

NATIONAL DISASTER PREVENTION AND MITIGATION PLAN B.E. 2553-2557 (2010-2014)

National Disaster Prevention and Mitigation Committee



NATIONAL DISASTER PREVENTION AND MITIGATION PLAN

B.E. 2553 - 2557 (2010 – 2014)

National Disaster Prevention and Mitigation Committee

Pro-Active Prevention and Mitigation
Quick Response, Rescue and Relief
Effective Rehabilitation
These Are Spirit of DDPM

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Distribute : Department of Disaster Prevention and Mitigation
Ministry of Interior

Tel. 66-2-637-3304-9 Fax : 66-2-243-2178

Hotline : 1784 www.disaster.go.th

Design : Office of National Buddhism Press
314 -316 Bamrungmuang Rd.
Baanbat Pomprab Bangkok 10100

: July 2011

: 1,000 books

ISBN :



His Majesty the King's Royal Guidance

To the Civil Servants

On the Occasion of Civil Servant Day, B. E. 2553 (2010)

Despite being not witnessed by any person, the performance of good deeds is required to proceed in order to augment and extend their results for the actual benefits and constant growth of one's own, the public and the entire nation. Therefore, every civil servant should be firmly determined and impartial to behave properly and perform official functions with industriousness and sacrifice, not to be discouraged and shaken by obstacle, problem, difficulty or wariness..

Jitlada Palace

Dated 31 March, B. E. 2553 (2010)



Preface

The advanced technology is recognized as crucial generative factor augmenting the growth of global economy, trade and investment. Notwithstanding, it coincidentally produces undesirable repercussions affecting society and surroundings in numbers of way. The instances, inter alia are the deterioration of global environment, the change in pattern of human – to – human and human – to – nature relations, etc. These negative by – products transform into accelerating agent leading the world to confront natural resource and environment crises and particularly global warming phenomena sooner than expected which further exacerbating disaster situation. The trend of disaster occurrence is on the rise in terms of frequency, intensity as well as becoming more diversified and complex. Consequently, we are in the dire need to change our mindset and practices in order to seek for appropriate disaster management system which is compatible with the change of natural condition, and to ensure the efficient prevention of potential loss and damage.

Acknowledging the aforesaid dilemma, and by basing on National Civil Defence Plan B. E. 2548 (2005), the National Disaster Prevention and Mitigation Committee has formulated National Disaster Prevention and Mitigation Plan B. E. 2553 – 2557 (2010 – 2014). This plan aims at providing frameworks and guidelines to facilitate and ensure the systematic, integrated, synergized and harmonious collaboration among concerned agencies of all sectors and levels in handling disaster. In addition, this plan clearly identifies the holistic strategic frameworks encompassed all phases of disaster management cycle for dealing with all types of disaster including security threat.

On 17 November, B. E. 2552 (2009), the Cabinet has approved the Plan in principle in order to set it into motions. Each agency concerned is required to formulate its sectoral action plan and prepare the budget to support the implementation of the plan. The formulation of the aforesaid action plan along with budgets must be in line with its assigned tasks and compatible with geographical, economic, social and environmental condition including the existing resources of each locality. In addition, the inclusion of systematic and continuous monitoring and evaluation efforts in the plan is required to ensure the performance outcomes in safeguarding the life and property of the people as well as the government property.

The National Disaster Prevention and Mitigation Committee highly anticipates that this National Disaster Prevention and Mitigation Plan will enhance and strengthen Thailand's disaster management capacity. Further, it will expedite a state of readiness in all aspects for addressing the challenges posed by all types of potential disaster and the efforts to prevent and minimize the loss of life and assets of the people.



(H.E Mr. Suthep Thaugsuban)

Deputy Prime Minister

Chairman of National Disasters Prevention and Mitigation Committee



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List of Acronyms

AA	: Army Area
AC	: Army Circle
BMA	: Bangkok Metropolitan Administration
BMCC	: Bangkok Metropolitan Command Center
BMDA	: Bangkok Metropolitan Director Assistant
BMDCC	: Bangkok Metropolitan District Command Center
BMDD	: Bangkok Metropolitan District Director
BMDDA	: Bangkok Metropolitan District Director Assistant
BMDeD	: Bangkok Metropolitan Deputy Director (Permanent Secretary for Bangkok Metropolitan Administration)
BMDPMP	: Bangkok Metropolitan Disaster Prevention and Mitigation Plan
BMD	: Bangkok Metropolitan Director
BMG	: Bangkok Metropolitan Governor
BNB	: Bangkok Naval Base
BPB	: Bangkok Police Bureau
P.1 – 9	: Provincial Police Bureau 1 - 9
BPB	: Bangkok Police Bureau
BPPB	: Border Patrol Police Bureau
CCDVC	: Central Civil Defence Volunteer Center (Department of Disaster Prevention and Mitigation)
CD	: Central Director (Director General of Department of Disaster Prevention and Mitigation)
CDD	: Community Development Department
CDV	: Civil Defence Volunteer
CIB	: Central Investigation Bureau
CTBDC	: Chanthaburi and Trad Border Defence Command
DCA	: Department of Civil Aviation
DCC	: District Command Center
DCU	: Direct Control Unit
DCURTA	: Direct Control Unit, Royal Thai Army
DCURTAF	: Direct Control Unit, Royal Thai Air Force
DCURTN	: Direct Control Unit, Royal Thai Navy
DD	: District Director
DDPM	: Department of Disaster Prevention and Mitigation
DEQP	: Department of Environmental Quality Promotion
DGDPPM	: Director General of DDPM
DGR	: Department of Groundwater Resources
DIW	: Department of Industrial Works National Level Committee
DLD	: Department of Livestock Development
DMC MOD	: Disaster Mitigation Center, Ministry of Defence
DMC PSMOD	: Disaster Mitigation Center, Office of Permanent Secretary for Ministry of Defence
DMC RTA	: Disaster Mitigation Center, Royal Thai Army
DMC RTAF	: Disaster Mitigation Center, Royal Thai Air Force

DMC RTARFH	:	Disaster Mitigation Center, Royal Thai Armed Forces Headquarters
DMC RTN	:	Disaster Mitigation Center, Royal Thai Navy
DMR	:	Department of Mineral Resources
DOA	:	Department of Agriculture
DOAE	:	Department of Agricultural Extension
DOEB	:	Department of Energy Business
DOF	:	Department of Fisheries
DOH	:	Department of Highways
DOLA	:	Department of Local Administration
DOPA	:	Department of Provincial Administration
DPD	:	Deputy Provincial Director (Chief Executive of Provincial Administration Organization)
DPMPO	:	Disaster Prevention and Mitigation Provincial Office
DPMRC	:	Disaster Prevention and Mitigation Regional Center
DRR	:	Department of Rural Roads
DSD	:	Department of Skill Development
DSDW	:	Department of Social Development and Welfares
DWR	:	Department of Water Resources
EGAT	:	Electricity Generating Authority of Thailand
EMIT	:	Emergency Medical Institute of Thailand
FDA	:	Food and Drug Administration
GISTDA	:	Geo-Informatics and Space Technology Development Agency (Public Organization)
HDRTN	:	Hydrographic Department, Royal Thai Navy
ISOC	:	Internal Security Operations Command
LAO	:	Local Administration Organization
LD	:	Local Director
LDA	:	Local Director Assistant (Municipality Clerk/ Pattaya City Clerk/Tambon Administration Organization Clerk)
LDD	:	Land Development Department
LPW	:	Department of Labour Protection and Welfare
MCC	:	Municipality Command Center
MCC RTARFH	:	Military Command Center, Royal Thai Armed Forces Headquarters
MCR	:	Department of Marine and Coastal Resources
MD	:	Marine Department
MEA	:	Metropolitan Electricity Authority
MMOI	:	Minister of Ministry of Interior
MMOD	:	Minister of Ministry of Defence
MOAC	:	Ministry of Agriculture and Cooperatives
MOC	:	Ministry of Commerce
MOD	:	Ministry of Defence
MOE	:	Ministry of Energy
MOED	:	Ministry of Education
MOF	:	Ministry of Finance
MOFA	:	Ministry of Foreign Affairs
MOI	:	Ministry of Interior
MOICT	:	Ministry of Information and Communication Technology
MOIN	:	Ministry of Industry

MOL	: Ministry of Labour
MONRE	: Ministry of Natural Resources and Environment
MOPH	: Ministry of Public Health
MOSDHS	: Ministry of Social Development and Human Security
MOST	: Ministry of Science and Technology
MOT	: Ministry of Transport
MOTS	: Ministry of Tourism and Sports
MRU	: Mekong Riverine Unit
MWA	: Metropolitan Waterworks Authority
NAC	: Naval Area Command
NC	: National Commander (Minister of Ministry of Interior)
NCH	: National Command Headquarters
NDPMC	: National Disaster Prevention and Mitigation Committee
NDPMP	: National Disaster Prevention and Mitigation Plan
NDWC	: National Disaster Warning Center
NPP	: National Preparedness Plan
NPWLF	: Department of National Park, Wild Life and Flora
NRCT	: Office of the National Research Council of Thailand
NREP	: Office of Natural Resources and Environmental Policy and Plan
NSC	: Office of the National Security Council
NSCT	: National Safety Council of Thailand
OAP	: Office of Atoms for Peace
OBEC	: Office of Basic Education Commission
OFS/RTF	: Office of Forensic Science, Royal Thai Police
OPM	: Office of the Prime Minister
PA	: Provincial Army
PAO	: Provincial Administration Organization
PAT	: Port Authority of Thailand
PCC	: Provincial Command Center
PCCC	: Pattaya City Command Center
PCD	: Pollution Control Department
PD	: Provincial Director
PDPMP	: Provincial Disaster Prevention and Mitigation Plan
PEA	: Provincial Electricity Authority
PG	: Provincial Governor
POPH	: Provincial Office of Public Health
PRD	: Public Relations Department
Pro.	: Province
PRPO	: Public Relations Provincial Office
PSMOAC	: Office of Permanent Secretary for Ministry of Agriculture and Cooperatives
PSMOD	: Office of Permanent Secretary for Ministry of Defence
PSMOI	: Office of the Permanent Secretary for Ministry of Interior
PSMOI	: The Permanent Secretary for Ministry of Interior
PSMOSDHS	: Office of the Permanent Secretary for Ministry of Social Development and Human Security
PWA	: Provincial Waterworks Authority
PWTCP	: Department of Public Works and Town & Country Planning

RFD	:	Royal Forest Department
RID	:	Royal Irrigation Department
RPT	:	Royal Thai Police
RTA	:	Royal Thai Army
RTAFOC	:	Royal Thai Air Force Operations Center
RTAOC	:	Royal Thai Army Operations Center
RTARF	:	Royal Thai Armed Forces
RTARFH	:	Royal Thai Armed Forces Headquarters
RTN	:	Royal Thai Navy
RTNOC	:	Royal Thai Navy Operations Center
SB	:	Special Branch
SPGH	:	Office of the Permanent Secretary, Government House
SRMCTF	:	Southern Region Marine Corps Task Force
TAO	:	Tambon Administration Organization
TAOCC	:	Tambon Administration Organization Command Center
TAT	:	Tourism Authority of Thailand
TDVB	:	Territorial Defence Volunteer Base
TDVC	:	Territorial Defence Volunteer Commander (MMOI)
TDVH	:	Territorial Defence Volunteer Headquarters
TDVR	:	Territorial Defence Volunteer Regiment
THPF	:	Thai Health Promotion Foundation
TMAC	:	Thailand Mine Action Center
TMD	:	Thai Meteorological Department
TRF	:	The Thailand Research Fund

Prologue

1. Preamble

Peruant to Disaster Prevention and Mitigation Act B. E. 2550 (2007) effective on 6 November, 2550, Department of Disaster Prevention and Mitigation has been mandated to formulate National Disaster Prevention and Mitigation Plan. Upon the completion, this plan will be forwarded to National Disaster Prevention and Mitigation Committee for consideration prior to submitting to seek for approval of the Cabinet. The formulation of the plan must be concluded within the period of two years as from the day the aforementioned act is effective.

2. National Disaster Prevention and Mitigation Plan B. E. 2553 – 2557 (2010 – 2014) Formulation Process

1) National Disaster Prevention and Mitigation Committee has acknowledged the National Disaster Prevention and Mitigation Policy in the 1/2552 (2009) meeting dated 2 February, 2552, and has constituted National Disaster Prevention and Mitigation Plan Formulation Sub – committee chaired by Deputy Permanent Secretary for Ministry of Interior (Chief of Disaster and Town and Country Planning Missions Cluster) of which members comprise the representatives from 30 concerned agencies. This sub – committee has been tasked to undertake broad review of the draft of the Plan prior to submitting to National Disaster Prevention and Mitigation Committee for consideration.

2) Department of Disaster Prevention and Mitigation has constituted Working Group on Plan Formulation Preparation, chaired by Director General of the aforesaid department. This working group has been tasked to develop the draft of the Plan for submitting to Sub – committee. The meetings among the members of Working Group was held twice in May, 2552 to review the draft of the Plan.

3) On 29 June, B. E. 2552, the symposium was held and more than 280 representatives of public sector, public enterprises, charitable foundations, volunteer corps, well – informed persons and the general public attended. The draft of the Plan was proposed to the participants for discussion and review. The comments and recommendations contributed by participants were noted and taken into account in improving the draft of the Plan.

4) On 4 August, B. E. 2552, and on 21 September, 2552, Sub – committee respectively convened the meetings to consider the draft.

5) Further, the aforesaid draft was submitted to National Disaster Prevention and Mitigation Committee for consideration.

6) Eventually, the draft of National Disaster Prevention and Mitigation Plan was proposed to the Cabinet for approval.

3. National Disaster Prevention and Mitigation Plan B. E. 2553 – 2557 (2010 – 2014) composes of 3 parts as follows :

- Part 1 Principles of Disaster Management
- Part 2 Disaster Countermeasure Procedure
- Part 3 Security Threat Management and Countermeasure Procedure

Structure of National Disaster Prevention and Mitigation Plan B. E. 2553 – 2557 (2010 – 2014)

National Disaster Prevention and Mitigation Plan B. E. 2553 - 2557

Part 1 Principles of Disaster Management

- Disaster Situation and Management
- Policy, Vision, Objectives and Target
- Strategic Framework, Plan and Measure
- Disaster Prevention and Impact Reduction
- Preparedness Arrangement
- Disaster Emergency Management
- Post – Disaster Management
- Standing Orders on Disaster
- Putting Plan into Action

Part 2 Disaster Countermeasure Procedure

- Flood and Landslide
- Tropical Cyclone
- Fire
- Chemical and Hazardous Material
- Transport Hazard
- Drought
- Cold Spell
- Forest Fire and Haze
- Earthquake and Building Collapse
- Tsunami
- Human Epidemic
- Plant Disease and Pest
- Animal and Aquatic Animal Epidemics
- Information Technology Threat

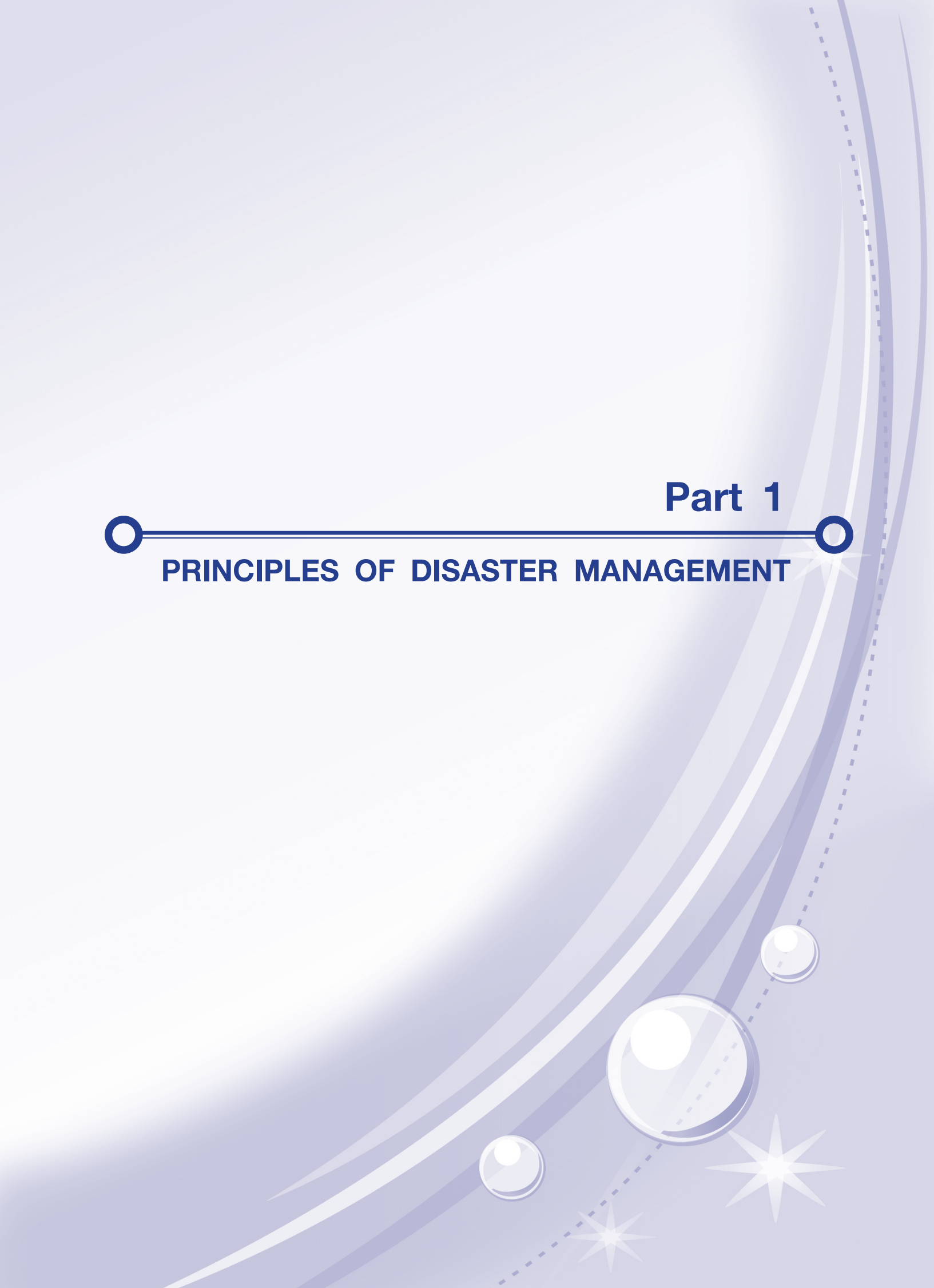
Part 3 Security Threat Management and Countermeasure Procedure

