ESCAP/WMO TYPHOON COMMITTEE

Summary Report
Small Meeting of Working Groups Chairs

(Macao, 16-17 December 2009)

SMALL MEETING OF WORKING GROUPS CHAIRS

Macao, – 16-17 DECEMBER 2009

It was decided, at the "Integrated Workshop Building Sustainability and Resilience in High Risk Areas of the Typhoon Committee: Assessment and Action", held in Cebu, Philippines, 14-18 September 2009, to hold a small meeting of WGs Chairs in order to review some major items to be discussed at the 42nd TC annual Session.

OPENING CEREMONY

As the meeting was held in Macao, and this Special Administrative Region of China is celebrating the tenth anniversary of its integration in the People's Republic of China, Dr. Fong Soi Kun, Chairman of the AWG and Director of the Macao Meteorological and Geophysical Bureau (MMGB-SMG) has taken this opportunity to for launching the MMGB Collected Papers Vol. III (Asia Summer Monsoon Mesoscale Numerical Simulation).

The Opening ceremony was attended by representatives of the media of Macao and reports of this event were broadcasted by the Chinese and Portuguese channels of the Macao Television and published in various newspapers. A press release, previously prepared by SMG in collaboration with TCS, was distributed to the media of Macao (Appendix I)

The welcome speech was given by Dr. Fong Soi Kun. Mr. Xuan Zengpei (ESCAP) and Mr. Koji Kuroiwa (WMO) also gave speeches at the opening ceremony. Exemplars of the publication Asia Summer Monsoon Mesoscale Numerical Simulation were offered to the representatives of ESCAP, WMO and TCS.

The discussions were held in conformity with the appended Provisional Agenda (Appendix II – Agenda and List of participants).

CONCEPT NOTE AND CHAPTER OUTLINES OF THE ASIA-PACIFIC DISASTER REPORT

Due to the absence of the Vice-Chair of the AWG the meeting was chaired by Mr. Edwin Lai, Chair of TRCG.

Mr. Xuan Zengpei made a presentation on the concept note and chapter outlines of the Asia-Pacific Disaster Report (Appendix III) and Mr. Yuichi Ono presented the summary of the First Editorial Committee Meeting, which was held in Bangkok, 18-19 November 2009 (Appendix IV). The Asia-Pacific Disaster Report is a joint ESCAP-ISDR Publication and it is

expected to be officially launched by October 2010, at the Fourth Asian Ministerial Conference on DRR in the Republic of Korea

The AWG members agreed that the Typhoon Committee is willing to collaborate, together with the Panel on Tropical Cyclones, in the elaboration of the chapter I of the Asia-Pacific Disaster Report, more specifically in what refers the trend of tropical cyclones in the region.

ASSESSMENT REPORT ON THE CHANGE OF FREQUENCY AND INTENSITY OF TROPICAL CYCLONES

Mr. Tong Tin Ngai made a presentation of the conclusions on the assessment of impacts of climate change on tropical cyclone frequency and intensity in the Typhoon Committee region (Appendix V). The presentation was based on the findings of the Expert group, which had a two day's meeting before the WG Chairs meeting, on 14 and15 December 2009. According to the presentation, the expert team at this stage could not conclude whether there is an increasing or decreasing linear trend in frequency of TC formation over the Western North Pacific. The Assessment Report will be submitted in the 42nd TC Session for approval and publication.

STRATEGIC PLAN (SP) AND ANNUAL OPERATING PLAN (AOP)

Review of Strategic Plan 2007-2011

During the discussion it was suggested to change the printout of the SP. The updating of the figures related to natural disasters was also suggested to be carried out with the collaboration of the Division of Statistics of ESCAP.

During the discussion was achieved a certain consensus on:

i) Adding one or two paragraphs about climate change in the "Introduction" of the Strategic Plan;

ii) Discussion of the new Strategic Plan 20012-20016 during the next Integrated Workshop and 43rd TC Session.

Annual Operating Plan-2009

The status of the AOP-2009 of the three WGs and TRCG was reviewed based on the following documents presented as appendixes:

Appendix V - Presentation "WMO-Annual Operating 2009 and 2010"; Appendix VI-WGM AOP 2009; Appendix VII-WGH AOP 2009; Appendix VIII-WGDPP AOP 2009 and Appendix IX-TRCG AOP 2009.

Annual Operating Plan-2010

The AOP for 2010 was discussed and will be submitted to the 42nd Session. The following documents were presented (besides Appendix V - Presentation "Annual Operating Plan 2009 and 2010"): Appendix X-WGM AOP 2010; Appendix XI-WGH AOP 2010; Appendix XII-WGDPP AOP 2010; Appendix XIII- TRCG AOP 2010.

TCTF BUDGET FOR 2010

The chairs of the WGs submitted their proposals for funding the respective activities in 2010. It was discussed the necessity of updating the budget taking into account the evolution of travel costs, hotels and cost of living, amongst other indicators, in the Members where actions have been carried out. The TCS was requested to make a study on this issue. Following this recommendation TCS has prepared the document "Analysis of various events supported by TCTF from 2007 to 2009" (Appendix XIV).

CROSS-CUTTING PROJECTS (involving the three main components of TC)

- **Project proposal on Urban Flood Risk Management (UFRM) Programme**

Before the small meeting of TC WGs Chairs, it was held on 9 December 2009 a Skype teleconference (Appendix XV), through Skype, on the UFRM project (Appendix XVI) in which issues related to this project were discussed. The participants were: Mr Toshio OKAZUMI, Mr. Hong Il-Pyo, Mr. Liu Zhiyu, Mr. Katsuhito MIYAKE, Mr. Zuhua Chen, Mr. LeHuu Ti, Mr. Olavo Rasquinho and Mr.Jinping Liu.

There was a consensus in considering the UFRM proposed by China as a crosscutting project, involving the three main components of TC and agreed in general with the project proposal. AWG will take care of this project.

The AWG requested other WGs to review the proposal and provide their input. The proposed TC task force (or coordinating body) meeting also was adopted. The budget (4000USD) for this meeting is allocated under AWG.

Some suggestions were made regarding joining efforts of the WGs on working together:

- Creation of a task force;

- Establishment of the criteria for the selection of a pilot city for the project;

- Need of choosing high risk cities as pilot cities (several cities were mentioned: Beijing, Busan, Macao, Manila, city in the coast of Viet Nam);

- Include also storm surge in the project, combining river floods and storm surges;

- To organize a meeting in July or August 2010, to be supported by ESCAP, to discuss the UFRM project;

- Possibility of contracting consultants by ESCAP to push forward this crosscutting project (about US$5,000 - suggested by Mr. Xuan Zengpei)

- To set up roadmap that would include detailed implementation procedures and financial aspects;

- ESCAP expressed its willingness to contact donors for since this project is properly structured;

- To set up the channel of connection and communication with support base, such as ESCAP, WMO, ISDR, WB, ADB, ICHARM, JICA, etc;

- Discuss at 42nd TC Session the roadmap for this project

- **Integrated Pilot Study Project - PAGASA**

Mr. Roy Badilla from PAGASA introduced "Integrated Pilot Study Project" (Appendix XVII) which was proposed at TC Integrated Workshop held in Cebu of Philippines, September 14-19, 2009. The main purpose of the presentation of this project is to have a pilot area wherein the three Working Groups on Meteorology, Hydrology and Disaster Prevention and Preparedness can collaborate together.

The Pilot Project is divided into four main components: (1)Rainfall estimation and forecasting ("Nowcasting") system; (2) Flood Forecasting System; (3) Flood Warning System; (4) Emergency Radio Communication System and (5)Voice/Data Communication System.

It is expected from the TC WGs the following:

WGM- to introduce the radar Image interpretation, including (a) input to the hydrologic model; (b)increase the lead time; and (c) in the form of training or module

WGH -to dispatch hydrology experts to the Philippines to train hydrologists;

WGDPP - to conduct series of trainings on disaster prevention and preparedness.

Comments regarding Metro-Manila pilot project

Some comments and suggestions were made on this project:

- The year 2010 was considered too early for this project, considering that radars and software for nowcasting are not yet installed (radar is supposed to be installed in 2010);

- After the tropical storm Ketsana (26 Sep 2009) a lot of support in hardware and software has been offered to Philippines for preventing future floods, but it is still needed training in new technologies, such as the ones related to nowcasting;

- The AWG expressed its willingness in providing support to PAGASA in implementing this project, not only through the provision of experts of TC Members but also through a greater involvement of the three WGs.

- It was suggested to seek support from other organizations (e.g. Japan International Cooperation Agency – JICA, Korea International Cooperation Agency - KOICA);

- WGM should collect information from the Members on the progress of studies and experiments on Quantitative Precipitation Forecast and Quantitative Precipitation Estimation (QPF/QPE) in order to include in the AOP-2011 actions related the support to this project;

- Manila was considered a potential pilot city for the TC crosscutting UFRM project;

PAGASA-DOST's Master Plan for Enhanced Metro Manila Flood Warning & Monitoring System[1]

It was also presented the PAGASA-DOST's Master Plan for Enhanced Metro Manila Flood Warning & Monitoring System (Appendix XVIII).

Assessment of Variability of Water Resources Impacted by Climate Change

Another crosscutting project was proposed by WGH: Assessment of Variability of Water Resources Impacted by Climate Change**.** The idea of formulating this potential project was proposed by AWG at the "Integrated Workshop Building Sustainability and Resilience in High Risk Areas of the Typhoon Committee: Assessment and Action", which was held in Cebu, Philippines, 14-18 September 2009. Due to the lack of information its discussion was skipped for a more appropriate occasion.

Hosting ESCAP/WMO Typhoon Committee Secretariat in 2011-2014

The Secretary of TC informed the participants on the demarches carried out by TCS to invite the TC Members to host the TC Secretariat headquarters. In this regard, and considering that there were no submissions up to the established deadline, the Secretary also informed that the Government of Macao has offered hosting TCS for a new four-year period (Appendix XIX)

TC Publication Procedures

The Secretary submitted to the AWG a proposal for the rules for drafting the TC publications under the TC logo and numbering, in accordance with the working document WRD/TC.42/8.5 (Method and Procedures for ESCAP/WMO Typhoon Committee Publications)

[1] DOST – Department of Science and Technology - PAGASA

to be presented to the 42nd Session (Appendix XX) for approval after eventual changes. No objections were made.

Dr. Kintanar Award for Typhoon-related Disaster Mitigation

The Secretary also informed the AWG that there was only one submission for the Dr. Roman L. Kintanar Award 2009 for Typhoon-Related Disaster Mitigation, and presented to the AWG the proposed contents of the plaque to be delivered, together with a cheque of US $2,000 at the 42nd Session of TC.

- **Resources Mobilization**

During the discussions the representative of ESCAP expressed the willingness of this organization to contact donors since projects are duly structured (he referred specifically to the UFRM);

Other topics (suggestions made at the meeting)

- It was suggested to invite one wind expert to present a scientific lecture in the 42nd Session;

- Include experts from TC Members in post-disaster missions;

- TRCG should enlarge their actions to hydrology and DPP, not only meteorology;

- WGs should consider studies on the following issues:

  - Possible paths of forthcoming typhoons (including the possible entry points in a number of receiving countries), comparing with the ones in the past years;

  - Assess possible consequences of heavy precipitation and implications for the river deltas;

  - Methodology adopted by DALA (Damage and Loss Assessment - a tool for the socio-economic and environmental assessment of disasters through standard sectoral procedures that allow comparability of results).

Appendixes

Appendix I – Press Release presented to the media of Macao

Appendix II– Agenda and list of Participants

Appendix III - Concept Note and Chapter Outlines of the Asia-Pacific Disaster Report

Appendix IV - Summary of the First Editorial Committee Meeting

Appendix V - Presentation "WGM Annual Operating 2009 and 2010";

Appendix VI-WGM AOP 2009;

Appendix VII-WGH AOP 2009;

Appendix VIII-WGDPP AOP 2009

Appendix IX-TRCG AOP 2009.

Appendix X-WGM AOP 2010;

Appendix XI-WGH AOP 2010;

Appendix XII-WGDPP AOP 2010;

Appendix XIII- TRCG AOP 2010;

Appendix XIV – Analysis of various events supported by TCTF from 2007 to 2009

Appendix XV - Teleconference

Appendix XVI- Project proposal on Urban Flood Risk Management (UFRM) Programme

Appendix XVII - Integrated Pilot Study Project - PAGASA

Appendix XVIII - PAGASA-DOST's Master Plan for Enhanced Metro Manila Flood Warning & Monitoring System

Appendix XIX - Hosting ESCAP/WMO Typhoon Committee Secretariat in 2011-2014 (Working document to submit to the 42nd TC Session)

Appendix XX - TC Publication Procedures (Working document to submit to the 42nd TC Session)

APPENDIX XVIII

Typhoon Committee Strategic Plan

2007-2011

An Integrated, Regional Approach to Improve the Quality of Life for Members' Population through Mitigating Typhoon-related Impacts

Executive Summary

From 1950 to 2005, 54 percent (approximately 3 million people) of the worldwide deaths produced by natural disasters occurred in the Asia/Pacific region. These are staggering numbers and a tragedy almost beyond comprehension, because many of these deaths are from typhoon-related impacts. The only slight hope is that in the Asia/Pacific area, the loss of lives has decreased from 100,000 per year in last five decades (1955-2005) to 42,000 per year in last 15 years (1990-2005). However, 42,000 deaths per year during the past 15 years and the personal and family impacts are still too much.

In the Asia/Pacific area, annual economic losses increased from US$10.6 billion per year in the last five decades (1950 -2005) to US$29 billion per year in the last 15 years (1990-2005). From 1950 – 2005, 57 per cent (approximately US$33.5 billion) of the economic loss in the Asia/Pacific region was from wind storms and floods many of them associated with typhoon-related impacts.

For less developed countries, in addition to the tragic personal loss of life and property, natural disasters, especially typhoons, severely threaten and impact their sustainability, capacity building, debt repayments, poverty reduction and even the basic necessities of life – clean drinking water, food, and shelter.

During its 39 years of existence, the Typhoon Committee has been repeatedly recognized as an outstanding regional body who has integrated the actions and plans of the meteorological, hydrological, and DPP components to produce meaningful results. The purpose of this Strategic Plan is for the Typhoon Committee to identify regional areas, goals, and activities which the Committee wants to achieve in 2007-2011 to continue to produce meaningful results for saving lives, mitigating damage, and decreasing social and economic effects from typhoon-related events.

The development of the Strategic Plan has been based on various international and regional frameworks, protocols, and action and strategic plans pertaining to tropical cyclone activities within the region such as the UN Millennium Development Goals, International Strategy for Disaster Reduction's Hyogo Framework for Action, WMO Long Term Plan, ESCAP Thematic Areas, Hashimoto Action Plan, Beijing Declaration on Disaster Reduction, and the Statute of the Typhoon Committee.

Typhoon Committee's Vision: The Typhoon Committee is the World's best intergovernmental, regional organization for improving the quality of life of the Members' populations through integrated cooperation to mitigate impacts and risks of typhoon-related disasters.

Typhoon Committee's Mission: To integrate and enhance regional (meteorological, hydrological, and disaster prevention and preparedness) activities of Members within international frameworks to reduce the loss of lives and minimize social, economical, and environmental impacts by typhoon-related disasters.

The Typhoon Committee has identified seven Key Results Areas (KRAs) for special emphasis in the next five years (2007-2011). These KRAs are defined as the critical, overarching, priority areas of special interest for the Typhoon Committee. The Committee must complete the Strategic Goals (see pages 7-8) associated with these KRAs to achieve its vision and mission through regional, integrated actions. The seven KRAs are:

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 and International Collaboration.

It should be noted that the Typhoon Committee along with its working groups can make major contributions in accomplishing these KRAs, but there are many other factors and influences which are not under the direct control of the Typhoon Committee. Therefore the Committee will need the assistance and support of other international organizations and funding sources.

The most important functions and responsibilities of Members' Governments are to protect their people's lives and to improve their people's quality of life. Through this Strategic Plan, the Typhoon Committee's 14 Members are meeting the most important government functions and responsibilities through regional cooperation and collaboration. The last 39 years has shown how successful the Typhoon Committee has been in the area of in typhoon-related matters in improving the protection of their people's lives and in improving their people's quality of life. Building on this legacy of the past, this Strategic Plan provides the roadmap into the future.

Table of Contents

1. Introduction.

From 1900 – 2005, 91 percent of the deaths worldwide caused by natural disasters occurred in the Asia/Pacific area. From 1950 to 2005, 54 percent (approximately 3 million people) of the worldwide deaths produced by natural disasters occurred in the Asia/Pacific region. These are staggering numbers and a tragedy almost beyond comprehension, because many of these deaths are from typhoon-related impacts. The only slight hope is that in the Asia/Pacific area, the loss of lives has decreased from 100,000 per year in last five decades (1950 - 2005) to 42,000 per year in last 15 years (1990 - 2005). However, 42,000 deaths per year during the past 15 years and the personal and family impacts are still too much.

The economic losses from world-wide natural disasters on average have been increasing exponentially in the last 15 years (1990 - 2005). Based on a best fit curve, the economic loses world-wide have increased from US$30B in 1990 to US$65B in 2005 (Munich Re Group, 2005). In 1900 - 2005, 49 per cent of the damages worldwide from natural disasters occurred in the Asia/Pacific area. In this area, annual economic loss increased from US$10.6 billion per year in the last five decades (1950 - 2005) to US$29 billion per year in the last 15 years (1990 – 2005). Private sector losses accounted for over 70 per cent of the total loss. From 1950 – 2005, 57 per cent (approximately US$33.5 billion) of the economic loss in the Asia/Pacific region was from wind storms and floods many of them associated with typhoon-related impacts.

For more developed countries, typhoon related impacts cause major social and economic disruptions through loss of lives and property. For less developed countries, in addition to the tragic personal loss of life and property, natural disasters, especially typhoons, severely threaten and impact their sustainability, capacity building, debt repayments, and even the basic necessities of life – clean drinking water, food, and shelter.

The Typhoon Committee, through its regional cooperation and collaboration has for the past 39 years, been working to help the people of the region through accomplishments and actions to reduce the loss of life and property due to typhoon-related effects.

2. Development of the Strategic Plan

The Typhoon Committee at its 37th Session held in Shanghai, China and at its 38th Session held in Hanoi, Vietnam decided to restructure the Committee's Regional Cooperation Programme Implementation Plan (RCPIP) to better reflect Key Results Areas and the required Strategic Goals and Activities needed to achieve these Key Results Areas.

In September 2006, a historical "International Workshop on Integrating Activities of Meteorology, Hydrology, and Disaster Prevention and Preparedness Components of the Typhoon Committee into the related International Framework for Disaster Risk Management for Better Impacts and Visibility" was held in Macao, China. For the first

time, the Typhoon Committee's Working Groups on Meteorology, Hydrology, and Disaster Prevention and Preparedness (DPP) along with the Advisory Working Group met jointly to define high priority regional actions required to reduce the loss of life and social and economic impacts from tropical cyclones.

During this September 2006 meeting, the Advisory Working Group (AWG) prepared the initial proposed draft of the Typhoon Committee's Strategic Plan based upon the impacts from all of the working groups. This initial proposed draft was circulated to the Members following the meeting for their review and comments. The AWG took these comments and incorporated then into the second proposed draft Strategic Plan for the consideration of the Members at the 39th Session of the Typhoon Committee held in Manila, Philippines.

The development of the Strategic Plan has been based on various international and regional frameworks, protocols, and action and strategic plans pertaining to tropical cyclone activities within the region such as the UN Millennium Development Goals, International Strategy for Disaster Reduction's Hyogo Framework for Action, WMO Long Term Plan, Beijing Declaration on Disaster Reduction, ESCAP Thematic areas, Hashimoto Action Plan, and the Statute of the Typhoon Committee.

The Typhoon Committee has been repeatedly recognized as an outstanding regional body who has integrated the actions and plans of the meteorological, hydrological, and DPP components to produce meaningful results. The purpose of this Strategic Plan is for the Typhoon Committee to identify areas, goals, and activities which the Committee wants to achieve in 2007-2011 to continue to produce meaningful results for saving lives and mitigation of damage from typhoon-related events.

3. Scope of the Typhoon Committee's Strategic Plan.

- A very important aspect of this strategic plan is the involvement of the Typhoon Committee **and** its Members. The Typhoon Committee alone could not achieve the strategic goals in the Key Results Areas by itself.
- The results will be achieved through the Members' regional and integrated activities with support and monitoring of the TCS, World Meteorological Organization (WMO), and the UN Economic and Social Commission for Asia and the Pacific (ESCAP).
- The critical part of this plan is the required regional cooperation and collaboration among Members and the integration of the meteorological, hydrology, and DPP components.
- This strategic plan directly support the functions of the Committee as described in the Statute of the Typhoon Committee:

    1. Review regularly the progress made in the various fields of typhoon damage prevention;

2. Recommend to the participating Governments concerned plans and measures for the improvement of meteorological and hydrological facilities needed for typhoon damage prevention;
3. Recommend to the participating Governments concerned plans and measures for the improvement of community preparedness and disaster prevention;
4. Promote the establishment of programs and facilities for training personnel from countries of the region in typhoon forecasting and warning, hydrology and flood control within the region and arrange for training outside the region, as necessary; and
5. Promote, prepare and submit to participating Governments and other interested organizations plans for coordination of research programmes and activities concerning typhoons.

4. Vision and Mission.

Typhoon Committee's Vision:

The Typhoon Committee is the World's best intergovernmental, regional organization for improving the quality of life of the Members' populations through integrated cooperation to mitigate impacts and risks of typhoon-related disasters and to enhance beneficial typhoon-related effects.

