at State/Region, all Districts and Townships in Rakhine (1,200 officers) and Ayeyarwaddy (1,700 officers) will have basic knowledge on DRR and Early Warning. (50 officers are supposed to participate in one HRD program.)
- 10 times of information transmission exercises will be conducted.

Implementation of CBDRM Activity

- 3,200 village people in Rakhine and 5,200 village people in Ayeyarwaddy will be trained for CBDRM activity including preemptive evacuation. (200 people are supposed to participate in the CBDRM activity in one village.)
- 42 times of evacuation drills will be conducted.

[Other activities]

(12) Holding the Annual Seminar

On July 8th 2014, July 7th 2015, and January 24th 2017, the Project held the annual seminar by inviting 100 officers from disaster management related organization targeting to share the Project progress, and to strengthen the capacity of the related officers.

(13) Holding the Counterpart Training in Japan

The Project conducted counterpart training in Japan in 2013, 2014, and 2015. Total 33 CPs participated in the training.

They learned information transmission during disaster, roles and responsibilities of early warning at national level, prefecture level and municipality level, and disaster management drill in Japan.

4 . Issues, Initiatives and Lessons Learned for Project Implementation

Further Improvement of Early Warning System

The early warning system was improved in this project by conducting mainly the improvement of information dissemination system, capacity enhancement of related government officers, and capacity enhancement of community people. In other words, the system was improved to disseminate the information issued by DMH to the village level by union and local level government officers, and the resident people evacuate to the safe locations. The project prepared the expansion plan to disseminate the improved early warning system to other areas. Although there is a financial issue, the implementation of expansion plan will lead to improve the early warning system.

On the other hand, although the contents of expansion plan are the important items on the early warning system, the study or the analysis to know the risk areas and safe locations to evacuate are not included in the plan. The science based risk assessment is emphasized in the Sendai Framework. The issuance of warning message and establishment of evacuation centers etc. based on the risk assessment are also indispensable items for improvement of early warning system, and are to be promoted.

Project Implementation in Cooperation with Related Agencies

RRD and DMH are the main counterpart agencies which signed on the Record of Discussion of the project. However, the JICA Expert Team tried to establish and strengthen the cooperative relationship with GAD by recognizing the importance to have a good relation with GAD, since the GAD has an institutional system from union level to village level, and GAD has a practical authorizations for decision making on project activities. And

the JICA Expert Team tried to establish the framework to implement the DRR activities efficiently and in cooperation with related agencies through the discussion on the roles on DRR of related agencies. And the JICA Expert Team also tried to enhance the relationship with related agencies by inviting the related agencies to discussions, workshops, seminars, and trainings etc. It was appreciated by the other donors that the networks among related agencies strengthened by this project were effective for their future support for Myanmar government on DRR.

Effective Input of Project Fund and Equipment

The policy of this project was that the financial support was provided for the pilot activities by the project, but the followed expansion plan would be implemented by the Myanmar side. In the project, the draft expansion plan was prepared at the end of third year activity, and the finalization of expansion plan and discussion to secure the budget for implementing the expansion plan were conducted in the fourth year activity. It can be said that the sustainability of the project activity would be higher if the new ministers and related officers could understand the contents of expansion plan and could have more realistic images on the implementation of expansion plan such by providing financial support for a part of expansion plan under the difficult situations such as the replaces of related officers during the third year and fourth year activities.