- Security Threat Management
- Sabotage Action
- Mine and Land Mine Threat
- Air Threat
- Protest and Riot



Part 1

PRINCIPLES OF DISASTER MANAGEMENT





Chapter 1

Disaster Situation and Management

1.1 Disaster Situation in Thailand

The report of World Population Prospects (The 2007 Revision, UNDP) reveals that the current number of the world population stands at 6,700 million and it is estimated that the number will reach 9,300 million in 2050. For Thailand, in the year 2008, the number of the population was 63 million (Central Registration Bureau, Department of Provincial Administration), and from the projection it is expected that within the next two decades (in 2027) Thailand's population will increase to 70.6 million (National Economic and Social Development Board : 2008). The aforesaid increase of human population will further lead to an increase in demand for the basic needs such as food, water, energy, housings, and other necessities for the livelihood. As the consequence, the key driving forces to cope with the increasing demand such as the scientific and technological advances, the growth of economy, industry, trade, investment etc. have been developed and introduced. Simultaneously, these driving forces have become accelerated factors which induce the squandering of the existing natural resources and the development regardless of the resources sustainability. The lavish consumption of resources without taking their limitation and potentiality to replenish into consideration sequentially lead to the continuous depletion of the resources and the deterioration of the ecosystem.

In addition, there has been the continuous release of the greenhouse gases through anthropogenic activity into the atmosphere at the greater rate than the natural phenomena has resulted in their excessive accumulation and concentration. This phenomenon has affected the discharge of the earth's heat into the atmosphere through long wave radiation, thus, the heat has been increasingly confined. Consequently, the average earth's near – surface temperature has increased approximately 2 – 4 °C (IPCC 2007) which further induce an interminable succession of disasters in every global region as never before in the history of mankind particularly during the past 2 – 3 years. These disasters, for instances more intensified storm, catastrophic flood, drought, heat waves, mass death of wildlife and many species of organism are at the brink of extinction, the reduction in agricultural yields and level of food security, striving for water which leads to social conflict; have widely inflicted the impacts on economy, society, natural resources and environment and have caused tremendous damages worth several billions Baht.

The disasters that had occurred and claimed hundreds of lives including causing the enormous material losses in Thailand during the past 7 years (2002 – 2008) can be delineated as follows :

1.1.1 Floods

During 2002 – 2007 Thailand had frequented floods almost annually and they have become the most devastated disaster of the country. The main causes of floods in Thailand are the influence of the powerful low pressure through or the elongated region of relatively low atmospheric pressure lies across northern, central and northeastern regions, coupled with the southeast monsoon prevailing over Andaman Sea and the Gulf of Thailand. This weather related phenomenon had caused the frequent torrential downpours and eventual inundation in many provinces which claimed the lives and devastated the properties of the people as well as the public utilities. And in the recent years the floods have been exacerbated and more severe and inflicted heavier toll of losses as tabulated in Table 1.1

Table 1.1 Flood Statistics during 2002 – 2008

Year	Frequency	No. of Province Affected	Damage		
			Injuries (person)	Fatalities (person)	Value of Damage (million Baht)
2002	5	72	0	216	13,385.31
2003	17	66	10	44	2,050.26
2004	12	59	3	28	850.65
2005	12	63	0	75	5,982.28
2006	6	58	1,462	446	9,627.41
2007	13	54	17	36	1,687.86
2008	6	65	0	113	7,601.79

Source : Department of Disaster Prevention and Mitigation

1.1.2 Storm

Storm is a natural phenomenon that can inflict the destructive impact on wide area as wide as hundreds of square kilometers (particularly the area located on or nearby the path of a storm). The damage caused by storm will vary according to its intensity. If the storm is categorized as a depression it will produce the torrential rains accompanied by floods and in case a depression deepening into tropical cyclone or typhoon its accompanied phenomena such as torrential rains, floods will be exacerbated, and the unusual strong wind – waves triggered by the intensified wind velocity can threaten the seafaring navigation and may inflict the heavy death toll and material losses. Thailand has been prone to this natural disaster and has occasionally witnessed a multitude of storms, for instances in 2003 and 2004 all of 76 provinces of the kingdom were hit by 3,213 and 3,834 storms and the value of damage stood at 457 and 398 million Baht respectively. The table below concludes the detail of storm occurrence in Thailand during 2002 – 2008.

Table 1.2 Storm Statistics during 2002 – 2008

Year	Frequency	No. of Province Affected	Damage		
			Injuries (person)	Fatalities (person)	Value of Damage (million Baht)
2002	594	67	11	18	213.33
2003	3,213	76	434	74	457.42
2004	3,834	76	63	73	398.41
2005	1,313	57	0	13	148.87
2006	1,883	65	39	29	92.24
2007	2,233	67	71	10	234.54
2008	1,995	65	30	15	227.54

Source : Department of Disaster Prevention and Mitigation

1.1.3 Landslides

The occurrence of a landslide in Thailand in the former time was not extensive both in terms of scale and damage. Generally, a landslide occurs simultaneously or accompanies the flashflood produced by the continuous heavy downpours of rainstorm and has saturated and destabilized the land mass and rock in such area. Eventually, the aforesaid land mass and rock moved down the slope under the influence of gravity. At present Thailand has witnessed an increasing occurrence and intensity of mudslides due to various preconditions and contributing factors particularly the anthropogenic activities such as deforestation, cultivation of cash crops in a sloping area, destruction of a land's surface etc. Table 1.3 reveals the statistics of landslide occurrences in Thailand during 1988 – 2008.

Table 1.3 Landslide Statistics during 1988 – 2008

D/M/Y	Province	Damage		
		Injuries (person)	Fatalities (person)	Value of Damage (million Baht)
22/11/1988	Nakhon Si Thammarat	NA	242	1,000
11/09/2000	Phetchaboon	NA	10	NA
04/05/2000	Phrae	NA	43	100
11/08/2001	Phetchaboon	109	136	645
20/05/2004	Tak	391	5	NA
23/05/2006	Phrae and Uttaradit	MA	83	308
15/08/2007	Phetchaboon	NA	6	NA
11/12/2008	Surat Thani	NA	2	NA

Source : Department of Natural Resources

1.1.4 Drought

Since Thailand is predominantly agricultural country, the water scarcity can inflict considerable impacts and hardship on farmers. The global phenomenon such as the climate change or the long – term change of weather over the periods of time has shorten a rainy season or in other words it has prolonged a dry season leading to drought. Particularly during the periods of November to June, different areas in Thailand receive consistently below average of rainfalls coupled with the limited volume of water in the large – scale reservoirs and dams have resulted in a deficiency of water for consumption and for agriculture particularly in the unirrigated areas. Table 1.4 reveals drought statistics and its impact on Thailand during 2002 - 2008.

Table 1.4 Drought Statistics during 2002 – 2008

Year	No. of Province Affected	Damage		
		No. of People Affected (person)	No. of Agri. Area affected (Rai)	Value of Damage (million Baht)
2002	66	12,841,110	2,071,560	508.78
2003	63	5,939,282	484,189	174.32
2004	64	8,388,728	1,480,209	190.66
2005	71	11,147,627	,13,736,660	7,565.86
2006	61	11,862,358	578,753	495.27
2007	66	16,754,980	1,350,118	198.30
2008	61	3,531,570	524,999	103.90

(1 Rai = 1,600 square metres)

Source : Department of Disaster Prevention and Mitigation

1.1.5 Tsunamis

The unprecedented tragic incident occurred when the tsunamis triggered by a submarine earthquake of 9.3 magnitude on Richter Scale near Sumatra, Indonesia slammed and devastated the Indian Ocean coastal communities of 11 countries in Asia and Africa on Sunday 26 December, 2004. This catastrophe had claimed more than 216,000 of lives, caused material losses in terms of billions of dollars, and imposed the terrible toll on illfated countries. To Thailand, such a calamity was the first of its kind, hundreds of its Andaman Sea coastal communities in 6 provinces namely, Phang Nga, Krabi, Ranong, Phuket, Trang, and Satun were ravaged and flattened by such a powerful wall of water. It claimed thousands of lives of both Thai and foreigners and has orphaned more than 1,200 children. Speaking in the monetary term, the preliminary estimated value of damage and the economic opportunity loss particularly of tourist industry sector stood at approximately 14,941 and 30,000 million Baht respectively. Table 1.5 reveals the detail of casualties resulted from earthquake/tsunami of 26 December 2004.

Table 1.5 Number of Fatalities, Injuries and Missing due to Tsunami (26 December, 2004)

No.	Province	Fatalities (person)				Injuries (person)				Missing (person)		
		Thai	Foreigner	Unid.	Total	Thai	Foreigner	Unid.	Total	Thai	Foreigner	Total
1.	Phang Nga	1,302	1,926	997	4,225	4,344	1,253	0	5,597	1,363	323	1,686
2.	Krabi	358	203	161	722	3,780	791	0	4,571	329	258	587
3.	Phuket	163	111	5	279	591	520	0	1,111	256	385	641
4.	Ranong	158	2	4	164	279	28	0	307	6	0	6
5.	Trang	3	2	0	5	0	0	168	168	1	0	1
6.	Satun	6	0	0	6	0	0	21	21	0	0	0
	Total	1,990	2,244	1,167	5,401	8,994	2,592	189	11,775	1,955	966	2,921

Source : Department of Disaster Prevention and Mitigation

1.1.6 Cold Spell

During the periods of October to February each year, the cold weather front from the People Republic of China will prevail over Thailand leading to the drop in temperature and chilly weather in the lowland area with the particular cold weather on the highland area or on the mountains. A cold spell can affect the people's daily life and can cause cold weather related illness such as respiratory disease, influenza, and animal epidemic etc. Table 1.6 reveals large number of people affected by cold spell.

Table 1.6 Cold Spell Statistics during 2002 – 2008

Year	No. of Province Affected	Damage	
		No. of People Affected (person)	No. of Household
2002	42	1,913,021	319
2003	22	1,100,920	184
2004	32	1,246,112	208
2005	25	3,742,793	624
2006	47	2,303,703	384
2007	48	5,910,339	985
2008	49	9,554,992	1,592

Source : Department of Disaster Prevention and Mitigation

1.1.7 Fires

Fire is one of the most common incidents and its main causes are negligence, carelessness or oversight such as electric short circuit, explosive combustion while cooking or from arson. The report on fire incidents from Hong Kong concludes that the most likely place of fire breakout is a residency as in the United States of America where houses are the most common places of fire breakout.

In case of Thailand, the collecting and recording the statistics of fire incidents are not conducted according to the clear – cut classification of building where the fire breaks out or the causes of fire outbreak. Anyhow, the breakout of fires will lead to the tremendous losses of lives and property of the people as tabulated in table 1.7.

Table 1.7 : Fire Statistics during 2002 – 2008

Year	No. of Outbreak (Time)	No. of Province Affected	Damage		
			Injuries (person)	Fatalities (person)	Value of Damage (million Baht)
2002	1,135	74	150	24	805.81
2003	2,267	76	167	56	565.54
2004	1,727	76	69	31	487.02
2005	1,559	62	68	48	931.91
2006	1,734	66	66	37	1,083.84
2007	1,901	71	156	45	875.79
2008	1,696	61	92	30	1,424.89

Source : Department of Disaster Prevention and Mitigation

1.1.8 Earthquake and Building Collapse

Thailand has never experienced large – scale earthquake. Notwithstanding, there were the records of two medium – scale earthquake occurrences, the first one was an earthquake of 5.6 magnitude on Richter Scale in Tha Songyang district, Tak province of a northern region on 17 February, 1975 and another one of 5.9 magnitude on Richter Scale in a western part of the country, along Srisawat fault line, Srisawat district, Kanchana Buri province on 22 April, 1983.

In addition, the tremors can be felt 5 – 6 times annually in these two parts of the country. Earthquakes can damage any structures particularly high – rise buildings and houses, and can be harmful to the people such as from the falling of an object etc. Table 1.8 reveals the statistics of earthquake occurrences in Thailand and nearby countries.

Table 1.8 Earthquake Statistics in Thailand and Nearby Country

D/M/Y	Epicenter	Magnitude	Effects
24/1/2006	Shan State, Myanmar Lat. 20.53 ON ; Long. 98.69 OE	5.7	Tremor can be felt in Chiang Mai, Chiang Rai, and Maehong Son provinces
8/10/2006	Myanmar, Lat. 12.02 ON ; Long. 99.17 OE	5.6	Tremor can be felt in Pechburi, Ratchaburi, Prachuab Kirikhan, and Sumut songkhram provinces; minor damage of the structures was reported
1/12/2006	East of Sumatra, Indonesia Lat. 3.49 ON ; Long. 99.2 OE	6.5	Tremor can be felt in Haad Yai district of Songkhla province, and in Narathiwat province
13/12/2006	Mae Rim district, Chiang Mai province, Lat. 18.93 ON ; Long. 98.97 OE (Mae Ta fault)	5.1	The cracks in the walls of school and temple buildings in San Sai, Mae Rim and Muang districts of Chiang Mai provinces were reported.
2/11/2007	Myanmar – Laos – China joint border, approx. 200 kms from Chiang Rai Province	5.7	Tremor can be felt in Chiang Rai Province
28/12/2007	North of Sumatra, Indonesia, approx. 340 kms from Phuket province	5.7	Tremor can be felt in the high – rise building of Phuket and Phang Nga provinces
12/5/2008	Szechuan region, China	7.8	Extremely high death toll and extensive damage
3/09/2008	Border area between Myanmar and China, approx. 583 kms. Northeast of Chiang Rai province	5.1	No report of damage

Source : Thai Meteorological Department and Department of Natural Resources

1.1.9 Animal and Plant Epidemics

(1) The wide – spread outbreak of epidemic in domesticated animals such as cattle, poultry, pig etc., has been considered as infrequent phenomenon in Thailand. And once there is an outbreak it would be rapidly contained as revealed by the statistics of Department of Livestock Development in Table 1.9.

Table 1.9 Deceased Livestock in Major Outbreak of Epidemic in Animal during 2002 – 2008

Year	Ox (unit)	Buffalo (unit)	Pig (unit)	Chicken (unit)	Duck (unit)
2002	308	28	844	NA	NA
2003	85	26	1,194	130,185	9,303
2004	1,446	42	157	11,593	8,903
2005	52	45	1,036	3,574	22,752
2006	30	50	287	682	1,255
2007	14	32	259	207	2,996
2008	28	43	250	20,538	3,698

Source : Department of Livestock Development

(2) Outbreak of Avian Influenza

The first case of a new strain of an influenza A virus subtype H5N1 in Thailand was identified in January, 2004 and commonly called bird flu. And during the time period 2004 -2008, Thailand had been attacked by occasional waves of H5N1 outbreak which the large fraction of fowl population were killed and culled. In addition, during the time periods of the aforesaid outbreak this deadly virus claimed the lives of 17 out of 25 infected persons as delineated below :

- The first wave of outbreak which took place during 23 January – 24 May, 2004, eight out of twelve infected persons were dead.
- The second wave of outbreak which took place during June - October, 2004, four out of five infected persons were dead.
- The third wave of outbreak which took place during July - November, 2005, two out of five infected persons were dead.
- The fourth wave of outbreak which took place during June – July, 2006 all three infected persons were dead.
- In 2007 the outbreak of avian influenza among the fowl population was discovered in four provinces viz; Phisanulok, Nongkhai, Angthong and Mukdahan but no person was infected.
- In 2008 the outbreak of avian influenza among the farmed and native chicken was discovered in four provinces viz; Chumsaeng district of Nakhonsawan, Saklek district of Phichit, Thungsalieng district of Sukhothai and Nongchang district of Uthai Thani.

