Thailand Country Report

ESCAP/WMO Typhoon Committee
42nd Session

25-29 January 2010

Singapore

CONTENTS

I Overview of tropical cyclones which have affected/impacted Member's area in 2008

1. Meteorological Assessment (highlighting forecasting issues/impacts)

In 2009, there was one tropical cyclone called "KETSANA" moving to Thailand. A review of the tropical cyclone including its track and impacts is given as follows:

Typhoon "KETSANA" (0916)

A low pressure cell which originated in the Western Pacific Ocean intensified into the tropical depression in the evening of the 24th September 2009 and strengthened into the tropical storm "KETSANA" in the morning of the 26th September. It moved westward traverse across Central Luzon Island of Philippines to the central part of the South China Sea and reached typhoon status in the afternoon of the 28th September. It continued to move west and made landfall over Vietnam, before downgrading into the tropical storm in the evening of the 29th September. It downgraded again to the tropical depression while moving pass the Lao P.D.R. to the northeastern part of Thailand at Amphoe Khong Chiam in Ubon Ratchathani province around 07.00 A.M. on the next day. It loosed its intensity, became a low pressure cell over the lower northeastern part of Thailand on the 1st October. The low pressure cell made its course through Lop Buri, Suphan Buri and Kanchanaburi provinces, respectively before it finally dissipated over the Andaman Sea on the 3rd October. Track of KETSANA is shown in fig.1 below.

After passing across Vietnam, Lao P.D.R. and entering the northeastern part of Thailand, it produced widespread rain with isolated heavy to very heavy rainfalls in some areas of the country, especially in the lower part of the Northeast. Flash floods and damage to people properties were reported in several areas of the lower part of northeastern and central Thailand.

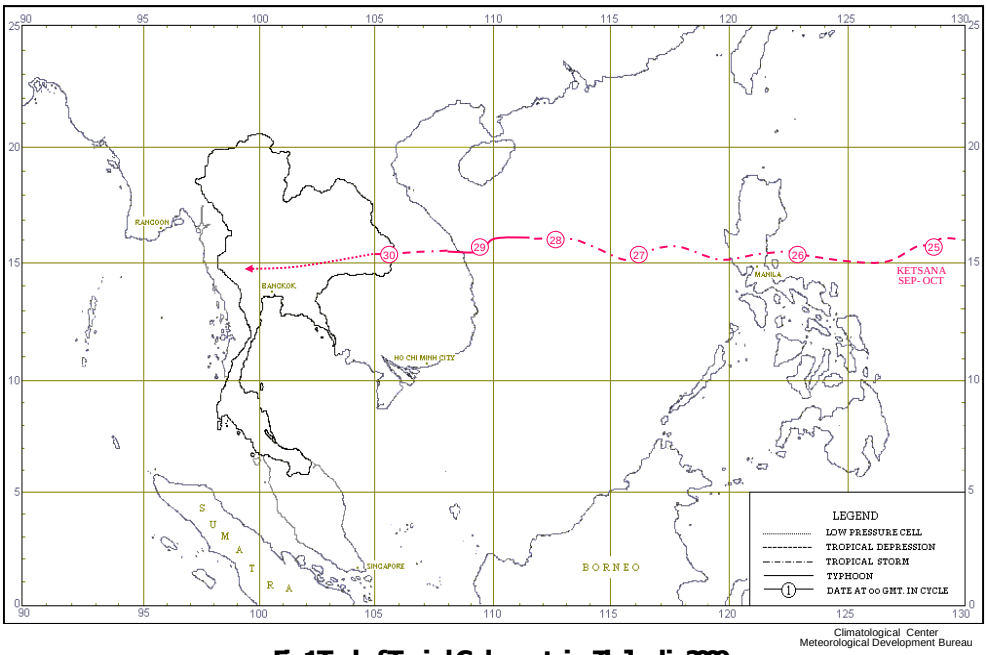

Fig 1 Track of Tropical Cyclone entering Thailand in 2009

2. Hydrological Assessment (highlighting water-related issues/impact)

Even though the Typhoon KETSANA caused heavy rain and flash floods in many places along its track, it also increased the huge volume of water of the dams and filled the natural reservoirs of the country. Its positive impacts will support water consumption of local people in all activities of the community, particularly in agriculture

3. Socio-Economic Assessment (highlighting socio-economic and DPP issues/impacts)

Typhoon "KETSANA", which weakened to a tropical depression when it approached Thailand, has affected approximately 40 provinces in Thailand. The provinces that affected were in the northeastern, northern and southern part of Thailand. There were 2 deaths 1 injured and 2,897,554 people or 701,288 families were affected. There were 44 houses destroyed, 4,683 houses partially damaged, and around 821,335 acres of agricultural area

were destroyed. The total damages were estimated at US$ 20,321,890 (or 711,034,613 Bath).