Typhoon Committee's Mission:

To integrate and enhance regional activities in the areas of meteorological, hydrological, and disaster prevention and preparedness of Members within international frameworks to reduce the loss of lives and minimize social, economical, and environmental impacts by typhoon-related disasters and to enhance beneficial typhoon-related effects.

5. Key Results Areas (KRAs) and Strategic Goals (SG).

KRAs are defined as the critical, overarching, priority areas of special interest for the Typhoon Committee. The Committee must complete the strategic goals associated with these KRAs for it to achieve its vision and mission through regional, integrated actions. The Committee has identified seven KRAs for special emphasis in the next five years.

It should be noted that the Typhoon Committee along with its working groups can make major contributions in these KRAs, but there are many other factors and influences which are not under the direct control of the Typhoon Committee. Therefore the Committee will need the assistance and support of other international organizations and funding sources. The following are the KRAs and Strategic Goals (SG):

KRA 1: Reduced Loss of Life from Typhoon-related Disasters.

SG 1: To reduce the number of deaths by typhoon-related disasters by half (using the decade 1990-1999 as the base line to compare with the decade 2006-2015) in Typhoon Committee Region.

KRA 2: Minimized Typhoon-related Social and Economic Impacts.

SG 2: To reduce the socio-economic impacts of typhoon-related disasters per GDP per capita by 20 per cent (using the decade 1990-1999 as the base line to compare with the decade 2006-2015) in Typhoon Committee Region.

KRA 3: Enhanced beneficial typhoon-related effects for the betterment of quality of life.

SG 3a: To improve the beneficial use of typhoon-related effects of typhoons by 10 per cent in water management by selected Members (using the decade 1990-1999 as the base line to compare with the decade 2006-2015)

SG 3b: To promote increasing use of the typhoon-related beneficial effects among the Members in many different sectors.

KRA 4: Improved Typhoon-related Disaster Risk Management in Various Sectors.

SG 4a: To provide reliable typhoon-related disaster information for effective policy 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.

KRA 5: Strengthened Resilience of Communities to Typhoon-related Disaster.

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.

KRA 6: Improved capacity to generate and provide accurate, timely and understandable information on typhoon-related threats.

SG 6a: To strengthen RSMC capacity 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 TC products and information.

SG 6c: To enhance capacity of Members' typhoon-related observation and monitoring.

KRA 7: Enhanced Typhoon Committee's Effectiveness and International Collaboration.

SG 7a: To strengthen the capacity of TCS to effectively discharge its responsibilities and functions.

SG 7b: To strengthen the capacity for resources mobilization for the

implementation of the strategic goals.

6. Strategic Goals and Associated Activities.

KRA 1: Reduced Loss of Life from Typhoon-related Disasters.

Strategy Goal 1: To enhance cooperation among TC Members to reduce the number of deaths by typhoon-related disasters by half (using the decade 1990-99 as the base line compared to the decade 2006-2015)

Associated Activities[1]:

Integrated:

- Identify the primary causes of typhoon-related loss of life and identify location (which Members and where in the Members' area), gender, social status, and any other additional information available.

Meteorological Related:

- Update typhoon monitoring, forecasting, and warning system. (Also applicable to SG 2)
- Improve tropical cyclone forecast accuracy, including forecast of intensity and track of typhoon as well as typhoon induced wind and rainfall. (Also applicable to SG 2, SG 3a, SG 6b)

Hydrological Related:

- Preparation of inundation and water-related Hazard Maps. (Also applicable to SG 2, SG 4a, and SG 5b)
- Establishment on flash flood warning system including debris flow and landslides. (Also applicable to SG 2)
- Evaluation and improvement of operational flood forecasting system models. (Also applicable to SG 2)
- Establishment of flood forecasting systems to selected river basins. (Also applicable to SG 2)

[1]Activities are listed under the headings of Integrated and the three components of Meteorology, Hydrology, and Disaster Prevention and Preparedness. However, it should be noted that although one component may have the lead on an activities, most activities include collaboration, coordination, and integration with the other components.

Disaster Prevention and Preparedness Related:

- Identify Members' key agencies and sectors working on disaster preparedness and protection of vulnerable communities against typhoon-related disasters and encourage establishment of linkages, networking, and exchange of information among them.
- Assist as requested Members' policy development and strategic planning on disaster risk management with special emphasis on densely populated areas and vulnerable communities.
- Provide an effective framework for integrating early warning systems for vulnerable communities into development process.

KRA 2: Minimized Typhoon-related Social and Economic Impacts.

Strategic Goal 2: To reduce the socio-economic impacts of typhoon-related disasters per GDP per capita by 20 per cent (using of the decade 1990-1999 as the base line to compare with the decade 2006-2015).

Associated Activities:

Integrated:

- Collect, study, and catalog typhoon–related social and economic impacts.
- Standardize Members' the methodology to assess social and economic impacts/issues of typhoon-related disasters.
- Regionally increase Members' Human Development Index (HDI) as defined in the UNDP 2006 Human Development Report.

Meteorological Related:

- Produce users' oriented products. (Also applicable to SG 1)
- Assess the change of frequency and intensity of tropical cyclones. (Also applicable to SG 1)
- Evaluate relationship between socio-economic impacts and intensity of the tropical cyclones.

Hydrological Related:

- Development of guidelines for reservoir operation. (Also applicable to SG 3b)
- Assessment of socio-economic impacts of typhoon-related disasters. (Also applicable to SG 4a)
- Improve management of urban flood. (Also applicable to SG 1, SG 4a, SG 4b, and SG 5b)

Disaster Prevention and Preparedness Related:

- Provide reliable disaster statistics on socio-economic impacts of typhoon-related disasters for monitoring the progress achieved by the Typhoon Committee.
- Develop, establish, promote, coordinate and facilitate exchange of good practices on disaster risk management for socio-economic development of data for a

regional-wide disaster information system which would be accessible to all Members' decision makers, disaster services, communities, and others designated by the Members.

- Develop an effective framework for integrating early warning systems to support socio-economic development into disaster management systems.
- Identify Members' key agencies and sectors working on beneficial effects of typhoons and encourage establishment of linkages, networking, and exchange of information among them.

KRA 3: Enhanced beneficial typhoon-related effects for the betterment of quality of life

Strategic Goal 3a: To improve the beneficial use of typhoon-related effects of typhoons by 10 per cent in water management by selected Members (using the decade 1990-99 as the base line to compare with the decade 2006-2015)

Associated Activities:

Integrated:

- Collect and distribute Members' studies and ideas on typhoon-related beneficial effects to other Members. Promote these studies and ideas via the Typhoon Committee's web site and the media.

Strategic Goal 3b: To promote increasing use of the typhoon-related beneficial effects among the Members

Associated Activities:

Disaster Prevention and Preparedness Related:

- Identify Members' key agencies and sectors working on beneficial effects of typhoons and encourage establishment of linkages, networking, and exchange of information among them.
- Provide reliable statistics on the benefits gained from typhoon-related effects for monitoring the progress achieved by the Typhoon Committee.

KRA 4: Improved Typhoon-related Disaster Risk Management in Various Sectors

Strategy Goal 4a: To provide reliable typhoon-related disaster information for effective policy making in risk management in various sectors.

Associated Activities:

Meteorological Related:

- Investigate and determine a policy regarding the naming of tropical depressions because of the possible associated impacts and to increase the awareness of the public and decision-makers on these possible impacts.
- Investigate and determine a policy on the intensity terms to be considered for tropical storms and typhoons.

Hydrological Related:

- Preparation of inundation and water-related Hazard Maps.

Disaster Prevention and Preparedness Related:

- Develop, establish, promote, coordinate and facilitate development of database on various sectors for a regional-wide disaster information system which would be accessible to all Members' decision makers, disaster services, communities, and others designated by the Members. (Applicable to SG 1, SG 2, SG 3b, SG 4b, SG 4c, SG 5a and SG 5b)
- Survey and document Members' legal framework for disaster Prevention and Preparedness policy, plans, and governance structure for priority sectors for sharing among Members.
- Establish and distribute an inventory of Members' existing disaster reduction techniques and management strategies.

Strategy Goal 4b: To strengthen capacity of the Members in typhoon-related disaster risk management in various sectors

Associated Activities:

Meteorological Related:

- Promote and facilitate the exchange and use of relevant data.
- Determine, analyze, and disseminate current status of Members' accuracy in forecasting tropical cyclone formation, track, intensity, and radius of significant winds, research or techniques which may improve the forecasts, and methodology to track the improvements in forecast accuracy.

Disaster Prevention and Preparedness Related:

- Assist as requested Members' policy development and strategic planning on disaster risk management in priority sectors.
- Identify priority areas for capacity building on disaster risk management of interested Members as may be required.

Strategy Goal 4c: To enhance international and regional cooperation and assistance in the field of disaster risk reduction.

Associated Activities:

Integrated:

- Identify Members whose risk management is efficiently structured and then promote visits of DPP experts from other Members to these Members.
- Strengthen cooperation and exchange of disaster early warnings among Members. (Also applicable to SG 1, SG 2 and SG 3b)

Disaster Prevention and Preparedness Related:

- Establish and distribute an inventory of Members' existing disaster reduction techniques and management strategies.

KRA 5: Strengthened Resilience of Communities to Typhoon-related Disaster

Strategy Goal 5a: To promote and enhance culture of community-based disaster risk management among the Members

Associated Activities:

Integrated:

- Increase the number of women regionally in meteorology, hydrology, disaster Prevention and Preparedness, and related sciences in support of the Millennium Development Goals. (Also applicable to SG 5b)

Meteorological Related:

- Provision of understandable and useful tropical cyclone impact information and materials to the public both before an approaching tropical cyclone and as a tropical cyclone approaches.

Hydrological Related:

- Establishment on the community-based flood forecasting and warning system. (Also applicable to SG 1, SG 2, and SB 4b)

Disaster Prevention and Preparedness Related:

- Develop, establish, promote, coordinate, and facilitate exchange of experience on community based risk management for a regional-wide disaster information system which would be accessible to all Members' decision makers, disaster services, communities, and others designated by the Members.
- Assist as requested Members' policy development and strategic planning on integration of community based risk management into development process.

Strategy Goal 5b: To promote education, training and public awareness of typhoon-related disasters among the Members

Associated Activities:

Integrated:

- Promote lectures in primary, secondary and high schools in order to sensitize students to typhoon-related social and economical impacts and to encourage them to choose earth sciences as a future field of study and work.
- Identify and distributed material (including photographs) on typhoons and related hazards and make available to Members' teachers and professors.
- Promote media and public campaigns to enhance awareness of tropical cyclone impacts and on preparedness activities the public should take to protect their lives and mitigate losses to property.
- Develop and implement a multi-hazard information web site to raise the level of public awareness of natural hazards and their impacts. Encourage users' participation in the development.
- Develop a library of outreach/education material based upon users' needs for Members to use during their outreach/educational activities.
- Establish protocols and agreements with the radio and TV broadcast stations in order to quickly disseminate typhoon-related information directly from NMHSs and DPP centres to the media outlets.

Meteorological Related:

- Provision of on-the-job training on typhoon forecasting systems. (Also applicable to SG 1 and SG 2)

Hydrological Related:

- Provision of on-the-job training on flood forecasting systems. (Also applicable to SG 1 and SG 2)

Disaster Prevention and Preparedness Related:

- Provide training and outreach activities to and face-to-face meetings with the people at the last kilometre/mile and the local first responders.

KRA 6: Improved capacity to generate and provide accurate, timely and understandable information on typhoon-related threats

Strategic Goal 6a. To strengthen RSMC capacity to respond to the needs of the Members in forecasting and capacity building

Associated Activities:

Meteorological Related:

- Identify regional tropical cyclone forecasting guidance requirements.
- Establish standard verification methods and procedures for track and intensity forecasts and exchange verification values with other Members.

Strategic Goal 6b. To improve capacity of Members to provide timely and accurate user-oriented and friendly TC products and information

Associated Activities:

Meteorological Related:

- Post each Member's typhoon model verification data on a web site which all Members would have access to via the Internet.
- Improve less developed Members' typhoon information processing system.

Hydrological Related:

- Hydrological products which meet users' requirements. (Also applicable to SG 1 and SG 2)

Strategic Goal 6c. To enhance capacity of Members' typhoon-related observation and monitoring

Associated Activities:

Integrated:

- Recruit volunteers to help observe, report, and distribute information on typhoon-related hazards.
- Enhance the understanding of the processes related to tropical cyclone formation and land falling through collection of real time, targeted observations in typhoons and analyze.

Meteorological Related:

- Participate in THORPEX-ASIA and organize other observational programmes and experimental studies as appropriate and funding allows.
- Improve regional in situ observations for monitoring typhoons.
- Assist relevant Members in receiving required satellite data from FY, MTSAT and others and in applying these data.

KRA 7: Enhanced Typhoon Committee's Effectiveness and International Collaboration.

Strategic Goal 7a: To strengthen the capacity of TCS to effectively discharge its responsibilities and functions described in the Terms of Reference and support the Members in the implementation of the strategic goals

Associated Activities:

Integrated:

- Participate in typhoon-related internal meetings and conferences and prepare written reports on proceedings to share with other members.

Disaster Prevention and Preparedness Related:

- Provide reliable disaster statistics for monitoring the progress achieved by the Typhoon Committee.

Strategic Goal 7b: To strengthen the capacity for resources mobilization for the implementation of the strategic goals

Associated Activities:

Integrated:

- Collect, collate, and make available to Members successful cases of project funding for their reference.
- Enhance resource mobilization to reduce the impacts of typhoon-related disasters on debt sustainability of Members.

Disaster Prevention and Preparedness Related:

- Facilitate resource mobilization for disaster Prevention and Preparedness projects among Members with assistance from international, regional, national, Typhoon Committee Resource Mobilization Group (RMG), and the TCS.

7. Annual Operating Plan and Budget

Each year during the 5 year period of this Strategic Plan, the AWG with input from the working groups, TRCG, RMG, and TCS will prepare a proposed draft Annual Operating Plan (AOP) to be approved at the next Typhoon Committee Session. The AOP which will contain detailed actions and success indicators to be conducted in that year as steps towards meeting the KRAs Strategic Goals. Thus, through the completion of the five AOPs, the Committee and its Members should accomplish all of the KRA Strategic Goals and Activities contained in this plan. The AWG will prepare a proposed draft budget (TC Trust Funds) for each year based upon the priority actions contained in the AOP and the successes achieved in the previous year's AOP. Activities and objectives which are successfully accomplishing Strategic Plan objectives and AOP actions and are producing positive results in accomplishing the vision and mission of the Typhoon Committee will be given due consideration when preparing the budget.

8. Conclusion

The most important functions and responsibilities of Members' Governments are to protect their people's lives and to improve their people's quality of life. World-wide, the

Asia/Pacific region is the one most heavily impacted by natural disasters such as typhoons. In the last 15 years, an average of 42,000 people lost their lives and an average of US$29 billion property losses occurred each year in this region due to natural disasters. Regional coordination and collaboration is essential to reduce these tragic losses and resulting socio-economic impacts. Therefore through this Strategic Plan, the Typhoon Committee's 14 Members are building on the great legacies of the past and laying a path to meet the challenges of the future. With a focus on accomplishments in the seven identified KRAs, the Members have a plan to improve their abilities during typhoon situations to protect their people's lives and to improve their quality of life through regional coordination and cooperation.

Press Release

ESCAP/WMO Typhoon Committee Advisory Working Group Meeting and the Launching Ceremony of the MMGB Collected Papers (Vol.3)

The Secretariat of the Economic and Social Commission for Asia and the Pacific (ESCAP) / World Meteorological Organization (WMO) Typhoon Committee (TC) is organizing a meeting of the Advisory Working Group of this Committee in Macao during 16-17 December 2009. The purpose of the meeting is to review its Strategic Plan 2007-2011, the Annual Operating Plan 2009 and to discuss the Annual Operating Plan 2010 and future projects and actions related to the TC main components: Meteorology, Hydrology and Disaster Prevention and Preparedness.
The meeting is scheduled to be held at 9 am on 16 December at the conference room of the Conselho Consultivo para o Reordenamento dos Bairros Antigos de Macau. The meeting will be attended by the chairpersons of the Working Groups and high representatives of the ESCAP and WMO.

At the commencement of the meeting, a launching ceremony for the "MMGB Collected Papers Volume 3" will be hosted by the Director of the Macao Meteorological and Geophysical Bureau (MMGB) Dr. Fong Soi Kun.

Since Year 2004, MMGB has started to compile the collaboration research achievements with the professors from the Sun Yat-sen University, extended abstracts for papers presented at the international symposia or seminars, as well as the regional professional cooperation workshops by the colleagues in MMGB for publication of the collected papers. This year the publication is the 3rd volume of the collected papers.

In celebrating of the Tenth Anniversary of the Macao Special Administrative Region, MMGB issued the 3rd Volume of the Collected Papers this year. MMGB will continue to keep abreast of the times and to work hard on researching on meteorological and climate change, aiming to use their expertise for the improvement of livelihood.

ESCAP/WMO
Typhoon Committee

TYPHOON COMMITTEE ADVISORY WORKING GROUP MEETING
(Macao, 16-17 December 2009)
PROVISIONAL AGENDA (Rev. 11 Dec 2009)

Day 1: Wednesday, 16 December 2009

09:00 – 09:20 – Opening Ceremony
- Welcome speech – Dr. Fong Soi Kun, Chair of AWG
- Address – Mr. Xuan Zengpei - Chief, Inf. and Com. Technology and Disaster Risk Reduction Division (ESCAP)
- Address – Mr. Koji Kuroiwa - Chief , WMO Tropical Cyclone Programme

09:20 – 09:30 – Launching of the MMGB Collected Papers Vol. III (Asia Summer Monsoon Mesoscale Numerical Simulation)

09:30 – 09:40 – Group Photo & 10 minutes break

09:40 – 10:00 – Presentation on the concept note and chapter outlines of the Asia-Pacific Disaster Report - Mr. Xuan Zengpei

10:00 – 10:15 – Brief presentation of the conclusions on the Assessment Report on the change of frequency and intensity of tropical cyclones
- Mr. Tong Tin Ngai, coordinator of the expert group

10:15 – 11:00 – Strategic Plan (SP) and AOP
- Review of the SP2007-2011
- Update of the SP
- AOP 2009
- AOP 2010

11:00 – 11:15 – Coffee break

11:15 – 13:00 – Strategic Plan (SP) and AOP (cont.)

13:00 – 14:30 – Lunch

14:30 – 16:00 – Cross-cutting projects

UNITED NATIONS
Economic and Social Commission for Asia and the Pacific

World Meteorological Organization

ESCAP/WMO Typhoon Committee

- Urban Flood Risk Management (UFRM)
- Metro-Manila Integrated Pilot Study project
- Assessment of Variability of Water Resources Impacted by Climate Change
- Others

16:00 – 16:15 – Coffee break

16:15 – 18:00 - Cross-cutting projects – Cont.

19:00 – 21:00 – Welcome dinner (Convention Center, Fisherman Wharf offered by SMG)

Day 2: Thursday, 17 December 2009

09:00 – 11:00 – Cross-cutting projects (cont.)

11:00 – 11:15 – Coffee break

11:15 – 13:00 – Cross-cutting projects (cont.)

13:00 – 14:30 – Lunch

14:30 – 16:00 – Other topics

- Hosting of the TCS after the 43rd Session
- TC Publication Procedures
- Kintanar Award for the 42nd Session
- Resources Mobilization
- Others

16:00 – 16:15 – Coffee break

16:15 – 18:00 – Other topics (cont.)

20:00 – 22:00 – Dinner (offered by TCS)

PARTICIPANTS:

Mr. Fong Soi Kun – Chairman of AWG – Director of SMG
Mr. António Viseu – Deputy Director SMG
Mr. Xuan Zengpei – Director of Inf. and Comm. Technology and Disaster Risk Reduction Division, ESCAP
Mr. Yuichi Ono – Chief of Dis. Risk Red. Section of the Inf. and Comm. Technology and Disaster Risk Reduction Division, ESCAP
Mr. Koji Kuroiwa – Chief WMO Tropical Cyclone Programme - WMO
Mr. LEI Xiaotu – Chairman of WGM
Mr. Waon-Ho Yi – Chairman of WGDPP
Mr. Edwin Lai – Chairman of TRCG
Mr. Kiichi Sasaki – RSMC-Tokyo, Japan
Mr. Roy A. Badilla – PAGASA – Philippines
Mr. CHEN Zuhua – BoH-China
Mr. Tong Tin Ngai – Macao Meteorological and Geophysical Bureau – SMG
TCS staff

Concept Note on the development of the Asia-Pacific Disaster Report - A Joint ESCAP-ISDR Publication

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Background and basic concept

- ES proposed the publication of the Asia-Pacific Disaster Report in cooperation with key partners at its first session of the CDRR in March 2009.
- The Committee provided full support to her proposal and further recommended that the report should focus on trends and major events, best practices and lessons learned from specific national efforts, regional cooperation, champions for disaster risk reduction, economic and social analyses of the impact of disasters, and disaster recovery programmes

Background (continued)

- The 65th Session of the ESCAP Commission in April 2009 expressed support for the findings and recommendations of the Committee and requested the secretariat to implement the recommendations

Absence of such report in the region

- IDD and ISDR researches show:
- There has never been a comprehensive report in the Asia-Pacific Region on disaster risk reduction which focuses on socio-economic aspects of disaster risks, risk analyses of hazards characteristic of the region, sound practices, and enabling mechanisms at the regional and national levels

A Joint ESCAP-ISDR Publication:

- IDD and ISDR/Asia-Pacific held about 10 rounds of very friendly and in-depth consultations and reached agreement on all the issues
- The Report will be a joint ESCAP-ISDR Publication

Theme of the Report:

- The Report would take up a rotating or special theme for each of its publications, and each theme would focus closely on the concerns of the international community at the time of publication (e.g., Disasters induced by climate change – Fourth AMC)

On the utilization of their own strengths (1):

- Lots of expertise and research strengths existed in ESCAP and ISDR, and should be utilized to the fullest possible extent.