In case of plant epidemic, still there has not been any severe case of outbreak in Thailand

1.1.10 Human Epidemic

(1) Avian influenza which is common in fowl population has evolved into a flu virus strain that can infect various species including human. As of 1997 to present (17 March, 2009) the cases of H5N1 subtype avian influenza outbreak in the fowl population have been reported in 62 countries and 257 out of 417 infected persons in 15 countries were dead (as of 8 April, 2009).

The outbreak of H5N1 strain of avian influenza in various regions of the world has caused the global concern that the co – existence and the genetic material exchange of human flu virus and avian flu virus particularly H5N1 which might mutate and create the a new virulent human – to – human transmission influenza strain and emerging as the global pandemic. It is expected that the trend of this evolution could be possible outside Thailand and can rapidly spread world – wide due to the advanced mode of transportation.

Most human influenza is a non – pandemic flu or a common flu that generally and globally spreads among humans. Notwithstanding, in the past century the world had experienced numbers of the notable pandemic human influenza outbreak such as Asiatic flu, Spanish flu, African flu etc. which claimed the lives of approximately 20 – 40 million people worldwide.

Unlike the countries in the cold weather region, the outbreaks of human influenza in Thailand are not as severe. The outbreaks of human influenza and their effects are expounded as follows:

- During 1918 – 1919 outbreak, 27.32% and 0.95% of the total number of the population were infected and died of the virus respectively. And afterward, Thailand has experienced the sporadic outbreak of human influenza almost every year.

- In the short period of February – March, 1978 outbreak, it was reported that approximately 360,000 people in Bangkok mostly under 20 years of age were infected (75 : 1,000 pop. ratio).

- In 1985 outbreak of moderate severity outbreak, more than 92,000 people were infected nationwide (178.4 : 100,000 pop. ratio) and 40 persons died of the virus.

- In Thailand, the people are sparsely infected by human influenza particularly the seasonal flu year – round and the number of infected persons increase during the mid – year. The report on Thailand’s human influenza situation reveals that during the past decade approximately 30,000 – 50,000 persons were infected and less than 10 persons died of this virus annually. It is estimated that in case of the outbreak of pandemic influenza, millions of Thai people will be infected and it could claimed the lives of a large fraction of the population.

(2) The current situation and trend of new strain of an influenza A subtype H1N1.

The outbreak was first detected in Mexico in mid – March, 2009 where the flu laboratory and the result of the test confirmed the infection of infected patients suffered the unusual pneumonia system. The samples were sent for test in the laboratory and the result of the test confirmed the infection of new strain of influenza A subtype H1N1. From the report of WHO concludes that as of 6 July, 2009 this virus has spreaded in 136 countries and caused severe illness in 94,512 persons and 429 deaths.

Thailand has inevitably affected by the rapid spread of H1N1 nationwide particularly in the vulnerable places such as school, military base, entertainment facility and urban community. The findings resulted from the epidemic monitoring and surveillance reveal that since 28 April – 5 August, 2009 there have been 10,043 of confirmed cases and 81 deaths (Department of Disease Control).

1.1.11 Chemical and Hazardous Material Incidents

In Thailand, the chemical and hazardous material incidents are most likely in industrial factory, chemical depository and whilst transporting. But the cases of chemical and hazardous materials leakage, spill and fire hazard posed by such materials, are the major causes of harmful impacts on human being and environment. The statistics of chemical and hazardous material incidents are concluded in table 1.10

Table 1.10 Statistics of Chemical and Hazardous Materials Incidents during 2002 – 2008

Year	Frequency (time)	Damage		
		Injuries (person)	Fatalities (person)	Value of Damage (million Baht)
2002	27	7	4	602
2003	28	56	5	150
2004	29	140	27	200
2005	23	54	3	100
2006	32	200	9	NA
2007	35	90	4	NA
2008	69	328	15	NA

Source : Pollution Control Department

1.1.12 Forest Fires

Mostly the forest fires are triggered by human beings to exploit the forest for personal interest such as for agricultural and hunting purposes, or negligently throwing of the alighted cigarette butt into the forest. The statistics of forest fires outbreak in Thailand are considerably high in terms of the frequency and increasing damaged coverage area as shown in table 1.11.

Table 1.11 Forest Fire Statistics during 2002 - 2008

Year	Frequency	No. of Province Affected	Damaged Area (Rai)
2002	11,974	64	253,391
2003	8,011	64	98,523
2004	10,544	64	201,758
2005	9,447	64	189,276
2006	4,711	64	55,885
2007	7,757	64	117,270
2008	5,569	60	70,811

(1 Rai = 1,600 square metres)

Source : Department of National Park, Wild Life and Flora

1.1.13 Transport Hazard

A due process of economic and social development in Thailand has led to an increasing trend and exacerbating of road traffic accident to the extent that it has become one of the highest ranking causes of fatalities among Thai population. Besides, it has inflicted the economic burden on the family of the dead and a society, the medical cost, the loss of a national labour force etc. One of the report concludes that 10 percent of the total road traffic accidents resulted from human errors such as reckless driving, violation of traffic regulations and drunk driving etc. The statistics of road traffic accidents are concluded in table 1.12.

Table 1.12 Road Traffic Accidents Statistics Nationwide during 2002 – 2008

Year	No. of Accident (time)	Property Damage Million Baht)	Casualties	
			Injuries (person)	Fatalities (person)
2002	91,623	1,494	69,313	12,316
2003	107,565	1,750	79,692	14,012
2004	124,530	1,623	94,164	13,766
2005	122,122	3,238	94,446	12,871
2006	110,686,	3,643	83,290	12,693
2007	101,765	4,620	79,162	12,591
2008	88,720	5,420	71,088	11,544

Source : Royal Thai Police

1.1.14 Information Technology Threat

Despite the recession of the global economy, an underground economy has continuously matured and prospered into an efficient and stable marketplace due to the change and evolution in the pattern of internet security threat. The Internet Security Threat Report Volumn 14 Symantec Corp. concludes that “The unfortunate truth is that many internet roamers are not known

of these threats, and subsequently put their personal data and financial data at risk by indiscreetly connecting the websites”. Currently, websites have become the major windows to inoculate the threat of all types. The report on the wide spread of computer virus statistics from when the first computer virus was detected 25 years ago reveals that during 2001 – 2002 there were approximately 20,000 computer viruses threatened the internet networks, and in 2008 the number of threatening viruses had increased to more than 1,600,000 or 60 – fold increase. A current trend of internet security threat mainly focuses on malicious attempts to hack the users’ personal data such as their bank account and passwords while conducting the on – line transactions with a bank. The conduct of threat in this manner proportionately contributes 70 percent of the total threats. The stolen personal data such as credit card and bank account datum will be bought and sold through underground market system.

In addition, the use of computer viruses in hacking and expropriating personal computer without the acknowledgement of remote owner, has become the core mechanism for the underground information technologists who have the connection with different types of crime to make use of in exploitation.

1.1.15 Sabotage Threat

Sabotage is any deliberate action aims at destroying and damaging property, material, building and workplace, strategic public utility and facility; or at disrupting, obstructing, and delaying the social functional system, including causing harm to person which leading to political, military, economic and societal psychological agitation so as to inflict the harmful effect on national peace and order and security. Since 2004 sabotage movement in 3 southern border provinces of Thailand has increased both in terms of frequency and intensity. The sabotage activity statistics are concluded in table 1.13.

Table 1.13 Sabotage Statistics during 2006 -2008

Year	No. of Province Affected	Damage		
		Fatalities (person)	Injuries (person)	Value of Damage (million Baht)
2006	8 provinces namely Narathiwat, Pattani, Yala, Songkhla, Bangkok, Nonthaburi, Satun, and Nakhon Nayok	522	906	82
2007	5 provinces namely, Bangkok, Narathiwat, Pattani, Yala, and Songkhla	592	1,209	76
2008	4 provinces namely, Songkhla, Yala, Pattani, and Narathiwat	334	930	68

Source : Department of Disaster Prevention and Mitigation

In addition to the previous – mentioned disasters and threats, Thailand has experienced numerous unprecedented types of disasters such as storm surge, haze, SARS (Severe Acute Respiratory Syndrome), avian influenza, AIDS (Acquired Immune Deficiency Syndrome) etc. These harmful phenomena have formidably affected a physical and mental well-being and a property of the people at large as well as the entire economic system from the grass – root to the national level. The absence of preparedness for prevention or the explicit and specific measures for coping with all those disasters, their consequences will be appallingly exacerbated and eventually impede a long – term development of the country. This is because the government needs to divert and allocate the national budget as Disaster Relief Contingency Fund for providing assistance to disaster victims. Each year the national budget allocated for this purpose has continuously increased according to the rising trend of disaster occurrences as illustrated in table 1.14.

Table 1.14 Statistics of Disaster Relief Contingency Fund Expenditure

Fiscal year	Total (million Baht)	Rate of increasing (%)
2004	1,627	-
2005	5,058	210.8
2006	6,472	27.9
2007	7,933	22.5
2008	9,267	16.8

Source : Department of Disaster Prevention and Mitigation

The total expenditure of Disaster Relief Contingency Fund for relief and mitigation efforts illustrated in Table 1.14, is estimated in percentage and ranked by types of disaster in Table 1.15

Table 1.15 Statistics of Disaster Relief Contingency Fund Expenditure Ranking during 2004 – 2008

Rank.	Disaster	Percentage
1	Flood	56.92
2	Drought	25.55
3	Cold Spell	4.77
4	Tsunami	3.24
5	Storm	3.19
6	Avian Flu	1.94
7	Period of Scant Rainfall during Rainy Season	1.82
8	Fire	1.22
9	Pest	0.59
10	Terrorism	0.27
11	Others	0.26

Source : Department of Disaster Prevention and Mitigation

1.2 Effects of Global Change Context on Disaster Situation

Over the course of the past two decades the world had undergone an enormous change particularly in the economic, social and environmental aspects due to the pivotal driving forces such as scientific and technological advances and a growth in economy as well as trade and investment. These driving forces have also brought about a change in the relationship between human and nature. The natural resources endowed for collective use among human beings have been improvidently squandered and exploited on an inequitable and partial accessible basis. Through human's depredation of natural resources, the world have tremendously gained materialistic benefits and prosperity. Unfortunately, these gains have been achieved at the increasing costs in the forms of the degradation of an environment, a loss of ecosystem balance and ecosystem services, a permanent decrepitude and depletion of diversified natural resources. Additionally, it has brought about a trigger of disaster occurrences which subsequently result in heavy losses of lives and properties of the people.

A context of a global change over the past two decades and its trend in the next two decades manifest the world is at a brink of natural resources and environment crises. A human's perception, mind – set and behavior on the natural resources consumption need an urgent alteration for the benefits and survival of the future generations. The followings are the crucial indicators that revolve around a context of a global change.

1.2.1 Population and Economic Growth Impacts on High Level of Natural Resources Consumption

Increase in number of population is considered as one of the environmental problems. Normally the nature keeps a number of human population and other organisms in check within the limit that environment can support or within the environmental carrying capacity. In case where a number of organisms has grown beyond this limited carrying capacity of environment, part of these organisms will cease to exist. Nevertheless, through the consequences of economic growth, the people's well - being and living condition have been enormously improved and an income growth has been generated among the impoverished people leading to a longer life expectancy and an increase in number of population. In addition, an economic growth has become a driving force of the urban area – bound mass migration of the people from the peripheral areas to seek better job opportunities, and an unchecked urbanization that exacerbates the conflicts between an urbanite and its rural counterpart in form of striving for the resources. Examples of these urban – rural strives are, among the others, land use pattern, water resource for consumption versus for crop cultivation etc., including the deterioration of environment condition at the alarming rate and repercussions on people's quality of life.

1.2.2 Use of Global Resources Disregarding Sustainable Ecosystem Management

Human's use and depredation of the planet's natural resources has proceeded without taking a sustainable ecosystem management into account or not been based on such system. At the "Global Environmental Summit" held in Johannesburg, South Africa, the participated countries had generally acknowledged that the global ecosystems' and biosphere's capacity to support anthropogenic activities have been diminished overtime. Despite the application of various measures to sustain the healthy ecosystems, the current patterns of human's global resources consumption and mode of production have impaired the strength of those measures employed (Office of National Economic and Social Development Board : 2008).

The report of "Millennium Ecosystem Assessment", a research project that focuses on ecosystem changes supported by United Nations indicates that the ecosystems that humans are highly subject to have been unwisely used and plundered leading to their irreversible degradation. Moreover, the global genetic resources are decreasing very rapidly and a multitude of related problems and harmful consequences are the results, such as shortage of clean drinking water, natural disasters, waste decomposition etc. All these phenomena reflect the weakening of ecosystems' function. Various studies on ecosystems find that ecosystems of many specific regions are highly vulnerable and deprived of flexibility to replenish and regenerate. A degradation of global resources and environment caused by unwisely consumption of mankind have further reduced potentiality of factors of production and natural food resources and severely affected multitude of the world population's quality of life and survival.

1.2.3 Climate Change and Global Warming

(1) Numerous scientific evidences and findings of academics of science and scientific societies working on climate change point out that the world is now experiencing global warming and climate variation. From the study and analysis the data collected from the measurement of the earth's near – surface temperature and the amount of rainfalls over the periods of past 30 years in different regions of the world indicate that the average global air temperature near the earth's surface increased 0.7 °C per decade. The average increase in global temperature has become one of the crucial causative factors contributing the occurrences of water – related disaster such as flood, landslide, and tropical cyclone in Southeast Asian region. In addition to these, many regions of the world are experiencing coastal land area subsidence results in sea level rise and its expansion deep inland that might inundate the shore – based communities in the near future.

(2) Global warming and climate change can have significant environmental, agricultural, health, economic and social consequences. Examples include : severe water shortage particularly clean drinking water that will affect about one – sixth of the world population ; an extinction of specific plant and animal species particularly the reproductive insects that will increase insect – borne plant diseases; increasing frequency of epidemic outbreak; increasing trend of natural

disaster occurrences such as flood, storm and drought in forms of intensity, frequency and value of damage; reduced yields of food crops that lead to famine and malnutrition etc. These negative repercussions will be deteriorated if the affected regions are dominantly resided by the impoverished people whilst the people living in cold weather region will suffer the extreme heat wave and experience potential loss of life.

(3) Change in the earth's surface due to climate change and global warming can be obviously noticed in cold weather region of the world. The strength of soil structure in this region is weakened by melting underground ice sheet or permafrost. Consequently, construction of buildings and other structures in this area is difficult and requires very costly and complicated design to reinforce their foundations. In case of the coastal area where economic, social and recreational facilities are abundantly concentrated, sea level rises can lead to difficulties for these shore – based communities and can also displace the multitude of shore – based population.

1.2.4 Climate Change and Trend in Thailand

(1) Findings from Thailand's climate model projection based on the global climate change and greenhouse effects scenario, reveal that average temperature during the next 2 – 3 decades will continue to increase 1 – 2 °C nationwide and particularly northeastern and southern regions will experience warmer climate than the rest. This phenomenon can lead to changes in rainfall and seasonal patterns. The areas that generally experience the torrential rain will receive more rainfalls, thus rendering these areas to become more vulnerable and exposed to inundation and flashflood. Increase in the amount of rainfalls can obviously notice in the areas directly influenced by southwest monsoon that has been more intensified such as in the lower southern region provinces and in Chanthaburi and Trat provinces on the eastern coast of Gulf of Thailand. The overall amount of rainfalls in these areas will increase approximately 10 – 15 percent whereas the majority of inland areas in northern, central and northeastern regions will receive less amount of rainfalls leading to persistent drought and substandard or highly limited crop growth or yield production.

(2) Like most countries in the world, Thailand will be inevitably and widely affected by the consequences of global warming and global climate change. Thailand's economic and social development can be hampered, ecosystems deteriorated and its' disaster vulnerability and exposure will increase. The most likely disasters that Thailand expects to encounter more frequently than before are flood and flashflood due to intensified monsoon wind and change of rainfall pattern characterized by shorter period of heavy rains and longer period of diminishing during rainy season. It is estimated that the shore – based communities on the eastern and southern coastal areas of Thailand can be most prone to flashflood due to aforesaid phenomenon. Not only shore – based communities, the inland metropolitan urbans such Bangkok, Haad Yai district of Songkhla province, and Chiang Mai can also be more at risk of flashflood triggered by the same factor but the situation can be worsen due to their insufficient drainage system. Coupled with the high tide spawned by tropical cyclone, the impacts of potential flooding on the coastal areas along Gulf of Thailand from Prachuab Khirikhan province to Surat Thani province can be intensified. In addition, global warming can exacerbate the existing problems of the affected areas such as the vulnerable coastal ecosystems, cultivation area etc., and the frequent outbreak of epidemic and diseases such as malaria, dengue fever and leptospirosis.