Project implementation period
March, 2013 – March, 2017

February, 2017 Vol. 4

(i) List of collected materials

No	Name of Books	Organization	Version	Target Audience	Available	Pages	Year
1. International Framework							
1-1	Asean Agreement On Disaster Management And Emergency Response	ASEAN	Eng	UN, INGO, NGO and Government	Soft	124	
1-2	Asean Regional Forum Strategic Guidance For Humanitarian Assistance	ASEAN	Eng	UN, INGO, NGO and Government	Soft	48	
1-3	AADMER WORK PROGRAMME 2016 - 2020	ASEAN	Eng	UN, INGO, NGO and Government	Soft	100	2016
1-4	UN Strategic Framework for Myanmar	UN	Eng	UN, INGO, NGO and Government	Soft	32	
1-5	Implementing HFA		Eng	UN, INGO, NGO and Government	Soft	110	
1-6	Recommendations for Recovery and Reconstruction in Post-2015 Global Framework for DRR (HFA2)	International Recovery Platform	Eng	UN, INGO, NGO and Government	Soft	33	
1-7	Implementation of the Hyogo Framework for Action	UNISDR	Eng	UN, INGO, NGO and Government	Soft	66	
1-8	Guidance and Indicator Package for Implementing Priority Five of the Hyogo Framework	UN	Eng	UN, INGO, NGO and Government	Soft	60	
1-9	World Conference on Disaster Reduction 18-22 January 2005, Kobe, Hyogo, Japan	ISDR	Eng	UN, INGO, NGO and Government	Soft	25	
1-10	9th Meeting of Regional Consultative Committee on Disaster Management 28-30 November, 2011 – Phnom Penh, Cambodia	RRD	Eng	Government	Soft	19	2011
1-11	HFA Implementation in Myanmar Presentation files on Int'l framework and DRR (MAPDRR WS 6.15. 2016)	RRD	Eng	Government	Soft	9 files	2016
2. Government Law and Plan							
2-1	Disaster Management Law	Government of Myanmar	Eng	Government	Soft	3	2013
2-2	Disaster Management Rule	MSWRR	Eng	Government	Soft	31	2015
2-3	Institutional Arrangements for Disaster Management in Myanmar	ADPC, Social Welfare	Eng	Government	Soft	161	2009
2-4	Myanmar Action Plan on Disaster Risk Reduction (MAPDRR)	Social Welfare, RRD	Myan/Eng	UN, INGO, NGO & Government	Soft	91	2012
2-5	Report for MAPDRR 2011 - 2012	RRD	Eng	Government	Soft	55	2012
2-6	Lesson Learnt Workshop on implementation of MAPDRR	RRD	Eng	UN, INGO, NGO & Government	Soft/PPT	39	2016
2-7	Standing Order on Natural Disaster Management in Myanmar	Government	Eng	Government	Soft	161	2009
2-8	Township Disaster Management Plan	Government	Myan	Government	Soft	77	2010
2-9	Disaster Risk Management Sector Plan	Technical Working Group on DRR	Eng	UN, INGO, NGO & Government	Soft	42	2008
2-10	Ayeyarwaddy Region Disaster Management Plan	Ayeyarwaddy Region	Eng	Government	Soft	45	2013
2-11	Region or State Government Law	Government	Eng	Government	Soft	13	2010
2-12	Organization and Tasks of Natural Disaster Protection Committee	GAD Labutta	Eng	Government	Soft	11	2013
2-13	GAD Regional Data Labutta Township	GAD Labutta	Eng	Government	Soft	45	2013
2-14	Communication Network Project to be able to use in Emergency	GAD Labutta	Eng	Government	Soft	22	2011
2-15	Guide Book For Provision Of Natural Disaster Management Plan At Township Level	MSWRR, MOHA	Eng/Myan	Government	Soft	43	2010
2-16	Township Disaster Management Plan (Bogalay Township)	GAD Bogalay	Eng/Myan	Government	Soft	62	2011