On the utilization of their own strengths (2):

- Each Chapter of the Report would have a lead convening author and a number of contributing authors
- ESCAP and ISDR would have a division of labour between them on the responsibilities for different chapters of the Report
- Welcome inputs from other partners, especially those offering to take up some chapters (e.g. International Recovery Platform)

Advisory Board (1):

Advisory Board:

- A high-level Advisory Board would be formulated to provide guidance to the Editorial Committee

Advisory Board (2):

- Chairs: ES of ESCAP, ASG of ISDR
- Member governments: Japan, China, India, Malaysia, Republic of Korea, Indonesia, and the Philippines,
- Heads of international organizations in Asia-Pacific: OCHA, UNDP, UNEP, ADPC, FAO
- Others: JICA, Microsoft Bill Gates Foundation, Senator Legarda (first UN/ISDR Champion)

ToR of the Advisory Board (1):

- The Advisory Board would provide guidance and advice to the Editorial Committee on a broad range of issues, including the appropriateness of the theme, the chapters of content of the Report, the choice of lead convening authors, the trends of the disaster risk reduction in the world, future directions of work, and resource mobilization for the Committee's activities.
- The formulation of the Board would take into consideration the issues of professional experience, seniority, sub-regional representation, and gender balance, among others.

ToR of the Advisory Board (2):

- The Board would be chaired jointly by the ES of ESCAP and the ASG of ISDR. In actual operations, the meeting of the Board could be chaired by both the chairpersons or by just one of them.
- The members of the Board may provide their guidance and advice to the Editorial Committee upon request or on their own. The provision might be done through either correspondence or organized meetings.

Joint Editorial Committee (1):

- A joint Editorial Committee would be established

ToR of Joint Editorial Committee (2):

- The joint Editorial Committee would be set up to be responsible for every aspect of the work involved in the publishing process
- It included the choice of the theme topic, the formulation of the content of the chapters or the publication structure, the choice of the lead convening authors of the chapters, the organization of the review meetings, the approval process, the printing, the launching of the publication, and an overall schedule for completion of the work

ToR of Joint Editorial Committee (3):

- The Committee would be set up jointly by ESCAP and ISDR
- It would be composed of the ESCAP and ISDR staff mainly, and also some guest editors upon invitation
- It would have two editors, two executive editors and two secretaries and they would have the same authority but are responsible for different chapters
- Other members of the Committee would be nominated by them with an equal representation and the same authority

ToR of Joint Editorial Committee (4):

- The Committee would submit the main items related to the publication of the Report, through correspondence or through organized meetings, to the Advisory Board for their comments with a deadline for feedbacks, which would be incorporated as appropriate
- In view of the fact that the Advisory Board might not be established in time for the first issue of the Report, consultation with the Board would be waived
- The final drafts would be submitted to the ES of the ESCAP and the ASG of ISDR for approval

Joint Editorial Committee (5):

Editors:
Dr Zengpei Xuan, Chief of IDD, ESCAP
Dr Jerry Velasquez, Senior Regional Coordinator of ISDR/Asia-Pacific
Executive Editors:
Dr Rodel Lasco, Convening Lead Author, IPCC and Philippine Coordinator, ICRAF
Dr Haishan Fu, Chief of Statistics Division, ESCAP (assisted: P Stocker)
Secretaries:
Dr Yuichi Ono, Section Chief of DRS, IDD
Ms Madhavi Ariyabandu, Programme Office, UNISDR
Other Members:
ESCAP: Section Chiefs of SAS & IDS, IDD; of Water, and Environment, EDD; of Economic & Social Survey, MPDD; one each from SDD and PMD
ISDR: Madhavi Ariyabandu, Abhilash Panda, Angelika Planitz, Andrew Maskerey, Lead GAR Author, more

On the preparation process and the schedule of work (1):

- By October 2009: the general framework is ready
- By December 2009: the drafting process starts
- By April 2010: Lead Authors hand in drafts
- By May 2010: the drafts are finished
- By September 2010: the Report is printed
- By October 2010: the Report is officially launched at the Fourth Asian Ministerial Conference on DRR in the Republic of Korea

On the preparation process and the schedule of work (2):

- **Two forums are envisaged for November 2009 and May 2010**
- **Forum, November 2009: mainly members of the Editorial Committee and the lead authors to review the content of the Report**
- **Forum, May 2010: finalizing the content of the Report before printing starts, by the same group**

Content of the Report with possible candidates for Lead Convening Authors (1)

- **Forward by the SG**
- **Joint preface by the USG and ES of ESCAP and the ASG of ISDR**
- **Acknowledgements**
- **Abbreviations**

Chapter 1: Hazards, vulnerability and risks - Trends and analysis (Lead author: Yuichi Ono, IDD, ESCAP)

The chapter will review the status and analyze the trends of hazards, vulnerability and exposure in Asia and the Pacific, highlighting the link of disaster risk reduction and climate change adaptation and inclusive development. The chapter will include among others the analysis of drought, wildfires, deforestation, El Niño, glacial retreat, GLOF, debris flow, and potential consequences on water supply, floods, and landslides and forest and their trends and impacts to the region, as well as the analysis of low-intensity but high-frequency hazards which have a high overall impact on livelihoods and economic assets but are not adequately reflected in funding priorities as compared with the more visible major disasters.

Chapter 2: Sound practices and lessons learned from subregional and national efforts (Lead author: Madhavi Ariyabandu, UNISDR)

The chapter will examine sound practices and lessons learnt in promoting and implementing wide-ranging comprehensive disaster risk reduction, disaster prevention and disaster management mechanisms supported by legal and institutional arrangements. The focus will be on efforts by multilateral organizations and initiatives at the sub regional level with emphasis on moving from emergency response to disaster prevention and risk reduction. A few selected national efforts by developing countries will be described.

Chapter 3: Regional cooperation, including South-South cooperation (Lead author: Jerry Velasquez, UNISDR)

The chapter will describe innovative multilateral types of cooperation - formal and technical - at the regional or subregional level, including regional cooperative mechanisms for enhancing disaster reduction capabilities, sharing experiences and information on disaster reduction amongst countries of the Asia-Pacific region. The chapter will guide regional cooperation not only for disaster risk reduction but also for development and promote in particular regional South-South cooperation mechanisms for implementing regional/sub regional activities in disaster risk reduction and development.

Chapter 4: Champions for disaster risk reduction (Lead authors: Clovis Freire, IDD, ESCAP and Manny De Guzman, UNISDR)

The chapter will present selected champions for disaster risk reduction in the Asia-Pacific region that could serve as exemplary practices for advocating disaster risk strategies and approaches. Champions may include eminent persons, women, children, disabled persons, among others, representing different cultures and experiences at all levels, who pushed forward wide-ranging disaster risk reduction activities. The process of identifying champions would include the development of the terms of reference of the champion in accordance with the selected theme of the Asia-Pacific Disaster Report and its endorsement by the Advisory Board, the establishment of a panel of experts for the selection of champions and a transparent system of screening, nomination and evaluation of candidates in consultation with key stakeholders.

Chapter 5: Economic and social analysis of disasters (Lead author: Tiziana Bonapace, MPDD, ESCAP)

The chapter will analyze the economic and social aspects of disasters, the linkages between disaster risk reduction and poverty alleviation and development, and the impacts of disasters, including ecosystem change, on socio-economic development in the Asia-Pacific region. The chapter will also analyze the applications of cost-benefit analysis for providing a better basis for policymaking. Selected case studies on recent achievements in mainstreaming disaster risk reduction into development policies, creating and strengthening national integrated disaster risk reduction mechanisms for enhancing sustainability and cost -effectiveness of public investment would be described.

Chapter 6: Disaster recovery programmes (Lead Author: Sanjaya Bhatia, IRP, UNISDR)

The chapter will review good practices of disaster recovery programmes in the Asia-Pacific region and lessons learnt in recovery, including restoration and/or improvement of facilities, livelihoods and living conditions of disaster-affected communities, together with efforts to reduce disaster risk factors. The focus will be on recovery strategies, policies and programmes that develop and implement disaster risk reduction measures applying the build back better principle. Specific examples from recovery experiences in the region in reducing risks in recovery and in organizing recovery issues, including Institutional arrangements and donor assistance in the context of a disaster and its timely delivery, public participation, gender matters, as well as the latest achievements in the area of joint emergency preparedness and response activities, particularly of transboundary nature, will be discussed.

Chapter 7: Space technology applications for disaster risk management (Lead author: Wu Guoxiang, IDD, ESCAP)

The chapter will provide concrete cases of space technology applications for disaster risk management in the Asia-Pacific region. The focus will be on describing how the use of information, communication and space technology tools for disaster risk management, especially in data collection and dissemination, early warning, disaster monitoring and evaluation and disaster emergency communications, works operationally in the context of developing countries in the region. The chapter will exemplify innovative cooperative mechanisms using advanced information, communication and space technologies with a multi -hazard approach in the region.

ToR for the Lead Convening Authors

The Lead Convening Authors will provide overall guidance on the development of respective Chapters, based on the agreed framework of the publication

The Lead Convening Authors will also lead the development of the Chapter, working closely with other authors and contributors

The Lead Convening Authors will also be responsible for reviewing all relevant comments that will be received in the course of the Chapter development and the peer review process, and incorporate into a revised version the Chapter comments that are judged to be valid

ToR for the Authors

The Authors will provide substantive inputs into the development of the Chapter in coordination with the Lead Convening Author.

Technical Details

- **The total length: around 200 pages**
- **Some 33 pages/chapter, size of the Survey,**
- **Biannual, to go together with every AMC if applicable**

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

What we expect from Typhoon Committee

- **As a key contributing author**
- **To Chapter 1 substantively, and**
- **To other chapters wherever applicable**

THANK YOU

Summary of the First Editorial Committee Meeting
The Asia Pacific Disaster Report,
18-19 November 2009, UNCC, Bangkok

A. Background

After the agreement to produce the Asia Pacific Disaster Report as a joint publication, IDD and ISDR/Asia-Pacific had some 10 rounds of consultations and worked out a guideline manual for the publication: the Concept Note. The Note covered almost all aspects of work related to the publication. During the process, the Executive Secretary (ES) of ESCAP reviewed the Note and provided her comments which were agreed upon by ISDR/Asia-Pacific and incorporated in. Based on the agreements as contained in the Note, the First Meeting of Lead Authors/Editorial Committee of the Asia Pacific Disaster Report was organized on 18-19 November 2009, at UNCC, Bangkok. The programme is attached in Annex 1.

B. Attendance

The meeting was co-chaired by the Co-editors, Mr. Xuan Zengpei and Mr. German Velasquez, and attended by all the Lead Authors except one – Dr. Sanjaya Bhatia who was represented by Mr. Abilash Panda, and many of the contributing authors. The list of participant is attached in Annex 2.

C. Decisions

1. It was decided that the Report would have seven Chapters in the new sequence. One previous chapter, Chapter 4 Champions for disaster risk reduction would be merged into other and relevant chapters. In addition, a new chapter or the final chapter would be added to summarize the gist of all the chapters. Each chapter will have a stand alone summary part. Cross-cutting themes such as capacity building and partnerships will be addressed in each chapter as and when required. The new seven chapters together with a list of convening lead authors and their chapter sequence are now as follow:

	Sequence	Title	Lead Author
	Preface	Including the scope, background and ground rules	
PART I	Chapter 1	Hazards, vulnerability and risks - Trends and analysis	Yuichi Ono
	Chapter 2	Economic and social analysis of disasters	Tiziana Bonapace
PART II	Chapter 3	Regional cooperation, including South-South cooperation	Dhar Chakrabarti
	Chapter 4	Disaster recovery programmes	Sanjaya Bhatia
	Chapter 5	Applications of space, indigenous technology, and other ICT technology for disaster risk management	Wu Guoxiang
	Chapter 6	Sound practices and lessons learned from sub-regional and national efforts	Vishaka Hidellage/ Ramona Miranda
PART III	Chapter 7	Conclusion	IDD/ESCAP and UNISDR/ Asia Pacific

2. The meeting agreed to harmonize the contents among chapters and to reduce duplication from the existing reports. Such efforts should continue to be made throughout the drafting process. In this connection, it was decided that Lead Authors communicate with each other and coordinate among themselves throughout the drafting process, especially between Chapter Six and Chapters Two to Five. The communications could be done by themselves through email, with copy to the Secretaries of the Editorial Committee, or through the Secretaries.

3. The Report will use the ISDR terminology for consistency throughout the Report (www.preventionweb.net)

4. Gender concerns should be addressed adequately. This could be in 1 or 2 analytical sections or addressed gender concerns in all chapters separately. A suggestion was made to look at women as enablers rather than victims.

5. For the Lead Author of the Chapter Seven – Conclusion, ESCAP/IDD and ISDR/Asia-Pacific will be the Co-Lead Author of the Chapter. In operation, it was further recommended that IDD would produce a first draft in June 2010, after all drafts of the six Chapters were ready, and submit to ISDR/Asia-Pacific for review.

6. After lengthy discussions, the meeting approved the outlines of the first six chapters as proposed by the Lead Authors. The revised outlines of chapter 1 to 6 are attached in Annex 3.

7. The meeting agreed that the Report be analyzed based on the availability of data and literatures. The Report is for the use of the government, so the targeted audiences of the Report include national government offices as well as planning and development agencies. In addition, the writing language style is to support the focus of social and economic perspective, meaning that the use of the jargon has to be minimized.

8. After the Outlines of the Chapters were approved, the Lead Authors would have the all authority to discharge their duties in the choice of the contents, the contributing authors and all other issues, except those that might have political or diplomatic implications.

9. It was decided that the ESCAP Editorial Guidelines, in addition to the UN Editorial Guidelines would be the Editorial Guidelines of the Report.

10. It was decided that the Lead Authors would submit each of their final draft in April, but the next meeting of the Lead Authors/Editorial Committee would be held in June instead of the previously planned May to give more time for peer review and other needs. In this connection, the Lead Authors were requested to carry out their peer reviews using sectoral approaches whenever possible. The revised timeline and schedule of production is attached in Annex 4.

D. Selected issues for attention

The following issues were highlighted as 'selected issues.' These alternative ideas were well considered when making a decision. The next issue of the Report may take these into consideration.

a. Champions:

There were two different views on champions on DRR. One view was that champions were a good mechanism to promote DRR in the region. The Asia Pacific Report would be able to select champions from the individuals, the private institutions, government agencies, NGOs and regional/sub-regional organizations, like the UNESCO practice of selecting the "World Heritage Sites", and the *Time* magazine to select the *Man of the Year*. It would win recognition for the regular publication. In the region, ISDR has done the first selection of DRR champion (Senator Legarda of the Philippines) and the Report could use the same selection process. The other view was that it was not suitable for the Report to do the selection, due to a difficult selection process and the page limit. If ESCAP wished to do it, it could do it, but not in the Report.

b. Structure of the Report:

Currently the Report has seven chapters divided into three areas: a) Review and analysis of the current trends and socio-economic development. b) Sound practices and lessons learned. c) A chapter of final conclusion. There was one different view on the structure: a) A general review and analysis of the disaster risks. b) Measures to reduce the risks. c) Challenges ahead and plans for the future.

ANNEX 1: THE PROGRAMME OF THE MEETING

17 November 2009

UNITED NATIONS ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

UNITED NATIONS INTERNATIONAL STRATEGY FOR DISASTER REDUCTION

First Editorial Committee Meeting of Asia-Pacific Disaster Report on Securing the Development in the Face of a Changing Climate

18-19 November 2009
Meeting Room B, UNCC
Bangkok

TENTATIVE PROGRAMME

DAY1	**Wednesday, 18 November 2009**
09:00-09:15	Welcome addresses by Mr. Xuan Zengpei, Director, IDD, ESCAP, and Mr. Jerry Velasquez, Senior Regional Coordinator, ISDR
09:15-09:30	Brief introduction to the Asia-Pacific Disaster Report by Mr. Yuichi Ono, Chief, Disaster Risk Reduction Section, IDD, ESCAP
09:30-09:45	Objectives and expected outcomes of the meeting by Mr. Jerry Velasquez, Senior Regional Coordinator, ISDR
09:45-10:00	Questions and answers (Editorial committee is clear on the concept note and what to achieve during the two days)
10:00-10:15	Tea/Coffee break
10:15-12:15	Agreement on the overarching themes of the report
12:15-13:00	Chapter Planning, and chapter wise discussion (Each lead author of a chapter will facilitate a group discussion to formulate a chapter outline based on a common format which would include the content outline and names of the contributing authors)
13:00-14:00	Lunch break
14:00-15:30	Chapter wise discussion (continued)
15:30-15:45	Tea/Coffee break

15:45-17:00	Chapter wise discussion (continued)
17:00	End of the first day (Chapter leaders are responsible for making a presentation on the following day)
DAY2	**Thursday 19 November 2009**
09:00-09:20	Links between the APDR and GAR, how to make closer links with the GAR by Andrew Maskrey, ISDR
09:20-10:00	Open discussion (Editorial Committee understands the need to make closer links between the GAR, related publications and APDR so that the APDR could best complement the weakness and suggested follow up areas by GAR 2009)
10:00-10:30	Group Discussion (Review chapter outlines to reflect issues from the GAR)
10:30-10:45	Tea/Coffee Break
10:45-12:45	Presentation of chapter plans by chapter lead authors
12:45-13:00	Questions and Answers
13:00-14:00	Lunch
14:00-15:00	Presentation of chapter plans by chapter lead authors (continued)
15:00-15:15	Questions and Answers (Editorial committee agrees with each chapter plan from a practical point of view)
15:15-16:15	Schedules and any other business (Schedules and arrangements are agreed on the concept notes)
16:15	Closing remarks by IDD

ANNEX 2: LIST OF PARTICIPANTS

FOR PARTICIPANTS ONLY

18 November 2009

UNITED NATIONS ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

UNITED NATIONS INTERNATIONAL STRATEGY FOR DISASTER REDUCTION

First Editorial Committee Meeting of Asia-Pacific Disaster Report on Securing the Development in the Face of a Changing Climate

18-19 November 2009
UNCC, Bangkok

PROVISIONAL LIST OF PARTICIPANTS

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Mr. Nokeo Ratanavong	Economic Affairs Officer, Disaster Risk Reduction Section

Ms. Atsuko Okuda	Officer-in-Charge, ICT and Development Section
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Macroeconomic Policy and Development Division

Ms. Tiziana Bonapace	Chief, Macroeconomic Policy and Analysis Section
Ms. Yejin Ha	Associate Economic Affairs Officer, Macroeconomic Policy and Analysis Section

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Programme Management Division

Mr. Charles Davies	Programme Officer, Technical Cooperation Section

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Editorial Unit

Mr. Orestes Plasencia	Chief, Editorial Unit, Conference Service Section
Ms. Sanoma Kellogg	Editor, Editorial Unit, Conference Service Section

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ANNEX 3 - REVISED OUTLINES OF CHAPTER ONE TO SIX

Chapter One: Hazards, vulnerability and risks - trends and analysis

Proposed chapter lead convening author: Mr. Yuichi Ono, IDD, ESCAP

Proposed Scope:

Coverage: Geological (earthquake, landslide and tsunami) and hydrometeorological (flood, including GLOF, drought, tropical cyclone, forest fire, etc.)

Analysis of hazards, vulnerabilities and risks
Study of climate change projections of extreme events

Means: Global Risk Data Platform, EM-DAT, IPCC, available data from other sources

Outcome 1: Establishment of linkages between climate change projections of extreme events and vulnerability/risk of hydrometeorological disasters

Outcome 2: Insights on climate change specific disasters such as GLOF, tropical cyclones, drought/forest fire and its linkages to El Nino and La Nina in the region

Outcome 3: Neglected disasters (out of radar screen from the EM-DAT database) and disaster risk reduction issues in LDCs and SIDs

Outcome 4: Analysis of capacity gaps for disaster risk reduction in the region

Outcome 5: Flagging off the inter-related issues among disaster risk reduction, climate change adaptation, and development

Chapter 2 will elaborate economic and social analysis of disasters including vulnerability aspects (coordination will be made between chapters 1 and 2 - in the Part 1 of the Report)

Proposed Outline:

1.1 Regional Overview Based on the EM-DAT data
Various trend analyses in general (number of hazard and disasters, disaster loss v.s. GDP per country, sub-regional comparisons, etc.)

1.2 Climate Change Impacts
- 1.2.1 GLOF
  [UNDP, India?]
- 1.2.2 Drought
  [China Drought Monitoring Center, US/NOAA]
- 1.2.3 Impacts of Sea Level Rise in SIDS in the region
  [UNEP and SOPAC?]

1.2.4 Impacts of Sea Level Rise in Mega-Delta in the region
[UNEP and UNU/EHS]
1.2.5 Trend of Tropical Cyclones in the region
[Typhoon Committee and Panel of Tropical Cyclone]
1.2.6 More frequent extremely heavy rainfall in short time period
[Japan Meteorological Agency]

1.3 Impacts of Climate Change and Variability

1.3.1 ENSO and extreme climate in the region
1.3.2 ENSO, climate change and forest fire in the region
[Global Fire Monitoring Center?]