1.3 Disaster Management Arrangement in Thailand

Similar to other countries world wide, an occurrence of disaster in Thailand tends to increase both in terms of frequency and intensity due to the changes of environment and disaster condition. Simultaneously, an advance and prosperity that Thailand has achieved through national development have inevitably brought about the undesirable concomitances in form of a variety of disaster which is more complex in nature. Thus a systematic disaster management is essentially required and it must be in harmony with all policies and plans.

1.3.1 Disaster Management under National Civil Defence Plan B. E. 2548 (2005)

Pursuant to The Civil Defence Act B. E. 2522 (1979), the Office of Civil Defence Secretariat was obliged to formulate National Civil Defence Plan every three years. The aforesaid plan had laid out direction and policies for a country's disaster management. The substantial and multi – faceted essences of such policies encompass and bring to the fore:

(1) The prevention - oriented policy through taking proactive approach to reduce the impacts of disaster through :

- Developing disaster warning system at all levels, from community to national level.
- Putting in place the main, auxiliary and standby communication systems.
- Developing disaster management related human resource.

(2) The focus on the unity of disaster management through constituting the unitary incident command system to ensure uninterrupted commanding.

(3) The focus on the application of the participatory approach which provides the window of opportunity for all stakeholders from public sector, public enterprises, private sector, foundation/volunteer and the general public to involve.

(4) The focus on creating and strengthening community awareness and preparedness, arranging community disaster education, and enhancing its capacity to deal with disaster prior to the arrival of outside assistance.

Nevertheless, Thailand's disaster management system based on the guidelines stipulated in National Civil Defence Plan B. E. 2548 (2005) did not entirely cover all aspects of disaster management. The instances are, inter alia, :

(A) Lack of clear – cut operating procedure and unity in disaster management at all levels, from the national to provincial and local level. The key government officials are not sufficiently empowered to command and issue the order to all agencies involved, which leads to inefficient coordination and integration of resources for disaster operations.

(B) Shortage of budget, personnel and appropriate basic equipments required for disaster management activities as well as specific equipments and specialists requiring for dealing with particular types of disaster.

(C) Lack of continuous research and development on disaster behavior and its grass – root cause, the management problem and solutions. In addition, it also lacks planning for both policy – makers and actors.

(D) Lack of comprehensive joint disaster exercise among agencies concerned.

1.3.2 Disaster Prevention and Mitigation Act B. E. 2550 (2007)

The government has acknowledged the importance of disaster management and subsequently enacted Disaster Prevention and Mitigation Act B. E. 2550 (2007) as the basic legal mechanism for a current disaster management in Thailand. The aforesaid Act has come into force since 6 November, 2007, concurrently Civil Defence Act B. E. 2522 (1979) and Fire Prevention and Suppression Act B. E. 2542 (1999) had been abolished. All this, to be in compliance with the public administration reform under “Government Ministry and Department Restructuring Act B. E. 2545 (2002)” and Ministerial Regulation on Compartmentalization, Department of Disaster Prevention and Mitigation has been established and tasked to prevent, and mitigate all types of disaster including accidents as well as post disaster rehabilitation. Substantial essences of the Disaster Prevention and Mitigation Act B. E. 2550 (2007) are concluded as follows :

(1) Scope of disaster management activity has been extended to encompass all types of disaster along with clear – cut definitions of disaster and security threat (Section 4).

(2) Designating National Disaster Prevention and Mitigation Committee to lay down policy for formulating National Disaster Prevention and Mitigation Plan. The committee comprises 23 members and chaired by the Prime Minister or the Deputy Prime Minister entrusted by the Prime Minister (Section 6 and 7).

(3) Designating Department of Disaster Prevention and Mitigation as national focal point to carry out disaster management activities of the country (Section 11).

(4) Formulation of three disaster prevention and mitigation plans viz; National Disaster Prevention and Mitigation Plan, Provincial Disaster Prevention an Mitigation Plan, and Bangkok Metropolitan Disaster Prevention and Mitigation Plan (Section 11, 12, 16, 17, 33 and 34).

(5) Clearly identifying authorized persons and their disaster management tasks at all levels as tabulated in chart 1.1.

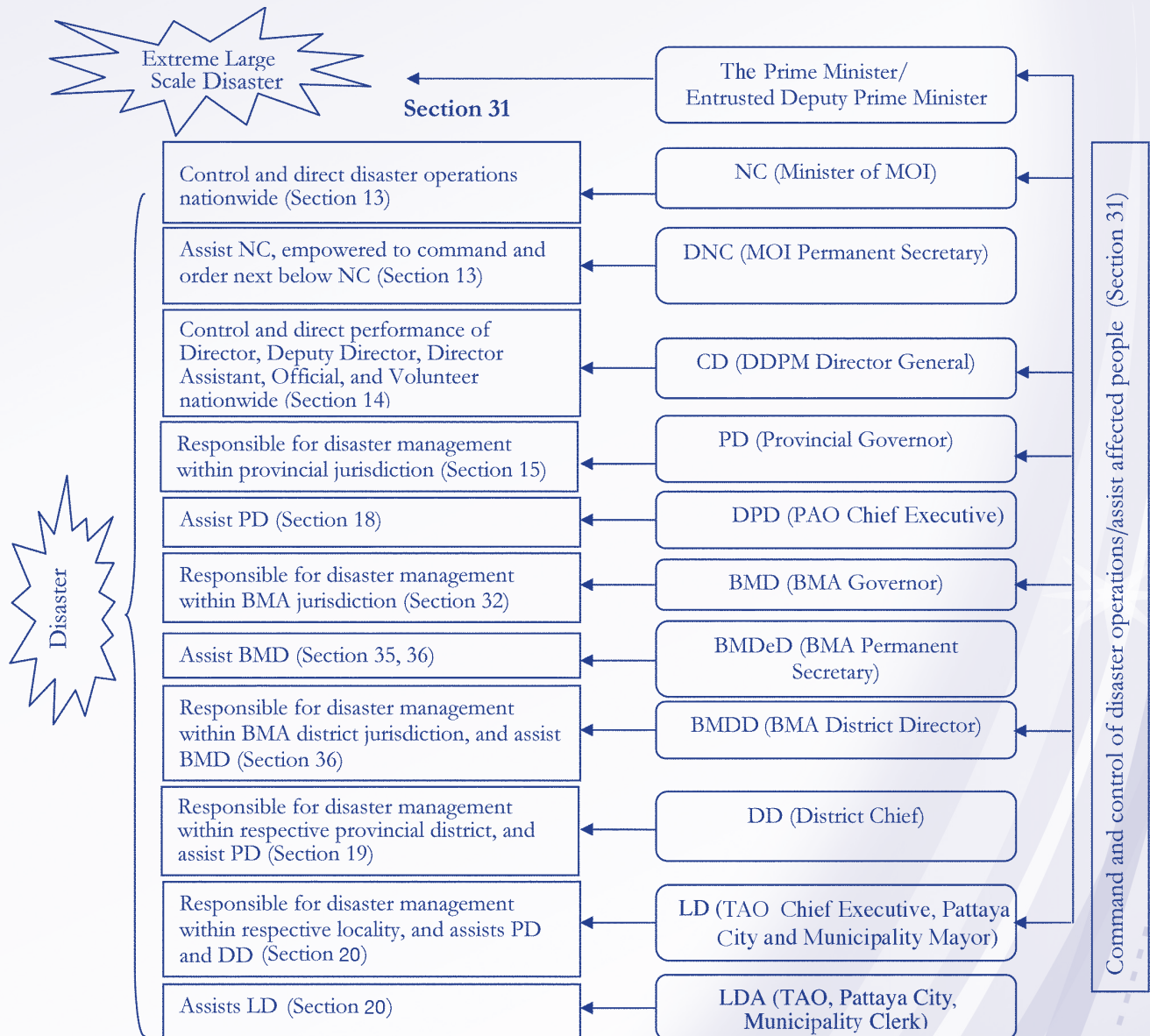


Chart 1.1 Authorized Person under Disaster Prevention and Mitigation Act B.E. 2550 (2007)

1.3.3 Thailand's Current Disaster Management Arrangement

Disaster Prevention and Mitigation Act B. E. 2550 (2007) has explicitly prescribed and explicated disaster management arrangement that encompasses the types of disaster, policy guideline, operating procedure as well as coordinating procedure as illustrated in chart 1.2 :

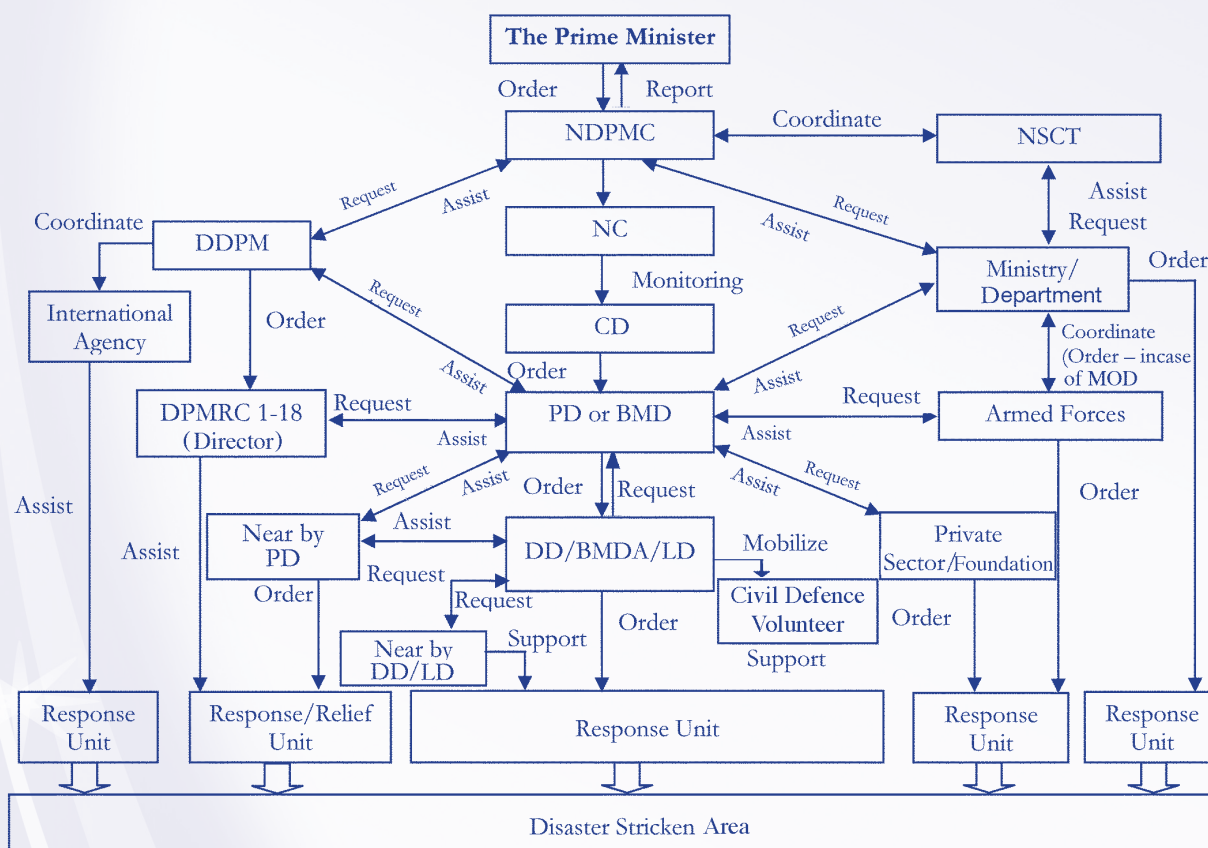


Chart 1.2 Current Disaster Management Arrangement in Thailand

(1) The Prime Minister is a chairman of National Disaster Prevention and Mitigation Committee. In case of extreme large – scale disaster the Prime Minister has been empowered to command National Commander, Director, state agency, and local administration organization to handle disaster situation.

(2) National Disaster Prevention and Mitigation Committee, which is chaired by the Prime Minister or the entrusted Deputy Prime Minister is obligated to lay down a policy for the formulation of National Disaster Prevention Mitigation Plan and integrate the development of disaster management system. Department of Disaster Prevention and Mitigation as the Secretariat of National Disaster Prevention and Mitigation Committee has been tasked to formulate the aforesaid plan in conjunction with relevant government agencies including the representatives from local administration organization.

(3) The National Safety Council of Thailand is the main body responsible for formulating the accident – related policy and developing safety mind. Department of Disaster Prevention and Mitigation as well functions as the Secretariat of National Safety Council of Thailand.

(4) All disaster operations related command, order and management at national, provincial/ Bangkok Metropolis and local levels must proceed according to the Act as illustrated in chart 1.1

1.4 Disaster Seasoning Calendar

The occurrences of natural disaster in Thailand are subject to seasonal cycle such as cold spell, drought, flood, landslide and storm whilst man – made disasters such as road traffic accident, and fire are year – round incidents. In addition, special traditional events and festivals such as Loy Krathong, New Year, Songkran etc., are crucial contributing factors to exacerbate situation. Yet, all agencies concerned have sufficient time to prepare countermeasures to prevent the preventable loss from these potential man – made disasters as illustrated in table 1.16.

Table 1.16 Disaster Seasoning Calendar

Type of Disaster	Disaster/Event	Periods of Time (month)
Natural	<ol style="list-style-type: none"> 1. Cold spell 2. Drought 3. Flood 4. Landslide 5. Tropical Cyclone 6. Earthquake 7. Storm surge 	<p>October – January</p> <p>January – May</p> <p>October – November and June – September</p> <p>October – November and June – September</p> <p>March – May</p> <p>Year – round surveillance</p> <p>October – November</p>
Natural/human induced	<ol style="list-style-type: none"> 1. Forest fire 	<p>Year – round surveillance</p> <p>Northern region April – May</p> <p>Northeastern region November – May</p> <p>Central region</p> <p>Eastern region } March - May</p> <p>Southern region }</p>
Human - induced	<ol style="list-style-type: none"> 1. Road traffic accident 2. Chemical and hazardous material incident 3. Fire 	<p>Year – round surveillance</p> <p>Year – round surveillance</p> <p>Year – round surveillance</p>
Festival or event related disaster such as fire, accident etc.	<ol style="list-style-type: none"> 1. Loy Krathong festival 2. New Year celebration 3. Children Day Celebration 4. Chinese New Year 5. Making Offerings to Ancestor Chinese Festival 6. Songkran festival 	<p>November</p> <p>December – January</p> <p>Second week of January</p> <p>Either January or February (depends on lunar year)</p> <p>First week of April</p> <p>April</p>

Source : Implementation Handbook 2009, Department of Disaster Prevention and Mitigation

Chapter 2

Policy, Vision, Objectives, and Target

2.1 Terminology

2.1.1 Disaster : under Disaster Prevention and Mitigation Act B. E. 2550 (2007) this term refers to fire, storm, flood, drought, human epidemic, animal epidemic, aquatic animal epidemic, and plant epidemic. In addition it as well refers to other hazards either natural or human – induced, accident, air threat, and sabotage or any cause that poses the threat to life and body of the people, or inflict damage on property of the people or of the State.

2.1.2 Prevention : refers to those activities or measures to provide outright avoidance and reduction of the adverse impacts of disasters and as well refers to any activity and measure which are aimed at preventing an occurrence of a disaster and reducing disaster risks that may lead to the loss of lives and properties of the people and a State.

2.1.3 Mitigation : refers to anticipated structural and non – structural measures under taken to limit the adverse impact of disasters.

2.1.4 Preparedness : refers to activities and measures taken in advance to ensure effective response to the impact of disaster, including the issuance of timely and effective early warnings and the temporary removal of people and property from a threatened location.

2.1.5 Disaster Emergency Management : refers to the organization, management of resources and responsibilities for dealing with all aspects of emergencies, in particularly preparedness, response and rehabilitation.

2.1.6 Rehabilitation : refers to a process by which the disrupted livelihood and living condition, physical and mental condition of the people including economic and social infrastructures in the affected areas are restored and reconstructed to their proper functioning following a disaster as soon as possible.

2.1.7 State Agency : refers to any government agency, public enterprise, public corporations and other agencies of State, excluding local administration organization.

2.1.8 Local Administration Organization : refers to tambon administration organization, municipality, provincial administration organization, Pattaya City, Bangkok Metropolitan Administration and other local administration organization established by particular laws.

2.1.9 Local Administration Organization of Specified Locality : refers to tambon administration organization, municipality, Pattaya city, and other local administration organization, established by particular law, excluding provincial administration organization and Bangkok Metropolitan Administration.

2.1.10 Local Command Center : refers to provincial, provincial district, Pattaya City, municipality, tambon administration organization. Bangkok Metropolitan and Bangkok Metropolitan district command centers.

2.1.11 Local Director : refers to Provincial Director, Bangkok Metropolitan Director and Deputy and Assistant Directors, District Director, specified Local Director and Assistant Director.

