

**Third Joint Session**  
**Panel on Tropical Cyclones | Typhoon Committee**  
(42<sup>nd</sup> Session of PTC and 47<sup>th</sup> Session of TC)  
9- 13 February 2015  
ESCAP - UN Conference Center  
Bangkok, Thailand

FOR PARTICIPANTS ONLY  
WRD/TC.47/4.3  
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ENGLISH ONLY

**Report on Activities of Working Group on  
Disaster Risk Reduction (WGDRR) in 2014**

(Item 7 of Provisional Agenda)

(Submitted by WGDRR)

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**ACTION REQUIRED:**

This Committee is invited to:

- a) Review the activities of WGDRR conducted in 2014
- b) Approve the recommendations and AOP of WGDRR for 2015 and beyond

## **REPORT OF ACTIVITIES OF WORKING GROUP ON DISASTER RISK REDUCTION (WGDRR) IN 2014**

### **1. The 9<sup>th</sup>WGDRR Annual Meeting**

The 9<sup>th</sup> Working Group on Disaster Risk Reduction Annual Meeting was held in Seoul, Republic of Korea from 26 May to 27 May. Total 7 member countries including Macao, Malaysia, Hong Kong, Republic of Korea, Thailand, USA (Guam), and Viet Nam participated on the workshop. Also, there were participants from international organizations such as ADRC (Mr. JunjiMoriwaki), UNESCAP (Ms. Yejin Ha), and Tohoku University (Dr. Yuichi Ono).The main theme of the 9<sup>th</sup> WGDRR Annual Workshop was “Past, Present, and Future of WGDRR”. In the workshop, the ways of strengthening on international cooperation for DRR were mainly discussed. With reference to the main theme, Dr. Shim, Jae Hyun from NDMI introduced the history of WGDRR and reviewed the main themes in the past annual meetings since 2006. Through the review, he suggested the future ways of WGDRR which include 1) Long-term development strategy for WGDRR annual meeting, 2) Expansion of TCDIS, 3) International Cooperation among member countries for DRR.

The presentations in the 9<sup>th</sup> WGDRR Annual Workshop were as follow;

- 1) Review of WGDRR Action Sheet (Mr. OlavoRasquinho)
- 2) Past, Present, and Future of WGDRR (Dr. Shim, Jae Hyun)
- 3) Introduction of NOAA and International Cooperation Research Strategy (Mr. Raymond Tanabe)
- 4) Prospect of International Cooperation on Natural Disaster Risk Reduction (Dr. Kim, Chang Wan)
- 5) Media Report Guide line on Disaster and introduction on AMCDRR (Dr. Yuichi Ono)
- 6) Member reports  
: Macao, Malaysia, Hong Kong, Republic of Korea, Thailand, USA(Guam), and Viet Nam
- 7) Introduction of NDMI project (Transfer of New Technologies for Disaster Prevention and Safety)  
(Dr. Chihun Lee)
- 8) Smart Disaster Management Technology (Smart Big Board and Big Data Analysis)  
(Dr. Hong, Sung Jin)
- 9) Introduction of New-Version TCDIS and Trial Performance (Dr. Kim, Jitae)
- 10) Activities of UNESCAP in Korea (Ms. Ha, Yejin)
- 11) Development of Web-GIS Public Safety Map (Mr. Park, Kyung Chan)

### **2. The 2014 Northern Mindanao Project**

The Northern Mindanao project, launched in 2013 upon a request of the PAGASA of the Philippines, completed its second phase in 2014. The project aims to help the Philippines reduce flash flood-related risk, especially for Cagayan De Oro City in the Northern Mindanao area, through installation of the Flash Flood Alert System(FFAS) and the Automatic Rainfall Warning Systems(ARWS). The city was one of the areas hit hard by Typhoon Wash in 2011. So far the FFAS has been installed at the PAGASA in Manila as well as its regional office in Cagayan De Oro. In addition, two rainfall gauges, one water level gauge, and two warning posts have been installed along with the Cagayan De Oro River. The FFAS receives real time-based monitoring data from this

equipment, and forecasts the occurrence of flash flood in three hour advance. The Northern Mindanao project will be completed in 2015, and NDMI is seeking to expand a disaster risk reduction project to other member countries.