1.4. Neglected Disasters

1.4.1 Impacts of small but more frequent disasters
[SAARC from the data 2008 and 2009]
1.4.2 Disasters in small countries such as SIDS
[SOPAC?]
1.4.3 Tornadoes in Bangladesh
[International Group to Reduce Wind-related Disaster Risk/ International Association of Wind Engineering]

1.5 Risk Assessment Initiatives in the Region

1.5.1 Introduction of various risk assessment initiatives in the region
[ADPC, IDRC]
1.5.2 Disaster Index and Indicators (water-related ones for example)
1.5.2.1 Water Insecurity Index
[EDD, ESCAP]
1.5.2.2 Flood Vulnerability Index
[ICHARM]

1.6 Climate Change Adaptation Progress in the Region

1.6.1 Analysis of country survey
1.6.2 Case studies

1.7 Conclusions and Recommendations

1.7.1 Conclusions
1.7.2 Recommendations
(Examples)
- Recommend to develop a regional network of countries with large delta
- Promote to develop an official disaster database in the Region
- Recommend to develop a regional-scale climate change scenario

Annexes Table - Disaster Data per Country (EM-DAT)

Chapter two: Economic and Social Analysis of Disasters

Proposed chapter lead convening author: Ms. Tiziana Bonapace, MPDD, ESCAP

Proposed outline:

1. **Theoretical linkages between disaster risk reduction, climate change, poverty alleviation and development (very brief, as it will come up in other chapters)**
   - Mutual, reinforcing inter-linkages between poverty/vulnerability.
   - Potential impact of disasters on the wider macroeconomy via direct, indirect and secondary effects.

2. **Quantitative Evidence on the socio-economic impact of disasters**
   - Review of existing global econometric analysis (including a series of studies recently commissioned by the World Bank as part of preparation of the forthcoming Economics of Disaster Risk Reduction report and recent study by the Asia Development Bank on economics of climate change) – slightly mixed evidence on impact of disasters on socio-economic development, but preliminary findings generally indicate that natural disasters have an adverse impact on long-term growth.
   - Country-based evidence on the socio-economic impact of disasters, drawing on evidence from the Asia-Pacific region.
     - Examples of the impact of disaster events on GDP performance as a summary indicator of economic performance (including particularly severe impacts on small-island developing states) and other economic consequences.
     - Social consequences of disaster events (why and how the poor and vulnerable populations are disproportionately impacted by disasters)
     - Difficulties in measuring economic impact of disasters in countries where localized events occur on an annual basis and thus where it is not possible to establish a non-disaster counterfactual (e.g., Philippines; Nepal). In such cases, sub-national and sect oral analysis may be particularly important.
     - Difficulties in separating out socio-economic impacts of disaster events from underlying trends and impacts of other shocks (e.g., conflict).
     - Factors influencing vulnerability from an economic perspective, including inverted 'u' hypothesis on relationship between stage of development and impact of disasters (e.g., Japan from1868 to the current day) and the role of structural economic change (e.g., Bangladesh), shifts in production technology, short-term economic performance in the run up to a disaster; etc.
     - Factors influencing vulnerability from a social perspective, including social protection of disadvantaged and vulnerable social groups such as children, disabled, elderly and women
   - Very limited quantitative evidence on impact of disasters on poverty either in the Asia-Pacific region or elsewhere. Presentation of available evidence for the Asia-Pacific region (e.g., studies undertaken as background contributions to ISDR's 2009 Global Assessment Report).

3. **Use of socio-economic tools for reducing disaster risk: mainstreaming DRR into development**

- Definition of mainstreaming (essentially to treat risk reduction as an integral part of the development process, rather than an end in itself).
- Why mainstream? Aims, objectives, benefits.
- Growing interest in and commitment to mainstreaming (HFA, donor policies, government policies). Recognised good practice in both disaster risk reduction and climate change adaptation communities. Discussion about the "no regrets" approach to disaster risk reduction
- Progress to date.
    - From a weak beginning, there has been steady - if slow - progress towards greater consideration of disaster risk concerns in PRSPs and national development plans over the past few decades (e.g., 2005 Bangladesh PRSP; 2006 Vietnam PRSP also good.) Ditto in development partner/NGO country strategy papers. This progress has been supported by various guidelines (e.g., ProVention mainstreaming tools; UNDAF guidance notes relating to DRR; various guidelines in the related area of climate change adaptation mainstreaming (e.g., OECD, 2009)) and development partner efforts to encourage mainstreaming in individual countries (e.g., as a key element of SNAPs supported by ISDR).
    - Country case examples demonstrating increasing consideration of disaster concerns in successive development plans.
    - Asia-Pacific country own ratings of achievements in mainstreaming as reported to ISDR under relevant HFA implementation monitoring indicators.
- Still some way to go though.
    - Despite the above progress, disasters are still often viewed primarily within a very narrow, project-based framework of structural mitigation requirements (flood control etc), enhanced preparedness (EWSs etc), relief and rehabilitation capabilities and ex post support to vulnerable groups – e.g., Cambodia – rather than treated as a cross-cutting issue. DRR is still far from a truly mainstreamed approach in many developing countries.
    - Sectoral policies and strategies continue to blatantly ignore disaster risk in some cases – e.g., as in agricultural sector in Nepal.
    - Disaster risk is widely ignored in the design of individual development projects and programmes.
    - Sub-national planning processes are often innately weak, implying that it can be very difficult to get mainstreaming off the ground at the local level.
- Obstacles to progress in mainstreaming-
    - Insufficient appreciation of the socio-economic impact of disasters and thus of the relevance of disaster risk reduction goals to sustainable development achievements, in part due to:
        - Incomplete information on disaster preparedness, shortcomings in the underlying damage assessment process and direct disaster losses and related relief and rehabilitation costs and shortcomings in the underlying damage assessment process.
        - Limited analysis of the social and wider macroeconomic and financial impact of past disasters.
        - Limited analysis of the potential social, economic and financial impact of future disasters or related options for policy response.
    - Inadequate budgetary arrangements either disaster risk reduction or post-disaster response or tracking of related expenditure.

- Limited available guidance on how to incorporate disaster risk concerns in the identification, appraisal, design, monitoring and evaluation of individual development interventions, from both economic, social and other perspectives.
- A widely prevailing view that disaster risk reduction is expensive which, together with budgetary limitations, results in an emphasis on other less costly or more immediately pressing demands on government expenditure.

- Factors/changes required to move forward (All elements of this part are important).
  - Improved knowledge on the socio-economic impacts of disasters. Discussion of the DALA and PDNA methodologies, applicability to the Asia-Pacific region and its potential for overcoming some of above issues. Recommended thrust of future country-based broader economic and poverty analysis.
  - Cost-benefit analysis, generating evidence on the potential economic returns to individual investments in disaster risk reduction which can be used to promote greater consideration of disaster risk in the design of investments. Presentation of case examples of worked cost-benefit analyses (e.g., for India, Nepal) and discussion of challenges in undertaking cost-benefit analysis in this area (limited data, probabilistic nature of hazards, dynamic nature of vulnerability etc).
  - Country-specific project-orientated tools and guidelines for mainstreaming disaster risk reduction.
  - Enhanced budgetary/fiscal management of disasters, including incentives for disaster risk reduction.
  - Exploring the use of innovative financing mechanisms that reduce risks. Progress made if any, limitations and why the market is underdeveloped.
  - Appropriate policy and legislative frameworks.
  - Appropriate institutional frameworks (in particular, securing the direct involvement of ministries of finance and planning in both disaster risk reduction and climate change adaptation).
  - Champions, including those able to make the social and economic case for disaster risk reduction (case studies in a box)
  - Coordinated development partner support, avoiding the duplication perils of fragmented funding and helping governments and the international community to allocate external resources most effectively.
  - Meaningful monitoring and evaluation indicators, both nationally and internationally.

Conclusions and policy recommendations

Chapter 3: Regional Cooperation, including South-South Cooperation

Proposed chapter lead convening author: Mr. P.G. Dhar Chakrabarti, SAARC Disaster Management Center, National Institute of Disaster Management (NIDM)

Proposed outline:

3.1 Rationale

- Geographic
- Humanitarian
- Scientific
- Economic

- Political

3.2 Genesis and evolution

- Civil society initiatives
- Red Cross & Red Crescent
- Scientific, technical and academic cooperation
- Asian Disaster Preparedness Centre
- Global initiatives: IDNDR, YSSW, HFA
- Impact of recent mega disasters

3.3 Types

- Pan-Asian: AMCDRR, IAP
- Multi-lateral: UN, World Bank, ADB
- Trans-regional: ICIMOD, ADRC, BIMSTEC
- Sub-regional: Mekong River Commission
- Tri-lateral: Japan-China-Korea
- Bi-lateral: Preferred mode of regional powers
- Inter-governmental: ASEAN, SAARC, SOPAC, ECO

3.4 Pattern of inter-governmental cooperation

- Declaratory phase
- Building legal-institutional framework
- Programme interventions
    - Response
    - Preparedness
    - Risk Reduction
    - Climate Change Adaptation

3.5 Emerging initiatives

- Asian Seismic Reduction Centre
- International Centre for Drought Reduction
- Typhoon Committee and Panel on Tropical Cyclone
- Regional Research Centre on Catastrophic Disasters
- International Centre on Climate Change Adaptation

3.6 Intra-regional and inter-regional Cooperation

- South-South Cooperation windows
    - UNDP
    - ESCAP
    - GFDRR
- Intra-regional cooperation in Asia-Pacific
- Inter-regional cooperation with Africa, South America

3.7 Constraints

- Political
- Economic
- Financial
- Technical
- Capacity

3.8 Challenges

- Region specific challenges
- Common challenges
- Looking forward

Methodology:

- Data mining
- Structured inputs from main regional organizations
- Questionnaire
- Interaction and discussion
- Comments
- Peer review

Work plan:

- November: Finalization of ToR
- December: Data mining, questionnaire
- January: Framing of issues, discussions
- February-March: Drafting of report
- April: Review
- May: Final Report

Assistance required:

- Facilitation for data collection
- Access to available information
- One Research Associate and One Research Assistant for 4 months

Chapter 4: Disaster Recovery Programmes

Proposed chapter lead convening author: Mr. Sanjaya Bhatia, IRP, ISDR

Proposed outline:

4.1 Introduction

- Recovery phase as entry point for disaster risk reduction (Why is DRR necessary in recovery)

4.2.a Recovery Programs – cases on DRR integration in/during recovery phases (This section would analyze good/bad practices of integrating DRR into recovery from "selected" national recovery programme amongst the countries listed below)

- Philippines
- Bangladeshh
- Philippines
- China Earthquake Administration
- Vietnam
- Indonesia
- Myanmar
- India
- Iran

- Pakistan
- Japan
- Turkey??

4.2.b DRR in Recovery Sectors

- Analysis of cases on effective recovery by sector/theme
  1. Livelihoods
  2. Water and sanitation
  3. Reconstruction
  4. Etc……

4.3 Support Programs/ Process (Identifies key process that "should/could" be utilized to integrate DRR into recovery)

- Recovery Knowledge Management
- UN or international community mechanisms
- Sample process of "few" selected national governments

4.4 Recommended Post-disaster Actions / Actions during recovery/ Policies and Strategies (do-able & precise suggestions to Governments)

- Analysis of conditions that facilitate improvements in policy, legislation, and institutional arrangements vis-à-vis recovery programmes –

4.5 Conclusion

- The conclusion will clearly determine the conditions that advance recovery process
- It will also point out new measures to address the recovery gaps mentioned in GAR09

4.6 References and Sources of Information

Chapter 5: Applications of space, indigenous technology, and other ICT technology for disaster risk management

Proposed chapter lead convening author: Mr. Wu Guoxiang, IDD, ESCAP

Proposed outline:

5.1 ICT development from the DRR perspective

5.1.1 Regional overview of ICT development in Asia and the Pacific
5.1.2 Mobile
5.1.3 Broadband
5.1.4 What these means to DRR

5.2 Protecting ICT infrastructure

5.2.1 Recent examples: ICT infrastructure and service disruptions
5.2.2 Benchmarks: what worked in some countries to prevent such disruptions
5.2.3 Disaster preparedness of ICT ministries and agencies
5.2.4 Disaster preparedness of telecom operators
5.2.5 Common gaps

5.2.6 Opportunities to enhance disaster preparedness

5.3 Enhancing disaster preparedness through ICT

5.3.1 Disaster data mapping: what are the critical disaster data and applications
5.3.2 Examples of disaster data mapping
5.3.3 Hazard maps: how far the region is
5.3.4 How to enhance the use of hazard maps: evacuation guidelines etc.
5.3.5 Major challenges and opportunities from the ICT perspective

5.4 Early warning enhanced by mobile capabilities

5.4.1 Regional benchmarks: what worked and what didn't
5.4.2 ICT coverage and hazard maps: an example
5.4.3 How to identify priority areas of high disaster risks and low ICT coverage

5.5 Policy recommendations

5.6 Conclusion

Chapter 6: Sound practices and lessons learned from sub-regional and regional efforts

Proposed chapter lead convening author: Ms. Vishaka Hidellage / Ms. Ramona Miranda, Duryog Nivaran

Changing the focus to 'mainstreaming' DRR, CCA into development – need to come up with proper title for this

- Incentives, mechanisms, barriers, audits
- Operation – no regrets approach

Proposed outline:

Justification

- Development disaster link is poor in practice (focus on macro vs. micro) etc. – chapter 2 may cover this. But some analysis of justification of this chapter

Sound practice and malpractice

- Any instances/examples of the adoption of overarching national development policy frameworks and practice that focus on the underlying drivers of disaster risk.
  - Where prospective and corrective disaster risk reduction is given mandatory consideration in development planning
  - Any policy with regard to disaster impact assessment from development projects
  - Where disaster management stakeholders are consulted during development planning
  - Aggravations of disasters by development malpractice

Why is the development DRR link weak, despite HFA implementation support? Why this is not moving forward, reasons (both structural and non structural)

- Governance and accountability in DRR

- Structural & non structural aspects

CC as a push factor internationally

- Cashing in on adaptation emphasis for mainstreaming DRR & CCA into development planning. Realizing the reality of CC means we cannot do without the change
- Key productive sectors and threats from disasters and CC

What needs to be done? (highlight what can be done to change things)

- Role of Government/LG; decentralisation
  - financial institutions, UN
  - CSO
- Role of public – private-partnerships and corporate social responsibility
- How can national level decision making authority be made accountable for DRR
- What information, evidence is needed to convince highest level of decision making
- How can a common agenda be developed and facilitated for national level DRR & CC incorporating DRR aspects into NAPA or NAPS
- How to develop methodologies for auditing
- Incentives

Look at sectoral analysis – education, agriculture etc.
Governance, decentralization – other highlighted bits in GAR to guide some of the earlier analysis

Removing the part about selecting champions, and have one section on the experience use of champions as an effective driver, catalyst

Needs:

- Partner organizations from S E Asia & Pacific
- Research Assistant
- Funds for data collection & research assistance
- Peer review, advisory team – including people from CC sector
- Coordination with Chapter 2

Possible team to assist write/research this chapter

- Clovis Freire (already mentioned as co author) to work parallely
- Angelika Planitz, UNISDR – Pacific inputs
- Anshu Sharma, ADRRN – South East Asia inputs
- Scott, Huyi

Overall

- Peer review, advisory team – including people from CC sector
- Making a common team available for data access?
- Re-ordering the chapters
- Time factor

ANNEX 4 - REVISED TIMELINE AND SCHEDULE OF PRODUCTION

Timeline	Activities
By November 2009	▪ To organize the First Editorial Committee Meeting (and the lead authors if applicable) to review and decide on the content of the report, including the number and names of the chapters and annotations, the selection of lead authors, and the main contributing authors possibly nominated by the lead authors. ▪ Lead authors to submit the revised outlines of chapters ▪ E-working space to be developed (information pool)
By 15 December 2009	▪ To finalize all of the items to be contained in the report. The lead and contributing authors will start working. ▪ The Editorial Committee and the authors will maintain close consultation with each other, especially during the drafting period. ▪ At this stage, the Committee should also start working on the design of the cover pages and other pages.
February or March 2010	▪ Mid-term review back to back with the IAP meeting
By April 2010	▪ The lead authors will have to complete their drafted works and submit to the Editorial Committee. ▪ The Committee will send the drafts, together with the designs of the covers, for peer review for two months among national institutions, regional and sub-regional organizations, and academia with a deadline for feedbacks. ▪ The Committee might request reviewing entities to focus their reviews only on the parts closely linked to their specialties.
By June 2010	▪ To get the first drafts of all report content ready. ▪ To organize the second forum to review and finalize the report by inviting the same list of participants as in the First Editorial Committee held in November 2009. The finalized draft of the Report will be later sent to the ESCAP Editor. ▪ The report will be provided to GAR11 team for possible inclusion in its publication
By September 2010	The report will be ready for printing
By October 2010	The report is to be officially launched at the Fourth Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR), Incheon, the Republic of Korea, 9-11 October 2010

Annual Operating Plan of WGM

Macau, China

2009.12.16

Outline

- Review of AOP in 2009
- AOP for 2010
- Suggestion

Review of AOP in 2009

- Assessment on TC climate change
- TIPS
- Urban flooding & storm surge
- Forecasting skill (T-PRAC)
- GTS
- On-line forum
- Roving seminar

AOP1 of 2009: Assessment of the impact of climate change on tropical cyclone frequency and intensity variation

- To make a simple collective report on drafting assessment paper
  - Indicator: Distribution an overview report on the impact of the climate change on tropical cyclone frequency and intensity
  - ☑ implementation: Primary assessment report was presented at IWS Cebu
- To form an expert team
  - ☑ Expert team: Tin, Jim, Dr.Lee, Nakazawa, Woo Jin Lee, Ying
  - ☑ Assessment expert team meeting planned in Dec 2009.

AOP1 of 2009: Assessment of the impact of climate change on tropical cyclone frequency and intensity variation (con.)

- To form a critical assessment and make suggestions or interpretation for users
  - Indicator: Publication of a serial evaluation scientific report under the name of Typhoon Committee since 42nd session
  - ☑ Implementation: Publication of the assessment report in 2010

AOP2 of 2009: Development of typhoon information processing system (TIPS)

- Action:
  - To hold a workshop on TIPS (jointly with EPS)
- Success indicators:
  - Improvement/establishment of TIPS by Members
- Implementation (complete Yes or No): Yes!
  - ☑ To be continued aims at transfer of technology and knowledge among TC Members

AOP3 of 2009: Improvement of warning services for urban areas

- To develop a guideline for quantitative precipitation estimation (QPE) quantitative precipitation forecast (QPF) techniques
  - Indicator: Publication of a guideline for QPE/QPF
  - ☒ Implementation: Requirement for the QPE/QPF is not yet will defined. No specific studies are able to conduct.

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AOP3 of 2009: Improvement of warning services for urban areas (con.)

- To develop a regional storm surge forecasting system for urban areas
  - Indicator: Dissemination of a regional advisory for storm surge forecasting
  - ☑ Implementation: The results of the survey of the status in using storm surge model was presented at IWS Cebu. RSMC Tokyo will produce the storm surge distribution map to TC Members in 2010.

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AOP4 of 2009: Improvement of tropical cyclone forecasting skill of TC members

- Action:
  - To exploit and share the results of T-PARC by Members (evaluation of the impact of the T-PARC special observation on typhoons)
- Success indicators:
  - Distribution of an evaluation report on the impact of the T-PARC special observation on typhoon
- Implementation (complete Yes or No): Yes!
  - ☑ JMA held an int'l meeting on the improvement of typhoon track forecasting from 30 Nov. to 2 Dec. 2009.
  - ☑ RSMC will inform the TC Members of the results of T-PARC 2008 in the next issue of the Technical Review (N0.12) to be published in 2010.

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AOP5 of 2009: Improvement of communication system in the TC area

- To upgrade the communication system in Members (prepared for WMO information system)
  - Indicator: Number of Members prepared for WIS
  - ☒ Implementation.: all the Members of TC are still in the process of developing their communication systems to meet their requirement for WIS
- Upgrade the VSAT system in five countries (China)
  - Number of Members with new VSAT system
  - ☑ Implementation: completed
- Migration from A/N to BUFR (ROK offered to provide software support)
  - Indicator: Completion of the migration in the Committee's region
  - ☒ Implementation: Not yet. KMA informed that BUFR decoding software has been provided ot Members at 40th session. Further assistances can be provided by KMA

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6. Promotion of discussions among forecasters of TC members during the approach of tropical cyclone

- Action:
  - To set up an on-line forum for exchange of typhoon monitoring and forecasting information, consisting of experts of met., hydro. and DPP.
- Success indicators:
  - Development of a guideline on the structure and operation of the forum)
  - Establishment of the forum
- Implementation (complete Yes or No): Yes!
  - ☑ The web-based typhoon forum was successfully set up in July 2009.
  - ☑ To be continued aims for the improvement of the usage of the forum..