2.2 National Disaster Prevention and Mitigation Policy

At the first meeting of National Disaster Prevention and Mitigation Committee on 2 February, 2009, a forum ratified and adopted the national disaster prevention and mitigation policy which encompassed five crucial areas of disaster management as follows :

2.2.1 Develop and promote more effective disaster prevention and reduction of its adverse impact through an application of economic self – sufficiency philosophy which emphasizes the moderate approach, rationality, limited adequacy, and efficient self – immunity as a norm to achieve sustainable solution to disaster related problem and harmony with geo – social condition.

2.2.2 Develop and promote disaster preparedness system to enable all sectors of the society to integratedly and efficiently cope with seasonal and sudden disasters through increasing the role and involvement of all stakeholders.

2.2.3 Develop and strengthen disaster emergency management capacity of all sectors concerned to ensure rapid, timely and integrated provision of assistance to affected people.

2.2.4 Develop and strengthen rehabilitation and recovery system so as to meet the needs of affected people on rapid, thorough and equitable basis.

2.2.5 Develop and strengthen disaster management related linkage system between network organization both at national and interntaional levels.

2.3 Vision

Being the principal plan for national disaster management that can minimize disaster risks and losses of lives and properties of people and State property to the extent equivalent to international standard.

2.4 Objectives

2.4.1 Initiate framework and guidelines for all governmental and non governmental agencies at all levels to undertake disaster management activities before, during or after the occurrence of a disaster in systematic and integrated manner.

2.4.2 Systematize the operating procedure and preparedness system in all aspects of all agencies concerned nationwide to deal with of all phases of disaster management cycle.

2.4.3 Develop and enhance the capacity of all agencies concerned at all levels in disaster preparation, prevention, response and mitigation, and rehabilitation to ensure the efficiency and efficacy of implementation.

2.5 Target

2.5.1 All sectors of the society participate and cooperate in all phases of disaster management cycle.

2.5.2 Being well – prepared for resources availability such as budget, personnel, and mechanical equipments required for disaster management activities.

2.5.3 Create public awareness and safety mind to collectively foster the development of safety culture in Thai society.

2.5.4 Affected people are able to receive relief assistance and the affected areas are rehabilitated and restored on the thorough and equitable basis.

2.6 Scope of Disaster

Disaster Prevention and Mitigation Act B. E. 2550 (2007) defines “disaster” as fire, storm, flood, drought, human epidemic, animal epidemic, aquatic animal epidemic, and plant disease and pest; including other hazards which affects the public, be it, induced by nature or human, accidents or any other incident which are harmful to life, or body of people or inflict the damage on property of people or of State, and as well referring to air threat and sabotage.

“Air threat” refers to harmful menace induced by air raid.

“Sabotage” refers to any deliberate act aims at destroying a property of people or of State or the public utility facilities or at disrupting, impeding and delaying the functioning system, including causing bodily harm to a person which will trigger the national political, economic and social agitation with an intent to damage the stability of a State.

National Disaster Prevention and Mitigation Plan widens scope of disaster operations to cover :

2.6.1 Fourteen disasters, viz :

- 1) Flood and landslide
- 2) Tropical cyclone
- 3) Fire
- 4) Chemical and hazardous materials
- 5) Transport hazard
- 6) Drought
- 7) Cold spell

- 8) Forest fire and haze
- 9) Earthquake and building collapse
- 10) Tsunami
- 11) Human epidemic
- 12) Plant disease and pest
- 13) Animal and aquatic animal epidemics
- 14) Information technology threat

2.6.2 Four security threats, viz.,

- 1) Sabotage
- 2) Mine and landmine threat
- 3) Air threat
- 4) Protest and riot

2.7 Disaster Severity Scale

Disaster severity scale is classified into 4 levels for the useful purpose of designating the level of responsible Director or Commander as tabulated in table 2.1

Table 2.1 Compatibility between Disaster Severity Scale and Level of Director or Commander in Charge

Level	Scale	Person in Charge of Management
1	Small – scale disaster	Local Director, District Director, and/or Bangkok Metropolitan Director Assistant are capable of containing the situation and suppressing the incident
2	Medium – scale disaster	In case where disaster situation is beyond capacity of the above mentioned Director, Provincial Director and/or Bangkok Metropolitan Director are obliged to intervene.
3	Large – scale disaster with severe and widespread impact or required specialist or specific equipment	In case where situation is beyond the capacity of the second level Director, Central Director and/or National Commander are obliged to intervene.
4	Large – scale disaster with catastrophic impact	The Prime Minister or Deputy Prime Minister entrusted will be in charge as the commander

3.1 Disaster Management Strategy

The stipulation of disaster strategy that is capable of fulfilling objectives and target to increase the efficiency in all phases of national disaster management, requires to take the dynamic and sequence of disaster management cycle into consideration. Consequently, the better protection of life and property of the people and of the government that is prescribed as the basic principle of National Disaster Prevention and Mitigation Plan will be achieved. The disaster management cycle by which the aforesaid strategy based on is illustrated in chart 3.1 and the strategy is categorized as follows :

- First Strategy** : Disaster Prevention and Impact Reduction
- Second Strategy** : Preparedness Arrangement
- Third Strategy** : Disaster Emergency Management
- Fourth Strategy** : Post – disaster Management

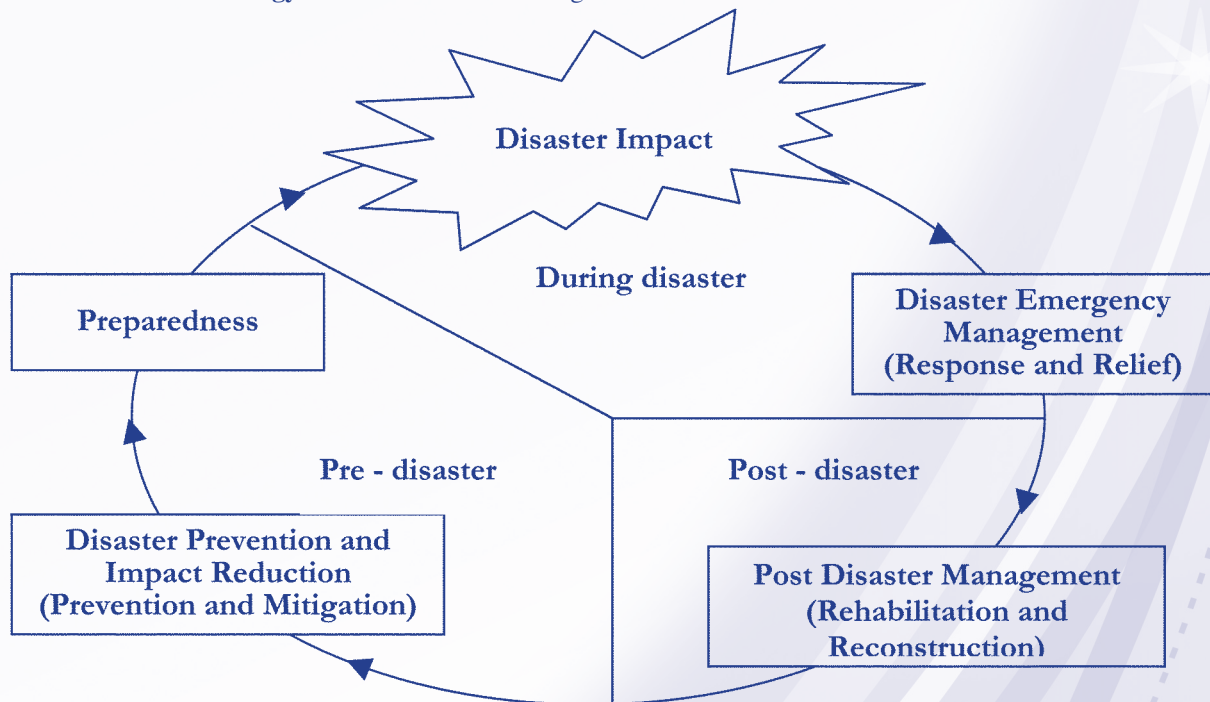


Chart 3.1 Disaster Management Cycle

Source : ASEAN Disaster Risk Management Course; United Nation Office for the Coordination of Humanitarian Affairs (UNOCHA)

3.1.1 First Strategy (Disaster Prevention and Impact Reduction) aims at adjusting and improving disaster management system to facilitate capacity building and preparedness beforehand in order to reduce disaster severity and adverse impacts on the people at risk.

(1) Purposes

- (1.1) Prevent disaster and reduce disaster impacts.
- (1.2) Reduce disaster risk.

(2) Disaster prevention and mitigation measures include :

(2.1) Development of disaster management information system to facilitate the creation of advanced disaster database system capable of connecting to database servers of other agencies concerned at local and national as well as international levels.

(2.2) Safeguarding areas at risk according to the level of disaster risk of the respective areas through the application of risk assessment and risk mapping as identified in this national plan.

(2.3) Development of disaster main and action plans through the formulation of master and action plans for each type of disaster.

(2.4) Promoting disaster knowledge, perception and awareness of the general public including self – protection techniques through appropriate learning process.

(2.5) Application of structural measure to prevent disaster.

(2.6) Application of natural approach such as ecosystem restoration to prevent disaster.

(2.7) Undertaking systematic research and development on all types of hazard to achieve the stock of knowledge of disaster risk reduction and disaster management techniques.

(2.8) Initiating guidelines and measures for disaster insurance to transfer disaster risk.

(3) Key Performance Index

(3.1) Linkage of disaster information network system between local, national and international levels within 2014.

(3.2) Creation and improvement of risk maps for all types of disaster annually.

(3.3) Development and improvement of 5 disaster related training course curricula annually.

(3.4) Construction of at least 5 structural projects in each province for the purpose of disaster prevention each fiscal year.

(3.5) Rehabilitation of at least 5 water resources in each province for the purpose of flood and drought prevention and mitigation each fiscal year.

(3.6) Undertaking at least two topics of research and development on disaster prevention and mitigation each year.

(3.7) Completion of disaster risk transfer pioneer project within 2014.

3.1.2 Second Strategy (Preparedness) aims at developing disaster preparedness system and guidelines to deal with potential disaster and to relieve the government's burden of providing disaster relief and assistance after the occurrence of a disaster.

(1) Purposes

Being well – prepared to address a disaster in a timely and efficient manner.

(2) Preparedness procedure comprises 8 measures viz:

(2.1) Formulation of disaster prevention and mitigation plan at all levels, from national to community level.

(2.2) Development of forecasting and warning systems at national and local levels.

(2.3) Strengthening the capacity of communication system.

(2.4) Conducting disaster exercise at all levels.

(2.5) Preparation and stockpiling of basic necessities for distribution to the affected people.

(2.6) Preparation of resources and energy supply to support disaster operations.

(2.7) Preparation of disaster management personnel.

(2.8) Strengthening disaster management preparedness of local administration organization.

(3) Key Performance Index

(3.1) 30% of total number of community will have their own disaster prevention and mitigation plans in 2007 and the number of the aforesaid community will increase by 10% per annum.

(3.2) 100% of local administration organization will be equipped with warning information and signals receiving system in 2014.

(3.3) 100% of local administration organization will conduct disaster exercise within 2014.

(3.4) At least 50% of disaster management related equipment items prescribed in equipment procurement plan of Department of Disaster Prevention and Mitigation will be purchased within 2014.

3.1.3 Third Strategy (Disaster emergency management : Response and Relief) aims at being well – prepared to respond to disaster situation and its immediate impacts rapidly and efficiently. Additionally, to facilitate the systematic and orderly disaster emergency operations and to minimize the losses of life and material.

(1) Purpose

The effective disaster emergency management and minimization of loss.

(2) Disaster emergency management measures include :

(2.1) Establishment of incident command center at all levels.

(2.2) Inter – linkage of communication systems of all agencies to optimize the utilization of the system in the face of disaster.

(2.3) Synergizing interagency efforts to assist affected people and contain the situation through highlighting search and rescue operations including setting up disaster victims data center and emergency maintenance unit.

(2.4) Provision of medical treatment to the affected people by arranging the efficient emergency medical service system.

(2.5) Management of dead body by arranging the place and appliances required for keeping and conducting identification.

(2.6) Launching public relations campaign by setting up media center and publicizing accurate and timely information concerning disaster situation for periodical distribution to the general public in order to reduce their panic.

(3) Key Performance Index

(3.1) At least 60% of each disaster stricken local authority sets up command center within 2011, 80% within 2012, 90% within 2013, and 100% within 2014.

(3.2) 85% of communication systems of all concerned agencies are interlinked and serviceable in the face of disaster within 2011, 90% within 2012, 95% within 2013, and 100% within 2014.

(3.3) At least 85% of the affected people will receive the preliminary relief assistance within the first 24 hours after the onset of disaster within 2011, 90% within 2012, 95% within 2013, and 100% within 2014.

(3.4) 60% of the people will receive the accurate information concerning disaster situation within 2011, 70% within 2012, 80% within 2013, and 90% within 2014.

3.1.4 Fourth Strategy (Post - disaster Management) aims at ensuring the provision of rapid, efficient and continuous relief assistance and support to help rebuild the normal livelihoods of the affected people, as well as restoring the affected areas return to normal as soon as possible.

(1) Purposes

(1.1) The affected people will be equitably assisted and supported according to their needs and able to resume normal livelihoods as soon as possible.

(1.2) The affected area will be restored and rehabilitated to return to normal as soon as possible.

(2) Post - disaster management measures include :

(2.1) Provision of disaster relief and assistance to affected people.

(2.2) Rehabilitation of affected people, livestock and wildlife.

(2.3) Restoration of damaged public utility and facilities.

(2.4) Restoration of damaged basic infrastructure facilities.

(2.5) Improvement of environmental condition in affected area.

(2.6) Preparation of damage report and for monitoring and evaluation of relief and rehabilitation operations.

(2.7) Coordinating with international organization to request for disaster rehabilitation assistance.

(2.8) Learning lessons from the past disaster.

(3) Key performance Index

(3.1) 80% of affected people will receive satisfactory relief assistance within 2011, 85% within 2012, 90% within 2013 and 95% within 2014.

(3.2) Damaged basic infrastructure facilities will be restored back to their normal condition or building back better according to prescribed criteria in each budget year.

(3.3) At least 2 lessons learned reports will be produced within 2011, 3 reports within 2012, 4 reports within 2013, and 5 reports within 2014.

3.2 Disaster Programme and Measure

All main activities or programmes and measures of four strategies are summarized in the table below:

Table 3.1 Conclusion of Measure and Main Activity in National Disaster Prevention and Mitigation Plan

No.	Strategy	Measure	Main Activity
1	Disaster prevention and impact reduction	8	51
2	Preparedness	8	34
3	Disaster emergency management	6	19
4	Post - disaster management	8	19
Total		30	123

Detail of disaster prevention and mitigation measures is tabulated in Appendix

3.3 Budget Sources

The budget required for interpreting the aforesaid measures and main activities into practice can be drawn from the following sources.

3.3.1 Budget for implementing activities under the first and the second strategies and for preparation to implement activities under third strategy, can be drawn from the following sources:

(1) Ministerial/Departmental Regular Budget : Each fiscal year, the concerned government agencies will set up the annual budget required for implementation of their disaster management activities corresponding to the measures prescribed in National Disaster Prevention and Mitigation Plan. To obtain the aforesaid budget each concerned government agency is required to formulate its action plans along with the required budget by taking the programmes and activities under the national plan into account, then incorporates these action plans into “4 – Year Public Service Implementation Plan” as well as the annual implementation plan of the respective agency for further submitting and requesting the annual budget from the government.

(2) Provincial and Provincial Cluster Budget : Under the Provincial and Integrated Provincial Cluster Administration Royal Decree B. E. 2551 (2008), the provincial government and provincial cluster are entitled to directly request for the budget from government. To obtain the budget, they are required to formulate Provincial Development Plan, Provincial Cluster Development Plan, Provincial Annual Public Service Implementation Plan, Provincial Cluster Annual Public Service Implementation Plan together with preparing budget proposals according to the relevant budget

procedure laws. This entitlement aims at promoting their intervention and responsibility in disaster management in their respective jurisdictions as of intentionally prescribed under Disaster Prevention and Mitigation Act B. E. 2550 (2007). Through this window of opportunity, the provincial government and provincial cluster are able to develop budget proposals and submit to request for budget for implementing disaster management activities within the areas under responsibility.

(3) Local Administration Organization Budget : Disaster Prevention and Mitigation Act B. E. 2550 (2007), Section 32 appoints Bangkok Metropolitan Governor as Bangkok Director responsible for disaster operations within its jurisdiction. Besides, in Bangkok Metropolitan Disaster Prevention and Mitigation Plan formulated under the aforesaid Act, Section 33 Section 32 (1) has prescribed the roles of Bangkok Metropolitan Administration in disaster management.