### **3. The WGDRR Parallel Session in 9<sup>th</sup> Integrated Workshop**

During the 9th Typhoon Committee Integrated Workshop held in United Nations Conference Center, Bangkok, Thailand from 20 to 24 October 2014, the Working Group on Disaster Risk Reduction (WGDRR) had a two-day parallel session on 21 through 22 October 2014.

There were 15 representatives from 9 Members (i.e. China; DPR Korea; Hong Kong, China; Lao PDR; Malaysia; Republic of Korea; Thailand; USA (Guam and Hawaii); Viet Nam), ADRC, UNESCAP and TCS attending on the WGDRR parallel sessions.

The WGDRR parallel session exchanged the information on priorities and key areas; reviewed the progress on the implementation of the AOPs for 2014; discussed the 2015 WGDRR AOPs and the budget; reappointed a chair and a vice chair of the WGDRR; discussed how to participate in the 3rd UN World Conference on Disaster Risk Reduction.

### **3. The review of WGDRR activities in 2014 AOPs**

#### **(AOP1) Extend the WEB GIS based TCDIS**

WEBGIS based TCDIS started in 2006 and was upgraded to second version in 2014. In 2014 version of TCDIS, it included new website design in TCDIS, improvement on the search option for past similar Typhoon, and display of historical regional damage. There has been difficulty for NDMI in collecting information from member countries. In this regard, it is suggested that member countries would provide the past disaster damage data and other related data through member country report. It is recognized that TCDIS is an important base and suggested to report the progress of each year in the TC Session.

#### **(AOP2) Provide the training program for disaster prevention technologies and policies including WGTCDIS**

The Expert mission team including NDMI and TCS visited Guam (DHS, Department of Homeland Security) on September 2014. During the expert mission, following items were discussed;

- 1) Training on TCDIS
- 2) Urban flood analysis and Korea community safety map
- 3) Introduction of DSI (Disaster Scientific Investigation)
- 4) Use of radar measurement for rainfall-induced disaster response

With reference to the contents of expert mission, Member countries can select and request the training program. Member countries for expert mission in 2015 will be discussed in 47th session in Bangkok, Thailand.

#### **(AOP3) Promote the international cooperation research**

The 2014 Northern Mindanao Project for Philippines was implemented by NDMI and in this project, Flash Flood Alert System (FFAS) and Automatic Rainfall Warning System (ARWS) were installed in Cagayan de

Oro, Philippines. The Northern Mindanao Project will be completed in 2015. In project, it will expand the installation of ARWS (Automatic Rainfall Warning System) in Cagayan de Oro and enhance the function of FFAS (Flash Flood Alert System). NDMI proposed to all TC members to join this project similar to Philippines and suggested TC members who are interested in the project can submit their proposal before May 2015.

#### **(AOP4) Application of SWIedge (Hong Kong) to member countries**

SWIedge is a widget, which allows users anywhere on the globe to obtain local severe weather warnings issued by official weather services in real time. In 2014, there was not much progress without new member subscribing to the SWIedge initiative. There are 7 member countries of current SWIedge providers including China (Guandong); Hong Kong, China; Macao, China; Malaysia; Republic of Korea; Singapore; and USA (Guam). HKO will continue to encourage members to join the initiative. As warning information dissemination technology and delivery platform evolve, SWIedge will only be one of many available options open for members and no significant resource input is expected for further SWIedge development.

#### **(AOP5) Benefit evaluation of Typhoon disaster prevention and preparedness project**

The CMA proposed this project in 45th TC session, but not much progress was reported so far. Nevertheless, the AOP5 will be continued in 2015, and the members agreed on it.

#### **(AOP6) Setting up community weather stations for raising public awareness on climate change and extreme weather**

This project was proposed by HKO and found useful to promote public awareness. The HKO extended it to community weather observing scheme (CWOS), which was well received by the public. It was recognized that the similar concept like ICWOS can be also extended to other TC members. In last November, a training workshop on iCoWin was held in Viet Nam and Lao PDR, and DPRK expressed their interest in taking part in this project in 2015. The HKO ensured that technical or training support could be provided with other TC members if feasible.

#### **(AOP7) Supporting Synergized Standard Operation Procedure (SSOP) project related to disaster risk management**

The mechanism meeting was held in Bangkok, Thailand in last October. The TC secretariat participated in, and presented the AOPs of the WGDRR. The possibility of extension of the expert missions and the iCo-Win project to the PTC, and the formulation of experience sharing tools/materials between the TC and the PTC was discussed during the meeting.