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7. Improvement of warning information dissemination

- Action:
  - To hold a roving seminar jointly with TRCG on forecast techniques, warning dissemination and media skills (Hong Kong or Nanjing, China)
- Success indicators:
  - Origination of the workshop
- Implementation (complete Yes or No): Yes!
  - ☑ Held in Nanjing /China, Combine with TRCG

12

Review of AOP in 2009

Plans:	Implementation:
– Assessment on TC climate	☑ Yes, to be continued
– TIPS	☑ Yes
– Urban flooding & storm surge	☒ S.S. yes, but U.E not yet (postponed)
– Forecasting skill (T-PRAC)	☑ Yes
– GTS	☒ VSAT yes, but WIS and BUFR not yet
– On-line forum	☑ Yes, to be continued
– Roving seminar	☑ Yes, combine with TRCG

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Part II:
priority project & AOPs for 2010

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AOPs for 2010

- **Assessment of impacts of climate change on tropical cyclone in TC region – (II) track and scope (distribution)**
- **Storm surge forecasting skill**
- TIPS & Research Fellowship
- **Typhoon early warning system**
- Web-based typhoon forum
- Exchange of radar data

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AOP 1 for 2010:
Assessment of climate change on tropical cyclone in TC region --- (II) track and scope (distribution)

- **To publish "Assessment report of the impacts of climate change on tropical cyclone in TC region --- (I) frequency and intensity"**
  - Under the name of TC, 42nd session
  - Budget: US$ 4,000
- **To set up or extend the expert team**
  - Recommended members: Tin, Jim, WJ Lee, Ying, Dr.Lee, Nakazawa… + focal point of each TC Member
  - Suggestion: **letter of appointment**
- **To make a draft of the 2nd report**
  - To hold 2 times expert workshop (2day for each time) to discuss the 2nd assessment report

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AOP 2 for 2010:
improvement of storm surge forecasting skill for coastal areas

- **To modify the regional storm surge model**
  - to produce storm surge distribution maps for TC Members and evaluate them by RSMC Tokyo
- **To hold a 7-days storm surge workshop**
  - **Budget: US$ 6,000**
- **Leading Member: JMA (RSMC Tokyo)**

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AOP 3 for 2010:
Typhoon information processing system (TIPS)

- **To facilitate technology and knowledge transfer among TC Members through research and development initiative**
  - Improvement / establishment of TIPS by Members
  - Modify the analysis (Location & intensity), Forecasting (EPS: weights based on forecast error) and Interactive forecast edit system
  - **Budget: US$ 5,000**
- Leading Member: HKO & KMA

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AOP 4 for 2010:
Typhoon early warning system

- **To set up a unified platform for viewed the real-time forecasts information by all TC Members**
- **To establish a super-ensemble early warning system on tropical cyclone and carry out operational test in 2010**
- **To hold the Shanghai TC FDP training workshop based on Shanghai EXPO 2010 TC FDP project**
  - Combine with TRCG
- Leading Member: CMA & RSMC-Tokyo

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AOP 5 for 2010:
Web-based typhoon forum

- **To upgrade the on-line forum by expanding the member of registered users and by exchanging more information or data through the forum**
  - Information: video., fig., text….
  - User: experts, public
- **To form a team of moderators on related topics**
  - Real-time information, History case, Forecasting
  - Budget: No
- Leading Member: CMA & RSMC Tokyo

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AOP 6 for 2010:
Exchange of radar data

- **To set up an radar data set list of Members**
  - Recommended Members: Thailand ,Cambodia, Lao PDR, Malaysia, Philippines
- **To exchange the radar data among Members**
  - Budget: No
- Leading Member: Thailand

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List of AOPs for 2010

AOPs:	Leading Member:	Budget
Assessment report on TY climate	**Mr. Tong (Macao/China)**	**US$4000**
Storm surge forecasting skill	**JMA**	**US$6000**
TIPS & Research Fellowship	**HKO & KMA**	**US$5000**
Typhoon early warning system	**CMA & RSMC Tokyo**	
Web-based typhoon forum	**CMA & RSMC Tokyo**	
Exchange of radar data	**Thailand**	

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Part Ⅲ:
suggestion
(priority project of WGM for further)

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Suggest:
(Priority project of WGM for further)

- **Assessment of impacts of climate change on tropical cyclone in TC region**
- **Data base and share**
- **Publish**

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PP1 of WGM for further

- Assessment of impacts of climate change on tropical cyclone in TC region —
  - (I) frequency and intensity (2009-2010)
  - (II) track and scope (distribution) (2010-2011)
  - (III) wind and precipitation (2011-2012)
  - (IV) disaster and benefit (2012-2013)
  - ✓ Serial assessment reports: publish (since 2010)
  - ✓ Confer the "letter of appointment" by TC to extend the positivity of the expert team

25

PP2 of WGM for further

- Database and share
  - EBT (expand best track) database
    - Set up a operational expert team, Recommended members: JMA, JTWC, STI, HKO
    - Hold expert meeting face to face to book the best track of last tropical cyclone season (2010)
  - Real time information:
    - forecasting and warning (model and official) , (2010)
    - field program (such as: T-PRAC (2010…..)
    - operational observation (2011…..)
  - ✓ Best track and yearbook: publish (since 2011)

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PP5 of WGM for further

- Publication
  - Techniques and handbook:
    - ✓ Serial critical assessment report: publish (since 2010)
    - ✓ Best track and Yearbook: publish (since 2011)
    - ✓ Evaluation report on forecasting skill: publish (since 2011)
    - ✓ Risk map and EWS handbook: publish (2012)

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PP5 of WGM for further

- Publication (con.)
  - Journal "Tropical Cyclone Review" under the name of TC:
    - ✓ Technicality, Quarterly (Semiyearly)
    - ✓ Content:: (focus on the progress in TC region)
      - ☞ Operational techniques of TC Members, include M. H. DPP…
      - ☞ Research paper of scientist
    - ✓ Edit by TCS (WGM +…), newsroom (STI)
    - ✓ Editor committee: focal point of Member of WGM +…
    - ✓ Funding: by STI/CMA

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Thank you for your attention!

Suggest: (Priority project of WGM for further)

- Assessment of impacts of climate change on tropical cyclone in TC region
- Database and share
- Forecasting skill
- Risk Management
- Publish

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PP3 of WGM for further

- **Forecasting skill**
  - Field program:
    - T-PRAC , (2010)
    - Mobile detection and unmanned aircraft detection for landfall tropical cyclone (2011)
  - Model improvement:
    - TCM: H-WRF, Grapes-TCM…, (2010)
    - Couple model: TCM + POM +…. (2010-2011)
    - Ensemble (or super ensemble) forecast system (2010-2012)

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PP3 of WGM for further (con.)

- **Forecasting skill (con.)**
  - Forecast element:
    - Track 120hFCST by TCM (2010)
    - Track 7 days by TCM (2011)
    - Intensity 72hFCST (2011)
    - QPF/QPF, floods and radius of strong winds of 48hFCST (2011)
  - Forecast accuracy:
    - Evaluate forecasting skill (2010)
    - Reliability of forecast (2011)
  - Evaluation report on forecasting skill: publish (2011)

32

PP4 of WGM for further

- **Risk management**
  - Disaster evaluation:
    - disaster and GIS database, Risk map (historic), combine with WGDPP (2011)
    - Assessment the disaster and benefit, combine with WGDPP (2012)
  - Risk forecast techniques:
    - correlation between risk and tc (track, intensity, the distribution of wind and precipitation) , combine with DPP (2011)
    - Risk forecasting model, combine with DPP (2012)
  - Risk map and EWS handbook: publish (2012)

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	A	B	C	D	E	F	G	H	I	J	K	L
1		**APPENDIX XVIII - Typhoon Committee Integrated Annual Operating Plan for Calendar Year 2009**										
2		**Submitted by the Advisory Working Group - 21 January 2009**										
3												
4												
5		SG 1: To enhance cooperation among TC Members to reduce the number of deaths by typhoon-related disasters by half										
6		(using the decade 1990-1999 as the base line to compare with the decade 2006-2015).										
7												
8		SG 2: To reduce the socio-economic impacts of typhoon-related disasters per GDP per capita by 20 per cent										
9		(using the decade 1990-1999 as the base line to compare with the decade 2006-2015).										
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11		SG 3a: To improve the beneficial use of typhoon-related effects of typhoons by 10 per cent in water management by selected Members										
12		(using the decade 1990-1999 as the base line to compare with the decade 2006-2015)										
13		SG 3b: To promote increasing use of the typhoon-related beneficial effects among the Members										
14												
15		SG 4a**:** To provide reliable typhoon-related disaster information for effective policy making in risk management in various sectors.										
16		SG 4b: To strengthen capacity of the Members in typhoon-related disaster risk management in various sectors										
17		SG 4c: To enhance international and regional cooperation and assistance in the field of disaster risk reduction.										
18												
19		SG 5a: To promote and enhance culture of community-based disaster risk management among the Members										
20		SG 5b: To promote education, training and public awareness of typhoon-related disasters among the Members										
21												
22		SG 6a. To strengthen RSMC capacity to respond to the needs of the Members in forecasting and capacity building										
23		SG 6b. To improve capacity of Members to provide timely and accurate user-oriented and friendly TC products and information										
24		SG 6c. To enhance capacity of Members' typhoon-related observation and monitoring										
25												
26		SG 7a: To strengthen the capacity of TCS to effectively discharge its responsibilities and functions described in the Terms										
27		of Reference and support the Members in the implementation of the strategic goals										
28		SG 7b: To strengthen the capacity for resources mobilization for the implementation of the strategic goals										
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	A	B	C	D	E	F	G	H	I	J	K	L
32		Working Group on Meteorology										
33												
34	SP's KRA and SG	Objective Number	Objective	Action	Other WGs Involved	TCS Responsibility	Expected Quarter Completed	Other Organizations Involved	Success Indicators	Funding Required	Funding Sources	Completed - Yes or No
35												
36		1	Assessment of the impact of climate change on tropical cyclone frequency and intensity variation	(a)To make a simple collective report on frequency and intensity change of tropical cyclones (Tong Tin Ngai, Macao) (b) To form an expert team (Recommended members: Tong Tin Ngai, Jim, WJ Lee, CMA, MRI/JMA, HKO) (c) To form a critical assessment and make suggestions / interpretation for users			(1) 41st session (2) 41st session (3) 42nd session	HKO	(a) Distribution an overview report on the impact of the climate change on tropical cyclone frequency and intensity at 41st session (b) Publication of a serial evaluation scientific report under the name of Typhoon Committee since 42nd session	US $4,000	Yes	Yes. Prliminary assessment report was presented at IWS Cebu. Assessment expert team meeting planned in Dec 2009. Publication of the assessment report in 2010.
37		2	Development of typhoon information processing system (TIPS)	To hold a workshop on TIPS (jointly with EPS) Place: ROK	TRCG		Mid April / late Feb.	KMA	Improvement/establishment of TIPS by Members	US $6,000	Yes	Yes. To be continued aims at transfer of technology and knowledge among TC Members
38		3	Improvement of warning services for urban areas (coastal areas)	To develop a guideline for quantitative precipitation estimation (QPE) quantitative precipitation forecast (QPF) techniques and a regional storm surge forecasting system for urban	WGH, WGDPP		(1) second-third quarter (2) 42nd session		(a) Publication of a guideline for QPE/QPF (b) Dissemination of a regional advisory for storm surge forecasting			(a) Not yet. Requirement for the QPE/QPF is not yet will defined. No specific stuedies are able to conduct. (b) The results of the survey of the status in using storm surge model was presented at IWS Cebu. RSMC Tokyo will produce the storm surge distribution map to TC Members in 2010.

	A	B	C	D	E	F	G	H	I	J	K	L
39		4	Improvement of tropical cyclone forecasting skill of TC Members	To exploit and share the results of T-PARC by Members (evaluation of the impact of the T-PARC special observation on	WGH, WGDPP		41st session	JMA	Distribution of an evaluation report on the impact of the T-PARC special observation on typhoon			Yes. JMA will hold an int'l meeting on the improvement of typhoon track forecasting from 30 Nov. to 2 Dec. 2009. RSMC will inform the TC Members of the results of T-PARC 2008 in the next issue of the Technical Review (N0.12) to be published in 2010.
40		5	Improvement of communication system in the TC area	(1) To upgrade the communication system in Members (prepared for WMO information system) (2) Upgrade the VSAT system in five countries (China) (3) Migration from A/N to BUFR (ROK offered to provide software support)			4th quarter	CMA KMA	(a) Number of Members prepared for WIS (b) Number of Members with new VSAT system (c) Completion of the migration in the Committee's region	USD$3,000	Yes	(a) all the Members of the Committee are still in the process of developing their communication systems to meet their requirement for WIS. (b) Completed. (c) Not yet completed. KMA informed that BUFR decoding software has been provided to Members at 40th session. Futhter assistances can be provided by KMA.
41		6	Promotion of discussions among forecasters of TC Members during the approach of tropical cyclones	To set up an on-line forum for exchange of typhoon monitoring and forecasting information, consisting of experts of met.,			2nd quarter	CMA	(a) Development of a guideline on the structure and operation of the forum (CMA) (b) Establishment of the forum			Yes. The web-based typhoon forum was sucessfully set up in July 2009. To be continued aims for the improvement of the usage of the forum.
42		7	Improvement of warning information dissemination	To hold a roving seminar jointly with TRCG on forecast techniques, warning dissemination and media skills (Hong Kong or Nanjing, China)	TRCG		4th quarter	HKO,CMA	Organization of the workshop.			Yes.
43												
44												

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29												
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32		Working Group on Hydrology (WGH)										
33												
34	SP's KRA and SG	Objective Number	Objective	Action	Other WGs Involved	TCS Responsibility	Expected Quarter Completed	Other Organizations Involved	Success Indicators	Funding Required	Funding Sources	Completed - Yes or No
35												
36	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 5b	1	Produce and use Flood Hazard Maps (FHMs)	To prepare and publish FHMs which are used by local people and municipalities for timely evacuations and planning	WGDPP	See above	(a) First (b) Second (c) Third (d) Fourth	ICHARM, JICA	(a) IDI requests members to submit reports on their activities, model produced FHMs, etc. （ ICHARM & JICA conduct FHM follow-up seminar in Manila) (b) Each member submits reports to IDI (c) IDI to compile draft final report containing following items Outline and Background, Cooperative activities, Member's activities, FHM example in each members, Conclusion (c) IDI presents draft final report at IWS (d) IDI compiles/publish final report of the project	2009 allocated WGH TCTF (about 1500USD) for publication	(1)TCTF (2) JICA (3) Members' own funds	To be finalized in 2009
37	KRA 1 SG1	2	Establish debris flow and landslides warning system	Establish methodologies in TC region of using Critical Lines (CLs) for issuing evacuation orders/advices to communities against sediment-related disasters	WGDPP	See above	(a) First (b) Second (c) Third (d) Fourth		(a) NILIM, Japan requests members to write a report on their activites on model areas. (b) each member submits reports on requested activities (c) NILIM compiles reports including following items. Abstract, Outline, Review of methodologies for setting CLs, Achievement of members, Conclusion (c) NILIM to introduce draft final report at IWS (d) NILIM to finalize/publish final report of the project	2009 allocated WGH TCTF (about 1500USD) for publication	(1)TCTF	To be finalized in 2009
38	KRA 1 SG 1 KRA 2 SG 2	3	To improve flood forecasting capability and accuracy through On-the-Job Training (OJT)	Conduct 3rd OJT on flood forecasting through the use of models, observations, and past events		See above	(a) First (b) Second (c) Third (d) Fourth		(b) Malaysia in collaboration with TCS invites participants from TC members (b) 3 particiants will be identified (c) Selected participants prepare required data for the model sites (c) Malaysia reviews data and information on selected pilot areas (d) Malaysia conducts 3 week OJT for 3 participants in late 2009	TCTF 3,000 USD to support intl. participants, and local funds to be prepared by Malaysia	(1)TCTF; (2) Malaysia	YES

	A	B	C	D	E	F	G	H	I	J	K	L
39	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 5b	4	Projects on Urban Flood Management in TC Region	*To enhance TC members' capacity on urban flood management *to prepare "Guidelines on flood management for urban planning and development in the Typhoon Area", etc	WGM,WGDPP	See above	(a) First (b) Second (c) Third (d) Fourth		(a) MWR, China sends questionnaires on urban flood management practices in TC members (b) members send requested information to MWR c) China presents compiled information at IWS (d) specific areas for collabration, model area, etc. will be identified	Funding required from funding agencies to promote integrated approaches to urban flood managemen t	(potential) ADB, JICA, KOICA	NO
40	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 6b	5	Assessment System of Socio-economic Impacts of Water-related Disasters for Infrastructure	To provide an effective and/or optimum socio-economic flood control/managemen t measure and reasonable preliminary damage forecast system for flood control/managemen t infrastructure investment		See above	(a) First (b) Second (c) Third (d) Fourth		(a) ROK requests members to provide their own assessmen system on infrastructure investment, etc (b) ROK compiles information from the members (c,d) ROK conducts current status and assessment system analysis of domestic and abroad flood control measures			NO
41	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 5b	6	Project on Hazard Mapping for sediment-elated disasters	To raise local people's awareness for sediment-related disasters. To separate people and their properties from high-risk areas	WGDPP	See above	(a) First (b) Second (c) Third (d) Fourth		(a) NILIM, Japan will distribute a draft of guideline and opens Technical Help Desk. (b) Members will select model sites with topographical map & field survey c) the results will be reported at IWS			NO
42	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 5b	7	Project on development and application of flood disaster preparedness indices	To promote the actions of local government bodies/communities to strengthen the level of preparedness for flood disasters, by applying a set of evaluation indices	WGDPP	See above	(a) First (b) Second (c) Third (d) Fourth		(a) Japan provides to members a draft evaluation system (a set of indices) and opens a THD (b) Members will select model municipalities or communities and test application of proposed evaluation system (c) Members will report to Japan the results of evaluation together with comments for improvement of indices (d) the results will be discussed at next IWS			NO

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32	Working Group on DPP											
33												
34	SP's KRA and SG	Objective Number	Objective	Action	Other WGs Involved	TCS Responsibility	Expected Quarter Completed	Other Organizations Involved	Success Indicators	Funding Required	Funding Sources	Completed - Yes or No
35												
36	KRA 4 SG 4b and 4c KRA 5 SG 5b	1	Promote value of WEB_GIS based TC DIS to TC Members	Provide WEB_GIS based TCDIS system to Members and explain the purpose and use of the WEB_GIS based TCDIS and to promote its benefits		Assist in planning the expert missions	First	ADRC, UN/ISDR, etc.	Complete expert missions to the Viet Nam to facilitate implementation of the WEB_GIS based TCDIS in the respective Member	US $12,000	NEMA, Korea TCTF	Yes
37	KRA 4 SG 4b and 4c KRA 5 SG 5b	2	Enhance WEB_GIS based TCDIS and establish methodology to assess the socio-economic impacts of disasters	Conduct the 4th Meeting of WGDPP to brief Members on WEB_GIS based TCDIS and discuss on assessment of the social and economic impacts of natural disasters	WGM WGH	Plan, coordinate, organize and facilitate	Second	ADRC, UN/ISDR, etc.	Brief Members on how to provide input and maintain WEB_GIS based TCDIS as well as its potential applications and discuss on assessment of the social and economic impacts of natural disasters	US $30,000	NEMA, Korea and TCTF	No
38	KRA 4 SG 4b and 4c KRA 5 SG 5b	3	Operational implementation of WEB_GIS based TCDIS	Maintain Hardware, Software of WEB_GIS based TCDIS System and upgrade disaster information and other contents by inputs from Members	WGM WGH	Assist in collecting necessary data from Members	Expect to go operational by March 2009	ADRC, UN/ISDR, etc.	Complete each Member's disaster information in 2008	US $30,000 for maintenance	NEMA, Korea and TCTF	No

	A	B	C	D	E	F	G	H	I	J	K	L
39	KRA All SG ALL	4	Review progress of TCDIS project and enhance the Typhoon Committee's effectiveness and efficiency in meeting its purpose stated in the Statute of the Typhoon Committee	Participate in a focused, integrated WGM, WGH, WGDPP, TRCG, and AWG Workshop with specific deliverables defined and to review progress of TCDIS project and future activities of WGDPP	WGM WGH WGDPP TRCG AWG RMG	Plan, coordinate, organize, and facilitate	Second or third		Discuss future activities of WGDPP, report on TCDIS and collaboration with other WGs			Yes
40	KRA 4 SG 4b and 4c KRA 5 SG 5b	5	Maintain and enhance WEB_GIS based TCDIS	Make presentation on WGDPP's Activities in 2009		Assist in including presentation on the TC Session agenda	Fourth		Successful acceptance of WEB_GIS based TCDIS by TC Members			Yes
41	KRA 4 SG 4b and 4c KRA 5 SG 5b	6	To develop a conceptual framework consistent with Typhoon-related Hazard Early Warning Systems in conjunction with other WGs to make a link with the TCDIS	Prepare concept paper and proposal on program of action	WGM WGH TRCG AWG	Assist in collecting inputs from Members	Concept paper by First Qt. and initiate public education activities jointly with mission		Acceptance of concept paper and mission			Yes

Training and Research Coordination Group (TRCG)

Objective Number	*KRA / SG*	*Objective*	*Action*	*Other WGs Involved*	*TCS Responsibility*	*Expected Quarter Completed*	*Other Organizations Involved*	*Success Indicators*	*Funding Required*	*Funding Sources*
1	KRA 6 / SG 6b and 6c	To: (a) enhance Members' capability and capacity in the priority operational and research subject matters as identified in the TRCG annual report; and (b) provide training for enhancing Members' capability and capacity in the presentation of weather information with particular emphasis on tropical cyclone warning	Roving Seminar (with themes including media training)	nil	Provision of administrative and logistic support.	4th	WMO/PWSP	Feedback from evaluation forms to be completed by a target audience of about 30 people.	USD 14,000	TCTF
2	KRA 6 / SG 6b and 6c	To facilitate technology and knowledge transfer among TC Members through research and development initiatives.	Research Fellowship	nil	Announcement of fellowship offers and other necessary administrative support.	3rd - 4th	TC Members	Publication of research findings in TCAR or other journals.	Fellowship offered by voluntary hosts.	TC Members
3	KRA 6 / SG 6b and 6c	To promote the role of women forecasters in operational tropical cyclone forecasting.	Attachment of two forecasters, preferably women, to RSMC Tokyo	nil	Facilitation of nomination process and provision of administrative support as required.	3rd	RSMC Tokyo, WMO	Assessment as given in RSMC Tokyo report.	USD 4,500	TCTF
4	KRA 4 / SG 4a, KRA 5 / SG 5b, KRA 6 / SG 6b and 6c	To facilitate TRCG coordination and planning works and to promote the understainding and use of EPS information and TIPS systems.	1st TRCG Workshop	WGM, WGDPP	Provision of administrative and logistic support	2nd	WMO/TCP, KMA	(a) Feedback from evaluation forms to be completed by a target audience of about 40 people; (b) TIPS software transfer to developing Members; (c) 4-year Plan of Research and Training Programme	USD 14,000	TCTF (extra funding from KMA and WMO on top of USD 14,000 from TCTF)