Pursuant to Article 20 under Disaster Prevention and Mitigation Act B. E. 2550 (2007), appoints local executives of local administration organization in locality of all types (municipality, tambon administration organization, and Pattaya City) as Local Directors responsible for disaster management activities within their respective jurisdiction. Consequently, disaster preparedness, prevention, mitigation and rehabilitation efforts within the respective jurisdiction are directly under their responsibility. In addition, this Act designates chief executive of provincial administration organization as Provincial Director Assistant whose tasks are, to assist provincial governor as Provincial Director in disaster responsibilities and to perform other duties as Provincial Director assigned.

Henceforth, all the above – mentioned local administration organizations, in conjunction with provincial administration organization are required to provide financial support to communities under responsibility to enhance local capacity, develop local preparedness and resilience and for implementing or disaster management related activities. In addition, in Provincial Disaster Prevention and Mitigation Plan formulated under this Act, has prescribed requirements for local administration organization to procure equipments and vehicles for disaster operations purpose. Subsequently, local executives should acknowledge the importance of disaster management activities and arrange to provide financial support.

3.3.2 Budget for implementation activities under the third and the fourth strategies : In addition to the sources of budget mentioned under 3.3.1, the followings are other two additional budget sources available for implementing the activities under the third and the fourth strategies :

(1) Disaster Relief Contingency Fund

Due to unexpected and enormous loss of lives and materials imposed by disaster, the government realizes the importance and necessity to provide immediate relief assistance to affected people. Subsequently, the government has issued Ministry of Finance Regulations on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum for all government agencies concerned to base on in spending this fund to alleviate and mitigate the facing hardship of affected people as appropriate and necessary prior to receiving annual budget.

(2) Central Fund

This category of budget is specially approved and allocated for disaster rehabilitation and recovery purposes such as repairing damaged basic infrastructure facilities, relocating and building houses for affected people, restoring their livelihood, rehabilitating their mental health etc. The fund will be granted to the eligible rehabilitation projects proposed by the stricken provincial government. The aforesaid projects precedently require the acknowledgement of District Disaster Relief Committee chaired by district chief and Provincial Disaster Relief Committee chaired by provincial governor before submission. The utilization of budget availed from central fund must be in conformity with rules prescribed by National Disaster Prevention and Mitigation Committee.

Chapter 4

Disaster Prevention and Impact Reduction

Disaster prevention and impact reduction strategy is one of the principal strategies of proactive disaster management. The existing preparedness and precautionary protective measures to address the potential problems and obstacles prior to the occurrence of a disaster will enhance and strengthen the capacity in reducing the loss of lives and properties of the people and State property. This strategy can be the pillar to support the national security and assure the general public of their safety.

4.1 Objectives

To prepare and acquire effective and efficient disaster management system to handle disaster situation.

4.2 Guiding Principle for Disaster Management

4.2.1 Identification of Disaster Policy

National Disaster Prevention and Mitigation Committee is Thailand's main body responsible for identifying national disaster policy, integrating the development of disaster management system and formulating National Disaster Prevention and Mitigation Plan. Whilst National Commander, Central Director, and Director in the locality are obliged to interpret the policy into practice.

4.2.2 Implementing Mechanisms

(1) National Command Headquarters is responsible for overall national disaster management and performs designated functions which include directing, controlling, overseeing, commanding and supervising emergency operations center at all levels as well as coordinating with all public and private agencies concerned.

(2) Local Command Center is responsible for disaster management within the respective locality jurisdiction which includes directing, controlling, overseeing, commanding and implementing various disaster management activities in all phases of disaster management cycle. Disaster management activities at this level will be carried out according to the capacity of local entity and if the situation seemed to be beyond local entity's capacity to cope, the foresaid center is entitled to request for the assistance from the adjacent local entity.

4.2.3 Other Stakeholders' Support

Private entities, volunteer, charitable foundation and the general public are required to provide support and cooperation in disaster operations in the forms of equipments, tools, appliances and personnel upon the request and command of National Commander, Central Director and other Directors in the locality for such a support.

4.2.4 Military Joint Operations Guideline

(1) Disaster management activities conducted within military area or concerning with military affairs or personnel or property will be conducted conforming to the written joint – agreement between Provincial Director or Bangkok Metropolitan Director and the military commandant of the relevant military area, except the case of being under the command of the Prime Minister or the Deputy Prime Minister whom the Prime Minister entrusted.

(2) In case a disaster occurs outside military area but concerns with military affairs or personnel or property, the case will be dealt according to the written joint – agreement.

4.2.5 Charitable Organization Joint Operations Guideline

(1) Charitable organization is required to appoint its focal point to coordinate with Emergency Operations Center established at each level on 24 – hour basis as well as preparing the relevant resources for immediate mobilization.

(2) In case when the charitable organization is contacted by the following government agencies in charge, Disaster Prevention and Mitigation Provincial Office, Provincial Police, municipality and tambon administration organization, the aforesaid charitable organization should dispatch its mobile unit to the affected area in short notice. Upon arrival, the aforesaid mobile unit has to report for duty to Emergency Operations Center or the incident commander.

(3) When a disaster occurs and the charitable organization's staffs are the first team to access the affected area, they are obliged to seal off the affected area to prevent the unauthorized persons' entering. Simultaneously, the aforesaid staffs must immediately notify the government agency or the government official in charge to proceed to get the situation under control.

All this, the government agency in charge is obliged to report disaster situation to Emergency Operations Center and notify agencies concerned to provide support and assistance in addressing disaster, as well as disseminating disaster situation information to the general public.

4.2.6 International Disaster Assistance Guideline

Ministry of Foreign Affairs is authorized as the principal government mechanism to request for international disaster assistance through the following procedures :

(1) In case of necessity to receive international assistance in disaster prevention and mitigation, Department of Disaster Prevention and Mitigation will notify Ministry of Foreign Affairs to request for such an assistance from foreign government, international organization or foreign agency.

(2) In case of foreign government, international organization or other foreign agency offer disaster assistance to Thailand, Ministry of Foreign Affairs will verify the aforesaid disaster assistance and notify Department of Disaster Prevention and Mitigation for further in – country coordination and support.

(3) Ministry of Foreign Affairs in conjunction with Department of Disaster Prevention and Mitigation, Immigration Office, Custom Department and other agencies concerned will consider the measure to facilitate the entry of the donor international organization or foreign agency.

(4) In case of the unanticipated arrival or notification on arrival of the donored international organization or foreign agency, the Immigration Office will seek into the details and notify Ministry of Foreign Affairs, Custom Department and Disaster Prevention and Mitigation for further proceeding.

(5) In case of the international organization of which the representative office situated in Thailand can provide disaster assistance in forms of technical know – how, equipment, appliance and other relevant matters by directly contact with the government agency which is in charge of handling that disaster. Subsequently, the aforesaid government agency is obliged to notify Department of Disaster Prevention and Mitigation and Ministry of Foreign Affairs for information.

(6) In case of death of any foreign national, Ministry of Foreign Affairs is in charge of coordinating with the foreign embassies for further proceeding.

4.3 Implementing Mechanism Arrangement

The following implementing mechanisms will be established to undertake disaster management responsibilities.

4.3.1 National Command Headquarters

The power and duty of National Command Headquarters are to direct, control, oversee, supervise, and coordinate disaster operations undertaken by Emergency Operations Centers of all levels. The Headquarters is headed by the Minister of Ministry of Interior as National Commander and other functioning staffs which comprise permanent secretary for Ministry of Interior as the Deputy National Commander, director general of Department of Disaster Prevention and Mitigation as the Central Director, the representatives from every government agency, public enterprise and the designated private entity. The main administration staffs of the headquarters will be the personnel from Department of Disaster Prevention and Mitigation.

4.3.2 Local Command Center

This category of center includes :

(1) Tambon Administration Organization Command Center is headed by chief executive of the TAO as the Director, other functioning staffs of the center comprise TAO clerk as the Deputy Local Director, sub - district headman, village headman and the representatives from private sector located within tambon jurisdiction. This first response mechanism is responsible for disaster operations within tambon jurisdiction.

(2) Municipality Command Center is headed by the mayor as Director, other functioning staffs of the center comprise municipal clerk as the Deputy Director, chiefs of different divisions of municipality and the designated private sector's representatives. This first response mechanism is responsible for disaster operations within its jurisdiction.

(3) Pattaya City Command Center is headed by Pattaya City mayor as the Director, other functioning staffs of this center comprise Pattaya City clerk as the Deputy Director, chiefs of different divisions of Pattaya City office and the designated private sector's representatives. This first response mechanism is responsible for disaster prevention and mitigation operations within its jurisdiction.

(4) District Command Center is headed by district chief as the District Director, other functioning staffs of this center comprise district clerk, chiefs of different divisions of district office, representatives of the local administration organization and private sector located in district jurisdiction. The main function of this center is to carry out disaster operations within the district jurisdiction and to assist the provincial disaster operations.

(5) Bangkok Metropolitan District Command Center is headed by each Bangkok Metropolitan District Director as the Bangkok Metropolitan Assistant Director. This center is responsible for conducting disaster operations within district jurisdiction as well as assisting Bangkok Metropolitan Director. All officials of divisions and sectors of Bangkok Metropolitan district office and the representatives from public sector within its jurisdiction are the functioning staffs of this center. In addition, this center is obliged to assist Bangkok Metropolitan Administration in managing a disaster within Bangkok Metropolitan jurisdiction.

(6) Provincial Command Center is headed by provincial governor as the Provincial Director, and deputy provincial governor whom entrusted by provincial governor including chief executive of provincial administration organization are Deputy Provincial Directors. The functioning staffs comprise the chiefs of different government offices located in the province and the representatives from designated public and private enterprises.

(7) Bangkok Metropolitan Command Center is headed by Bangkok Metropolitan governor as the Bangkok Metropolitan Director, and a permanent secretary for Bangkok Metropolitan Administration as the Bangkok Metropolitan Deputy Director. This center is responsible for disaster operations within Bangkok Metropolitan jurisdiction.

Tasks of Local Command Center

(1) Direct, control, perform and coordinate disaster management activities within the area under responsibility.

(2) Provide support to adjacent and other Command Centers upon request.

(3) Coordinate with government agencies and other relevant public enterprises located in the area under responsibility including private sector for cooperation on disaster management.

When a disaster occurs or is imminent in area under responsibility, the respective Command Center is obliged to establish Emergency Operations Center to provide assistance to the people in short notice.

The structure of implementing mechanism arrangement is illustrated in chart 4.1

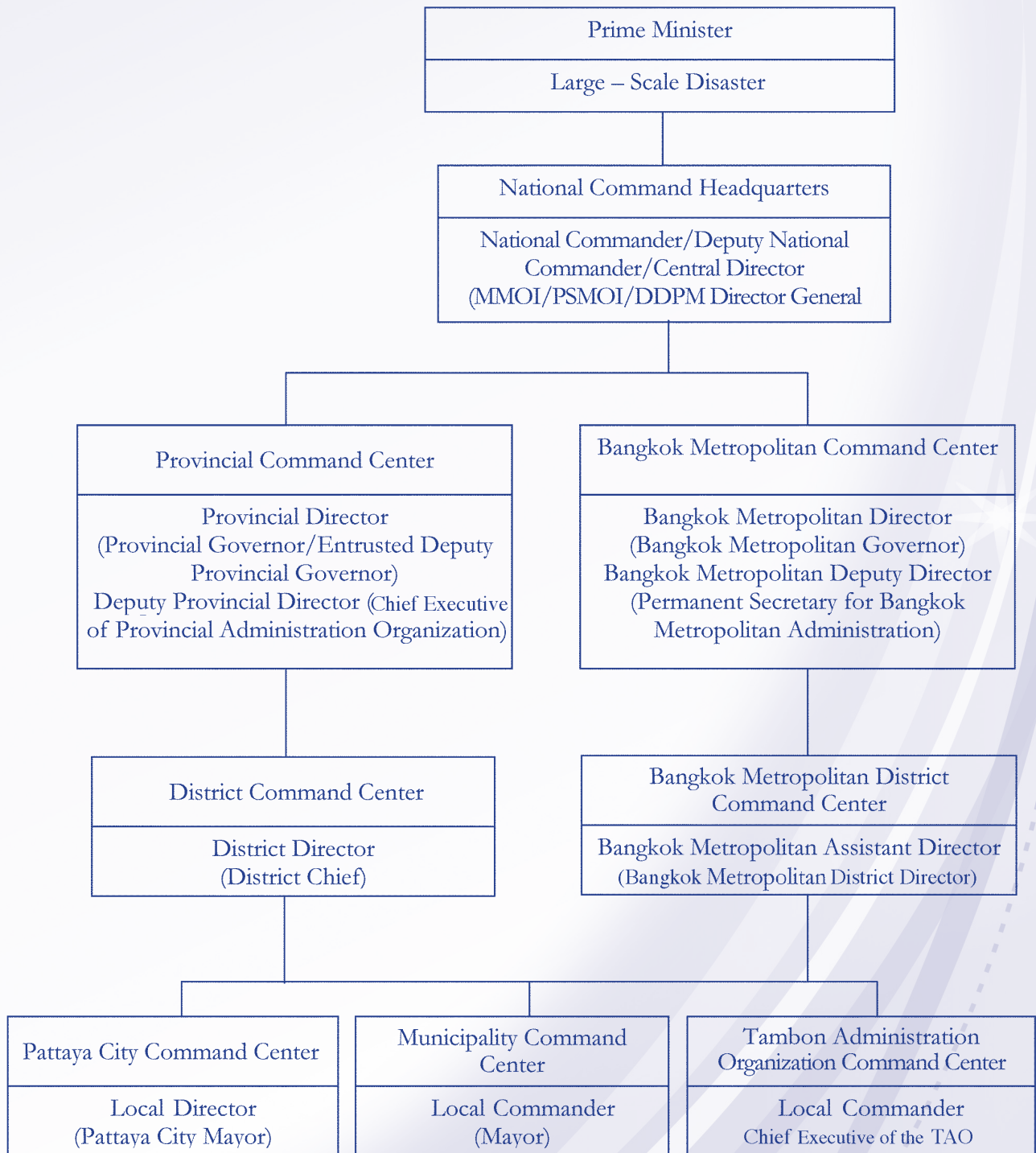


Chart 4.1 Implementing Mechanism Arrangement

4.3.3 Organization of Implementing Mechanism

(1) The organization of National Command Headquarters and Local Command Center is composed of six sections as illustrated in chart 4.2 namely :

- (1.1) Administration Section
- (1.2) Planning and Project Section
- (1.3) Prevention and Operations Section
- (1.4) Rehabilitation and Recovery Section
- (1.5) Public Relations Section
- (1.6) Communication Section



Chart 4.2 Organization Structure of Implementing Mechanism

(2) Tasks of each section :

(2.1) Administration Section is responsible for directing, controlling, and overseeing to ensure the effective and efficacious disaster operations.

(2.2) Planning and Project Section is responsible for planning, developing the plans, monitoring and evaluating the implementation, arranging disaster exercise, training and formulating disaster prevention and mitigation projects.

(2.3) Prevention and Operations Section is responsible for monitoring and assessing the potential disaster situation, setting up warning system and laying down measures for search and rescue operations, evacuating, and providing assistance to affected people as well as maintaining security and conducting psychological operations.

(2.4) Rehabilitation and Recovery Section is responsible for conducting damage and needs assessment, preparing the list of affected people, coordinating with all disaster relief related agencies as well as rehabilitating and restoring the damaged facilities to resume normal functions.

(2.5) Public Relations Section is responsible for reporting disaster situation, press release, public relations campaign as well as publicizing and disseminating disaster prevention knowledge, damage and relief works information including the facts to the media and general public.

(2.6) Communication Section is responsible for installing information technology system, interconnecting communication system between all agencies concerned as well as with commanding centers at each level.

4.3.4 Staff Deployment

(1) Generally, National Command Center is mainly staffed by officials of Department of Disaster Prevention and Mitigation and the supporting officials and personnel dispatched from relevant state agencies, public enterprises and private sector. These multi –agency corps will function according to their agencies' regular tasks for instances, the communication section will be reinforced by the additional staffs from Ministry of Information and Communication Technology, the monitoring and assessing disaster situation aspect will be reinforced by the additional staffs from Thai Meteorological Department, National Disaster Warning Center and Royal Irrigation Department etc.

(2) Staffing of Local Command Center

(2.1) Provincial Command Center is mainly staffed by the officials from Disaster Prevention and Mitigation Provincial Office and the supporting officials and personnel from government agencies, public enterprises and private sector located in the provincial jurisdiction.

(2.2) Bangkok Metropolitan Command Center is mainly staffed by Bangkok Metropolitan officials and supporting officials and personnel from disaster management related government agencies, public enterprises and private sector.

(2.3) District Command Center is mainly staffed by disaster management related officials of district office and supporting officials and personnel from other government agencies, public enterprises and private sector located within district jurisdiction.

(2.4) Municipality Command Center is mainly staffed by disaster management related personnel of municipality and supporting personnel of other divisions of municipality as well as representatives from private sector.

(2.5) Pattaya City Command Center is mainly staffed by disaster management related personnel of Pattaya City Office and supporting personnel of other divisions of Pattaya City Office and representatives from the private sector.