Flood with damages occurred everywhere in Ubon Ratchathani

4. Regional Cooperation Assessment (highlighting regional cooperation successes and challenges)

Cooperation with China

In 2009 Thai Meteorological Department(TMD), with great coordination of the Typhoon Committee Secretariat, collaborated with the Center of Water Resource & Environment of Sun Yat-sen University and the Bureau of Hydrology of Pearl River Commission of the Ministry of water Resource of China to have the training course on "Hydrological Observation and Forecasting" for TMD flood forecasting persons at the Sun Yat-sen University, 20-26 July 2009. In this connection and to further strengthen cooperation in flood forecasting issue, the workshop on "Hydrological Forecasting using the Xinanjiang Model" was organized at TMD during 14-25 December 2009 to further increase the skills of TMD staff to able to apply the Xinanjiang Model for flood forecasting of the country.

II. Summary of progress in Key Result Areas (*For achievements/results which apply to more than one Key Result Area, please describe them under the most applicable Key Result Area. Then, at the end of the description, place in parentheses ( ) the other applicable Key Result Areas)*

1 **Progress on Key Result Area 1: Reduced Loss of Life from Typhoon-related Disasters.** (*List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2009 Typhoon Committee Annual Operating Plan goals)*

a Meteorological Achievements/ Results

1. Improvement of Radar network:

To strengthen severe weather observations and monitoring networks, and nowcasting of the country, the following two C-band Doppler Radars which started the installations in the North of Thailand in 2009 have been completely finished and have been in operations:

(1). C -band Doppler Radar in Lumphun,
(2). C- band Doppler Radar in Petchaboon.

Additionally, three C -band Doppler Radars are being installed as follows, and all are expected to be completed in 2010:

(1). C -band Doppler Radar in Songkhla,
(2). C -band Doppler Radar in Samui,
(3). C -band Doppler Radar in Surin.

Totally, there are 25 weather radars in the TMD's precipitation monitoring network.

2. Improvement of the telemetering system in Thailand

In 2009, TMD installed 820 automatic rain gauges in the major river basins in Northern, Northeastern, Central and Eastern Thailand, increasing the total number of automatic rain gauges to 930. Totally there are 1,093 automatic rain gauges in the network, and 111 of those are river-level automatic observations. With the dense, real-time observations in the TMD' s telemetering system, it is expected that severe flood warning will be issued promptly and effectively.

3. Improvement of satellite receiving station

Recognizing the importance of using remote sensing data particularly the satellite data, TMD has extended the implementation of satellite receiving stations both for the GEO-stationary and Polar orbit as shown in the table 1. below:

Table 1.

Satellite Platform	Current status	Future plan	Remarks
GEO-stationary	1 MTSAT	MTSAT, FY2	Under implementation, expected to finish in 2011
Polar orbit	1 NOAA	NOAA, TIROS, MODIS, METOP, FY3,	

4. Improvement of storm surge forecasting

To be prepared for effective warning of storm surges that might be occur in the coastal areas in the Gulf of Thailand and the Andaman Sea during the typhoon season, the IIT Storm Surge Model was introduced to TMD. It is under the experimental and proper adjustment process before using as the storm surges forecasting tool of the country. However, TMD will also appreciate to accept and introduce the RSMC Storm Surge Model into the operation.

5. Implementation of Automatic Weather Station

In 2009, TMD has completed the installation of Automatic Weather Station(AWS) consisting of 87 stations across the country. All meteorological elements will be automatically reported in the real-time manner, additionally the critical index of severe weather-associated events such as the abnormal strong wind and precipitation are also set up for the system to give alarm signals to issue warning to people promptly.