#### **(AOP8) Media response to build the trust with media**

The NDMI took an initiative on this AOP, and reported that there was a positive action taken by the journalist associations in Korea. They agreed upon the disaster reporting rules such as reporting news not to increase psychological uncertainty, prohibiting the interview with victims and their families under pressure, and verifying the information by experts. Acknowledging difficulty in building trust with the media, especially on disaster-related reports, the WGDRR agreed not to continue this AOP in 2015.

#### **(AOP9) Making the information more understandable to the public and make them react**

This was led by the HKO, and aimed to produce a video for raising the public awareness on danger associated with tropical cyclones or storm surges. It was made progress in 2014 and to be completed in early 2015 as there were some issues to be resolved concerning the copyright issue and script writing.

**(AOP10) Providing policy message on two events namely AMCDRR in Bangkok on 22-26 June 2014, and the Third UN World Conference on Disaster Risk Reduction in 2015**

In 2014, WGDRR was not able to make a contribution to the AMCDRR held in June 2014, but agreed to hold a side event in the Third UN World Conference on Disaster Risk Reduction. The NDMI and the TC submitted application, and the committee confirmed the participation in the Public Forum. The discussion on a theme of the event, a selection of invited speakers, and etc. is under progress.

**4. Implementation status of the WGDRR AOP 2015**

AOPs 8 and 9 were completed in 2014 and AOPs 1-7, 10 in 2014 will be continued in 2015

**[AOPsto be continued in 2015]**

(AOP1) Extend the WEB GIS based TCDIS

(AOP2) Provide the training program for disaster prevention technologies and policies including WGTCDIS

(AOP3) Promote the international cooperation research

(AOP4) Application of SWIedge (Hong Kong) to member countries

(AOP5) Benefit evaluation of Typhoon disaster prevention and preparedness project

(AOP6) Setting up community weather stations for raising public awareness on climate change and extreme weather

(AOP7) Supporting Synergized Standard Operation Procedure (SSOP) project related to disaster risk management

(AOP8) Providing policy message on the 3<sup>rd</sup> UN World conference on Disaster Risk Reduction in 2015

**5. Confirmed budget proposed for WGDRR activities in 2014**

WGDRR proposed the requests of US\$ 26,000 allocated TCTF in 2015 to support the WGDRR activities including:

i) To allocate US\$ 8,000 budget of TCTF in 2015 for supporting WGDRR participating in next TC Integrated Workshop.

ii) To allocate US\$ 5,000 budget of TCTF in 2015 for supporting community based weather station pilot project offering expert to visit interested members to install the weather stations and to provide technical documentation on installation, maintenance and data processing and display.

iii) To allocate US\$ 6,000 budget of TCTF in 2015 for supporting TCS, to take part in the WGDRR Expert Missions.

iv) To allocate US\$ 7,000 budget of *Special Request Budget* in 2015 for participation of the WGDRR in the 3rd UN World Conference on Disaster Risk Reduction.

## 6. Conclusion of WGDRR

On the basis of the information provided by the Members and findings of the parallel session on WGDRR, the following conclusions were reached:

i)WGDRR recognized the necessary of continuous collection of disaster information from the Member countries for the WGTCDIS. Encouragement to the members to collect and share disaster information will be continued in 2015.

ii)National Disaster Management Institute (NDMI) will upgrade and expand the WGTCDIS in 2015.

iii)The expert mission was successfully conducted in Guam, USA in 2014 to provide updated information on the operation of WGTCDIS and exchange information regarding new technology and policy related to field of DRR by NDMI and TCS. The expert mission will be conducted upon requests of the member countries in 2015. Member countries in WGDRR agreed to collect the demands from the members on the expert mission.

iv)The project to promote the international cooperation research for disaster risk management, which led by NDMI, will continue in 2015. The NDMI will dispatch the experts of Republic of Korea to the Philippines for installing the Automated Weather Station (AWS) and Flash Flood Alert System (FFAS) in Cagayan de Oro, Mindanao Island in Philippine.

