FOR PARTICIPANTS ONLY

E/ESCAP/66/INF/6
23 February 2010

ENGLISH ONLY

UNITED NATIONS
ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

Sixty-sixth session
13-19 May 2010
Incheon, Republic of Korea

REVIEW OF ISSUES PERTINENT TO THE SUBSIDIARY STRUCTURE OF THE COMMISSION, INCLUDING THE PROGRAMME PERFORMANCE REPORT FOR THE BIENNIUM 2008-2009 AND THE WORK OF THE ESCAP REGIONAL INSTITUTIONS: DISASTER RISK REDUCTION

(Item 3 (f) of the provisional agenda)

REPORT OF THE PANEL ON TROPICAL CYCLONES*

Note by the secretariat

The secretariat transmits to the Commission an executive summary of the report of the thirty-seventh session of the World Meteorological Organization/ESCAP Panel on Tropical Cyclones, held in Phuket, Thailand, from 15 to 19 February 2010.

* The report has been reproduced without formal editing.

REPORT OF THE PANEL ON TROPICAL CYCLONES

Introduction

The Panel on Tropical Cyclones (PTC) is a regional body jointly established by the World Meteorological Organization (WMO) and ESCAP in 1973 and associated with the Tropical Cyclone Programme of WMO. The main objective of the Panel on Tropical Cyclones is to promote measures to improve tropical cyclone warning systems in the Bay of Bengal and the Arabian Sea, including the dissemination of technical information on tropical cyclone research and forecasting operations that can mitigate the socio-economic impacts of tropical cyclone-related disasters. The Panel develops activities under three substantive components: meteorology, hydrology, and disaster prevention and preparedness (DPP), as well as in areas of training and research.

The thirty-seventh session of the WMO/ESCAP Panel on Tropical Cyclones hosted by Thailand was held in Phuket, Thailand from 15 to 19 February 2010. The session was attended by 31 participants from the six Members of the Panel on Tropical Cyclones, namely, India, Myanmar, Oman, Pakistan, Sri Lanka and Thailand. It was also attended by observers from China, Indian Institute of Technology (IIT) Delhi, UNESCO/IOC, UNEP, ICAO and representatives from WMO, ESCAP and PTC Secretariat.

I. REVIEW OF THE 2009 CYCLONE SEASON

The RSMC New Delhi informed the Panel that the north Indian Ocean witnessed the formation of eight cyclonic disturbances during 2009 against a normal of fifteen. Out of eight disturbances two intensified to deep depression, three up to the stage of cyclonic storms and one up to severe cyclonic storm. Comparing Bay of Bengal and Arabian Sea, two depressions and one cyclone “PHYAN” formed over the Arabian Sea, while the Bay of Bengal witnessed the formation of five disturbances including one severe cyclonic storm, ‘AILA’, two cyclonic storm, ‘BIJLI’ and ‘WARD’ and two deep depressions during the year.

The Panel expressed its appreciation to the RSMC New Delhi for its continued valuable support to the Members. It also stressed the importance of further strengthening of the existing cooperation and collaboration between the national Early Warning Centres and RSMC New Delhi.

II. REVIEW OF THE COORDINATED TECHNICAL PLAN AND CONSIDERATION OF THE WORK PROGRAMME FOR THE NEXT THREE YEARS

The Panel reviewed the progress of its activities at both national and regional levels in five components - meteorology, hydrology, DPP, research and education - based on the reports presented by the Members including the one sent from Maldives. The Panel also held an extensive discussion about the way to develop a concrete Annual Operating Plan (AOP) for 2010 for the five components to achieve the goals and objectives of the Coordinated Technical Plan (CTP).

Disaster Prevention and Preparedness

Based on the draft AOP for DPP component, the WG-DPP agreed to assign a lead country for each strategic goal. The lead country is responsible for designing concrete activities with achievable goals, plans, deadlines, etc. at the regional and

country levels. The inputs from those lead countries should be submitted to the WG-DPP Chair by the end of April 2010.

