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EXECUTIVE SUMMARY OF MEMBERS' REPORTS 2013

(submitted by AWG)

Summary and Purpose of Document:

This document presents an overall view of the progress and issues in meteorology, hydrology and DRR aspects among TC Members with respect to typhoons and related hazards in 2013.

Action Proposed

The Committee is invited to:

- (a) take note of the major progress and issues in meteorology, hydrology and DRR aspects as reported by Members in 2013; and
- (b) review and refine the draft Executive Summary in the APPENDIX with the aim of adopting a finalized version for reference by Members' governments and other collaborating or potential sponsoring agencies.

APPENDIX: Executive Summary of Members' Reports 2013 (draft version – Dec 2013)

**EXECUTIVE SUMMARY OF
MEMBERS' REPORTS 2013**

Edwin S.T. Lai (AWG Chair)

This executive summary is based on Members' Reports submitted by all 14 Members of the Typhoon Committee at the 8th IWS/2nd TRCG Forum in Macao, China on 2 – 6 Dec 2013, details of which can be found in:

(http://www.typhooncommittee.org/8IWS_2TRCG/Members.html).

1. Objectives

1.1 The objectives of this Executive Summary are to extract the key aspects of typhoon impact and related topical issues of regional interest in Members' countries or territories, and to consolidate the information and observations for:

- (a) the attention of Members' governments with a view to allocating the necessary resources strategically for the purposes of operational effectiveness and readiness, disaster mitigation and risk reduction, or leveraging available resources and support for technology transfer and capacity-building through regional cooperation initiatives; and
- (b) reference by sponsoring agencies with a view to coordinating and synergizing effort in the planning of relevant projects and programmes for such purposes, as well as channelling resources and aids into identified areas of gaps or needs.

2. Key Observations in 2013

2.1 *Overview*

2.1.1 The impact caused by tropical cyclones upon TC Members was quite significant during the year. The catastrophic effect of Haiyan in association with storm surges on the central Philippines in November produced devastating and tragic scenes that made headlines across the globe. Also reported but lesser known was a serious aviation incident at an airport in Lao PDR in which 49 people were killed as a result of downburst associated with Nari. Apart from these exceptional disasters, the perennial threat of heavy rain causing flooding and landslides continued to affect many Members. While the world debated which was the most intense typhoon ever, prolonged intense rain brought by a couple of un-named weaker cyclones still managed to wreak havoc in low-latitude countries. In particular, there were significant casualties in Viet Nam in September following the passage of a tropical depression, which also brought record-breaking rain and flood to Thailand and Lao PDR. In contrast, no death was reported in Viet Nam when Haiyan made landfall in November; yet ironically, ten people were said to be killed in the preparation phase leading up to Haiyan's passage.

2.1.2 Initiatives pursued by Members under relevant Key Results Areas (KRAs; see Reference on page 8) against the five major activity components of the Typhoon Committee were summarized in the table below. It was based on input from nine Members. Republic of Korea, Thailand and

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Viet Nam only provided qualitative input with no detailed breakdown, and their effort was as such not reflected in the summary table here. Cambodia and Lao PDR were also not included as such information was not provided in their Members' reports.

KRA =	1	2	3	4	5	6	7
Meteorology	24	21	5	20	10	22	9
Hydrology	12	4	0	6	5	3	0
DRR	9	10	4	12	9	4	4
Training and research	8	3	1	4	2	12	4
Resource mobilization or regional collaboration	4	3	2	3	2	4	4

2.2 *Summary of Members' Reports*

2.2.1 **Cambodia** suffered from prolonged heavy rain brought by Wutip, Nari and a tropical depression in November. From September to October in particular following the passages of Wutip and Nari, there was continuous rain with days of heavy downpour, leading to extensive flooding in provinces around the Mekong River, and also over the northwestern and southeastern part of the country. Twenty provinces were affected and 168 people were killed.

2.2.2 **China** was affected by 13 tropical cyclones, with nine making landfall, mostly over the south and southeast coast of China. Major hazards were associated with concentrated heavy rain events, which in turn led to widespread and record-breaking floods, and more rivers exceeding alert water levels. Losses induced were heavier than normal. Death toll was 199, with 67 people reported missing. Among the 11 provinces affected, Guangdong and Zhejiang were hardest hit.