Note: NDMI proposed to all TC Members to submit their proposal two years in advance if they went to join this project similar to Philippines.

v)WGDRR acknowledged the achievement of the AOP 6 led by Hong Kong, China, including its effort to raise public awareness on weather through community weather observing scheme and the training workshop to be held at Hong Kong Observatory in early November. DPR Korea expressed an interest in taking part in the project in 2015 and Thailand also requested such training opportunities be made available for other Members as well. Regarding the AOP4, not much progress was made and there might be a need to review whether this AOP should continue given the evaluation of other warning dissemination technology. As for AOP 9, the project of producing a video for raising public awareness of danger associated with tropical cyclones or storm surges will be completed later this year or early next year. Since the expense for the copyright issue was over budget on the item, TCS successfully coordinated to reallocate the budget with WMO for covering this project.

vi)As no representative from China in related to the AOP 5 attended the session, China will send the document of the AOP 5 progress until the next session. In addition, China requested for the continuity of AOP 5 but without necessity for the budget in 2015, and the Members agreed on it.

vii)The mechanism meeting to support the SSOP project was held in Bangkok, Thailand on 9-10 October 2014. The WGDRR noted that there was a demand for an extension of the expert missions and theiCO-Win project to the PTC members. The WGDRR members will take it into consideration in 2015.

viii)Regarding the AOP 8, NDMI reported that there was a positive action taken by the Media in the Republic of Korea. The WGDRR acknowledge a difficulty of building trust with the Media on the disaster-related reports.

The AOP 8 will not be continued in 2015.

ix) WGDRR acknowledged that the TCS and the NDMI submitted application of participating in Public Forum at the WGDRR. As there was a consensus among the WGDRR members about significance of the UNWCDRR, the WGDRR agreed to request special budget for this in 2015. The organizing cost for holding public forum to the Committee for the 3th UNWCDRR has been paid by TCTF at the end of November.

x) WGDRR reappointed Dr. Yeo Woonkwang as chair of group and Ms Leong Fong Peng as a vice chair of the group. Dr. Yeo suggested appointing Dr. Shim, Jaehyun as vice chair as well to deputize for him in his absence. The WGDRR agreed on his suggestion.

## **7. Recommendation of WGDRR**

On the basis of the information provided by the Members and deliberations, the WGDRR made the following recommendations:

i) To allocate US\$ 26,000 budget of TCTF in 2015 for a) supporting the WGDRR participating in the next TC Integrated Workshop; b) Supporting the community based weather station pilot project to provide a training workshop in HK or dispatch experts to interested members by HK to install the weather stations and to provide technical documentation on installation, maintenance and data processing and display; c) supporting TCS participating on WGDRR expert mission and d) support to conduct a lecture by the WGDRR and to organize the participation in the 3rd UN World Conference on Disaster Risk Reduction.

ii) To encourage the TC members to collect and share the disaster information for extending TCDIS; the TCDIS will be continually upgraded and extended in 2015.

iii) To collect the demands of expert mission from the members until the next annual session.

iv) To continue promotion of the international cooperation research through the Northern Mindanao Project: any member of TC is welcomed to submit a proposal to the NDMI.

v) To contact the PR of China as to the continuity of the AOP 5. without further budget allocation for 2015.

vi) To set up automatic weather stations for community based weather station project or to provide relevant training in 2015.

vii) To explore opportunity for PTC members to take part in the iCO-Win project and to exchange experience in engaging community to be aware of weather threats and climate change.

viii) To re-allocate saving from WGDRR budget this year for producing the video under AOP 9 in 2014.

xi) To facilitate participation of WGDRR in the 3<sup>rd</sup> UN World Conference on Disaster Risk Reduction.