The WG-DPP agreed to first focus on two specific activities for 2010: (1) to improve public awareness of the impacts of tropical cyclones and possible mitigation and response actions through effective communication with the media prior to, during, and after tropical cyclone occurrences and (2) to improve regional cooperation in policies and strategies on DPP, especially those related to tropical cyclones. Regarding the first activity, ESCAP will consider sending an expert to assist the development of this activity. To facilitate the second activity, the Government of Thailand supported by ESCAP will plan to invite DPP members to Thailand for its mock drill to take place in June-July 2010. This would provide a good on-site training opportunity for the members and help develop or improve Standard Operational Procedures for disaster risk management.

The WG-DPP proposed to organize the second meeting of WG-DPP in 2010. The meeting might be organized on the occasion of the mock drill (to be conducted by DPPM) in Thailand.

The WG-DPP acknowledged willingness of the support to its activities from ESCAP, WMO, and ICHARM. In order to facilitate the process, further coordination among WG-DPP Chair, Vice-chair, and PTC Secretariat and those organizations should take place upon the completion of the AOP, potentially during the above mentioned mock drill in Thailand.

The Panel was informed by ESCAP that the First session of the Committee on Disaster Risk Reduction of ESCAP took place in Bangkok on 25-27 March 2009. The Committee was established at ESCAP's Commission Session in April 2008 to serve as the regional forum for discussions and the building of consensus on disaster risk reduction and disaster management. During the meeting, countries in Asia and the Pacific have agreed to take a series of measures to improve their cooperation in sharing information and experiences in disaster risk reduction.

The Panel noted that ESCAP organized the Expert Group Meeting on Innovative Strategies towards Flood Resilient Cities in Asia-Pacific in Bangkok on 21-23 July 2009. The Meeting gathered experts from the Asia-Pacific region to review and share experiences and strategies on urban flood management considering climate change. In that connection, ESCAP invited to attend the meeting 9 experts of the ESCAP/WMO Panel on Tropical Cyclones from Bangladesh, India, Myanmar, Oman, Maldives, Sri Lanka, and Pakistan. The meeting recommended strategies for effective urban flood management considering climate change, including the strengthening of international cooperation on urban flood management, especially for data sharing and capacity building.

The Panel noted that ESCAP prepared a report of the analysis of comprehensive frameworks of flood management including those for urban areas. The report, which is entitled "Policy Options and Strategies for Effective Implementation of the Hyogo Framework for Action in Asia and the Pacific: Innovative Strategies for Flood Resilient Cities", reviews socio-economic impacts of flooding on urban areas, synthesizes experiences of recent developments in innovative strategies for effective urban flood management and provides policy options derived from collaborative work on urban flood management and regional consultation.

The Panel noted that ESCAP organized a Training Workshop on the Damage and Loss Assessment Methodology (DALA) in Bangkok from 29 September to 1 October 2009. The meeting was organized as part of the ongoing collaboration between the World Bank and the United Nations Regional Commissions in the area of disaster evaluation and disaster risk reduction to disseminate and adapt the Disaster Damage and Loss Assessment methodology (DALA) as a tool for disaster recovery needs quantification and ultimately for risk reduction.

The Panel was informed by WMO that WMO DRR Programme is facilitating the development of technical guidelines and training materials to support National development projects in DRR and development projects building on a regional cooperation model.

The Panel was informed by UNESCAO/IOC on progress towards the development of the IOTWS Regional Tsunami Watch Providers (RTWP), which are scheduled to take over regional responsibility for issuing tsunami advisories and watches from the Japan Meteorological Agency (JMA) and Pacific Tsunami Warning Centre (PTWC) in early 2011. The Panel welcomed UNESCO IOC's participation at this session and invited it to participate in future sessions of the PTC. The Panel further suggested that the PTC should be represented at future ICG/IOTWS sessions.

Hydrology

The representative of ICHARM suggested the Panel to promote the use of regional models which are already validated in the context. It would be better to look for such a model which is freely available and reliable enough.

The Panel noted that the proposed AOP for the hydrology component requires a thorough review. It requested Oman representative to serve as focal point for drafting the AOP with the support of Commission on Hydrology (CHy) and Hydrology and Water Resources (HWR) Programme of WMO and ICHARM.