6.Improvement of Global Telecommunication Circuits(GTS):

For meteorological data to be disseminated effectively in the global telecommunication lines and to be prepared for the WMO Information System(WIS), GTS circuits of the TMD‘s RTH have been consistently

updated. The current status of the TMD' s GTS is shown in the table 2. below:

Table 2.

Circuit	Speed	Protocol	Type
Bangkok-Tokyo	128 Kbps	IPVPN MPIS	Rx/Tx
Bangkok-Kuala Lumpure	64 Kbps	IPVPN MPIS	Rx/Tx
Bangkok-Singapore	64 Kbps	IPVPN MPIS	Rx/Tx
Bangkok-Beijing	64 Kbps	IPLC	Rx/Tx
Bangkok-New Delhi	64 Kbps	IPLC	Rx/Tx
Bangkok-Vientiane	64 Kbps	DDN	Rx/Tx
Bangkok-Phnom Penh	Internet	VPN Client	Rx/Tx
Bangkok-Yangon	Internet	TCP Socket	Rx/Tx
Bangkok-Hanoi	1200 bps	Asynchronous	Rx/Tx

b. Hydrological Achievements/Results

Royal Irrigation Department(RID)'s strategic goal has been set up in the aspect of mitigating the water disaster from flood or drought. Office of Hydrology and Water Management which is directly responsible for taking care of such strategy in the aspect of supporting the hydrological data or research benefit for water management, has also set the strategic plan accordingly with the item of the achievement of Water Crisis Situation Announcement.

Actually, Office of Hydrology and Water Management, Hydrology Section has the responsibility of meteorological and hydrological data in the criteria of processing the data for studying or forecasting for the purpose of the water resources development and water management that is the Royal Irrigation Department (RID) mission.

Following such responsibility, Hydrology Section has got strategic goal relating to the Department Strategy in the achievement of Water Crisis Situation Announcement. The indicators for the achievement can be seen in the critical situations in 2009 as follow:

1. “KETSANA” was a prominent cyclone effecting the northeastern Thailand from September 29, 2009 to October 3, 2009.
2. “PARMA” was another one effecting the northern Thailand from October 5 to 15, 2009
3. Frontal Rain still effected the major part of Thailand particularly in lower north, lower northeast, central and east from October 16 to 27, 2009
4. Low Pressure Center in southern part of Thailand from September 7 to 27, 2009

The details of the origins, impacts and measures for risk mitigation can be seen in the following Table 3 below.

To mitigate and reduce the risk of 2009 floods, the flood warning system is carefully managed in the following process.

First, telemetering system is used as a method for flood forecasting in different river basins covering nearly the whole country. Only Royal Irrigation Department has already got the system for monitoring 12 river basins from 25 in the criteria of real-time hydrological data.

Second, the forecasting situation is then announced to public with different ways like website or radio broadcasting or networks. For network mentioned above means regional offices which take part in communicating in the local areas with other methods or media.

Third, after flooding situation, pumping for water drainage has to be prepared in order to reduce the height of water level or inundated areas.

c. Disaster Prevention and Preparedness Achievements/Results

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

1) 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

- **Disaster Prevention and Mitigation Committee**

The National Disaster Prevention and Mitigation Committee (NDPMC), under the Disaster Prevention and Mitigation Act B.E 2550(2007), will be appointed to be the disaster management policy mechanism of the country. The committee is comprise of Prime Minister or designated Deputy Prime Minister as chairperson, Ministry of Interior as first vice chairperson, Permanent Secretary to Ministry of Interior as second vice chairperson and the membership from the national government organizations concerned. Director – General of Department of Disaster Prevention and Mitigation is designed as member and secretariat of the committee.

The main functions of NDPMC are to determine the policy for formulating the national disaster prevention and mitigation plan, to integrate the development on disaster prevention and mitigation mechanism among government and local administration agencies including other relevant private sectors, and to issue the regulations on the payment of remuneration, compensation and other expenditures relevant to disaster prevention and mitigation activities under the regulation of Ministry of Finance.

- **Department of Disaster Prevention and Mitigation**

After the bureaucratic reform in 2002, the Department of Disaster Prevention and Mitigation (DDPM) has been set up under the Ministry of Interior to serve the national disaster management system so as to sustain Thailand's habitability and safety. When the current Disaster Prevention and Mitigation Act B.E.2550 was issued and forced in November 2007, the Department of Disaster Prevention and Mitigation (DDPM) has been designed as the national government organization and operating agency on national disaster prevention and mitigation activities. Moreover, DDPM can establish the Disaster Prevention and Mitigation Regional Centers and the Disaster Prevention and Mitigation Provincial Offices to carry out the efficient disaster management.