## **Appendix 1. WGDRR AOP 2014 Implementation Status**

## **Appendix 2. WGDRR AOP 2015**

## Appendix 1. WGDRR AOP 2014 Implementation Status

SPs KRA and SGs	Objective Number	Objective	Action	Other WG's	TCS Responsibility	Expected Quarter Completed	Other Organizations Involved	Success Indicators	Funding Required	Funding Sources	Completed Yes or No
KRA 4 KRA 5 SG 4b SG 4c	1	Extending the WGTCIDS	(i)Collect disaster information from TC Members (ii) Upgrade the search option for similar Typhoon in WGTCIDS	TCS	Assist in collecting disaster information from Members	Ongoing	NDMI	Upgrade the search option for finding similar Typhoon in WGTCIDS		NDMI, Korea	Yes
KRA 4 KRA 5 SG 4b SG 4c SG 5b	2	Provide the training program	Perform Expert Mission for training disaster prevention technologies and policies including WGTCIDS	TCS	Assist in planning and performing the expert mission	Ongoing	NDMI	Send expert team to USA(Guam)	US \$ 4,000	NDMI, Korea and TCTF	Yes
KRA ALL SG ALL	3	Promote the international cooperation research	install the Flash Flood Alert System (FFAS) and AWS in Mindanao, the Philippines		Assist in planning and performing the international cooperation research	Ongoing	NDMI PAGASA	Complete the second phase of the Northern Mindanao project		NDMI, Korea	Yes
KRA 4 SG 4b SG 4c KRA 5 SG 5b	4	Application of SWidget to Member countries	Promote and extend the dissemination of warnings and alerts by Members through SWIC (Severe Weather	-	Assist in liaising with focal points	Ongoing	HKO	Disseminate the warnings/alerts through SWidget		HKO, Hong Kong	Yes



			Information Center)								
KRA 4 SG 4b SG 4c KRA 5 SG 5b	5	Setting up of community weather stations for raising public awareness on climate changes and extreme weather	(i) Liaise with Members on requirements and ways to take part in the project (ii) Offer an expert of Hong Kong, China for visiting Viet Nam and DPR Korea to implement the community weather stations	-	Assist in liaising with focal points and provide logistic support for the expert visits	Ongoing	HKO	i) Provide trainings on the iCoWin ii) Extended to community weather observing scheme	US \$5,000	TCTF	Yes
KRA 4 KRA 5 KRA 7 SG4b SG5a SG6b	6	Provide benefit evaluation of Typhoon disaster prevention and preparedness	(i) survey and evaluate the response of government, department, company and person to typhoon disaster (ii) survey and evaluate the benefit of different response		Assist in planning and performing the international cooperation research	Ongoing	CMA	Complete collecting response of government and departments, evaluation report finalized	US \$2,000	TCTF	Yes
KRA ALL SG ALL	7	Support the Synergized Standard Operation Procedure (SSOP) project		WGM WGH TCS		Ongoing					Yes
KRA 4 SG5a SG6b	8	Research media response how to build the	research the media response on the disaster			Fourth	NDMI	Provide the results of the research in 9th			Yes

		trust with media						IWS			
KRA 4 SG5a SG6b	9	Increase public awareness by making the information more understandable to the public and making them react	(i) make the educational video for the public (ii) collect the disaster information of member countries	TCS	Assist in collecting disaster information of member countries	Fourth	HKO	Complete the development of educational video for the public	\$6,000	HKO, Hong Kong Special request budget	Yes
KRA 4 KRA 7 SG5a SG6b	10	Providing the message on two events namely AMCDRR (exhibition booth and side event) in Bangkok on 22-26 June 2014 and 3th UN World Conference on Disaster Risk Reduction in 2015	(i) prepare WGDRR booth in AMCDRR (ii) prepare WGDRR booth in AMCDRR	TCS	Assist in planning and performing booth presentation in conference	Ongoing	NDMI TMD	Operate the booth in AMCDRR and Submit application for participating in 3th UN World conference	\$4,000	TMD, NDMI, and TCTF	Yes

## Appendix 2. WGDRR AOP 2015

SPs KRA and SGs	Objective Number	Objective	Action	Other WG's	TCS Responsibility	Expected Quarter Completed	Other Organi- zations Involved	Success Indicators	Funding Required	Funding Sources	Complete d Yes or No
KRA 4 KRA 5 SG 4b SG 4c	1	Extending the WGTCIDS	(i)Collect disaster information from TC Members (ii) Upgrade the search option for similar Typhoon in WGTCIDS	TCS	Assist in collecting disaster information from Members	Ongoing	NDMI	i) collect disaster information from Members ii)Upgrade the search option for finding similar Typhoon in WGTCIDS		NDMI, Korea	
KRA 4 KRA 5 SG 4b SG 4c SG 5b	2	Provide the training program	Perform Expert Mission for training disaster prevention technologies and policies including WGTCIDS	TCS	Assist in planning and performing the expert mission	Ongoing	NDMI	Send expert team to Members	US \$ 6,000	NDMI, Korea and TCTF	
KRA ALL SG ALL	3	Promote the international cooperation research	install the Flash Flood Alert System (FFAS) and AWS in Mindanao, the Philippines		Assist in planning and performing theinternational cooperation research	Ongoing	NDMI PAGASA	Complete the last phase of the Northern Mindanao project		NDMI, Korea	
KRA 4 SG 4b SG 4c KRA 5 SG 5b	4	Application of SWidget to Member countries	Promote and extend the dissemination of warnings and alerts by Members through SWIC (Severe Weather Information Center)	-	Assist in liaising with focal points	Ongoing	HKO	Disseminate the warnings/alerts through SWidget		HKO, Hong Kong	