2-17	Disaster Management Plan in Rakhine State (Extracted)	GAD	Eng	Government	Soft	41	-
2-18	Disaster Management Plan in Kyauk Phyu Township	GAD Kyauk Phyu TS	Eng	Government	Soft	15	2014
2-19	Myanmar NGO Contingency Plan	MNGO-CP	Myan	UN, INGO, NGO &	Soft	111	2010
2-20	Myanmar Tsunami Preparedness & Risk Reduction (TPRR) Program. 2015-2020	DMH, RRD	Eng	Government	Soft	70	2014
2-21	(Draft) Myanmar National Framework on Community Disaster	RRD, ADB, DRRWG	Eng	Government	soft	81	2016
3. Mainstreaming DRR							
3-1	Mainstreaming Disaster Risk Reduction into Shelter DRR Good Practices in Myanmar/ To Reduce Disaster on Construction Works	European Commission, Actionaid & Ministry of Social Welfare Relief and Resettlement	Eng/Myan	INGO, NGO & Government	Hard Copy	55	unknown
3-2	Guidance on Mainstreaming Disaster Risk Reduction in the Education Sector, Myanmar - Rural Setting	ADPC,RRD, Education Department	Eng	INGO, NGO, Government, Education Sector	Soft	83	2010-2011
3-3	Guidance on Mainstreaming Disaster Risk Reduction in the Health Sector, Myanmar - Rural Setting	ADPC,RRD,Health Department	Eng	INGO, NGO, Government, Health Sector	Soft		2010-2011
3-4	Mainstreaming Disaster Risk Reduction into Livelihood	UNDP	Eng	INGO, NGO & Government	Soft		2011
3-5	Mainstreaming Disaster Risk Reduction into Education	UNDP	Eng	INGO, NGO & Government	Soft		2011
3-6							
4. Hazard Information							
4-1	Manual on Cyclone (Causes, Effects & Preparedness)	UNDP, RRD	Eng/Myan	Community, NGO, NGO & Government	Soft	48	2011-2012
4-2	Manual on Earth Quake(Causes, Effects & Preparedness)	UNDP, RRD	Eng/Myan	Community, INGO, NGO & Government	Soft	50	2011-2012
4-3	Manual on Fire(Causes, Effects & Preparedness)	UNDP, RRD	Eng/Myan	Community, INGO, NGO & Government	Soft	50	2011-2012
4-4	Manual on Flood(Causes, Effects & Preparedness)	UNDP, RRD	Eng/Myan	Community, INGO, NGO & Government	Soft	50	2011-2012
4-5	Hazard Profile of Myanmar	RRD DMH	Myan/Eng	HRD	Soft	97	2009
4-6	Living with Earthquakes	Plan	Myan	Community	Soft Copy	1	unknown
4-7	Disaster Risk Reduction and Early Warning (Poster, leaflets) IEC materials	Myanmar Engineer Society	Myan	all level	Soft	16	2009
4-8	Drought Educational Pamphlet	EU and Action Aid	Myanmar	Community level	Soft		2010-2011
4-9	Erosion Educational Pamphlet	EU and Action Aid	Myan				
4-10	Earthquake Educational Pamphlet	EU and Action Aid	Myan				
4-11	Flood Educational Pamphlet	EU and Action Aid	Myan				
4-12	Cyclone Educational Pamphlet	EU and Action Aid	Myan	Government, Villagers & Community	Soft/Hard Copy		unknown
4-13	Fire Educational Pamphlet	EU and Action Aid	Myan				
4-14	Tsunami Educational Pamphlet	EU and Action Aid	Myan				
4-15	Poster (our protect from Heavy Rain, Storm & Flood)	UN-HABIT & DFIT	Eng/Myan	Community	Soft Copy	1	unknown
4-16	Multi Hazard Risk Assessment in Nargis Affected Areas	UNDP	Eng	INGO, NGO & Government	Soft	285	2011
4-17	Multi Hazard Risk Assessment in Rakhine State	UNDP	Eng/Myan	INGO, NGO & Government	Soft	301	2011