Nowadays, DDPM has set up 18 Disaster Prevention and Mitigation Regional Centers and 75 Disaster Prevention and Mitigation Provincial Offices over the country. DDPM Regional Centers and Provincial offices will be the front line unit to carry out the disaster prevention and mitigation. DDPM will cooperate with the relevant organizations both government and private sector and local agencies to perform the task. To mobilize the technology and know-how, exchange and share experience and information, DDPM has cooperated with various international organizations such as ADRC, ADPC, JICA, GTZ, UNDP UNISDR, UNOCHA, UNEP, etc.

2*) Assist as request Member's policy development and strategic planning on disaster risk management with special emphasis on densely populated areas and vulnerable communities*

- **Strategic Action Plan (SNAP) for Disaster Risk Reduction for Thailand**

Thailand recognized that the strategic plan on disaster risk reduction is essential to minimize the incidents, consequently, DDPM cooperated with United Nations International Strategy for Disaster Reduction (UNISDR) and Asian Disaster Preparedness Centre (ADPC) to formulate Strategic Action Plan (SNAP) for Disaster Risk Reduction for Thailand and set up a working group which is composed of the representatives of the government agencies concerned, private sector and experts to draft SNAP. The draft plan is on process to submit to Cabinet for approval.

3) Provide an effective framework for integrating early warning systems for vulnerable communities into development process.

The early warning system in Thailand could divide into 2 levels. In the national level, there are many organizations to take responsibility for the task relevant disaster warning. Thai Meteorological Department, Royal Irrigation Department, Department of Water Resources and Disaster Forecasting and Warning of Electricity Generating Authority of Thailand (EGAT) Public Co. Ltd are the main agencies to forecast the disaster warning on their own function. Therefore, Thailand's Early Warning Information from these agencies will be transferred to the people via mass media and agencies concerned and Department of Disaster Prevention and Mitigation (DDPM) will transmit the information through mechanism of Ministry of Interior to provinces, districts and local organizations.

After Tsunami disaster triggered the 6 southern provinces of Thailand on 26 December 2004, the government reviewed disaster early warning

system to develop the system more efficiency and to make more confidence in safety in the country. In 2005, the cabinet appointed the Committee on Early Warning System Development which comprise the representatives of the departments concerned, will be responsible for making the decision as to when a warning should be issued. The National Early Warning Center has been set up to carry out the early warning system.

In the local level, the rain gauge and manual disaster siren have been installed in the flood prone areas. This device is employed for observing and notifying of local flood conditions, forecasts and warnings. The rain gauge is extremely low cost and very simple to use. The villagers will be trained to measure, record and read the daily amount of rainfall. Whenever the amount of rainfall exceeds the predefined normal level, the villager in charge of surveillance signal the warning by using the manual siren device to notify the village headman to disseminate the warning through the village news broadcast center.

d. Research, Training, and Other Achievements/Results

Research :

In 2009, **TMD** carried out researches on the following topics:

- **The analysis of seasonal temperature and rainfall variation**

In this study, the variation trends of the mean maximum temperature, the mean minimum temperature, and the amount of rainfall were evaluated for the summer, winter and rainy seasons in Thailand. Data from year 1951 to 2006 from 45 meteorological stations were analyzed using statistical methods. The results reveal that mean of maximum and minimum temperature tend to have significant during both winter and summer, especially the mean minimum temperature demonstrated an extremely significant change, with an increasing temperature of 0.03 ^{0}C per year in winter and summer, and 0.018 ^{0}C per year in rainy season. Whereas, the mean maximum temperature increased 0.015 ^{0}C in winter, 0.01^{0}C in summer and 0.02^{0}C per year in rainy season. The analysis of rainfall over a period showed a decrease of 0.925 mm. per year in winter and 1.084 mm. per year in rainy season. While in summer the rainfall

increase 0.015 mm. per year. The seasonal rainfall, however, did not show a statistically significant tendency. Therefore it can be concluded that weather in Thailand is becoming warmer all seasons.