2.2.3 Among the initiatives highlighted by **China**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology	10	8	5	3	3	2	2
Hydrology	4	1					
DRR	5	5	3	2	1		
Training and research	4	2		1	1		
Resource mobilization or regional collaboration	3	3	2	1			

2.2.4 **DPR Korea** had a rare year in which no tropical cyclone affected the country and as a result no cyclone-induced impact and economic damage.

2.2.5 Among the initiatives highlighted by **DPR Korea**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology						3	
Hydrology				1		1	
DRR				3	1	1	
Training and research				1		4	
Resource mobilization or regional collaboration				1	1	1	1

2.2.6 **Hong Kong, China** had seven tropical cyclones necessitating the issuance of warning signals, of which gale signals were required for the passages of Utor and Usagi. While there were some

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injuries reported in both cases mostly as a result of loose objects blown in the wind, fatalities actually occurred with people swimming or diving offshore in turbulent seas, one in the case of Utor and another under windy conditions due to the combined influence of the northeast monsoon and Haiyan late in the season.

2.2.7 Among the initiatives highlighted by **Hong Kong, China**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology	4	3		1	1	5	
Hydrology	1	1		1	1		
DRR	1	3	1	1	3	1	
Training and research				1		2	
Resource mobilization or regional collaboration						3	

2.2.8 **Japan** was affected by 13 tropical cyclones during the year, with two of them, Toraji and Man-yi, making landfall at Kagoshima and Aichi Prefectures respectively in September. Eight people were killed and one person was reported missing in inundation and landslides triggered by widespread heavy rain. There was also damage caused by tornadoes that were spawned during their passages. However, the impact was even more severe in the case of Wipha in October. Although it did not make landfall, rainfall exceeding 800 mm was recorded and massive landslides occurred in Oshima Island near Tokyo. There were 40 persons killed and three were reported missing (as of 15 January 2014).

2.2.9 Among the initiatives highlighted by **Japan**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology	5	5		5	3	5	2
Hydrology				1		1	
DRR				1		1	2
Training and research				1		2	2
Resource mobilization or regional collaboration							1

2.2.10 **Lao PDR** was affected directly by five tropical cyclones (Jebi, Mangkhut, a tropical depression in September, Wutip and Nari), and indirectly by three (Rumbia, Utor and Krosa). Most of them brought strong winds, heavy rain, local storms and squalls, and river flooding to the central and northern parts of the country. In particular, flash floods and landslides occurred in the latter region and 17 people were killed. However, rain was even heavier and more prolonged in the southern part, where unstable weather lasted for a couple of weeks following the passages of a tropical depression in September and Nari in October. In the former case, flooding impact and damage were the worst seen in the past 35 years. In the case of Nari, air crash at Pakse International Airport due to downburst killed 49 people on board.

2.2.11 **Macao, China** had seven tropical cyclones necessitating the issuance of warning signals, but gale signals were only required for the passage of Utor. Most of the incidents were related to swinging billboards, fallen trees and broken windows.

2.2.12 Among the initiatives highlighted by **Macao, China**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7

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Meteorology	2	2		3			
Hydrology	1	1		1			
DRR	1	1		1	1	1	1
Training and research	2	1					
Resource mobilization or regional collaboration	1						

2.2.13 **Malaysia** had minimal impact from tropical cyclones during the year. The presence of tropical cyclones over the South China Sea and the Philippines regions generally strengthened the westerly winds, giving rise to enhanced afternoon convection. In general, the impact was restricted to an increase in rainfall amount due to the tail effects of tropical cyclones over the Peninsular Malaysia and the west coast of Sarawak and Sabah.