	A	B	C	D	E	F	G	H	I	J	K	L
1		**APPENDIX XVIII - Typhoon Committee Integrated Annual Operating Plan for Calendar Year 2009**										
2		**Submitted by the Advisory Working Group - 21 January 2009**										
3												
4												
5		SG 1: To enhance cooperation among TC Members to reduce the number of deaths by typhoon-related disasters by half										
6		(using the decade 1990-1999 as the base line to compare with the decade 2006-2015).										
7												
8		SG 2: To reduce the socio-economic impacts of typhoon-related disasters per GDP per capita by 20 per cent										
9		(using the decade 1990-1999 as the base line to compare with the decade 2006-2015).										
10												
11		SG 3a: To improve the beneficial use of typhoon-related effects of typhoons by 10 per cent in water management by selected Members										
12		(using the decade 1990-1999 as the base line to compare with the decade 2006-2015)										
13		SG 3b: To promote increasing use of the typhoon-related beneficial effects among the Members										
14												
15		SG 4a**:** To provide reliable typhoon-related disaster information for effective policy making in risk management in various sectors.										
16		SG 4b: To strengthen capacity of the Members in typhoon-related disaster risk management in various sectors										
17		SG 4c: To enhance international and regional cooperation and assistance in the field of disaster risk reduction.										
18												
19		SG 5a: To promote and enhance culture of community-based disaster risk management among the Members										
20		SG 5b: To promote education, training and public awareness of typhoon-related disasters among the Members										
21												
22		SG 6a. To strengthen RSMC capacity to respond to the needs of the Members in forecasting and capacity building										
23		SG 6b. To improve capacity of Members to provide timely and accurate user-oriented and friendly TC products and information										
24		SG 6c. To enhance capacity of Members' typhoon-related observation and monitoring										
25												
26		SG 7a: To strengthen the capacity of TCS to effectively discharge its responsibilities and functions described in the Terms										
27		of Reference and support the Members in the implementation of the strategic goals										
28		SG 7b: To strengthen the capacity for resources mobilization for the implementation of the strategic goals										
29												
30												
31												

	A	B	C	D	E	F	G	H	I	J	K	L
32		**Working Group on Meteorology**										
33												
34	SP's KRA and SG	Objective Number	Objective	Action	Other WGs Involved	TCS Responsibility	Expected Quarter Completed	Other Organizations Involved	Success Indicators	Funding Required	Funding Sources	Completed - Yes or No
35												
36	KRA 1 KRA 2 KRA 4	1	Assessment of the impact of climate change on tropical cyclone frequency and intensity variation	(a) To publish the Assessment Report of the impact of climate change on tropical cyclone freqqency and intensity (Macao, China)		Provision of administrative support	2nd	HKO	Publication of the Assessment Report	US $4,000	TCTF	
37												
38	KRA 1 KRA 2 KRA 4 /SG4(a)	2	Improvement of storm surge forecasting skill for coastal areas	(a) RSMC Tokyo will modify its storm surge model to produce storm surge distribution maps for TC Members and evaluate them. TC Members will provide bathymetry and tidal daea archive to RSMC Tokyo (b) To hold the storm surge workshop	WGH WGDPP	Provision of administrative and logicstic support	(a) 4th (b) 3rd	(a) RSMC Tokyo (b) WMO	(a) Production of the storm surge distribution map and report the evalution in 43rd session	US $6,000	TCTF	
39												
40	KRA 1 KRA 2 KRA 6 / SG 6b and 6c	3	Typhoon information processing system (TIPS)	To facilitate tehnology and knowledge transfer among TC Members through research and development inititative	TRCG	Provision of administrative and logistic support	2nd - 4th	HKO KMA	Improvement/establishment of TIPS by Members	US $5,000	TCTF	

	A	B	C	D	E	F	G	H	I	J	K	L
41	KRA 1 KRA 2 KRA 6 / SG 6b and 6c	4	Typhoon early warning system	(a) To set up a unified platform for viewing the real-time forcasts information and (b) to establish a super-ensemble early warning system on tropical cyclone and carry out operational test in 2010 and (c) to hold the Shanghai TC FDP training workshop Based on CMA Shanghai EXPO 2010 TC FDP				CMA	Report on CMA Shanghai EXPO 2010 TC FDP project and the evaluation			
42												
43	KRA 6 / SG 6b and SG 6c	5	Web-based typhoon forum	(a) To upgrade the on-line forum by expanding the number of registered users and by exchanging more information or data through the forum (b) To form a team of moderators on related topics		Provision of administrative support	2nd	CMA	Effective use of web-based typhoon forum as shown by website access statistics			
44	KRA 1 KRA 2 KRA 6 / SG 6b and 6c	6	Exchange of radar data	(a) To set up a radar data lists of Members (recommended Members: Thailand; Lao PDR; Malaysia; Philippines) (b) To exchange the radar data among			4th	TMD	Progress report			
45												

	A	B	C	D	E	F	G	H	I	J	K	L
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10												
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12		(using the decade 1990-1999 as the base line to compare with the decade 2006-2015)										
13		SG 3b: To promote increasing use of the typhoon-related beneficial effects among the Members										
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15		SG 4a**:** To provide reliable typhoon-related disaster information for effective policy making in risk management in various sectors.										
16		SG 4b: To strengthen capacity of the Members in typhoon-related disaster risk management in various sectors										
17		SG 4c: To enhance international and regional cooperation and assistance in the field of disaster risk reduction.										
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19		SG 5a: To promote and enhance culture of community-based disaster risk management among the Members										
20		SG 5b: To promote education, training and public awareness of typhoon-related disasters among the Members										
21												
22		SG 6a. To strengthen RSMC capacity to respond to the needs of the Members in forecasting and capacity building										
23		SG 6b. To improve capacity of Members to provide timely and accurate user-oriented and friendly TC products and information										
24		SG 6c. To enhance capacity of Members' typhoon-related observation and monitoring										
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26		SG 7a: To strengthen the capacity of TCS to effectively discharge its responsibilities and functions described in the Terms										
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28		SG 7b: To strengthen the capacity for resources mobilization for the implementation of the strategic goals										
29												
30												
31												

	A	B	C	D	E	F	G	H	I	J	K	L
32		Working Group on Hydrology (WGH)										
33												
34	SP's KRA and SG	Objective Number	Objective	Action	Other WGs Involved	TCS Responsibility	Expected Quarter Completed	Other Organizations Involved	Success Indicators	Funding Required	Funding Sources	Completed - Yes or No
35												
36	KRA 1 SG 1 KRA 2 SG 2	1	To improve flood forecasting capability and accuracy through On-the-Job Training (OJT)	Conduct 4th OJT on flood forecasting through the use of models, observations, and past events		See above	(a) First (b) Second (c) Third (d) Fourth		(b) Malaysia in collaboration with TCS invites participants from TC members (b) 3 particiants will be identified (c) Selected participants prepare required data for the model sites (c) Malaysia reviews data and information on selected pilot areas (d) Malaysia conducts 4 week 4th OJT for 3 participants in 2010	TCTF 3,000 USD to support intl. participants, and local funds to be prepared by Malaysia	(1)TCTF; (2) Malaysia	

	A	B	C	D	E	F	G	H	I	J	K	L
37	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 5b	2	Projects on Urban Flood Management in TC Region	*To enhance TC members' capacity on urban flood management *to prepare "Guidelines on flood management for urban planning and development in the Typhoon Area", etc	WGM,WGDPP	See above	(a) First (b) Second (c) Third (d) Fourth		(a) MWR, China sends questionnaires on urban flood management practices in TC members (b) members send requested information to MWR c) China presents compiled information at IWS (d) specific areas for collabration, model area, etc. will be identified	Funding required from funding agencies to promote integrated approaches to urban flood managemen t	(potential) ADB, JICA, KOICA	
38	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 6b	3	Assessment System of Socio-economic Impacts of Water-related Disasters for Infrastructure	To provide an effective and/or optimum socio-economic flood control/managemen t measure and reasonable preliminary damage forecast system for flood control/managemen t infrastructure investment		See above	(a) First (b) Second (c) Third (d) Fourth		(a) ROK requests members to provide their own assessmen system on infrastructure investment, etc (b) ROK compiles information from the members (c,d) ROK conducts current status and assessment system analysis of domestic and abroad flood control measures			
39	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 5b	4	Project on Hazard Mapping for sediment-elated disasters	To raise local people's awareness for sediment-related disasters. To separate people and their properties from high-risk areas	WGDPP	See above	(a) First (b) Second (c) Third (d) Fourth		(a) NILIM, Japan will distribute a draft of guideline and opens Technical Help Desk. (b) Members will select model sites with topographical map & field survey c) the results will be reported at IWS	1000UCD for one-day field training at 2010 TC Integrated Workshop	TCTF	
40	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 5b	5	Project on development and application of flood disaster preparedness indices	To promote the actions of local government bodies/communities to strengthen the level of preparedness for flood disasters, by applying a set of evaluation indices	WGDPP	See above	(a) First (b) Second (c) Third (d) Fourth		(a) Japan provides to members a draft evaluation system (a set of indices) and opens a THD (b) Members will select model municipalities or communities and test application of proposed evaluation system (c) Members will report to Japan the results of evaluation together with comments for improvement of indices (d) the results will be discussed at next IWS			
41	KRA 1 SG 1 KRA 2 SG 2 KRA 4 SG 4a KRA 5 SG 5b	6	Project on Assessment of the Variability of Water Resources Impacted by Climate Change	To promote the actions of local government bodies/communities to strengthen the level of preparedness for flood disasters, by applying a set of evaluation indices	WGM, WGDPP, TRCG				to be discussed			to be launched in2010

Working Group on DPP

SP's KRA and SG	Objective Number	Objective	Action	Other WGs Involved	TCS Responsibility	Expected Quarter Completed	Other Organizations Involved	Success Indicators	Funding Required	Funding Sources	Completed - Yes or No
KRA 4 SG 4b and 4c KRA 5 SG 5b	1	Promote value of WEB GIS based TC DIS to TC Members	Provide members' GIS, metrological, disaster information for WEB GIS based TCDIS system and Offer the expert mission	TCS	Assist in planning the expert missions	First	WMO, UNESCAP, ADRC, UN/ISDR, etc.	Complete collect disaster information from Lao PDR, Thailand, Philippines, and send expert team	US $7,000	NEMA, Korea	
KRA 4 SG 4b and 4c KRA 5 SG 5b	2	Enhance WEB GIS based TCDIS and establish methodology to assess the	Develop DiMap to enhance information shearing method and conduct the 5th WGDPP Meeting to discuss on	WGM WGH	Plan, coordinate, organize and facilitate	First	ADRC, UN/ISDR, etc.	Complete collect disaster information for DiMap and provide the brochures and report and discuss on assessment method	US $ 36,000	NEMA, Korea and TCS	
KRA 4 SG 4b and 4c KRA 5 SG 5b	3	Operational implementation of WEB GIS based TCDIS	Maintain Hardware, Software of WEB GIS based TCDIS System and upgrade disaster information and other	WGM WGH	Assist in collecting necessary data from Members	Expect to go operational by March 2010	ADRC, UN/ISDR, etc.	Complete collecting each Member's disaster information by 2009	US $10,000	NEMA, Korea and TCTF	
KRA All SG ALL	4	Review progress of WEB GIS based TCDIS project and enhance the	Participate in a focused, integrated WGM, WGH, WGDPP, TRCG, and AWG Workshop with specific deliverables	WGM WGH WGDPP TRCG AWG	Plan, coordinate, organize, and facilitate	Second or third		Discuss future activities of WGDPP, report on TCDIS and collaboration with other WGs			
KRA 4 SG 4b and 4c KRA 5 SG 5b	5	Maintain and enhance WEB GIS based TCDIS	Make presentation on WGDPP's Activities in 2010		Assist in including presentation on the TC Session agenda	Fourth		Successful acceptance of WEB GIS based TCDIS by TC Members			
KRA 4 SG 4b and 4c KRA 5 SG 5b	6	To develop a conceptual framework consistent with Typhoon-related Hazard Early	Prepare concept report or paper and proposal on program of action	WGM WGH TRCG AWG	Assist in collecting inputs from Members	Concept paper by First Qt. and initiate public education		Acceptance of concept report or paper and mission			

KRA 4 SG 4b and 4c KRA 5 SG 5b	7	To deveop a feasibility study on the real-time transmission of severe weather warming and carry out trials	Hong Kong, China has obtained agreement of the WMO PWS Expert team for the use of the SWIC and Macao, China; Philippines; and USA have agreed to participate in the trial. Hong Kong, China to	WGM, TRCG	Assist in liaising with focal points	4th quarter of 2010	WMO	trial dissemination of weather warnings by a couple of TC members before 42nd Session of the Typhoon Comiittee; extend dissemination of warnings to a few more members end of		
KRA 4 SG 4b and 4c KRA 5 SG 5b	8	Implement of a pilot project of community weather stations in TC members for raising public awareness on climate change	Identify funding and Hong Kong, China offers an expert to visit interested members to install the weather stations and to provide technical documentation on installation, maintenance and data processing and display	WGM, WGH	Assist as a accompaining member in the organization of stage-1 request for funding support under GFDRR south-south cooperation program to World Bank submitted on 1 July 2009, as part of a package on strengthening resilience to floods for 5 TC	Fourth quarter of 2010	ESCAP	Weather station installed in one interested TC member using TCIF and subject to funding under GFDRR, weather stations in more members may be set up	US $2,000	TCTF

	Total	1	2	3	4	5	6	Others		
TCS	30000	22000						8000	TCS	(publication)
WGM	19000	4000	3000	2000	0	0	10000		WGM	
WGH	19000	3000	10000	3000	3000				WGH	
WGDPP	18000	10000	4000	3000	1000				WGDPP	
TRCG	18000	14000	4000	0	0				TRCG	
AWG	19000	4000	5000	10000						
		UFRM	Viet Nam	NS & SGM						
	123000									

Analysis of various events supported by TCTF from 2007 to 2009

(in USD Dollars)

TABLE I

INTEGRATED WORKSHOP

PLACE OF THE EVENT	YEAR/NO. OF PARTICIPANTS	No.	Meteo	No.	Hydro	No.	DPP	No.	AWG	No.	TOTAL	% Increase/(Decrease) Yr08 - Yr07	% Increase/(Decrease) Yr09 - Yr08
THAILAND	2007	8	8,913	5	5,718	5	7,154	1	4,222	19	26,007		
BEIJING	2008	7	10,180	6	5,350	4	4,500	3	7,131	20	27,161	4.4	
PHILIPPINES	2009	8	10,972	5	9,028	5	6,977	5	8,172	23	35,149		29.4

TABLE II

ROVING SEMINAR

PLACE OF THE EVENT	YEAR/NO. OF PARTICIPANTS	No.	Meteo	No.	Hydro	No.	DPP	No.	AWG	No.	TOTAL	% Increase/(Decrease) Yr08 - Yr07	% Increase/(Decrease) Yr09- Yr07
PHILIPPINES	2007	6	12,734							6	12,734		
CANCELLED	2008	-	-							-	-		
NANJING, CHINA	2009	14	15,935							14	15,935		25.1

Referring to Table I and II, TCTF supported the participants to the regular events were increased especially in Roving Seminar which was twice of the participants in 2007. Despite the no. of participants in the Integrated Workshop were increased for 4 persons starting in the year of 2007 to 2009, the reimbursement amount rose from 4.4% to 29.4% mainly in the air-ticket cost and place of the event.

TABLE III

ON-JOB TRAINING FLOOD FORECASTING

PLACE OF THE EVENT	YEAR/NO. OF PARTICIPANTS	No.	Meteo	No.	Hydro	No.	DPP	No.	AWG	No.	TOTAL	% Increase/(Decrease) Yr08 - Yr07	% Increase/(Decrease) Yr09 - Yr08
MALAYSIA	2007 (DEFERRED TO 2008)			2	1,018					2	1,018		
MALAYSIA	2008			3	2,367					3	2,367	132.5	*
MALAYSIA	2009			3	1,702					3	1,702		(28.1) #

* No. of Participants increased from 2 to 3 with Air-Ticket Cost for Vietnam increased to 71% from USD401.-(2007) to USD688.-(2008)
# Air-Ticket cost for China decreased to 50% from USD877 (2008) to USD433.-(2009) and Air-Ticket cost for Laos increased to 12% from USD802 (2008) to USD902 (2009)

TYPHOON COMMITTEE SECRETARIAT TRAVEL COSTS

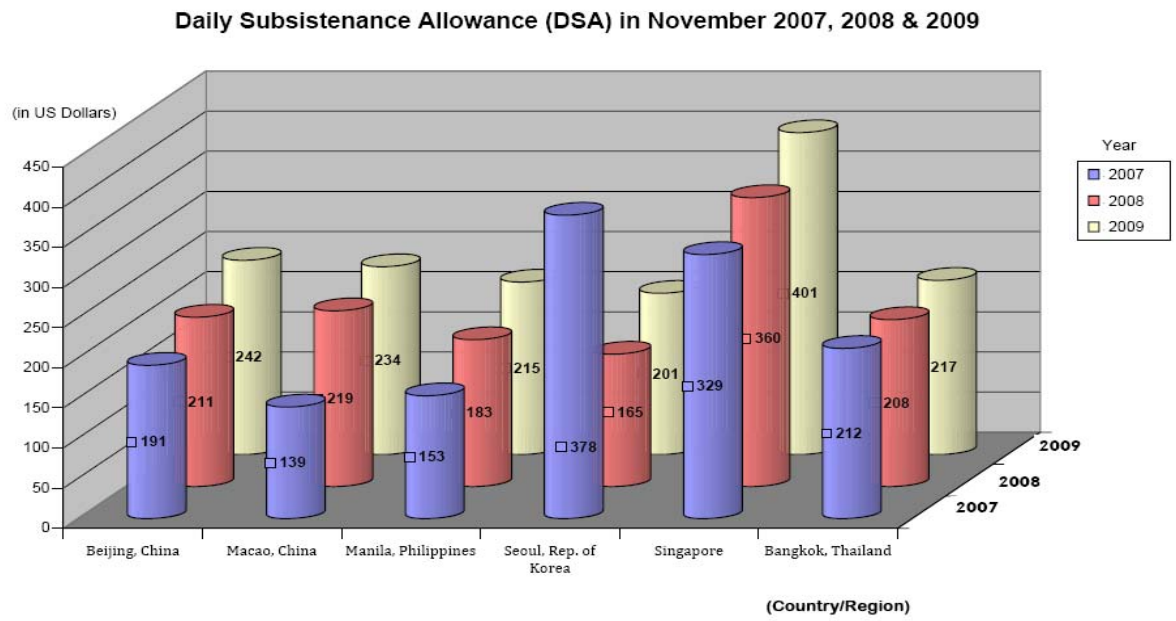
YEAR	No. of Events Participated by TCS	REGION/COUNTRIES FOR PARTICIPATING THE MEETING	AMOUNT IN USD
2007	4	1. Almaty, **Kasakhstan** 2. Makati City, **Philippines**, 3. Bangkok, **Thailand** and 4. Beijing, **China**	10,540.50
2008	7	1. Phnom Phenh, **Cambodia** 2. Seoul, **Rep. of Korea** 3. Beijing, **China** 4. Bangkok, **Thailand** 5. Bangkok, **Thailand** & Manila, **Philippines**, 6. Busan, **Republic of Korea,** 7. Bali**, Rep. of Indonesia**	14,012.58 i)
2009	9	1. Chiang Mai, **Thailand** 2. Bangkok, **Thailand** 3. Panyu, Guangzhou, **China** 4. Istanbul, **Turkey** 5. Seoul, **Republic of Korea** 6. Jeju Island, **Republic of Korea** 7. **Singapore** 8. Cebu, **Philippines** 9. Nanjing, **China**	14,051.84 ii)

i) The travel cost USD4,500 for The 41st session of Typhoon Committee, 19-24 Jan., 2009 was included in the year of 2009
ii) The estimated travel cost USD10,000 for The 42nd session of Typhoon Committee, 25-29 Jan., 2010

Air-Ticket Price paid by TCS in same city & country

(in USD Dollars)

Country	2007	2008	2009	% Increase/(Decrease) Yr08 - Yr07 Variance	%	% Increase/(Decrease) Yr09 - Yr08 Variance	%
Bangkok, **Thailand**	237.50	273.37	286.88	35.87	15.1	13.51	4.94



Source: United Nations International Civil Service Commission

(in US Dollars)

Country/Region	2007	2008	2009	Increase/(Decrease) % (Yr 09 - Yr 08)
Beijing, **China**	191	211	242	14.7%
Macao, **China**	139	219	234	6.8%
Manila, **Philippines**	153	183	215	17.5%
Seoul, **Rep. of Korea**	378	165	201	21.8%
Singapore	329	360	401	11.4%
Bangkok, **Thailand**	212	208	217	4.3%

The DSA of selective Typhoon Committee Members listed in the captioned table which are increased from 2007 to 2009. It reflects that the hotel accommodation expenses rose every year with exception of Seoul, Rep, of Korea and slightly reduced of UN DSA in Bangkok, Thailand in 2008. Generally, the UN DSA rose up with a range from 4.3% to 21.8%.