- **Application of PRECIS for climate change Predictability in Thailand**

The regional climate model PRECIS has been implemented on OpenSUSE 10.3 LINUX to investigate the climate projection for the period 1961-2100 with initial and boundary condition of ECHAM 4 for scenario A2 with low resolution 2.8x2.8 degrees. The model showed daily, monthly, yearly, seasonally and decadal projections of rainfall and temperature. The model can perform well in the yearly average of minimum temperature projection of the selected stations in Thailand. However, the difference of observed yearly average of maximum temperature and model is high at about 3.5 ^{0}C. And the observed rainfall is also much higher than those obtained from the model.

- **Application of ECPC G-RSM for monthly to seasonal prediction in Thailand**

The ECPC-G RSM is used for global and regional weather forecasting and data assimilation in Thailand, and is applied for long range weather forecast on 64 bits LINUX parallel system with the initial and boundary condition of GFS model and NCEP center. The minimum temperature of the model showed good agreement with the observed data, especially at the stations located at long distance away from coastal areas such as Chiang Mai and Ubon Ratchathani

- **Climate variability during pre-southeast monsoon**

The study of climate variability in Thailand during the pre-southwest monsoon using the record data of 45 stations from 1951-2008 to statically analyze its variability. The results showed that the pattern of rainfall in all parts of Thailand is increasing, except in the southwest part where it showed decreasing in its tendency, while both the maximum and minimum temperature showed significantly increase in all parts of the country. ENSO, IOD and MJO are also investigated to explain the relations to rainfall in the pre-southwest monsoon of Thailand

- **Suitable Monsoon Indices Investigation for Thailand**

Thailand monsoon indices are calculated from the differences of the 850 hPa U-wind of the selected area. The areas selected for indices investigation are 40-80 ^{0}E, 5-15 ^{0}N, and 90-110 ^{0}E, 20-30 ^{0}N referred as TMI1, and 80-100 ^{0}E, 5-15 ^{0}N and 90-1100 ^{0}E, 20-30 ^{0}N referred as TMI2. The results showed that indices from TMI2 played more significant role ,with R^2 at 0.5-0.8, on monthly average rainfall change than those of TMI1 where R^2 at 0.4-0.6 , particularly in upper Thailand.

Training: In 2009, TMD received WMO/ TCTF/ TCS support to attend the training courses in the TC as follows:

Table 4.

e. Regional Cooperation Achievements/Results

Please refer to Regional Cooperation Assessment

f. Identified Opportunities/Challenges for Future Achievements/ Results

- Participation in the TIPs workshop at Jeiju, ROK will be first step of TIPS implemention in TMD
- Research fellowships given to TMD on Typhoon Vortex initialization will lead to the improvement of Typhoon forecasting in Thailand.

2. **Progress on Key Result Area 2: Minimized Typhoon-related Social and Economic Impacts.** (*List progress on the Strategic*

No.	Course Title (s)	Duration	Country	No. of participant(s)
1.	The 1st Training and Research Coordination Group (TRCG) Technical Forum	12 - 15 May 2009	Republic of Korea	3
2.	Training on Hydrological Observation and Flood Forecasting Method and System	20 - 26 July 2009	China	4
3.	The 3rd On-the-job Training of Flood Forecasting System Based on the Tank Model (OJT)	21 July - 23 August 2009	Malaysia	1
4.	The Integrated Workshop on Building Sustainability and Resilience in High Risk Areas of the Typhoon Committee: Assessment and Action	14 - 18 September 2009	Philippines	3 (TMD), 1 (RID), 2 (DDPM)
5.	Typhoon roving seminar	16-19 November 2009	China	2
6.	The Second WMO International Workshop on tropical cyclone landfall process	19-23 October 2009	China	1

Goals and Associated Activities in the Strategic Plan and progress on the 2008 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