2.2.14 Among the initiatives highlighted by **Malaysia**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology	1			3		3	3
Hydrology	2			1	1		
DRR	1	1		1			1
Training and research	1					2	2
Resource mobilization or regional collaboration							2

2.2.15 **Philippines** had 25 tropical cyclones in their area of responsibility in 2013, of which 10 made landfall and among them six (Utor, Trami, Usagi, Nari, Krosa, Haiyan) brought devastating impact upon the country between the months of August and November. While the number of casualties in the first five cases totalled around 60, the one single event of Haiyan hitting the central Philippines together with a significant storm surge on 8 November had more than 7,000 people killed, the heaviest damage and casualties ever registered on record.

2.2.16 Among the initiatives highlighted by **Philippines**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology	1			1	1		
Hydrology	3	1		2	3	1	
DRR							
Training and research	1				1		
Resource mobilization or regional collaboration							

2.2.17 **Republic of Korea** was affected by three tropical cyclones during the year, namely Leepi, Kong-rey and Danas, even though technically they did not make landfall over the Korean Peninsula. In particular, the impact caused by Danas on 8 – 9 October in the southern part of the country was most significant, with more than 300 mm of rainfall recorded in Jeju Island during its passage.

2.2.18 Among the initiatives highlighted by **Republic of Korea**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology					x	x	x
Hydrology	x	x		x		x	x

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DRR		x		x	x	x	x
Training and research							
Resource mobilization or regional collaboration							

2.2.19 **Singapore** was indirectly affected by tropical cyclones on a number of occasions in 2013. Yagi in June gave rise to windy and thundery weather. Later in the season, Jebi, Mangkhut, Utor, Wutip and Nari all brought moderate to heavy rainfall to Singapore as enhanced southwesterly and westerly winds led to the formation and passages of “Sumatra” squalls over the region.

2.2.20 Among the initiatives highlighted by **Singapore**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology	1	3		3		2	
Hydrology	1						
DRR							
Training and research			1			2	
Resource mobilization or regional collaboration							

2.2.21 **Thailand** was seriously affected by three tropical cyclones in the months of September and October. A tropical depression bringing record-breaking rainfall in September was followed by the passages of Wutip and Nari as they moved inland after making landfall in Viet Nam. Flash floods associated with heavy rain mostly affected regions and provinces in upper Thailand, killing 36 people.

2.2.22 Among the initiatives highlighted by **Thailand**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology	x						
Hydrology							
DRR	x		x	x	x	x	
Training and research					x		
Resource mobilization or regional collaboration							

2.2.23 **USA (Pacific Region)**, from 1 November 2012 to 15 November 2013, had 28 tropical cyclones developing within Guam’s Area of Responsibility, with another two weak tropical storms moving into the area from central North Pacific. Advisories were issued for 16 tropical cyclones and warnings for four for several islands. While tropical cyclone activity was enhanced over Micronesia after several relatively quiet years, the cyclones also formed a little further east and thus had an effect on more inhabited islands. Haiyan, in particular, went directly over the small northern island of Kayangel in the Republic of Palau with an estimated 140-knot maximum sustained wind, bringing massive damage to the island’s vegetation and buildings. Fortunately, no death or serious injury occurred.

2.2.24 Among the initiatives highlighted by **USA (Pacific Region)**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7

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Meteorology				1	2	2	2
Hydrology							
DRR	1			3	3		
Training and research							
Resource mobilization or regional collaboration				1	1		

2.2.25 **Viet Nam** was affected by eight tropical cyclones in 2013, with seven of them making landfall. Heavy rain associated with the cyclones led to flash floods over river basins in the central and northern parts of the country. Opening of floodgates at hydropower plants and irrigation reservoirs during heavy rain situations also created flooding hazards for areas downstream. Direct impact of tropical cyclones caused 44 deaths, with 23 persons reported missing. More than half of the fatalities, however, actually occurred during the passage of an un-named tropical storm in September. It was also worth noting that even though no death was reported during the passage of Haiyan in November, ten people were reported killed in preparation for the typhoon.

2.2.26 Among the initiatives highlighted by **Viet Nam**, they were linked to TC KRAs and activities as below:

KRA =	1	2	3	4	5	6	7
Meteorology	x	x		x	x	x	x
Hydrology	x	x		x	x	x	x
DRR	x	x		x	x	x	x
Training and research	x	x		x			
Resource mobilization or regional collaboration							

Reference – Key Results Area (KRA)

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