The Panel was informed by ESCAP that as part of researches on water resources policy issues, the Water Security Section continued to carry out various studies related to the development of water resources for inclusive sustainable socio-economic development in the region, especially those related the introduction of a new concept of water security, which would contribute to overcoming barriers to human well-being or human security and also creating opportunities for development of water resources for economic growth. In connection with water security, ESCAP collaborate with ADB in the preparation of the Asian Water Development Outlook 2010, responsible for Key Dimension 1 (KD1) on household water security and for assisting in the development of a composite index on water security. These studies involved special reviews and a number of surveys conducted by ESCAP consultants in selected countries, including some member countries of the Panel, such as Bangladesh and India. The studies are expected to be completed in January 2010.

In this context, efforts have been made to develop "water insecurity index" so as to attract attention of policy makers for action on priority water resources issues, such as water-related and typhoon-related disasters. This concept could serve as a forum to further strengthen collaboration and cooperation among the Panel on Tropical Cyclones, WMO and ESCAP.

Also, in the context of water security, ESCAP, in collaboration with the Asia-Pacific Water Forum (APWF) Secretariat and ADB, convened a regional Ministerial Session at the Fifth World Water Forum in Istanbul on the "Ministers for Water

Security Initiative in the Asia-Pacific Region". The Session was chaired by the APWF President and well attended, including many Ministers, who participated in the deliberations on water security for sustainable socio-economic development of the region.

Building on the above achievements, ESCAP organized an expert group meeting in November 2009 in Bangkok, including experts from India, Sri Lanka and Thailand, to examine possibilities to establish a Council of Ministers on Water Security in Asia-Pacific (CoMWAP). Within the inter-governmental process, it was advised the concept of water security would need to be further developed to ensure consensus among Governments from sub-regions to the region. ESCAP is following this advice and expects to develop a more concrete course of action.

The Panel was also informed that, in order to strengthen capacity of the region to cope with impacts of climate change on water resources, ESCAP has initiated several activities on climate change adaptation in water resources. Among the priority activities, ESCAP participated in several regional initiatives, such as those initiated by APWF on the establishment of a Knowledge Hub on Water and Climate Change and organization of capacity-building training workshops. In August 2009, ESCAP in collaboration with the Korea Water Forum, the National Hydraulic Research Institute of Malaysia (NAHRIM) which the focal point for Knowledge Hub on Water and Climate Change of APWF, FAO and the McGill University of Canada organized two sessions on "Development of guidelines for assessment of impacts of climate change on water resources" and "Advances in the Development of Eco-efficient Water Infrastructure" at the Fourth AOGS Symposium, held in Singapore. These two sessions were well attended by experts of international organizations.

In connection with the above initiatives, ESCAP organized the Second Regional Workshop on Eco-efficient Water Infrastructure in Incheon, Republic of Korea as part of the Incheon World City Water Forum 2009 in August 2009. In addition, ESCAP also organized a special session as part of the Eco-hydrology Symposium in collaboration with a network of Universities in Asia and Europe.

The Panel was informed by WMO that the WMO Regional Association II (RA II, Asia) Working Group Hydrology has now been formally established. Cooperation between members of the hydrological community of the Panel and the Working Group is encouraged as several themes of both working groups would benefit from cooperation thus using synergy effects and avoiding duplication of work.

In the context of the operationalization of the WMO Flood Forecasting Initiative, a global workshop had been organized in Geneva in December 2009 with the main objective to develop a detailed activity plan to supplement the existing Strategy and Action Plan of this initiative. This activity plan together with Strategy and Action Plan are aiming to guide Members to implement the flood forecasting initiative based on national requirements and regional cooperation potentials and opportunities. Emphasis is laid on the concept of the initiative that a seamless cooperation between meteorological and hydrological services, nationally and in a regional transboundary scale is essential to improve flood forecasting services.