(2.6) Tambon Administration Organization Command Center is mainly staffed by disaster management related personnel of tambon administration organization and supporting personnel from other sections of tambon administration organization office and representatives from the private sector.

4.4 Requirements for Disaster Prevention and Impacts Reduction

Disaster prevention and impact reduction is one of the four principal strategies required for efficient and effective disaster management. The precautionary measures and activities under taken to prepare the society in all aspects prior to the occurrence of disaster, and in case of an occurrence of disaster they will facilitate the society to immediately and effectively handle disaster situation. Subsequently, being well – prepared will lead to reduction of adverse impact and loss of lives and properties. The requirement for disaster prevention and impact reduction includes the following aspects.

4.4.1 Risk Assessment

The assessment of the impending hazard and community vulnerability which are the main steps of disaster risk assessment process aims to estimate the probability of the potential disaster and its adverse impact inflicted on the people. The results of risk assessment can be applied to achieve the appropriate measures for disaster prevention and the reduction of its impact.

4.4.2 Disaster Database

(1) Organize disaster related statistical databases to contribute the efficient and effective disaster management such as disaster occurrences database, affected people database, disaster management related personnel and volunteer database, disaster expert database and other essential databases.

(2) Develop interagency disaster database linkage system for more efficiency and sharing utilization.

(3) Disseminate disaster information to all implementing agencies designated in this plan.

4.4.3 Disaster Education and Awareness Building

In order to promote disaster knowledge and foster disaster awareness among all sectors of society, several measures are initiated for materializing as follows :

(1) Facilitate and support a role and intervention of every type of mass media in promoting safety culture campaign on continuous basis particularly mass media which can efficiently outreach the general public such as radio, T.V., printing materials and internet.

(2) Promote disaster education on everyday life safety such as safe application of household electrical appliances, safe driving etc.

(3) Develop the format and text of campaigning materials to become clear, easy to understand, appropriate and attractive as well as outreaching each targeted group.

(4) Facilitate and support a role and intervention of networked agencies of public sector, private sector, local administration organization and volunteer in safety culture campaign on continuous basis.

(5) Provide disaster education which highlights dissemination of disaster knowledge, fostering and enhancing safety culture of all sectors of the society as well as developing educational personnel's potentiality, and learning necessary disaster knowledge among the students at all levels of academic institutions.

(6) Integrate disaster knowledge text into curriculum of training course for both public and private sector's personnel.

(7) Promote and facilitate closed cooperation between government agency and mass media to disseminate the accurate, expedient and timely information for handling each situation by applying the proactive public relations policy such as organizing "Safety Week" campaign etc.

4.4.4 Application of Structural Measures

Disaster prevention through the application of structural measures involves the use of man – made structural facilities such as buildings, dam, wall, reservoir, dyke, weir, transport route, warning sign etc. The structural measures applied must be appropriate and compatible with the condition of risk areas which include following activities:

(1) Secure the areas for the construction of structural facilities to contain and reserve the water such as reservoir, dam, pond, weir, irrigation channel including rehabilitating shallow water resources and channels such as canal etc., for the purposes of reserving the water for consumption during dry season and draining during the rainy season.

(2) Construct wall, dyke or sediment embankment to prevent the water overflowing and protect the erosion of seashore or river banks.

(3) Construct evacuation building or facilities in the area where the safety area is not easily available or where there is no appropriate safety area.

(4) In case where it is inevitably necessary to construct buildings in the area at risk, such buildings must be retrofitted and reinforced to ensure the safety of the occupants according to Building Control Act B.E. 2522 (1979).

(5) Construct / improve the roads for any time logistics transportation and the evacuation routes.

4.4.5 Research and Development

(1) Concept and Principle

Research and development refers to learning process and creative work undertaken on a systematic basis in order to increase the stock of knowledge and the use of this stock of knowledge to develop new disaster management techniques, methods or systems and to devise new applications.

Research and development can be undertaken simultaneously with monitoring and evaluation by means of compiling and analyzing data and information resulted from monitoring and evaluating the plan and project implementation in forms of before, during and after the implementation. This process aims to review the implementing procedure both in terms of the success and the problem areas in order to exchange working experiences, address the existing problems and prevent their recurrence, maintain good practices and develop new innovations for maximizing the public interest. Research and development process is illustrated in chart 4.2 as follows :

- (1.1) Analysis of current situation/problem areas
- (1.2) Create/select innovation to address problems/develop
- (1.3) Application of innovation on trial basis
- (1.4) Analysis data resulted from the trial and conclusion
- (1.5) Drafting the findings report
- (1.6) Publicity

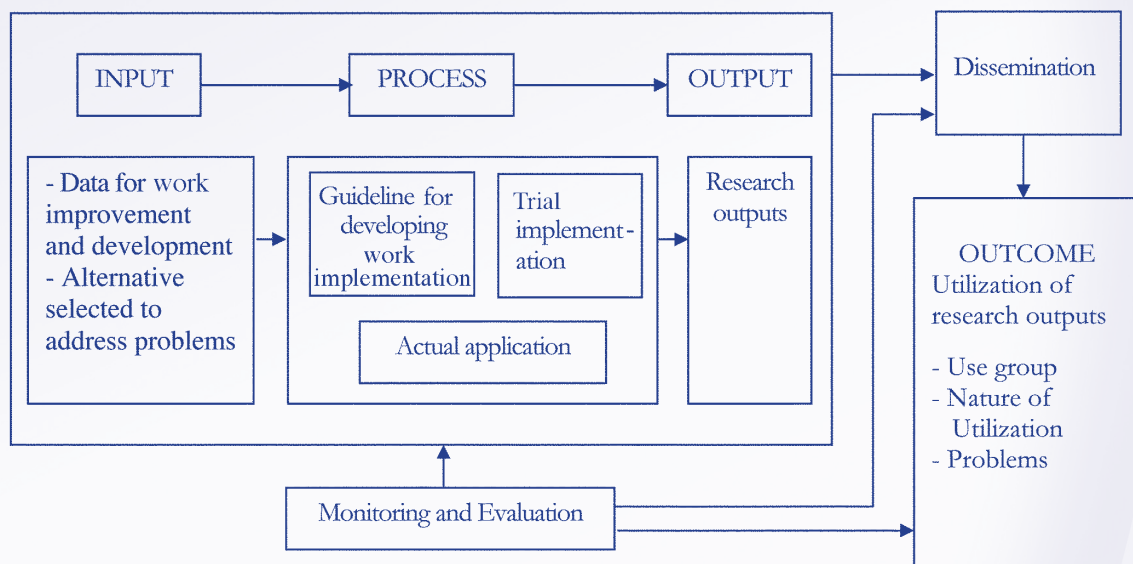


Chart 4.3 Research and Development Process

(2) Guidelines for Conducting Research and Development

(2.1) Undertake disaster management related research and development in conjunction with academic institutions, private sector, international organizations and other relevant government agencies in order to acquire knowledge and technology applicable for developing and uplifting the standard of Thailand's disaster management system equivalent to international standard.

(2.2) Study and experience lesson learned from major disaster in the past to digest their facts and valuable essence applicable for more efficient and efficacious disaster management.

Chapter 5

Preparedness Arrangement

Preparedness strategy involves the application of various measures to strengthen and enhance the capacity of all sectors of the society to counter the potential disaster. Subsequently, all stakeholders are obliged to undertake relevant countermeasures to ensure state of readiness prior to an occurrence of disaster.

5.1 Objectives

To prepare and arrange essential disaster resources, operating procedure and readiness to competently deal with all phases of disaster management cycle.

5.2 Guiding Principles of Preparedness

All sectors prepare and procure resources required for disaster emergency management by basing on the results of risk and vulnerability assessment of each risk area as well as putting in place the operational guidelines and conducting disaster exercises on regular basis.

5.3 Preparedness Requirements

5.3.1 Budget

Disaster management related government agencies both at national and local levels are required to set up annual operational budget as necessary and adequately beforehand for implementation of disaster management activities in all phases of disaster management cycle. The preparation of operational budget can facilitate and ensure the immediate, thorough and efficient disaster operations. The aforesaid annual budget can be set up in forms of ministerial and departmental regular budget, provincial development and provincial cluster development budget, and local administration organization budget.

(1) Ministerial/Departmental Regular Budget

Each fiscal year, government agencies concerned are required to set up and request the budget for implementing their disaster management related tasks as prescribed in National Disaster Prevention and Mitigation Plan. To obtain such a budget, the aforesaid government agencies are required to sort out and compile the relevant plan/project identified in National Disaster Prevention and Mitigation Plan to formulate their own action plan and budget plan, then incorporate them into “Four-Year Government Strategic Plan” as well as in the “Annual Implementation Plan” of the respective agencies for further submitting and requesting for the budget from the government.

(2) Provincial and Provincial Cluster Development Budget

Provincial Director should consider another window of opportunity to obtain budget for implementing disaster preparedness activities within the area under responsibility. This can be done by sorting out and compiling plan/project targeted to support the provincial disaster management and integrate them into the “Provincial Development Plan” for further proceeding.

(3) Local Administration Organization Budget

The chief executive of all types of local administration organization are required to acknowledge the importance of disaster preparedness and consider to allocate budget to support disaster management activities within the respective jurisdiction.

(4) Additional Budget Sources

In addition to the aforesaid sources of budget for disaster management, other sources of budget include:

- Disaster Relief Contingency Fund which can be obtained through the procedures prescribed under Ministry of Finance Regulations on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum.
- Central Fund which affected province can obtain for large scale rehabilitation projects by submitting project proposal through specific channel.
- Foreign Sources as per the approval of the government.

Since each category of additional sources requires specific and different procedure, the responsible agencies of all levels are required to ensure the readiness and preparation of all relevant resources as well as clarification of the relevant rules and procedure for immediate, efficient and regularized practice.

5.3.2 Personnel

(1) Deploy the personnel to take care of every disaster management function, and develop operating procedures which can be implemented rapidly and efficiently, as well as systematizing the training programme to develop and enhance the performance capacity to fulfill their responsibility. The aforesaid personnel include members of Emergency Response Teams and One Tambon One Search and Rescue Team etc.

(2) Organize and train the volunteer corps such as civil defence volunteer, Mr. Warning volunteer, search and rescue volunteer etc. to assist the government official to carry out disaster management activities.

(3) Prepare the particulars of disaster specialists or technicians of all agencies concerned to seek for their technical assistance in forms of joint disaster operations or as the lecturers on disaster management training programmes.

5.3.3 Training

(1) National Command Headquarters is responsible for identifying overall plan and policy for disseminating disaster knowledge and training programmes, disaster information publicizing, providing budget to support the implementation of plan and policy, evaluating the implementation as well as developing and coordinating with all stakeholders in arranging training programmes.

(2) Local Command Center is responsible for interpreting disaster management training policy into action to cover two targeted groups, namely the people and the officials.

(3) Dissemination of disaster knowledge and training programmes for the officials and the people can be carried out by basing on the following guidelines :

(3.1) Training programme for the general public aims at equipping them with basic disaster knowledge such as the nature of the threatening disaster including preventive and self-help techniques through

(3.1.1) Utilizing appropriate mass media.

(3.1.2) Organizing disaster management training programmes.

(3.1.3) Organizing disaster management demonstration events and activities.

(3.1.4) Facilitating and promoting private sector's involvement in disaster management activities.

(3.2) Volunteer training refers to the specific training for certain people or group of people on the activities they are volunteering in, such as disaster early warning, facilitating and assisting the official in disaster emergency operations including properly transporting the injuries to the medical center and conducting the vigilance until the emergency situation returns to normal. This skilled-based volunteer corps are widely known as the "Civil Defence Volunteer". The organizing of such volunteer corps is internationally recognized and practiced. This is because whenever the large-scale disaster occurred and the numbers of the affected people in dire need for assistance are too many for the limited numbers of the officials in charge. Thus, it is necessary to deploy the organized civil defence volunteers to assist the official in the emergency situation. Subsequently, these community-based volunteers need to be specifically trained and enhanced their capacity on the continuous basis such as in the field of search and rescue operations etc.

(3.3) Training the officials is targeted to familiarize them with the duties they are assigned to perform and to enhance their performance skills as well as ensuring their preparedness. This type of training can be conducted by basing on following guidelines:

(3.3.1) Organizing the specific functional training to familiarize them with assigned tasks.

(3.3.2) Providing the disaster management demonstrative training bases on the simulated scenario.

(3.3.3) Arranging disaster emergency management exercise for Local Command Center according to the developed operating procedure and disaster situation.

(3.3.4) Testing the state of readiness of disaster management system bases on the simulated scenario which is compatible with the current and near future surrounding situations.

(3.4) Preparing the training results report and evaluating the training of every targeted group to ensure the achievement of the goals set for human resource potentiality development.

5.3.4 Community Preparedness

The success in reducing of causalities and extent of damage requires the involvement of the community and the participation of its people in all phases of disaster management cycle. This is because the vulnerable community and its people are directly threatened and affected by the sudden disaster impacts along with the potential impacts as long as they continue to live in disaster-prone location due to some reasons. In this context, the procedure to facilitate the community and its people in organizing themselves to deal with impending minor disaster or everyday emergency has been set and enunciated as follows :

(1) Introduce and apply community-based disaster risk management practice to help the people and community achieve state of readiness to divert or cope with disaster impacts with the least expected loss and damage. In addition, this practice will simultaneously enhance and strengthen their capacity and self-reliance to deal with disaster preceding the arrival of outside assistance, and it will provide opportunity to

(1.1) Generate public awareness and encourage people's participation in addressing the facing problems regarding disaster risk.

(1.1.1) Monitor early warning information from various sources of media such as weather forecast, official announcement of potential disaster situation or risk educational materials.

(1.1.2) Alert people in the community and encourage the joint discussion among themselves to evaluate and analyze the community's risk and vulnerability to avail the following information:

- The area most at risk and number of families likely to be affected.
- Public places and utilities at risk
- Workplaces, cultivated areas, livestock farms, agricultural equipments etc.,likely to be devastated.

(1.2) Initiate community data system to facilitate the formulation of Community Disaster Prevention and Mitigation Plan. The guidelines for formulating the aforesaid plan have been set down as follows :

(1.2.1) Upon becoming aware of threatening situation and primary joint analysis of community's risk and vulnerability has been conducted, the community is required to survey and collect additional data of the community such as social and economic data, historical data on disaster occurrence and their consequences, specific disaster stricken locations, and then mark these locations on community map for further in-depth analysis of community vulnerability.

(1.2.2) A vulnerability analysis attempts to make known the persons and properties likely to be affected in case the disaster occurs. In addition, the results of the aforesaid analysis can be applied to segregate most vulnerable people in the community who need assistance and merit first priority in evacuating, for instances, children, the elderly, the disabled, pregnant women etc; and for further discussion to seek for disaster risk reduction initiatives or any available method to divert disaster.

(1.2.3) With the available disaster risk data, the drawing of risk map and safety map is proceeded superimposedly on the community map. This map will include data on the assembly location, evacuation routes, safe areas etc. In addition, the community is required to assess its capacity to mobilize the existing resources available in case of need.

(1.2.4) Based on the relevant existing data, risk map, safety map, available resources and the results of risk assessment, the community will proceed to formulate Community Disaster Prevention and Mitigation Plan.

(1.3) Set up a community organization of which the community-based volunteers such as "Mr. Warning" will be appointed as sub-committee in various sections as follows:

(1.3.1) Since the crucial mechanism to propel the plan into action is the people in the community, the committee will be constituted to carry out the clearly defined task and responsibility. Two alternatives are available in forming the committee, the community can either utilize the existing village committee or form a new Community Disaster Prevention and Mitigation Committee. Several Sub – committees are as well formed such as Sub – committee on Administration, Sub – committee on Disaster Relief and Rehabilitation Affairs, etc. The civil defence volunteers, particularly those who are trained to be disaster warning volunteer or “Mr. Warning”, or to be members of community search and rescue team, will be appointed as sub-committee.

(1.3.2) Community Disaster Prevention and Mitigation Center can be located either at the existing community hall or at any available building in the community. This center will serve as the workplace of the committee’s secretariat staff and as the storage of warning, close-circuit radio, search and rescue equipments etc.

(1.4) Conduct periodical disaster management exercise as stipulated in Community Disaster Prevention and Mitigation Plan through the role playing simulation system. The exercises are good opportunities to review the overall effectiveness and to seek for the drawbacks for improvement. To enhance the capacity and effectiveness in dealing with disaster, the community is advised to conduct disaster exercise at least twice annually.

(1.5) Coordinate with the local administration organization for financial support to procure relevant equipment.

Under Disaster Prevention and Mitigation Act B.E. 2550 (2007), Section 20 stipulated the local administration organization of locality (municipality, tambon administration organization and Pattaya City) to carry out disaster operations within its jurisdiction. As the consequence, the aforesaid local administration organization of all categories including the provincial administration organization are required to consider financial support to equip the communities within their jurisdiction with appropriate equipments for community’s vigilance, warning and search and rescue operations.

(1.6) Arrange for local administration organization - based search and rescue team which can be immediately dispatch to assist the people in distress.