Please refer to KRA 1a

b. Hydrological Achievements/Results

Please refer to KRA 1b

c. Disaster Prevention and Preparedness Achievements/Results

Nil

d. Research, Training, and Other Achievements/Results

Please refer to KRA 1d

e. Regional Cooperation Achievements/Results

Please refer to Regional Cooperation Assessment

f. Identified Opportunities/Challenges for Future Achievements/ Results

Please refer to KRA 1f

3. **Progress on Key Result Area 3: Enhanced Beneficial Typhoon-related Effects for the Betterment of Quality of life.** (*List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2008 Typhoon Committee Annual Operating Plan goals)*

a. Meteorological Achievements/Results

Nil

b. Hydrological Achievements/Results

Nil

c. Disaster Prevention and Preparedness Achievements/Results

Nil

d. Research, Training, and Other Achievements/Results

Please refer to KRA 1d

e. Regional Cooperation Achievements/Results

Nil

f. Identified Opportunities/Challenges for Future Achievements/ Results

Nil

4. **Progress on Key Result Area 4: Improved Typhoon-related Disaster Risk Management in Various Sectors.** (*List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2008 Typhoon Committee Annual Operating Plan goals)*

a. Meteorological Achievements/Results

Please refer to KRA 1a

b. Hydrological Achievements/Results

Please refer to KRA 1b

c. Disaster Prevention and Preparedness Achievements/Results

SG4a: To provide reliable typhoon-related disaster information for effective policy making in risk management in various sectors

DPP related:

1) Survey and document Members' legal framework for disaster Prevention and Preparedness policy, plan, and governance structure for priority sectors for sharing among Members

- **Structure of Disaster Management System**

  The structure of disaster prevention and mitigation system in Thailand was divided into 3 levels as follows

  1. *Policy Level*: The National Disaster Prevention and Mitigation Committee is the policy maker body. The national disaster prevention and mitigation plan will be the tool to drive the disaster management.

  2. *Command Level*: Minister of Interior as Commander in Chief has authority to control and supervise the situation throughout the country, however, in the catastrophe event, Prime Minister or Designate Prime Minister will be Chief of Commander. The Department of Disaster Prevention and Mitigation is the national government organization to operate the disaster prevention and mitigation all over the country

  3. *Operation Level*:

  DDPM Director General as Central Director has the duties to prevent and mitigate disaster throughout the country and supervise the Provincial and Local Director, staffs and civil defence volunteers.

  Provincial Governor as Provincial Director has the duties to copes with the disaster prevention and mitigation in the province.

Chief of District as District Director has the duties to carry out the disaster prevention and mitigation in the district.

Head of Local Administration Agencies as the Local Director have the duties to carry out the disaster prevention and mitigation in their local areas.

Bangkok Metropolitan Administration (BMA) Governor as BMA Director has the duties to carry out the disaster prevention and mitigation in Bangkok.

- National Prevention and Mitigation Plan

In 2007, Thailand repealed the Civil Defence Act 1979 that was issued since 1979 and enacted the Disaster Prevention and Mitigation Act 2007 to increase capacity of the disaster management. This act has significantly changed the Thailand's disaster management system particularly on the structure of the national disaster management. As mentioned in SG1, under the present Act, the Disaster Prevention and Mitigation Committee is responsible for formulating the national disaster prevention and mitigation plan. The substantial of the national plan shall comprise as fellows:

1) Guideline, measures and adequate budget to contribute systemically and continuously the disaster prevention and mitigation

2) Guideline and method to assist the victims in short and long term, evacuate the effected people, provide the public health and solve the communication and public utility problems

3) Relevant government and local agencies have the duty to operate all tasks under 1) and 2)

4) Guideline on the resources and asset preparedness and operation system including to building capacity of staffs and people.

5) Guideline on reconstruction, recovery and rehabilitation to the effected people.

Nevertheless, DDPM has cooperated with the organizations concerned to formulate the master plan of the various disaster types such as Master Plan on Flood, Windstorm and Landslide Disaster Prevention and Mitigation, Master Plan on Tsunami Disaster Prevention and Mitigation, Master Plan on Earthquake and Building Collapse Disaster Prevention and Mitigation.