An important activity in the WMO Flood Forecasting Initiative is the (sub)-regional implementation of the Flash Flood Guidance System (FFGS) with global coverage. This project, with financial assistance of USAID is implemented jointly by WMO, NOAA and the US-based Hydrologic Research Centre (HRC). In Asia, so far this system is being implemented through the Mekong River Commission in the Mekong River Basin, with potential of other sub-regions in Asia to follow. At the

heart of the flash flood guidance system is the use of 4-hourly, satellite-based quantitative precipitation information that is used together with terrestrial and hydraulic parameters to establish warnings on bank-full flow and probability for overflow of small streams which then is being evaluated by professional staff and used as input in a flash flood guidance system for decision-making.

A major step has been undertaken in the development of the Associated Programme on Flood Management (APFM): the HelpDesk has been inaugurated and is now operational with a few more functions to be activated before end of April 2010. The HelpDesk provides two main functions: (i.) a "Help Yourself" function, where a host of materials and practical tools related to flood management can be downloaded, and, (ii.) a "Get Help" function where advisory services can be requested that then will be addressed by the Technical Support Unit in the WMO Secretariat together with over 26 dedicated support base partners around the world. Access to the HelpDesk is: http://www.FloodManagement.info. A very successful part of the APFM is in capacity-building in different regions globally with the aim to promote through training the concept and implementation of Integrated Flood Management. This is being undertaken through regional training events as well as on a national basis such as was conducted recently in Malaysia through the initiative of the Department of irrigation and Drainage (DID).

The Panel was informed that the World Hydrological Cycle Observation system (WHYCOS) continues to be one of the flagship programmes of WMO. At the heart of the implementation of regional components of this programme is the establishment of hydrological information systems and capacity-building in transboundary river basins. The Mekong-HYCOS Project, funded by the French AFD, is now in its second year of implementation and aims to establish a regional flood information system. Participating countries are Cambodia, Laos, Thailand and Viet Nam; the Project is coordinated by the Mekong River Commission in cooperation with WMO. Through funding by the Government of Finland, the same kind of project will start implementation in 2010 over a period of three years in the Hindu Kush Himalayan region with Bhutan, Bangladesh, China, India, Nepal and Pakistan participating in the project that will be jointly coordinated by WMO and the Nepal-based International Centre for Integrated Mountain Development (ICIMOD).

The issue of urban flood management is seen as an area that deserves maximum attention and WMO has therefore produced a first tool on Urban Flood Risk Management in its APFM series of tools and participated in the Expert Group Meeting on Innovative Strategies towards Flood Resilient Cities in Asia-Pacific, organized by ESCAP in July 2009.

Meteorology

As regards AOP for the meteorological component, it was suggested that the Member send their assessment of the existing observing system as well as related infrastructure to the PTC Secretariat for a further reference.

RSMC New Delhi informed the Panel that the RSMC is planning to employ ensemble prediction techniques for the track forecasting. The Panel appreciated RSMC for its continued efforts in improving its advisory bulletins for track forecasts for Panel Members and also urged the Members to continue enhancing their warning capabilities with the aim of minimizing losses from the tropical cyclones, the ultimate objective of the Panel.

In order to make the best use of probabilistic forecasts for disaster risk management, Members agreed that due explication need to be provided to users before such information is put into operation. In this regard, involvement of WG-DPP in this process was suggested.

Thailand informed the Panel that maritime data/products are available from the TMD website (www.ihad.tmd.go.th) in graphical format, which could be a useful source of the information.

The Panel noted some challenges that the Department of Meteorology and Hydrology (DMH) of Myanmar is currently experiencing. Therefore, it welcomed the offer of China to upgrade, during 2010, the software of FengYunCast receiving system, which has been no longer operational in Myanmar since November 2009 when its software license expired. An INSAT Digital Meteorological Data Dissemination (MDD) system is to be provided to Myanmar by India. The Panel expressed a serious concern about the low-speed Internet connectivity in Yangon and NayPyiTaw, and agreed on the urgent need for upgrading to a more reliable broadband Internet connection, as recommended by the WMO fact-finding mission in February 2009, so as to ensure more sustainable GTS connection. The Panel, noting the DMH plan to shift all the NMC functions in Yangon to NayPyiTaw and the experience of Pakistan with similar relocation, expressed the view that new functions and facilities be independently developed in NayPyiTaw instead of the removal of the facilities from NMC Yangon.