4-19	Multi Hazard Risk Assessment in Rakhine State Additional Technical Details	UNDP	Eng	INGO, NGO & Government	Soft	179	2011
4-20	Early Warning Poster	Save the Children	Myan	Community	Soft	1	2011
5. CBDRM							
5-1	Inclusive Community-Based Disaster Risk Reduction; Guidance on Good Practice in the Ayeeyarwaddy Delta, Myanmar	MCCR	Eng	INGO, NGO & Government	Soft	36	2015
5-2	Inclusive Framework and Toolkit for Community-Based Disaster Risk Reduction in Myanmar	MCCR	Eng	INGO, NGO & Government	Soft	43	2016
5-3	Inclusive CBDRR power point	Action Aid	Myan	INGO, NGO & Government	PPT		2013
5-4	Training Of Trainers "Inclusive Community-based Disaster Risk Reduction" A Training Pack	MCCR	Eng	INGO, NGO & Government	Soft	128	2013
5-5	Community Based Disaster Risk Management DRR Good Practices in Myanmar	UNDP, RRD	Eng/Myan	Community Level, Field Facilitator, Volunteer Teachers, Education Sector	Soft	111	2011
5-6	School Safety Manual	UNDP, RRD	Eng/Myan	INGO, NGO & Government	Soft	61	-
5-7	Manual on Community First Aid	European Commission, DFID, ADPC & UNDP	Eng/Myan	INGO, NGO & Government	Soft	83	-
5-8	Manual Book for Community Based Search and Rescue	UNDP, EC, DFID, Denmark & ADPC	Eng/Myan	Community Volunteers, NGO, INGO	Soft	78	-
5-9	Disaster Preparedness Simulation Guideline For Community Level	Action Aid & European Commission	Myan	Community Level, Field Facilitator	Soft/Hard Copy	41	2011
5-10	Manual on Community Based Disaster Risk Management	ADPC	Eng	INGO, NGO, Government	Soft	74	2010-2011
5-11	VCA Guidelines	MRCS & ICRC	Myan	Government & Community	Soft Copy	60	2010
5-12	Participatory Vulnerability Analysis At Community Level Guidelines For Field Staff	Action Aid	Eng	INGO, NGO, Government	Soft	42	-
5-13	Training Manual on Disaster Risk Reduction Programming in Climate Change Context in Myanmar	Action Aid	Eng	INGO, NGO, Government	Soft	58	2011
5-14	Child-led Disaster Risk Reduction A Practical Guide	Save the Children	Eng	INGO, NGO & Government	Soft Copy	59	2009
5-15	How To Mobilize Coastal Communities In Labutta Township To Build Safer And More Resilient Villages	Malteser International	Eng	INGO, NGO & Government	Soft	102	-
5-16	CBDRR Guide Facilitator Guidebook	MRCS	Eng/Myan	INGO, NGO & Government	Soft	66	2014
5-17	Manual on Community-Based Disaster Risk Reduction	MRCS	Eng/Myan	INGO, NGO & Government	Soft	118	2014
5-18	Community-Based Disaster Risk Reduction Step by Step	MRCS	Eng/Myan	INGO, NGO & Government	Soft	76	2014
5-19	Civil Society on DRR Hand book (First Aid)	MRCS	Myan	all level			
5-20	Guidelines & Preparedness on Village Level	Actionaid & European Commission	Myan	Community Level & Village DRM Committee	Hard Copy	38	2011
5-21	Technical Workshop on CBDRM	UNDP	Eng	INGO, NGO & Government	Soft	48	2008
5-22	A Study On Knowledge, Attitudes And Practices (KAP) For Disaster Risk Reduction In Northern Rakhine State	USAID	Eng	INGO, NGO & Government	Soft	50	2015
5-23	A study report on the existing policies and practices on disaster risk reduction relating to Myanmar coastal fishing communities	Action Aid	Eng/Myan	INGO, NGO & Government	Soft	44	2011
5-24	Study on disaster vulnerability and preparedness of small and medium scale fisher folks in coastal region of Myanmar	Action Aid	Eng/Myan	INGO, NGO & Government	Soft	65	-