SG4b: To strengthen capacity of the Members in typhoon-related disaster risk management in various sectors

DPP related:

- Focus on disaster preparedness and prevention: Thai disaster management has been shifted its focus from “assistance” or “relief” to “preparedness and prevention”. This approach was accepted to reduce the damage and impact substantially. Several projects, both the construction and non construction measures, have launched for disaster risk reduction for example Community Base Risk Reduction Project, Mr. Warning Project, Early Warning System Installation in the risk areas.
- Develop database: Thailand develops the disaster database by using the high technology, GIS will be applied in the disaster risk assessment.
- Enhance public awareness: The training course, training material are organized to educate and increase knowledge in the disaster field meanwhile the disaster prevention and mitigation manual on specific disaster type are produced and disseminate to the public
- Exercise or evacuation drill: Due to the Disaster Prevention and Mitigation Act 2007, BMA, Provinces, Districts have to organize the

exercise or evacuation drill at least 2 time per year. DDPM will contribute the budget to operate it. The exercise aim at testing the efficiency of the plan and well prepare to people in confront with disaster occurrence.

SG4c: To enhance international and regional cooperation and assistance in the field of disaster risk reduction

Thailand has adopted Hyogo Framework for Action (HFA) since 2005 and has initiated various projects to minimize disaster risk. The technical, experts, know-how and information sharing from the international organizations and developed countries have been transferred to the related organizations for increasing disaster management capacity. Moreover, in the disaster regional committees meeting, Thai representatives from department concerned are the national focal point in regional committee such as TMD Director–General as the national focal point of Typhoon Committee, DDPM Director–General as the national focal point of ASEAN Committee on Disaster Management.

d. Research, Training, and Other Achievements/Results

e. Regional Cooperation Achievements/Results

f. Identified Opportunities/Challenges for Future Achievements/ Results

Nil

5. **Progress on Key Result Area 5: Strengthened Resilience of Communities to Typhoon-related Disasters.** (*List progress on the Strategic Goals and Associated Activities in the Strategic Plan and*

progress on the 2008 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

Disaster Awareness Outreach Program

To support the country in disasters mitigation and preparedness, TMD has continued its implementation on the Disaster Awareness Outreach Program to educate children and people in the disaster-risk area to be prepared to confront and cope with disasters, about 60,000 people participated in 2009.

b. Hydrological Achievements/Results

Please refer to KRA 1b

c. Disaster Prevention and Preparedness Achievements/Results

SG 5a: To promote and enhance culture of community-based disaster risk management among the Member

- **Community Based Disaster Risk Management (CBDRM) Approach**

Thailand has realized that it is essential to improve public safety for every sector of the people, particularly those who are in the risk areas. "Community Based Disaster Risk Management (CBDRM)" approach is to reduce vulnerabilities and to strengthen people capacity to cope with the disaster risk. Therefore, CBDRM has been applied to generate the awareness and to implant the culture of safety for the people in disaster prone areas.

Thailand by DDPM has cooperated with the local agencies such as Thai Red Cross, Local Authority Department and International Agencies; Asian Disaster Preparedness Centre (ADPC), GTZ, Asian Disaster Reduction Center(ADRC), Japanese International Cooperation Agencies(JICA) to generate the awareness of the general public CBDRM

approach. It has attracted the intervention of the people in every community to participate in holistic disaster management. Since 2003-2008, DDPM has continuously launched CBDRM training, at present, more than 30,000 persons in 3,354 villages 75 provinces which are the risk communities have been trained on CBDRM approach.

In this year, DDPM has initiated the new project to strengthen the community which has been trained on CBDRM. The 18 communities which were selected from all over the country will be retrained to be sustainable community on disaster prevention.

- **Mr. Warning Project**

Thailand is the flood prone areas. Therefore, DDPM initiated the Flashflood and Mudslide Warning Program to enhance capacity of the local in risk assessment and early warning. Under this program, DDPM has collaborated with Department of Provincial Administration, Department of Local Administration, The Meteorological Department, National Park Wildlife and Plant Conservation Department, and National Disaster Warning Centre to design "Mr. Disaster Warning" training course. This course aims at creating disaster warning network particularly in flashflood and mudslide prone village. "Mr. Disaster Warning" is the village volunteer who has been selected and trained to function as a vigilant, a forewarner and a coordinator. Nowadays, the 7,817 people in the flood prone areas to be trained in this programme.

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

DPP relate: Provide training and outreach activities to and face – to-face meetings with the people at the last kilometer/ mile and the local first responders.