Typhoon Committee Secretariat

Growth rates of consumer price index for Typhoon Committee Members[a]

(percent)

	Country or Region	2007	2008	Oct-2009
1	Cambodia[b]	5.9	19.7	-1.6
2	China	4.8	5.9	-0.5
3	Hong Kong, China	2.0	4.3	0.4
4	Japan	0.0	1.4	0.4
5	Lao PDR	4.5	7.5	c
6	Macao, China	5.6	8.6	-1.1
7	Malaysia	2.0	5.4	0.6
8	Philippines	2.8	9.3	3.1
9	Republic of Korea	2.5	4.7	2.8
10	Singapore	2.1	6.5	0.2
11	Thailand	2.2	5.4	c
12	Viet Nam	8.3	25.6	3.0

a Unless otherwise indicated, data refer to the whole country/region.
b Data refer to capital city.
c Data unavailable.
d DPR of Korea & USA are not included in the table considering the events are not commonly held in these areas.

Remarks:

Consumer price index (CPI) is a measure estimating the average price of conusmer goods and services purchased by households. A consumer price index measures a price change for a constant market basket of goods and services from one period to the next within the same area (city, region, or nation). It is one of several price indices calculated by most national statistical agencies. The percent change in the CPI is a measure estimating inflation.

The growth rates of CPI for Typhoon Committee (TC) Members are raised from 2007 to 2008 especially in Cambodia and Vietnam with 3 times of the CPI in 2007. Though in Oct 2009, the CPIs are slightly increased in TC Members while Cambodia, China and Macao are small declined.

Source: Country sources.

CONCLUSION

Based on the analysis of the various events supported by the Typhoon Committee Trust Fund from 2007 to 2009 and on the data related to the evolution of the inflation in the TC Members, we can conclude:

1. The cost of the organization of the main TC events, such as integrated workshops, roving seminars and on-the-job training courses has progressively increased;
2. The TCS staff has been more frequently invited by different organizations to participate in international meetings;
3. The price of the air-tickets and airport taxes are getting higher;
4. The growth of Consumer Price Index at the TC Members indicates that inflation rates are higher;
5. The updating of the United Nations Daily Subsistence Allowance reflects the higher cost of life in the TC Members;

Based on these conclusions, and considering that the Typhoon Committee will organize in 2010 besides the integrated workshop, seminar and training course, various other events and actions such as a pre-integrated workshop planning meetings for Sediment Disaster Hazard Mapping and Community Based Weather Stations, follow-up meeting on Tropical Cyclones Frequency and Intensity, pre- integrated workshop planning meeting on WEB GIS Based TCDIS, and printing of publications from Working Groups on Meteorology, Hydrology and DPP, it is considered necessary to update the ceiling of the Typhoon Committee Trust Fund annual budget.

Main Outcomes of Discussion of WGH Teleconference

Convener: Mr. Toshio Okazumi

9th December, 2009. Afternoon

1. Topic:

The Project on Urban Flood Risk Management

2. Participants

1	Mr. Toshio OKAZUMI	Japan	WGH Chair
2	Mr. Hong Il-Pyo	Korea	WGH Vice-Chair
3	Mr. Liu Zhiyu	China	WGH Vice-Chair
4	Mr. Katsuhito MIYAKE	ICHARM	
5	Mr. Zuhua Chen	China	
6	Mr. LeHuu Ti	ESCAP	
7	Mr. Olavo Rasquinho	TCS	
8	Mr. Jinping Liu	TCS	

3. Main Outcomes of Discussion

I. Project Organizing

1) to set up national task force in the priority pilot cities.
2) to set up TC task force and to integrate the three components of TC Work: WGM, WGH and WGDPP.
3) to be led by AWG and facilitated by TCS.
4) to be linked with ESCAP, WMO, ICHARM and other international organizations for the mobilization of the expertise resources and funding resource.
5) to involve all TC Members, especially poor and developing Members, such as Cambodia, Lao PDR and DPRK with focus on hydrology and water resources.
6) to be led by Ministry of Water Resources of China as driver in the field of hydrology.

II. Proposed Priority Activities

1) to compile key and common urban flood problems in TC Area.
2) to find good practices or on-going projects regarding the urban flooding and to exchange the experience and technique among TC Members.
3) to identify the criteria for selection of priority pilot cities, which can represent different types of city such as coastal city, mountainous city, river-along city, plain city, etc.

4) to select the priority pilot cities in TC region, based on abovementioned criteria.

5) to work out executable roadmap.

6) to identify the concrete outputs and achievements on its work to improve water resources management and understanding of the hydrological cycle of the TC Area including impacts of climate change on urban development.

7) to develop a decision-making support system for urban flood management including design and rationality verification of rain gauge network, Radar data application, flood monitoring and reporting, flood forecasting, early warning, hazard mapping, etc.

8) to prepare the report and training materials for possible replication which can be supported by ICHARM.

9) to identify the required supporting activities expected from WGM and WGDPP for effective innovative urban flood risk management for priority pilot cities.

10) to study the possible impacts of climate change on hydrology and flood regime for priority pilot cities.

11) to be supported by ICHARM on the terms of the technique of down-scaling calculation of meteorology data and various networks with researchers/flood managers.

Project proposal on Urban Flood Risk Management Programme

-As for input to AWG small group meeting in 16&17 December 2009-

Objectives

Rapid urbanization, population growth, higher rainfall intensity bring serious flood damages by the difficulties of functioning present drainage system due to bad maintenance, lack of understandings by residences, and various problems in urban area.

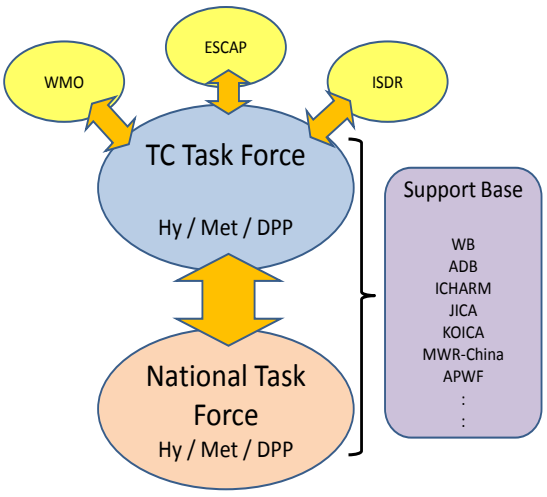
To solve the Urban Flood problems, especially in Asia and Pacific region, the core member of TC will set up task force for Urban Flood Risk Management. The key to success will be effective collaboration among meteorology, hydrology and disaster management sections. This TC task force together with national task force in priority pilot cities can find new solution for mitigating urban flood damages.

Understandings from "Conclusions of the questionnaire study on UFRM" prepared by China

1) Many of the cities in the TC region are suffered from different urban flood issues, and some data showed that urban flood events increased in recently years.
2) Great achievement has been made about the structure measures for the urban flood management in the TC region, but there are still some problems, such as lower flood control standard, aged drainage systems in urban areas etc.
3) It was proved that the flood warning system was a very effective non-structure measure in many urban flood events. Several urban flood forecasting and warning system have been developed and applied in the TC Members. However, these systems are incomplete and limited in the integrated urban flood management.
4) Ideas about the improvement of urban flood risk management and urban flood monitoring and forecasting/warning system, etc., were suggested by the TC members. Most of them focused on the increment of budget allocation and the improvement of urban flood forecasting and warning system.

Project Formation

1. Project Organization
   a TC Task Force ---- Advise to national task force on how to collaborate between met, hydro and DPP, and linkage with international organization
   b National Task Force in priority pilot cities ----- realize and implement the collaborative works advised by TC task force in national level



c Support base organizations ---- Organization supporting to priority pilot cities in financially, technically and physically.

2. Project Procedure
   a Setting up TC task force
   b Discussion on criteria of priority pilot cities
   c Selection of priority pilot cities
   d Designate problems and review past study and research
   e Setting up national task force
   f Develop Integrated Actions Plan and Actions List
   g Resource Mobilizing/ Coordinating for setting up systems

3. Key perspectives in implementing project
   a Structural measures (rehabilitation of drainage system, construction of pumping stations, retarding basin, infiltration pitch, etc.)
   b Non-Structural measures (disaster monitoring, data collecting, flood forecasting, risk assessment, emergency response plan)
   c Hazard mapping, evacuation system, flood/weather forecasting and warning system, risk assessing and decision making system by WGTCDIS
   d Establishment of new code in urban planning, building and land use
   e Capacity building to solve garbage and sludge problems
   f Capacity building to solve DB and GIS related problems

4. Road Map and Milestones
   a December 2009 Meeting in Macao --- discussion on UFRM project
   b January 2010 3WGs discussion to set up TC task force in 42nd TC Annual Session
   c March 2010 set up TC task force prepare the criteria of selection of pilot cities
   d May 2010 select priority pilot cities and set up national task forces
   e September 2010 hold session on UFRM in Integrated Workshop 2010 - project plan –
   f January 2011 hold session on UFRM in 43rd Annual session, 2011 - implementation of project –
   g June 2011 organize a session in Singapore International Water Week or APWF - Progress of project -

Integrated Pilot Study Project

(Metro Manila, Philippines)

Roy A. Badilla
Hydro-Meteorology Division
PAGASA

Macau, China
December 16-17, 2009

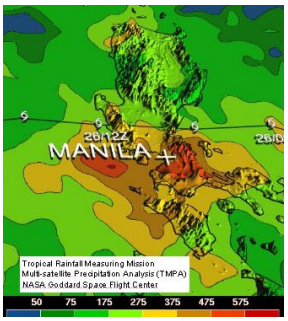
Purpose of the Project:

- To have a pilot area wherein the three working groups (WG on Meteorology, WG on Hydrology and WG on Disaster Prevention and Preparedness) can collaborate in one project.

- TC meeting in Cebu City (Philippines)
  September 14-19, 2009
  Pilot Area – Metro Manila, Philippines

- The Planned Project was overtaken by events
  September 26, 2009 – Tropical Storm Ketsana

Tropical Storm Ketsana



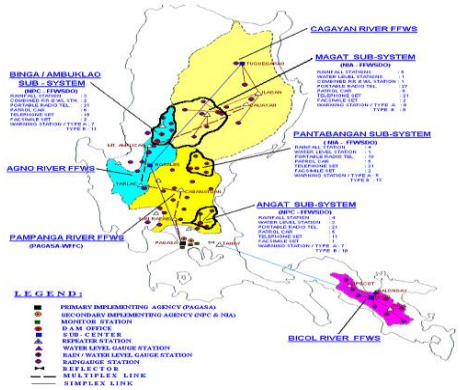
On 26 Sep 2009, TS Ketsana dumped record breaking rainfall over Metro Manila. The highest rainfall totals around the Philippines occur south of the storm's track (indicated by the thin black line) in an east-west band over central Luzon that includes Metro Manila.

Amounts in this region are on the order of 375 mm (~15 inches, shown in dark yellow) to over 475 mm (~19 inches, shown in orange). The highest recorded amount from the TMPA around Metro Manila was 585.5 mm (almost 24 inches).

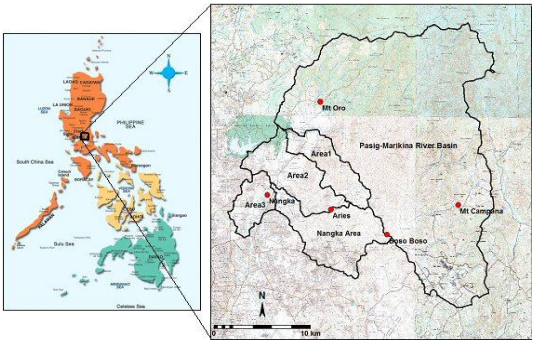
24-hour Rainfall @ Science Garden, Quezon City: 455 mm (18.2 inches) ~ 100 years
8AM, 26 Sep – 8Am, 27 Sep 2009 return period

Extreme rainfall brought by TS Ketsana resulted to massive flooding, deaths and destruction in Metro Manila

Flood Forecasting and Warning Services of PAGASA:



Pasig-Marikina River Basin:



Existing Facility for Flood Control in Metro Manila:

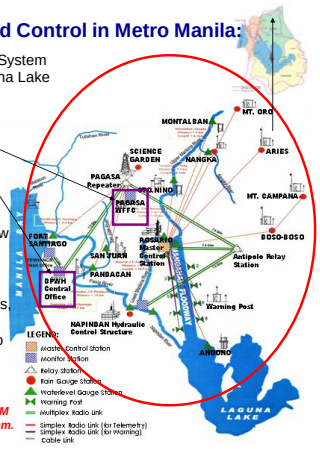
Effective Flood Control Operation System (EFCOS) for Pasig-Marikina-Laguna Lake Complex – under MMDA (2001)

PAGASA & DPWH act as monitoring agencies.

Operation of EFCOS – The forecast flood in the Upper Marikina river will be the basis open the Rosario weir & divert flow to Laguna Lake thru the Manggahan Floodway.

When flood in Pasig river subsides, temporary detained water from Laguna Lake will be discharged to Manila Bay thru the Napindan Channel.

However as a highly urban catchment, MM needs a rainfall & flood forecasting system.



After Tropical Storm Ketsana:

Interested Organizations:

1. AUSAID
2. UNDP
3. JICA
4. KOICA

Korean Government response to the recent disaster:

- **7 Oct 2009** - Ambassador Choi initiated a meeting with DOST & PAGASA.
- **13 Oct 2009** - PAGASA submitted proposal "Early Warning & Response System for Disaster Mitigation in Metro Manila" as an upscale of the first KOICA Grant, called KOICA EWS Phase 2.
- **14 Oct 2009** - DOST endorsed EWS P2 to KOICA Manila Office.
- **26 Oct 2009** (evening) - PAGASA was informed by KOICA staff thru phone that KOICA HQ has approved KOICA P2 project.
- **29 Oct 2009** - PRESSCON for the official announcement of the project approval.
- **2nd Week of Nov 2009** – dispatch of Survey Team to conduct site reconnaissance, collection of data and information and discussion with stakeholders – to finalize project document.

Response of the Korean Government was immediate and approval of KOICA EWS P2 was unprecedented! VERY FAST

Early Warning & Response System for Disaster Mitigation in Metro Manila (KOICA2)

Project Components:

1. Flood Forecasting System (includes automatic monitoring stations and Hydrological model)
2. Early Warning System (voice and siren warning)
3. Emergency Radio Communication System
4. Voice/Fax/Data Communication System
5. Patrol Cars and Maintenance Vehicle

Early Warning & Response System for Disaster Mitigation in Metro Manila (KOICA2)

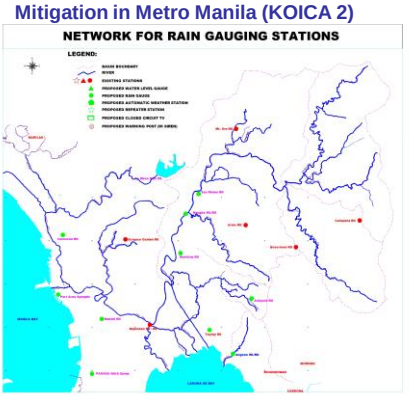
From KOICA:

1. Dispatch of Survey Team & Experts
2. Training of PAGASA personnel
3. Provision of Equipment

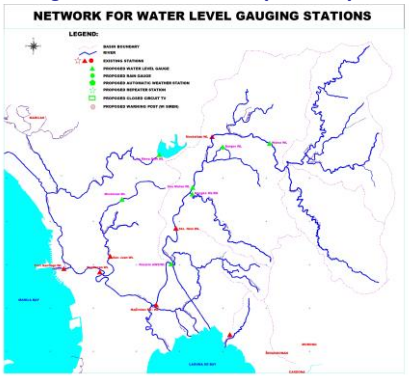
From GoP:

1. Provide counterpart funds, personnel, office space & use of office eqiupment

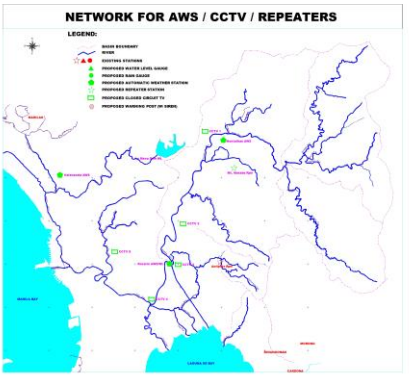
Early Warning & Response System for Disaster Mitigation in Metro Manila (KOICA 2)



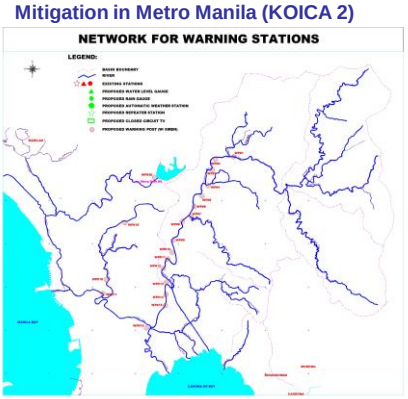
Early Warning & Response System for Disaster Mitigation in Metro Manila (KOICA 2)



Early Warning & Response System for Disaster Mitigation in Metro Manila (KOICA 2)



Early Warning & Response System for Disaster Mitigation in Metro Manila (KOICA 2)



Working Areas for the Typhoon Committee Working Groups

WG on Meteorology:

- Radar Image Interpretation
  - input to the hydrologic model
  - increase the lead time
  - in the form of training or module

WG on Hydrology:

- Dispatch hydrology experts to the Philippines
  - train hydrologists
  - preferably from Kwater

WG on Disaster Prevention and Preparedness:

- Conduct series of trainings on disaster prevention and preparedness.

THANK YOU

PAGASA-DOST's Master Plan for Enhanced Metro Manila Flood Warning & Monitoring System

1.0 Introduction

The Marikina River, about 40 kilometers long, is the main river in Eastern Metro-Manila, stretching from Rodriguez, Rizal up to Pasig, passing through San Mateo, Marikina City and Quezon City. The river flows at the center of Marikina Valley between the mountain range of Sierra Madre in the east and Quezon City in the west. Its depth ranges from 3 to 21 meters and spans from 70 to 120 meters. It is one of the main tributaries of the Pasig-Marikina-Laguna de Bay basin with a drainage area of 535 square kilometers. A portion of its flow is controlled and diverted by the Manggahan Floodway to Laguna Lake. The remaining water is drained to Manila Bay through Napindan Hydraulic Structure along Pasig river.

The Marikina River runs in the heartland of Marikina Valley passing through heavily populated residential areas throughout its length and through important commercial and industrial areas at its middle and downstream portions. The river regularly overflows its banks and floods the surrounding basin during periods of heavy rains. Metro Manila including some municipalities of the province of Roqriguez experienced the worst flooding with the passage of Typhoon Ondoy (Ketsana) on 26 September 2009 resulting to heavy loss of lives and enormous damage to properties.

2.0 Present Flood Forecasting, Warning, and Communications System

In October 1993, the Effective Flood Control Operation System (EFCOS) under the Department of Public Works and Highways (DPWH) was completed for the effective operation of the Manggahan Floodway and Napindan Hydraulic Control Structure (HCS) to ease the flooding in Metro Manila through the provision of flood warnings along the Maggahan Floodway. Two (2) rainfall gauging stations were set up in the upper reaches of the basin in Rizal while 5 water level monitoring stations were constructed in Rizal, Marikina and Manila. Control stations were set up at Rosario, Napindan, DPWH Central Office, National Capital Region (NCR) Head Office and at the Weather and Flood Forecasting Center (FFWC) of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), Department of Science and Technology (DOST). The DPWH and PAGASA-DOST serve as monitoring agencies of the EFCOS. Nine (9) warning posts were situated along the Floodway and two (2) warning posts were set up at the Rosario Weir and Napindan HCS.

However, the monitoring facilities were not sufficient for early warning system. In April 2001, the EFCOS was expanded with the construction of five (5) additional rainfall stations and two (2) water level stations with funding through the Grant Aid scheme of the Government of Japan. However, in July 2001, the operation of the EFCOS was transferred from the DPWH to the Metro Manila Development Authority (MMDA).

With the EFCOS project in place, the PAGASA-DOST utilized the rainfall and water level data of EFCOS as a basis in the issuance of flood advisories in Metro Manila to complement the flood forecasts being issued by MMDA. In October 2006 after the passage of Typhoon Milenyo, the relay station in Antipolo became defective and since then the no data was relayed to the display at the PAGASA Weather and Flood Forecasting Center (WFFC).

3.0 Justification of the Project

More than 70% of Metro Manila is classified as urban and a local thunderstorm can immediately cause flooding that stalls vehicles for a couple of hours or even more and cause horrendous traffic jams. Most often when flooding occurs, classes in school are suspended. The most affected is the service sector since Metro Manila has the highest percentage of government and private offices in the country. Hence, part of the flooding problem in Metro Manila is basically a rainfall forecasting issue.

The rapid urbanization and development of the Metropolitan Area makes it highly vulnerable to the impacts of climate change manifested through weather extremes such as floods, heat wave and sea level rise. The recent flooding in Metro Manila due to the passage of Typhoon Ondoy has once again underlined the need for flood mitigation measures which include structural and non-structural approaches. As a result of the great flood, international donors initiated efforts to address the various flood mitigation needs of Metro Manila. As the mandated Agency in providing early warnings on hydro-meteorological hazards, the PAGASA-DOST is coming up with this Master Plan to identify the various areas of cooperation and investment to improve the forecasting capability of PAGASA for Metro Manila as well as capacitate the early warning skill of the local government units.