5-25	First Civil Society Forum on CBDRM Institutionalisation	Action Aid, ADPC, MRCS, Save the Children UNDP	Eng	INGO, NGO & Government	Soft	66	2009
5-26	Community-Driven Recovery: Cyclone Nargis One Year On	UNDP	Eng	INGO, NGO & Government	Soft	76	2009
5-27	Consultation on Emerging DRR Needs in Changing Context of Partnership for Disaster Risk Reduction DRR Good Practices in Myanmar	MRCS	Eng	INGO, NGO & Government	Soft	16	2012
5-28		UNDP	Eng	INGO, NGO & Government	Soft	93	2011
5-29	DMTC TOT CBDRM	UNDP	Myan	NGO & Government	PPT		2016
5-30	Community-based Disaster Risk Reduction Project Manual Ayeayawady Region, Myanmar	CWS	Eng/Myan	Community, NGO, Government	Soft	60	2016
6. DRR Training Material							
6-1	Disaster Management Courses Facilitator guide	RRD	Myan/Eng	Government & NGO, INGO	Soft	190	2012
6-2	Disaster Management Courses Participant guidebook	RRD	Myan/Eng	INGO, NGO & Government	Soft Copy	178	2012
6-3	Manual Book on Myanmar Climate Change to Disaster Risk Reduction	European Commission & Actionaid	Eng/Myan	INGO, NGO & Government	Hard Copy	44	Oct-11
6-4	Handbook for a School based Risk Reduction Initiative	IFRC	Eng	INGO, NGO & Government	Soft	96	2015
6-5	Myanmar Tsunami Exercise Guidebook	RRD, DMH	Eng	INGO, NGO & Government	Soft	82	2014
6-6	Basic Disaster Management Course	RRD (MCCDDM)	Myan	INGO, NGO & Government	PPT file		2016
7. Shelter and Housing							
7-1	Lessons Learned & Way Forward for Resilient Shelter Interviews in Rural Myanmar	ISDR & Norwegian Ministry of Foreign Affairs	Eng	INGO, NGO & Government	Hard Copy	146	2011
7-2	How To Build A Safer Shelter, A guide to households on how to build a shelter that is safer against natural forces	Schweizerische Eidgenossenschaft, UNHABITAT, DFID & Myanmar Engineering Society, UNHABITAT & UNHABITAT	Eng	INGO, NGO, Government, village shelter committee (carpenter) & Community	Soft/Hard Copy	15	2010
7-3	Guidelines on Retrofitting of Rural Houses in Myanmar	Myanmar Engineering Society, UNHABITAT & UNHABITAT	Eng	INGO, NGO, Government & Community Level	Soft/Hard Copy	43	2010
7-4	Report on Impact Study on Disaster Resilient Cyclone Shelter	UNHABITAT	Eng	INGO, NGO & Government	Soft	87	2011
7-5	Cyclone Shelter Assessment	UNHABITAT	Eng	INGO, NGO & Government	Soft	26	2012
7-6	Village Shelter Committee Guide, Guide For Village Shelter Committee on How To Promote To Build Back Safer	Schweizerische Eidgenossenschaft, UNHABITAT, DFID & UNHABITAT & USAID	Eng	INGO, NGO, Government, village shelter committee (carpenter) & Community	Soft/Hard Copy	31	2010
7-7	Villager on Housing Committee Guide Line	UNHABITAT & USAID	Myan	INGO, NGO, Government, village shelter committee (carpenter) & Community	Hard Copy	31	2010
8. DRR Terms							
8-1	DRR Glossary	UNHABITAT	Myan	all level			
8-2	Standardization of DRR Terms	UNHABITAT	Myan	all level	soft	41	
8-3	Report of Workshop on Standardization of Disaster Risk Reduction Terminology in Myanmar Language (Chatrium Hotel)	UNDP, RRD & UN-HABITAT	Eng	INGO, NGO & Government	Soft Copy	4	Dec-10