KRA4 KRA5 KRA7 SG4b SG5a SG6b	5	Provide benefit evaluation of Typhoon disaster prevention and preparedness	(i) survey and evaluate the response of government, department, company and person to typhoon disaster (ii) survey and evaluate the benefit of different response		Assist in planning and performing the international cooperation research	Ongoing	CMA	Complete collecting response of government and departments, evaluation report finalized		CMA	
KRA 4 SG 4b SG 4c KRA 5 SG 5b	6	Setting up of community weather stations for raising public awareness on climate changes and extreme weather	(i) Liaise with Members on requirements and ways to take part in the project (ii) Offer an expert of Hong Kong, China for visiting Viet Nam and DPR Korea to implement the community weather stations	-	Assist in liaising with focal points and provide logistic support for the expert visits	Ongoing	HKO	i) Provide trainings on the iCoWin ii) Extended to community weather observing scheme	US \$5,000	TCTF	
KRA ALL SG ALL	7	Support the Synergized Standard Operation Procedure (SSOP) project		WG M WG H TCS		Ongoing					Yes
KRA4 KRA7 SG5a SG6b	10	Providing the message on the 3th UN World Conference on Disaster Risk Reduction in 2015	Hold a seminar on DRR in the WCDRR	TCS	Assist in planning and performing booth presentation in conference	Ongoing	NDMI	Hold a seminar in 3th UN World conference	\$7,000	TMD, NDMI, and TCTF	Yes

- SG1: To enhance cooperation among TC Members to reduce the number of deaths by typhoon-related disasters by half in the ten years of 2006 – 2015 (using the ten years of 1990 - 1999 as the base line).
- SG2: To reduce the socio-economic impacts of typhoon-related disasters per GDP per capita by 20 per cent in the ten years of 2006- 2015 (using the ten years of 1990 - 1999 as the base line).
- SG 3a: To identify and explore the beneficial use of resources such as rainfall brought by typhoon.
- SG 3b: To study and promote the increasing use of typhoon-related beneficial effects among the Members.
- SG 4a: To provide reliable typhoon-related disaster information for effective decision making in risk management in various sectors.
- SG 4b: To strengthen capacity of the Members in typhoon-related disaster risk management in various sectors.
- SG 4c: To enhance international and regional cooperation and assistance in the field of disaster risk reduction.
- SG 5a: To promote and enhance culture of community-based disaster risk management among the Members.
- SG 5b: To promote education, training and public awareness of typhoon-related disasters among the Members.
- SG 6a: To facilitate RSMC capability to respond to the needs of the Members in forecasting and capacity building.
- SG 6b: To improve capacity of Members to provide timely and accurate user-oriented and friendly tropical cyclone products and information.
- SG 6c: To enhance capacity of Members' typhoon-related observation, monitoring, forecasting and warning.
- SG 7a: To strengthen the capacity of Typhoon Committee to effectively discharge its responsibilities and functions described in this Strategic Plan and completed its stated mission in accordance with the Typhoon Committee's Statute.
- SG 7b: To mobilize available resources and engage collaborators for the implementation of the strategic goals.
- KRA 1: Reduced Loss of Life from Typhoon-related Disasters.
- KRA 2: Minimized Typhoon-related Social and Economic Impacts.
- KRA 3: Enhanced beneficial typhoon-related effects for the betterment of quality of life.
- KRA 4: Improved Typhoon-related Disaster Risk Management in Various Sectors.
- KRA 5: Strengthened Resilience of Communities to Typhoon-related Disaster.
- KRA 6: Improved capacity to generate and provide accurate, timely and understandable information on typhoon-related threats.
- KRA 7: Enhanced Typhoon Committee's Effectiveness, Efficiency and International Collaboration.