The representative of UNEP briefed the Panel about the activities of UNEP regional office on environment and climate change issues. She said that UNEP is willing to provide training opportunities for the Panel Members on environment and climate change. The Panel welcome the offer of UNEP and expressed its expectation that UNEP would continue to be represented at the future PTC sessions to enhanced collaboration between PTC and UNEP.

III. FOLLOW-UP ACTION ON PTC-36

PTC Secretariat informed the Panel that the Coordinated Technical Plan (CTP) was published and distributed to the Members. In this regard, the Panel commended the PTC Secretary for his endeavors to disseminate the CTP including his presentation of CTP at the Third World Climate Conference which was held in Geneva, Switzerland in August 2009. Members were of the view that such effort would lead to a better visibility of the Panel to the stakeholders and decision makers in and outside the Panel region.

The Panel encouraged the Members to continue to coordinate with hydrological and DPP organizations in the respective countries for the designation and report the focal points to PTC Secretariat as early as possible.

The Panel was informed that the “Workshop on Need Assessment of PTC Working Group on Disaster Prevention and Preparedness (WG-DPP) in Implementation of Coordinated Technical Plan (CTP)” was successfully held in Bangkok, Thailand from 25 to 28 August 2009. The WG-DPP established its terms of reference and drafted a 2010 Annual Operating Plan for DPP component.

The Panel was informed that the Regional Specialized Meteorological Centre (RSMC) New Delhi successfully installed a high-resolution storm-surge model of IIT and started to provide storm surge watch information though the RSMC advisories in 2009.

IV. PTC SECRETARIAT

The Panel noted the activities of PTC Secretariat during the intersessional period. The Panel expressed its gratitude to the Government of Pakistan for hosting the PTC Secretariat and appreciated the services being rendered by Dr. Qamar uz Zaman Chaudhry, Permanent Representative of Pakistan with WMO in his capacity as Secretary of PTC and Mr. Ata Hussain, Deputy Director (Coordination and International Met. Section) PMD as the Meteorologist of PTC Secretariat.

V. SUPPORT FOR THE PANEL'S PROGRAMME

The Panel was informed of the technical cooperation activities of WMO and ESCAP in support of the programmes of the Panel carried out in 2009, including the WMO Voluntary Cooperation Programme (VCP), Trust Fund arrangements, Emergency Assistance Fund scheme and Technical Cooperation among Developing Countries (TCDC) activities, and expressed its appreciation to WMO, ESCAP and collaborating partners for providing assistance to Members of the Panel.

The Panel noted that, in 2009, Maldives made a cash contribution to the Voluntary Cooperation Fund (VCP(F)). A VCP project for Bangladesh for the establishment of connectivity between GTS Message Switching System and domestic meteorological information network system was completed in December 2009 under VCP(F). The installation of an Automatic Weather Station (AWS) was completed in January 2009 in Myanmar with the support of MEISEI Electric Co. Ltd, Japan. China supported Myanmar and Sri Lanka for the provision of FengYunCast systems in 2007-2008, which are expected to be upgraded in 2010 by China.

The Panel was informed of the progress of the Trust Fund project for Sri Lanka for the installation of an S-band Doppler radar system. The selection of the supplier was made in June 2009 after an international tender for supply, delivery and installation of the radar. A kick-off meeting of the project was held in September 2009 in Colombo with the participation of the Department of Meteorology, WMO and the supplier. The installation of the radar and relevant training are scheduled for late 2010.

Within the framework of the TCDC, China organized the WMO Symposium on Meteorological Services in support of Decision-making, followed by the 2009 Study Tour in China, from 13 to 22 October 2009, in which 22 participants from 16 Members of WMO, including Bangladesh, participated. The Panel noted with appreciation the continued implementation of a preliminary meteorology course by Pakistan in 2009 for junior meteorological personnel from six neighbouring countries, including Bangladesh, Myanmar and Sri Lanka. It further noted that the third training course in 2010 was offered to Bangladesh, Maldives, Myanmar, Oman and Sri Lanka and another four neighbouring countries. India continued attachment training for tropical cyclone forecasters and storm surge forecasters. Thailand carried out on-the-job training for Myanmar on numerical weather prediction and for Myanmar and Oman on aeronautical meteorology forecasting. In showing its appreciation to India, Pakistan and Thailand for their active contributions to the Panel's training requirements through TCDC, the Panel encouraged other Members to exploit similar training opportunities for other Members, and agreed to further sharing of information on training opportunities available for Panel Members.