9. DRR Reports									
9-1	Post Nargis Recovery and Preparedness Plan		Eng	INGO, NGO & Government	Soft Copy	26	Nov-08		
9-2	Post Nargis Joint Assessment	ASEAN	Eng	UN, INGO, NGO &	Soft	213	2008		
9-3	Disaster Management Reference Handbook	Center for excellence in DM and HA	Eng	INGO, NGO & Government	Soft Copy		2014		
9-4	Learning from Cyclone Nargis	UNEP	Eng	INGO, NGO & Government	Soft Copy	32	2009		
9-5	Myanmar Post-disaster Needs Assessment Of Floods And Landslides July-september 2015	Government of Myanmar	Eng	INGO, NGO & Government	Soft	322	2015		
9-6	Post Nargis Social Impacts Monitoring April 2010	ASEAN	Eng	INGO, NGO & Government	Soft	72	2010		
0. Material in Myanmar Language									
1	Comprehensive Disaster Risk Reduction Programme (CDRRP)	UN-HABIT	Myan	INGO, NGO & Government	Soft Copy	41	unknown		
2	Natural Hazard to Development Plan Small Organization (Book-2)	European Commission & Actionaid	Myan	Community Level	Soft/Hard Copy	315	2011		
3	Natural Hazard to Development Plan Small Organization (Book-1)	European Commission & Actionaid	Myan	Community Level	Soft/Hard Copy	203	2011		
4	Small Business Development and Recovery Book	CDA, ECCDI, Golden Plain (GP) & UNDP	Myan	Communities	Hard Copy	14	2010		
5	All Villagers had to co-operate for Regional Development	Actionaid & UNDP	Myan	Government & Community	Hard Copy	6	-		
6	For Villager had to Co-operate and Monitoring & Evaluation (Staff Guideline)	European Commission & Actionaid	Myan	Field staffs/Facilitator, NGOs, CSOs	Soft/Hard Copy	47	2010		
7	Self Study Program by Own DRRLP (1)	Save the Children	Myan	NGO, CSO, Field Facilitator	Soft/Hard Copy	250	2011		
8	Self Study Program by Own DRRLP (2)	Save the Children	Myan	NGO, CSO, Field Facilitator	Soft/Hard Copy	250	2011		
9	GAD Function for Disaster		Myan	all level	Soft	7	-		
10	Disaster to development plan organization pamphlet	European Commission & Action aid	Myna	INGO,NGO,& Community	Hard Copy	6	2011		

Project Design Matrix (ver. 3)

November 3, 2016

Project Title: Project on Establishment of End-to-End Early Warning System for Natural Disaster

Project Duration: March 2013 to February 2017 (4 years) Project Site: Ayeyarwaddy Region and Rakhine State

Target Group: (1) Staff of RRD; (2) Staff of DMH;
 (3) Local Disaster Management Committee members at each level (local government level, district level, township level and community level);
 (4) District, township officers where the pilot site is located; and (5) Community(ies) in the target area.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>[Overall Goal] End-to-end early warning systems for natural disaster are expanded to coastal lined areas, especially in Ayeyarwaddy Region and Rakhine State, based on the expansion plan.</p>	<p>a. Improved end-to-end early warning systems are introduced to <u>Ayeyarwaddy Region and Rakhine State</u>.</p>	<p>a. Data from NNDMC</p>	
<p>[Project Purpose] The improved model of end-to-end early warning systems for natural disaster with the expansion plan is set up in pilot areas.</p>	<p>a. Early warning is delivered surely to community in the pilot areas through more than two routes in a drill to be conducted before the Terminal Evaluation. b. Appropriate evacuation warning is delivered to community in the drill. c. The expansion plans to <u>Ayeyarwaddy Region and Rakhine State</u> are approved by JCC.</p>	<p>a. Drill report b. Record of JCC meetings</p>	<p>- Necessary budget of RRD for establishing the Early Warning System is secured. - Government policy on disaster management does not change significantly.</p>
<p>[Outputs] 1. Information management and emergency communication system for natural disaster is improved.</p>	<p>a. Simultaneous information distribution system installed is confirmed to work normally. b. A model of information distribution system for community in a township or in a lower level areas is proposed. c. Tide data is monitored by installed tide gauge and analyzed for improving early warning system. d. Improvement model of information distribution through mass media is proposed.</p>	<p>a-c Project documents</p>	<p>- Employees who participated in trainings by the Project will continuously work for RRD and DMH.</p>