- **Disaster Prevention and Mitigation Academy**

Department of Disaster Prevention and Mitigation has set up Disaster Prevention and Mitigation Academy (DPMA) in October 2004 to be the national training center in the field of disaster management. DPMA has coordinated with the agencies and developed countries including international organizations to develop curricula and mobilize the technology and know-how for standardize training. The courses will be organized to serve the capacity of the government officers, local administration officers and private sector who are in charge of the disaster management including civil defence volunteers. Nowadays, DPMA has extended to 6 campuses in upcountry. The standard curricula have consisted of the Fire Fighting, Building Collapse (Search and Rescue), Hazmat Emergency Management, Civil Defense Volunteer and Disaster Management.

- **One Tambon One Search and Rescue Team Project (OTOS)**

Thailand has recognized the immediate need to establish a range of search and rescue capacities at national, provincial and particularly in local levels. In 2004, Thailand by DDPM has launched the "One Tambon(sub-district) One Search and Rescue Team (OTOS) Programme" which will resulted in the establishment, training and long-term maintenance of specially trained search and rescue team in every tambon community. DDPM, has incorporated various government agencies and NGO such as Department of Local Administration, Health

Insurance Office, Office of Health Promotion and Support Fund, and Thai Red Cross, to achieve the OTOS objectives which the OTOS objectives are (i) to ensure the safety of life, and the rapid and efficient search and rescue operation; (ii) to establish efficient search and rescue team at every provinces, district and tambon in the country; (iii) to enhance capacity and efficient search and rescue team through technical training and drilling; and (iv) to provide first aid treatment and rapid transfer to the appropriate medical establishment. As of November 2009, OTOS program is 85% completed with 6,615 SAR teams (10 members) based in each tambon or local administration offices throughout the country and more than 68,000 volunteers trained.

- **Building Capacity of Civil Defense Volunteer Program**

The disaster management role in Thailand, apart from the government organizations and private sector, the other important resource in the operation level is Civil Defense Volunteer. Pursuant to the Disaster Prevention and Mitigation Act 2007 and Ministry of Interior's Civil Defense Regulations 2005; civil defence volunteers will be recruited from local residents with age over 18 years and will be trained on Civil Defense Volunteer course for 5-days. Their function is to holistically assist the government official's operation of all type of disaster. Currently, there are approximately 1 million Civil Defense Volunteers (As of 31 October 2009, there are around 1,146,140 Civil Defense Volunteers in the country)

DDPM provides the training courses for Civil Defense Volunteers to increase their capacity on disaster prevention and support their various activities. The training courses for Civil Defense Volunteer will be more intensive so as to equip them with know-how on various disaster

management activities including search and rescue. After their training, these volunteers will be officially organized and based at their local communities and can be summoned to assist the officials in managing the emergencies anytime.

d. Research, Training, and Other Achievements/Results

Please refer to KRA 5c/SG4b

e. Regional Cooperation Achievements/Results

Nil

f. Identified Opportunities/Challenges for Future Achievements/Results

Nil

6. **Progress on Key Result Area 6: Improved Capacity to Generate and Provide Accurate, Timely, and understandable Information on Typhoon-related Threats.** *(List progress on the Strategic Goals and Associated Activities in the Strategic Plan and progress on the 2008 Typhoon Committee Annual Operating Plan goals)*

a. Meteorological Achievements/Results

Please refer to KRA 1a

b. Hydrological Achievements/Results

Please refer to KRA 1b,

c. Disaster Prevention and Preparedness Achievements/Results

Nil

d. Research, Training, and Other Achievements/Results

Please refer to KRA 1,5c

e. Regional Cooperation Achievements/Results

Nil

f. Identified Opportunities/Challenges for Future Achievements/ Results

Nil

7. **Progress on Key Result Area 7: Enhanced Typhoon Committee's Effectiveness and International Collaboration.** (*List progress on the Strategic Goals and Associated Activities in the*

Strategic Plan and progress on the 2008 Typhoon Committee Annual Operating Plan goals)

a. Meteorological Achievements/Results

Publicizing the WMO activities on the occasion of the WMO Day and TMD Day by organizing seminars for both public and TMD.

b. Hydrological Achievements/Results

Nil

c. Disaster Prevention and Preparedness Achievements/Results

Nil

d. Research, Training, and Other Achievements/Results

Nil

e. Regional Cooperation Achievements/Results

Nil

f. Identified Opportunities/Challenges for Future Achievements/ Results

Nil

III. Resource Mobilization Activities

Nil

IV. Update of Members' Working Groups representatives

Nil

Thailand