The Panel also noted the recent emergency assistance provided under the Emergency Assistance Fund scheme to WMO Members affected by natural disasters,

including Bangladesh and Myanmar. Following Cyclone Sidr, three SSB transceivers and two sets of Automatic Weather Stations (AWSs) are being provided to Bangladesh with the support of France, UK, VCP(F) and the WMO Emergency Assistance Fund. Following Cyclone Nargis, hydrometeorological instruments including an AWS, an electric generator, PCs for storm surge modeling as well as short-term training and a long-term fellowship, were provided to Myanmar in 2008-2009, and more reliable Internet connectivity is to be provided with the Emergency Assistance Fund and the VCP(F). Affected Members who need emergency assistance were advised to utilize this scheme, and all Members were requested to consider providing support to affected NMHSs.

The Panel further noted that the ESCAP Tsunami Regional Trust Fund, established in late 2005 with initial contribution of US$ 12.6 million for effective regional early warning systems for tsunamis, is planning to expand its scope in 2010 to include other hazards and climate preparedness. The Panel Members were encouraged to utilize the above resource mechanisms to support the Panel's Programme.

In this connection, the Panel noted that a regional early warning facility for Indian Ocean and South-East Asia was established with funding from the ESCAP Tsunami Regional Trust Fund and DANIDA, at the Asian Institute of Technology (AIT) campus in Pathumthani, Thailand. The facility is to build capacity for national early warning systems and enhance community resilience, i.e., to provide regional tsunami watch, to offer research and development support to NMHSs, and to enhance the capability of national systems to respond to early warning information at national, local, and at-risk community levels in line with the Hyogo Framework of Action. On 30 April 2009, the facility was reformulated as the Regional Integrated Early Multi-Hazard Early Warning System for Africa and Asia (RIMES), an inter-governmental, international, non-profit organization, whose mandate is to provide regional tsunami watch and advisory services, and build capacity of its Member Countries for early warning of tsunami and other natural hazards. Maldives serves as the current Secretariat to RIMES, and the Program Unit at AIT campus is responsible for day-to-day operation and management of the regional early warning facility. Some Members of the Panel received localized disaster risk information from RIMES.

The Panel noted with appreciation that WMO and ESCAP would continue to undertake activities in support of the Panel on Tropical Cyclones.

Panel on Tropical Cyclones Trust Fund (PTCTF)

The establishment of the Panel on Tropical Cyclones Trust Fund (PTCTF) indicated a step towards achieving self-reliance of the Panel. At the moment, the Trust Fund is being used not only for the provision of institutional support but also as funding support to the representatives of Panel Members attending training events and conferences.

Members were urged to continue to enhance their contributions to the Trust Fund as a substantial support for the Panel's activities.

A detailed financial report on the Trust Fund as of 31 December 2009 was submitted by WMO to the Panel (see Appendix).

The Panel endorsed the use of the Trust Fund for 2010 for the following specific purpose:

- Support for the attachment training at RSMC New Delhi for per diem of the participants (US$ 6,000)
- Support to PTC Secretariat for its operating expenses including those for printing Panel News and running PTC-website. (US$ 4,000)
- Support for participation of PTC in the seventh session of UNESCO/IOC ICG/IOTWS in Banda Aceh, Indonesia in April, 2010. (US$ 2,000)
- Support for organizing the second meeting of PTC Working Group on DPP during 2010. (US$ 5,000)

Any other emergency expenditure that can be justified for the use of the PTCTF requires the concurrence of both the Secretary of PTC and the Chairman of the Panel on Tropical Cyclones.

VI. DATE AND PLACE OF THE THIRTY-EIGHTH SESSION

The dates and venue of the 38th session in 2011 would be determined based on the consultation between WMO, ESCAP, and chairman of the Panel and PTC secretary.

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