<p>2. Response capacity for natural disasters from central government level to local government level is enhanced.</p>	<p>a More than 80% of government agencies related to disaster management participates in seminar/training/drill on early warning system for natural disaster organized by the project. b Manuals for early warning system at various level are developed.</p>	<p>a. Training/drill reports b Manuals</p>	
<p>3. Response capacity of community for natural disaster is enhanced.</p>	<p>a Villagers from all villages in the pilot village tract participate in training/evacuation drills b Evacuation centers and routes of all the pilot villages are designated and presented to the villagers</p>	<p>a. Training reports b Project documents c Project documents</p>	
<p>4. The expansion plan to coastal lined areas which include lessons learnt through activities under Output-1 to Output-3 is prepared.</p>	<p>a The expansion plans to <u>Ayeyarwaddy Region and Rakhine State</u> are approved by JCC.</p>	<p>a. Expansion plan documents</p>	
Activities			
<p><Output1></p>		Input	
<p>1-1 Early warning information distribution through an administrative line is improved.</p>		<p>【Japanese side】 (1) Dispatch of Experts ➢ Short-term Experts(6): -Chief Advisor/Disaster Management Structure -Early Warning System (EWS) Operation Planning -Wireless Communication System -Community-based Disaster Risk Management -Disaster Management Planning -Project Coordinator ➢ Lecturer(s): -Disaster Management System of Local Government -Disaster Management System on Tsunami</p>	<p>【Myanmar side】 (1) Assignment of counterpart personnel(C/P) -Project Director -Co-Project Director -Project Manager -Regional Project Manager -Regional Project Coordinator -Necessary number of C/P (2) Office space and facilities for the Project -in the buildings of RDD in Nay Pyi Taw -in the buildings of DMH in Yangon -Regional Administration Office in target area (the detail will be decided after</p>
<p>1-1-1 Identify the responsibilities and roles of each organization related with early warning dissemination in Myanmar and their problems.</p>	<p>Early warning information related with early warning dissemination in Myanmar and their problems.</p>		<p>- Necessary budget for the Project is allocated without any significant delay.</p>
<p>1-1-2 Clarify appropriate mandates/responsibility for each organization related with early warning system in Myanmar based on the Activity 1-1-1.</p>	<p>Clarify appropriate mandates/responsibility for each organization related with early warning system in Myanmar based on the Activity 1-1-1.</p>		
<p>1-1-3 Review the current contents of early warning for natural disaster such as standards for issuing/clearing early warning, and identify the bottleneck.</p>	<p>Review the current contents of early warning for natural disaster such as standards for issuing/clearing early warning, and identify the bottleneck.</p>		
<p>1-1-4 Improve the current contents of early warning for natural disaster such as standards for issuing/clearing early warning based on the Activity 1-1-3.</p>	<p>Improve the current contents of early warning for natural disaster such as standards for issuing/clearing early warning based on the Activity 1-1-3.</p>		
<p>1-1-5 Make clear the early warning information distribution route for natural disaster to the members of disaster management related organizations from national and local level (region/state government level, district level and township level)</p>	<p>Make clear the early warning information distribution route for natural disaster to the members of disaster management related organizations from national and local level (region/state government level, district level and township level)</p>		
<p>1-1-6 Install communication equipment including simultaneous system through administrative lines.</p>	<p>Install communication equipment including simultaneous system through administrative lines.</p>		
<p>1-1-7 Install tide gauge for improving early warning system.</p>	<p>Install tide gauge for improving early warning system.</p>		
<p>1-1-8 Conduct flood analysis and interview survey of the flood disaster in 2015 and compile its lessons learned.</p>	<p>Conduct flood analysis and interview survey of the flood disaster in 2015 and compile its lessons learned.</p>		