4.0 Proposed System – General Objective

This Terms of Reference summarizes the systems and components of a flood forecasting and flood warning system for Marikina River that is fully compliant with the requirements set by PAGASA-DOST, the National Disaster Coordinating Council (NDCC), and the World Meteorological Organization (WMO), and thus:

- Provide for a scientific and automated method for gauging the rainfall at the Marikina River basin and for monitoring water levels at selected points along the river which can help in the forecasting of the river's water level increase;
- Provide for an early warning system to the residents along Marikina River and enable them to evacuate to safer areas during periods of flooding;
- Make available real-time data on rainfall, water level, and other weather data along the river to concerned government offices and local government units;
- Provide for a reliable and secure two-way radio, voice, fax, and data communication system enabling the concerned government agencies and local government units to communicate and coordinate evacuation, rescue, relief, and rehabilitation efforts during flooding.

5.0 General Terms of Reference

The Project is divided into four main components:

1. Rainfall estimation and forecasting ("Nowcasting") system
2. Flood Forecasting System
3. Flood Warning System
4. Emergency Radio Communication System
5. Voice/Data Communication System

5.1 Rainfall estimation and forecasting ("Nowcasting") system

- ***Setting up of monitoring facilities such as X-band radars (1 mobile and 1 fixed) in strategic sites and additional rainfall stations for calibration***

  To increase the lead time of the forecast and upgrade the severe weather monitoring system in the Metropolitan area, there is an urgent need to install 2 X-band radars. This type of radar is best suited for urban areas and capable of providing real-time quantitative rainfall estimates as the main requirement for flash flood forecasting. Ten (10) additional telemetered rainfall gauging stations and one (1) automatic weather station are required to increase the density of ground observation network to calibrate the radar data.

- ***Hydrological decision support system (HDSS)***

  The two components under this item are described as follows:

  a. Data integration and processing

     The algorithms to be developed for data integration include:

     - Radar Quality Control - applied to all weather radars to remove artifacts and false echoes from the data);
     - Quantitative Precipitation Estimation -utilizes radar data, Vertical Profiles of Reflectivity (VPR) and rain gauge data to determine and accumulate the total basin rainfall reaching the surface);
     - McGill Algorithm for Precipitation Nowcasting Using Lagrangian Extrapolation (MAPLE) - to provide forecasts of radar echo position and intensity
     - Quantitative Precipitation Forecasting (QPF) - based on MAPLE, which gives a radar based prediction of the expected precipitation at the surface
     - Flash Flood Prediction Algorithm (FFPA) - computes basin averaged rainfall and alert users of flash flood potential
     - Severe Storms Analysis Package (SSAP) - identifies and predicts convective storms, their attributes, and hazards
     - WxScope Web Display - capability that allows the display of the weather data and the detection and Nowcasting products in a decision support system format.

  b. Inundation mapping

  Flood forecasts are ready provided in 2-dimensional graphic format showing the height and time of the forecast flood. For a better appreciation of the flood forecast, the use of GIS and DEM will be employed to derive the height and extent of inundation drawn in a map of the basin. This component will require the acquisition of an inundation model, a high resolution basemap and DEM and GIS software.

5.2 Flood Forecasting System

- It aims to forecast the rise in the water level of Marikina River using data from automatic weather observation stations on the slopes of the Sierra Madre fronting Marikina Valley and from water level gauging stations along the river.
- Telemetered data from the gauging stations are sent via a digital conventional two-way FM radio network to a forecasting control center at PAGASA. Video images of water level at selected stations along the river are likewise sent to the control center through a wireless IP broadband network.
- These hydrological data are processed and accumulated in a database automatically. The processed information will be converted into visual images for display at the control center and at monitoring stations. Information displayed shall include the amount of rainfall and visual image and height of water level at the gauging stations.
- Telemetering data repeaters are needed to relay data from the gauging stations to the control center.
- The default observation interval of the telemetry system is on hourly basis. The interval can be modified from the control center to vary from every 15 minutes, 30 minutes, 3 hours, or 'on demand'.
- The network will have the following stations –
    - ***Forecasting monitor/control station at PAGASA***

      A digital conventional FM two-way radio base station connected to a SCADA central processing unit receives the telemetered data. A personal computer processes the raw information for display at the control station on LCD monitors. Information displayed include amount of rainfall, water level and visual image of water level height, wind speed/direction, barometric pressure, relative humidity, solar radiation and temperature at the gauging stations. Alarm information such as low battery condition and intrusion at the gauging stations are also received by the computer. Warning messages are sent to concerned personnel from the control center through GSM-SMS.
    - ***Seven (7) automatic weather stations on Sierra Madre Mountain slopes***

      Sensors at the site measure the amount rainfall, wind speed/direction, barometric pressure, relative humidity, solar radiation and temperature. A SCADA remote terminal unit sends the data to the control center through a digital conventional FM two-way radio network.
    - ***Five (5) water level sensors on selected bridges along Marikina River***

      Water level sensors are mounted on selected bridges along Marikina River. An onsite SCADA remote terminal unit sends the water level readings to the control center through a digital conventional FM two-way radio network. A co-located video camera takes video images of actual water level height. The

images are sent to the control center through a wireless IP broadband network.

- ***Two forecasting data repeaters at Antipolo and Mt. Mataba in San Mateo***
  To facilitate data transfer from the remote telemetering stations to the control center. SCADA RTU repeaters are setup at Antipolo and Mt. Mataba in San Mateo.
- ***Seven forecasting (7) monitor stations at NDCC-OCD, city and municipal offices of Quezon City, Rodriguez, San Mateo, Marikina, Pasig, and Cainta***
  These monitoring stations display rainfall, water level, and other weather data from the gauging stations. These information come from the control center and are sent through the wireless IP broadband network.

5.2 Flood Warning System

- The Flood Warning System issues precautionary and informative warning siren and voice messages about water level and flow conditions along Marikina River to affected riverbank communities and villages during flood emergency stages. These messages are sent from a control center to warning posts along the Marikina River.
- During emergency flood stages, the operator at the control center selects the siren and voice messages and the warning post to issue the broadcast from a computer display screen. The commands to broadcast are sent to the identified warning post. A public address system at the warning post issues the siren and voice messages to warn inhabitants of surrounding villages. Patrol cars with this public address system and siren also go around to warn the residents.
- A feedback of the actual broadcast is sent from the warning post to the control center for recording purposes.
- During actual operation, the Flood Warning System should follow a set of procedures approved by Joint Operation and Management Committee (JOMC) of all existing flood forecasting and warning system for basin and dam operations.
- The communications network for the system is a digital conventional FM two-way radio network. Commands for broadcast from the control center are sent to the warning posts via the flood warning repeaters. These repeaters also channel the flow of actual broadcasted messages back to the control center.
- The system will have the following stations –
  - Warning monitor/control center at PAGASA
    A computer allows the operator to choose the type of warning message and the warning post to broadcast from a selection on the display. It also receives the feedback of the actual broadcasted message from the warning post and records the message into its hard disk. Alarm conditions from the warning posts are also processed by this computer.

- Twenty warning posts along the Marikina River
  A remote terminal unit (RTU) receives the command to warn from the control center via a digital conventional FM two-way radio network. The RTU selects the appropriate message from its stored voice messages database; amplifies the audio file; and broadcasts the message on its loudspeakers. To obtain a feedback, a microphone picks up the broadcasted message and sends back the audio thru the conventional FM radio network. Alarm conditions at the post such as intrusions and battery status are sent by the RTU to the control center. The warning posts can also issue siren warnings.
- Two (2) warning data repeaters at Antipolo and Mt. Mataba in San Mateo
  To facilitate data transfer to/from the control center to the warning posts, two RTUs configured as data repeaters are setup.

5.3 Emergency Radio Communication System

- The system allows for immediate and secure communication among government offices and local government units involved in precautionary, rescue, and relief efforts during periods of flooding.
- It provides a reliable and secure two-way radio communications with telephony, data communication, and GPS-based automatic location system.
- The radio network will be a trunk digital two-way radio system.
- The emergency radio communications network will have these components -
  - Three (3) four-channel digital trunk radio equipment located at PAGASA, Antipolo, and Mt. Mataba in San Mateo. These sites are inter-connected through a wireless IP broadband network.
  - Fifteen (15) digital base stations located at government offices and local government units
  - Thirty (30) digital mobile radios
  - Fifty (50) digital portable radios

5.4 Voice/Data Communication System

- Flood Operation Rules as mandated by NDCC-OCD and PAGASA require that reliable and secure voice/data communication links be made available between concerned agencies of government and local government units during flood emergency stages.
- The voice/data communication system allows for a secure and effective means of communicating via full duplex telephone, fax, and transfer of data among concerned government agencies during precautionary, rescue, and relief efforts during flooding.
- A wireless IP broadband network in the 5 Ghz band will provide the necessary connectivity. It gives at least 16 megabits of bandwidth.
- Voice and fax communications will be thru a VOIP system, with the remaining bandwidth available for WAN connectivity.

- Video images sent from the gauging stations will also use this network.
- The network will have point-to-point IP radios to provide WAN connections between PAGASA, NDCC-OCD, DPWH and the local government units; WAN connections from the remote video camera locations to the flood forecasting control center.

6.0 Cost Estimates

Description	Qty	Unit Cost	Total Cost	Funding Agency
1.0 Rainfall estimation and forecasting ("Nowcasting") system				UNDP
• Setting up of monitoring facilities		37,500,500	75,000,000	
- X-band radars (1 mobile and 1 fixed) in strategic sites		8,500,000	8,500,000	
- 10 additional rainfall stations for calibration of the X-band radar		134,000,000	134,000,000*	
• Hydrological decision support system (HDSS)		7,000,000	7,000,000	
- Data integration and processing		73,500,000	73,500,000	
- Inundation mapping				
- Base Mapping by Radar Data (IFSAR) and Very High Resolution Satellite Imagery (GeoEye-1) for Metro Manila & part of Rizal				
Sub total			164,000,000	
2. **Flood Forecasting System** to include One control/monitor station:	1 lot	37,000,000	37,000,000	KOICA
• Seven automatic weather stations				
• Five water level gauging stations w/ video monitors				
• Two data repeaters				
• Civil works, software/hardware integration				
3. Flood Warning System to include:	1 lot	50,000,000	50,000,000	KOICA
• One control/monitor center				
• Twenty warning posts				
• Two data repeaters				

• Civil works, software/hardware integration, and		1,000,000	1,000,000	KOICA
• 1 Maintenance Vehicle • Patrol cars	2	500,000	1,000,000	KOICA
4. Emergency Radio Communication System to include: • Three 4-ch digital trunking equipment • Fifteen digital base stations • Thirty digital mobile radios • Fifty digital portable radios • Civil works, software/hardware integration	1 lot	35,000,000	35,000,000	KOICA
5. Voice/Fax/Data Communication System to include • Point-to-Point IP broadband radios • Civil works, hardware integration	1 lot	8,000,000	8,000,000	KOICA
6. Capacity building and training	1 lot		1,000,000	UNDP
7. Derivation of warning thresholds based on rainfall intensities and water levels	1 lot		1,000,000	UNDP
8. Vulnerability assessment of the impacts of climate change on the flooding in Metro Manila	1 lot		2,000,000	UNDP
9. Integration of EWS in local disaster risk reduction plans	1 lot		2,000,000	UNDP
ESTIMATED PROJECT COST (PhP)			302,000,000	

*Counterpart of the Philippine Government

Total for UNDP = PhP170,000,000.00

Total for KOICA = PhP132,000,000.00

NOTE: The AWS provided by TECO will be installed in Northern and Central Luzon.

ESCAP/WMO Typhoon Committee

WRD/TC.42/9.1

FORTY-SECOND SESSION

SINGAPORE

25 – 29 JANUARY 2010

AGENDA ITEM 9

Original: ENGLISH

HOSTING ESCAP/WMO TYPHOON COMMITTEE SECRETARIAT 2011-2014

(Item 9 of Provisional Agenda – Support required for the Committee's Programme)

Submitted by Typhoon Committee Secretariat

Summary and Purpose of Document:

Proposal of Typhoon Committee Secretariat to discuss the offer of Macao Government to continue hosting TCS

Action Proposed

The Committee is invited to:

Discuss the offer from the Macao Government to continue hosting the TCS for one more four-year period.

1. Background Information

1.1 - Decision of TC at its thirty-eight Session in Hanoi, Vietnam, 14-19 November 2005

According to a decision of the Typhoon Committee at its thirty-eight Session, held in Hanoi, Vietnam, 14-19 November 2005 (paragraph 67 of the Report), the Typhoon Committee Secretariat would be hosted by the Special Administrative Region of Macao-China, for a period of at least four years from the 39th Session of the Typhoon Committee.

1.2 Decision of TC at its 39th Session on the appointment of the Secretary of TC

The representative of Macao, China nominated Mr. Olavo Rasquinho, former director of the Meteorological and Geophysical Bureau of Macao, China, for Secretary of the Typhoon Committee. Mr Olavo Rasquinho was confirmed by the Committee as Secretary of the TC for four years from 2007 – 2010 (Report of the Typhoon Committee on its Thirty-ninth Session, Manila, Philippines – 4-9 December 2006 - Paragraph 69)

1.3 Hosting Agreements

Two agreements were signed, one between the People's Republic of China and the Typhoon Committee and other between the Special Administrative Region of Macao-China and the TC, respectively:

-"Host Country Agreement Between the Government of the People's Republic of China and the Typhoon Committee Regarding the Typhoon Committee Secretariat" – signed in Manila, on December 7, 2006, by the Ambassador to the Republic of the Philippines of the People's Republic of China, Mr. Li Jinjun, and the Typhoon Committee Chairman Dr. Prisco D. Nilo.

- "Agreement Between the Government of the Macao Special Administrative Region of the People's Republic of China and the Typhoon Committee Regarding Administrative, Financial and Related Arrangements for the Typhoon Committee Secretariat" – signed on February 13, 2007, in Macao SAR by the Secretary for Administration and Justice Dr. Florinda da Rosa Silva Chan and the Typhoon Committee Chairman Dr. Prisco D. Nilo.

2. Macao SAR Government contribution and support

Starting in 2007, the annual financial contribution for the Endowment Fund for TCS operation, as under the Agreement between Macao and the TC, has been US$250,000 (approximately), besides the provision of the premises and secondment of one meteorologist.

In the Hagupit aftermath, which has seriously affected the TCS premises in September 2008, the Government of Macao provided temporary facilities during the restoration period.

3. Offer from Macao Government to host TCS for a new four-year period

Considering that the term of the four-years period will be reached at the end of 2010/beginning of 2011, TCS sent a circular letter (Ref. TCS/147–2009, 12 June 2009 – Annex I) to all Members inviting the interested Members in hosting the TCS to submit their candidatures in order that TC could take a decision at the 42nd TC Annual Session. TCS also requested that the candidatures should be submitted up to 30 September 2009.

Letters on this issue received by TCS:

- From the Hong Kong, China (Ref. HKOW 1/CT/T Pt. 39, 22 September 2009 – Annex II) in which the Director of Hong Kong Observatory expresses his support to the hosting of TCS by Macao SAR for another four-year period.

- From Dr. Fong Soi Kun, Director of Macao Meteorological and Geophysical Bureau (SMG), in his capacity as contact person between the Government of Macao and TCS, in which TCS is informed that, considering that there were no submission of candidatures up to the term of the application period, the Government decided to continue hosting TCS for a further four-year period (Ref. DDR 03-01/1582, 21 October 2009 Annex III).

4. Action proposed

The Committee is invited to:

(a) Discuss the offer from the Macao Government to continue hosting the TCS for one more four-year period.
(b) To approve one more four-year period for TCS to be sited in Macao SAR as offered by Macao Government;

Annexes:

I - Copy of the TCS circular letter (Ref. TCS/147–2009, 12 June 2009)
II – Copy of the letter (Ref. HKOW 1/CT/T Pt. 39, 22 September 2009) from Hong Kong
III - Copy of the letter (Ref. DDR 03-01/1582, 21 October 2009) from Macao

ESCAP/WMO Typhoon Committee

FORTY-SECOND SESSION

SINGAPORE

25 – 29 JANUARY 2010

WRD/TC.42/8.5

AGENDA ITEM 8

Original: ENGLISH

METHOD AND PROCEDURES FOR ESCAP/WMO TYPHOON COMMITTEE PUBLICATIONS

(Item 8 of Provisional Agenda)
Submitted by Typhoon Committee Secretariat

Summary and Purpose of Document:

Proposal from Typhoon Committee Secretariat (TCS) to implement the future Typhoon Committee publications under TC logo

Action Proposed

The Committee is invited to:

(a) Analyze and discuss the method and procedures for implementing the publications under TC Logo;

(b) Approve the "Method and Procedures for ESCAP/WMO Typhoon Committee Publications", after introducing the necessary amendments.

METHOD AND PROCEDURES
FOR
ESCAP/WMO TYPHOON COMMITTEE PUBLICATIONS

Background Information

Since 2007 the ESCAP/WMO Typhoon Committee (TC) has taken several measures to strengthen its identity. For the first time since 1968, year in which the Typhoon Committee was created, its Secretariat was installed in its own premises, an emblem was created and a song was composed. Following these measures the Typhoon Committee decided at its 41st Annual Session, which was held in Chiang Mai, Thailand, from 19 to 24 January 2009, "*request Typhoon Committee Secretariat (TCS) to propose a method and procedures to publish TC publications at the Forty Second Session*".

Before this decision the following TC publications have been printed since 2007 in conformity with the sequential numbering of WMO.

(i) Typhoon Committee Expert Mission Report - WMO/TD-No. 1448;
(ii) Typhoon Committee Disaster Information System Manual - WMO/TD-No. 1449;
(iii) Guidelines for Reservoir Operation in Relation to Flood Forecasting - WMO/TD-No. 1471;
(iv) General Guidelines for Setting up a Community-Based Flood Forecasting and Warning System (CBFFWS) - WMO/TD-No. 1472;
(v) Report on UN ESCAP/WMO Typhoon Committee Members Early Warning System - WMO/TD-No. 1475;
(vi) Report on UN ESCAP/WMO Typhoon Committee Members Disaster Management System - WMO/TD-No. 1476.
(vii) WEB GIS Based Typhoon Committee Disaster Management System Manual – WMO/TD-No. 1508

Following the decision of Typhoon Committee the TCS submits to the TC the proposal presented in this document.

I – TECHNICAL PUBLICATIONS

Introduction

This document sets out corporate visual identity for Typhoon Committee (TC) publications aiming at strengthening of its identity through branding and is designed for authors and editors of the publications of TC. It is intended to serve as a non-exhaustive guide, having as references the WMO Style Guide[1] and WMO Corporate Identity Guidelines[2], which in turn are based on the United Nations Editorial Manual[3], the primary authority for United Nations

[1] (Can be accessed at *www.wmo.int/pages/pubsguides/documents/WMO_STYLE_GUIDE_08.pdf*)
[2] (Can be accessed at *www.wmo.int/pages/*pubsguides/documents/WMO_VISUAL _ID_GUIDE_08.pdf)
[3] The *United Nations Editorial Manual Online*, which includes the United Nations spelling list, can be accessed at http://www.dgacm.org/ by clicking on "Editorial Manual Online".

editorial policy. The reason for this option is based on the fact that the ESCAP/WMO Typhoon Committee is a regional body of the WMO Tropical Cyclone Programme.

1. Language, Style and Fonts

The TC technical publications (such as guides, manuals and reports) are produced in English and the authors and editors write in accordance with the WMO Style Guide, in a friendly and non-exhaustive way. Arial font, point size 11, is used in all publications.

2. Reference aids and material

- International Glossary of Hydrology
- International Meteorological Vocabulary (WMO-No. 182)
- United Nations spelling list (http://www.dgacm.org/ by clicking on “Editorial Manual Online”)
- WMO List of Abbreviations and Acronyms: 2008 (for pdf file, see WMO References & Dictionaries).
- WMO Standing Instructions – Chapter 4: Guidelines on the planning, production and distribution of WMO publications; Instructions for authors of papers to be published or reproduced by WMO

3. General layout

- **Format**

The technical publications are in format A4 and the text is divided into two columns.

- **Front cover**

The front cover is printed with a vertical bar in blue on the left. The remaining space is filled with the title of the publication and pictures related to the contents of the document. The month and year of the publication is placed below the title. The general appearance must be concise, attractive and convincing.

The cover contains the logotypes of TC, ESCAP and WMO which are placed on the lower part of the blue bar. The number of the publication (TC/TD No.) is placed below the logos.

- **Title Page**

Inside the publication, on the title page, the logotypes of TC, ESCAP and WMO (and eventually other partners) are aligned horizontally and the TC/TD number is placed under the logos. The title of the publication and the name(s) of the author(s) are placed under the publication number.

- **Verso of title page**

The TC publication number is repeated on verso of the title page, over copyright and International Standard Book Number (ISBN). Under ISBN is placed the following note:

Secretary of ESCAP/WMO Typhoon Committee
Avenida 5 de Outubro, Coloane
Macao, China
Tel.: (+853) 88010531
Fax: (+853) 88010530
E-mail: info@typhooncommittee.org

- **Back cover**

The outside back cover has a vertical bar in blue on the right, in which is printed the TC/TD number. A picture related to the contents of the technical document can be printed. It also contains a tagline which is intended for the purpose of identification and has the following information: “Printed in” and the name of the TC Member where the publication is printed and the “print run’, that is the number of copies printed.

- **Spine**

The TC number and publication title are printed in the spine of the publication when this is 4 mm wide or more.

4. Parts of a publication

The sequence for all the component parts of a publication is presented below. Lowercase Roman numerals (i, ii, iii, iv, …) are assigned to pages in the front matter and Arabic numerals to all the rest. The blank pages have no page numbers or marks/bands.

(ATT – This document can be accessed at the TCS Webpage – with an example in which the graphical aspect of the publications can be seen)