<p>1-2 Information distribution system for community in a township or in a lower level areas is developed.</p> <p>1-2-1 Select target township(s) and community(ies) as pilot project sites, village tracts and villages, in order to conduct the pilot project.</p> <p>1-2-2 Provide communication equipment to the community(ies).</p> <p>1-2-3 Consider or study the means of electricity generation at community level for securing the sustainability of early warning system for natural disaster.</p> <p>1-2-4 Conduct drills on information distribution in pilot project sites.</p> <p>1-3 Information distribution through mass media from DMH is improved.</p> <p>1-3-1 Review the current information distribution system to community through mass media from DMH and the contents of information, and identify and improve the bottleneck.</p> <p>1-3-2 Cooperates with a FM station which has been jointly established by the Government of Myanmar and private companies for early warning.</p> <p>1-3-3 Propose a certain line for broadcasting real-time disaster information.</p> <p><Output2></p> <p>2-1 Identify needs of training based on activities through 1-1-1 to 1-1-4.</p> <p>2-2 Conduct trainings on natural disaster and end-to-end early warning system, including a simulation exercise, for the staff of RRD, DMH and GAD from central, state/region, district and township level.</p> <p>2-3 Develop manuals and other Information, Education and Communication (IEC) materials on end-to-end early warning system at all levels (central level, local government level, district level, township level and community level)</p> <p>2-4 Reflect lessons learned from 2-2 into manuals and other IEC materials through conducting Pilot activities and Follow up activities.</p> <p><Output3></p> <p>3-1 Prepare/revise the community-based disaster management plan including guidance on how to utilize early warning such as when, where, how to evacuate, what items should be brought with in pilot project sites selected 1-2-1.</p> <p>3-2 Prepare a manual for drafting a community-based disaster management activity including developing community disaster management plan.</p> <p>3-3 Select and secure evacuation centers and routes.</p> <p>3-4 Conduct community-based disaster management activities such as evacuation drills based on the community-based disaster management plan.</p> <p>3-5 Implement training of township officers for instructing village tract administrators about community-based disaster risk management as follow up activities.</p>	<p>(2) Provision of equipment</p> <p>*Detailed contents will be determined through the implementation of the Project.</p> <p>Following equipment are under consideration:</p> <ul style="list-style-type: none"> -Early Warning system (SSB, Wireless LAN, I-com, speaker, etc.) -Tide gage -Solar panel <p>(3) C/P Training in Japan</p> <ul style="list-style-type: none"> Comprehensive Disaster Management including; - Disaster Management in Local Governments - Early Warning System Operation - Community-Based Disaster Risk Management <p>(4) Local cost shared by Japanese side</p> <ul style="list-style-type: none"> - Costs for enlightenment programs and implementation of evacuation drills. - Costs for social surveys. 	<p>the Commencement of the Project.)</p> <ul style="list-style-type: none"> (3) Expenses for conducting awareness program, emergency simulation exercises and evacuation drills (4) Provision of necessary data (5) Expenses for operation and maintenance of the Project office (6) Others, if any 	<p>[Pre-condition]</p> <p>Political situation of Myanmar is stable.</p>
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<p><Output4></p> <p>4-1 Summarize and compile a model on information distribution system through the administrative line into the expansion plan to coastal lined areas, through 1-1-1 to 1-1-6.</p> <p>4-2 Summarize and compile a model on information distribution system at township/village level into the expansion plan to coastal lined areas, through 1-2-1 to 1-2-4.</p> <p>4-3 Compile the manuals drafted in the activities of 2-3 and 2-4 into the expansion plan to coastal lined areas.</p> <p>4-4 Summarize and compile lessons learned in the activities of 3-1 and 3-4 into the expansion plan to coastal lined areas.</p> <p>4-5 Finalize the expansion plan.</p>			
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