Since search and rescue operations are vital part of overall disaster management to save life of people in potential or actual disaster situations, Sub-committee on Search and Rescue Operations of Community Disaster Prevention and Mitigation Committee is required to avail its community-based search and rescue team. To fulfill this requirement, a community is entitled to request local administration organization to fund the selected physically-fit members of a community attending the “One Tambon One Search and Rescue Team: OTOS” training programme organized by Department of Disaster Prevention and Mitigation. This community-based search and rescue team needs to be supported by agencies concerned in terms of equipments as appropriate and necessary, and in conducting periodical disaster exercise.

(1.7) Enhance community disaster management networks for external assistance. Since the trend of disaster occurrence is increasing both in terms of frequency and scale, a community needs to seek for outside support and assistance in dealing with all phases of disaster management cycle.

(2) Prepare for community early warning system to facilitate and ensure timely and effective warning information dissemination by the community-based volunteers and the watch-out and warning networks. The following basic communication equipments must be kept handy for the urgent need; trunk radio, close-circuit radio, manual siren, loud speaker, whistle etc.

(3) Provide required basic equipments to enhance the capacity of a community in dealing with disaster such as

- (3.1) Simple rain-gauge
- (3.2) Manual siren
- (3.3) Warning tower
- (3.4) Search and rescue equipments
- (3.5) Vehicle for rescue operations

5.3.5 Emergency Operating Procedure

The emergency operating procedure has been developed to facilitate and ensure the effective disaster emergency operations as follows :

(1) Formulate Sectoral Incident Action Plan and Contingency Plan of each agency concerned and periodically conduct disaster exercise prior to the actual disaster to ensure the state of readiness for handling disaster situations.

(2) Prepare both main and standby interagency communication system including intra - agency system. The systems must be tested to maintain its serviceability and efficiency.

(3) Identify guidelines for dissemination of disaster situation information to the general public and the officials concerned through radio and television broadcasts as well as through the community-based media facilities such as close-circuit radio, village radio tower etc. to keep the general public well-informed of the accurate and up-dated information.

(4) Put in place warning system and means of dissemination to caution the people and the officials concerned of the potential disaster in order to enable them to use the critical time for timely mitigation of disaster impacts.

(5) Identify the evacuation routes and safety areas for the people and the officials.

(6) Arrange the emergency medical service squads for timely mobilization and efficient treatment.

(7) Stipulate the measures for maintaining security, peace and order including for systematizing the traffic flows in the stricken areas.

(8) Systematize the donations collection and distribution as well as relief programme to ensure the thorough, adequate and equitable access of affected people.

5.3.6 Mechanical Equipment Supplies

(1) Prepare emergency equipments, vehicles and appliances to ensure their immediate serviceability and availability.

(2) Prepare an accurate and up-to-date inventory of all available equipments, vehicles and appliances of all resource organizations such as government agencies, public enterprises, private sector, and local administration organizations for joint disaster operations.

(3) Develop disaster mechanical equipments and tools for their up-to-date and compatibility with disaster situations.

5.3.7 Energy Supplies

(1) Sufficiently procure and store the reserved fuel for optimum utilization during disaster emergency operations.

(2) Provide additional reserved energy supply sources for disaster emergency operations.

5.3.8 Communication System

Currently most government agencies have their own communication systems to use in implementing their assigned tasks. Since the occurrence of disaster is more frequent, it is indispensable to integrate these communication systems to ensure their unity and ability to link from national to regional, provincial, district and area level respectively. To enable such a linkage, the intermediary channel will be provided and the key government agency will be assigned to function as the center linking and transmitting the relevant information. A disaster communication system can be categorized as follows:

(1) Communication System Components

(1.1) Main system which refers to the communication system commonly used to communicate among disaster management related government agencies and between the government agencies and people. The agencies concerned are required to well prepare their communication system prior to the occurrence of disaster and maintain its unfailing serviceability and accessibility to the sources of required disaster management information. The communication devices must be tested and practiced periodically. In addition, the aforesaid government agencies particularly those located in disaster prone areas are required to frequently drill on the application and preparedness of the systems to ensure their efficient serviceability in the time of emergency.

(1.2) Auxiliary system which refers to the commonly and concurrently used with the main systems and as the supportive channel. All government agencies are required to avail auxiliary system for the purpose of disaster management and are obliged to strictly drill on the application of these systems as well as sustain their serviceability particularly the agencies located in the area at risk.

(1.3) Standby system is the system which provided to substitute in case of the collapse of the main system.

(2) **Communication facilities** comprise telephone, mobile phone, internet, satellite communication system/mobile unit, call center, hot-line, AM/FM radio broadcast, television broadcast, official and amateur radio communication networks, trunk radio network, community radio station, warning tower and close-circuit radio broadcast.

(3) Implementing and Relevant Agency

(3.1) Office of the Permanent Secretary for Ministry of Interior, Department of Disaster Prevention and Mitigation, Department of Provincial Administration, TOT Public Company Limited, and CAT Telecommunication Public Company are assigned to function as the communication center of National Command Headquarters.

(3.2) Regional communication center or provincial communication station of the Office of the Permanent Secretary for Ministry of Interior, regional communication center or provincial communication station of the Provincial Administration Division of Department of Provincial Administration as well as Provincial Telephone Junction are assigned to function as the communication center of the Provincial Command Center.

In case of District Command Center and other types of Local Command Center, are required to set up their own communication centers to communicate with the superior or the adjacent entities.

(3.3) The relevant agencies or the assigned agencies are required to set up their own communication centers to communicate with National Command Headquarters and Local Command Center as the case may be.

(4) Operating Guidelines

(4.1) In Non-Emergency Situation

(4.1.1) Prepare and secure the main, auxiliary and standby communication systems and thoroughly check for their readiness and serviceability.

(4.1.2) Set up the database on locality network agencies to facilitate the communication and always update the data in the database.

(4.1.3) Formulate the communication plan to serve as a guide in the emergency situation communication and simultaneously and frequently conduct the drill on the application of communication along with other types of disaster exercise.

(4.1.4) Arrange communication channel for contacting and communicating with the core agencies during the crisis or in the wake of disaster.

(4.1.5) Ministry of Information and Communication Technology is designated as key agency responsible for preparing and securing communication systems for utilization in emergency situation.

(4.1.6) Ministry of Interior is designated as the intermediary agency to contact and communicate with its subordinated agencies and with other agencies assigned to undertake disaster operations activities. All the aforesaid agencies are required to prepare and standby their communication system around the clock for immediate activation when a disaster occurs.

(4.1.7) Department of Disaster Prevention and Mitigation is required to set up communication center to support the linkage of all relevant agencies' communication systems located within its area of responsibility and in the disaster stricken area as well.

(4.2) In Emergency Situation

(4.2.1) The implementing agency is required to proceed as follows:

- Install the focal communication channel for communicating and coordinating with National Command Headquarters, Local Command Center and to coordinate with and issue the order to field operations units, the agencies under supervision and control, and with other relevant local agencies. The aforesaid focal communication system both main and auxiliary channels must be applicable and serviceable around the clock.

- Install communication system at the field operations unit located in the affected area or the adjacent area for communicating with Local Command Center and the field operations staff.

- Arrange and dispatch mobile communication teams to work in collaboration with search and rescue teams in disaster stricken area.

- In case of partly or completely disruption of the main system in the affected area, Ministry of Information and Communication Technology is responsible for providing and setting up the standby systems to resume the serviceability as soon as possible.

(4.2.2) The relevant agencies are required to proceed as follows:

- The agencies at ministerial level which are directly responsible for or assigned to collaborate are required to contact and communicate with National Command Headquarters and other relevant agencies under supervision and control through their respective communication centers.

- The agencies at the local areas which are directly responsible for or assigned to collaborate are required to contact and communicate with original affiliated agency and Local Command Center.

Disaster management communication system arrangement is illustrated in chart 5.1

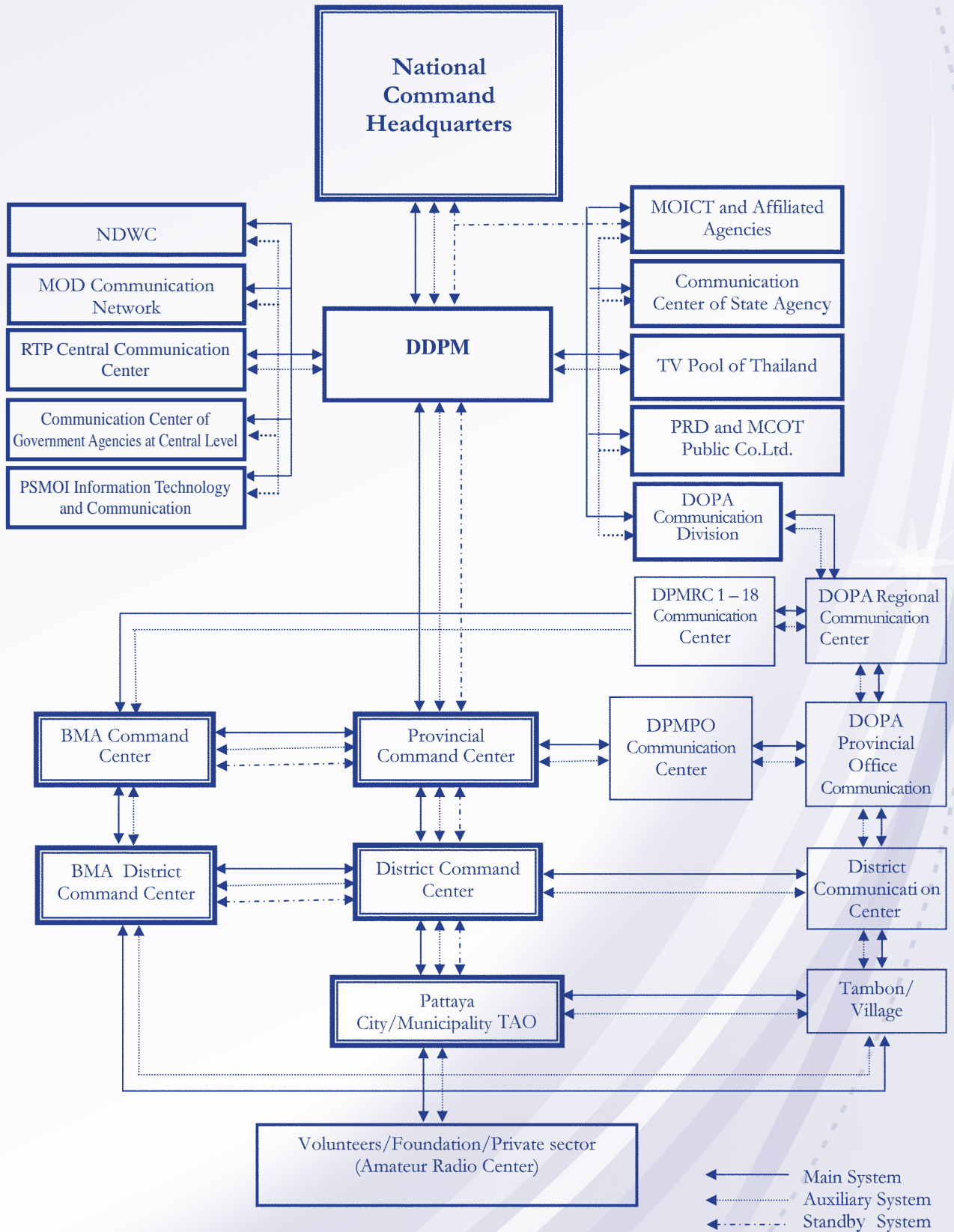


Chart 5.1 Disaster Management Communication System

5.3.9 Disaster Exercise

The importance and necessity of disaster exercises are widely recognized. Disaster exercises provide valuable opportunities to review the effectiveness and preparedness of disaster management system in view of quick and appropriate emergency operations, and to enhance public awareness through wide participation. Subsequently, Command Center of all levels are required to conduct exercises at least once annually by basing on the following guidelines.

(1) Identify the appropriate type of exercise which is compatible with the condition of the area at risk and the formulated contingency plan. Disaster exercises can be categorized into three types, viz.;

(1.1) Table Top Exercise: This type of exercise is conducted on the table in the conference room basing on the simulated scenario. The incident commander will demonstrate and command the simulated participants to act according to simulated scenario. Through table top exercise the participants will gain the insight and access the overall situation without the actual mobilization of disaster management resources.

(1.2) Functional Exercise: The scope of this type of exercise specifically cover the particular function of the procedure in details and highlights on the particular part of the plan. Functional exercise aims at developing and improving the function in details and is the preparatory part of full-scale exercise.

(1.3) Full-scale Exercise: This type of exercise involves multilateral and multi-level participation. It attempts to verify the main procedures and flexibility of disaster management system, the linkage and sequence of participating agencies' proceeding as well as the problem area in coordination.

(2) Exercise Preparation

(2.1) Identify the location and select types of exercise.

(2.2) Develop the exercise project proposal and budget request.

(2.3) Set up the committee or the task force to organize the exercise.

(2.4) Build the simulated scenario.

(2.5) Arrange the meeting among the simulated stakeholders prior to conducting the exercise.

(2.6) Prepare the location, organize the exhibition and public relations campaign.

(3) Conduct the exercise as planned.

(4) Evaluate the exercise.

(5) Report the achievements of the exercise.

Chapter 6

Disaster Emergency Management

Disaster emergency management is directed toward ameliorating the adverse impact of disaster and sustaining the general public's morale and the orderly disaster response operations of the responders. It is the burden by which all sectors of the society such as the government agencies, private sector, charitable foundation/volunteer and the people collaborately mitigate or alleviate the immediate damage caused by disaster as quick as possible. To safe the life and protect the property of the people from disaster must be regarded as first priority of actions.

6.1 Objectives

6.1.1 To respond to the imminent hazard as quick as possible through mobilizing cooperation from public sector, public enterprise, private sector, foundation/volunteer and the general public to immediately activate response operations.

6.1.2 To safe the life and protect the property of the people as well as an environment affected by disaster impacts.

6.2 Guiding Principles for Disaster Emergency Management

6.2.1 In case a disaster occurs within provincial, district and local administration organization jurisdiction, the guiding principles are formulated and required to be taken by agencies concerned as follows:

(1) When a disaster occurs or is imminent in any local administration organization of specified locality, Local Director of the respective local administration of specified locality is obliged to activate countermeasures instantly. Simultaneously the aforesaid Director is required to inform District Director of whom affected area is under responsibility and Provincial Director.

(2) In case of the area where a disaster occurs or is imminent falls under the responsibility of several Local Directors, anyone of them can exert the power or perform the duty thenceforth and immediately inform other Local Directors. And in case Local Director deems necessary to request for assistance from the State official or State agency outside the jurisdiction, that Director must notify District Director or Provincial Director as the case may be for further immediate commanding.

(3) Director of the adjoining or adjacent locality jurisdiction is obliged to support response operations of the disaster stricken locality entity.

(4) When a disaster occurs, the official who confronts the incident is obliged to activate preliminary procedure to suppress that incident and thus immediately reports Local Director for further command. And in case of necessity, the official is authorized to do any act for the purpose of protecting life of person or preventing person from any harmful menace.

(5) In case when it is necessary for the official to enter a building or a place adjacent to the incident scene for the purpose of response operations, such an act must be done upon the permission of the owner or of the occupier, except the case an owner or an occupier is absent in the mean time or in case of the property keeping inside a building or a place might easily induce a disaster, the official is authorized to order the owner or the occupier to move that property out of a building or a place. If the owner or the occupier do not conform, the official is authorized to move that property as necessary and will lawfully bear no liability for the subsequent damage resulted from such an act.

(6) Director of a disaster affected area is obliged to survey the subsequent damage and prepare the lists of the affected people and damaged property as the evidence and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance.

(7) In case the large-scale disaster associated with catastrophic impact occurs, the Prime Minister or the Deputy Prime Minister whom assigned by the Prime Minister is empowered to command and order National Commander, Director, the State agency, and local administration organization to perform any action for the purpose of disaster operations, including providing assistance to the people. In this regard, the Prime Minister or the assigned Deputy Prime Minister is empowered as National Commander, Central Director and Local Director.

6.2.2 In case a disaster occurs within Bangkok Metropolitan jurisdiction, those who are in charge must follow the following guiding principles for handling disaster situation.

(1) When a disaster occurs or is imminent within Bangkok Metropolitan jurisdiction, Bangkok Metropolitan Assistance Director is obliged to activate disaster response operations immediately and simultaneously notify Bangkok Metropolitan Director and Bangkok Metropolitan Deputy Director at once.

(2) In case of necessity to request for disaster assistance from any State official of any State agency located within Bangkok Metropolitan jurisdiction, Bangkok Metropolitan Director is required to notify the aforesaid State official or State agency as the case may be. And upon receiving notification the State official or State agency is obliged to provide assistance requested in short notice.

6.3 Requirements for Effective Disaster Emergency Management

Response operations which is taken immediately prior to and following disaster is directed towards mitigation and minimizing the adverse consequences inflicted by disaster on the people's life and the property of the people and government. The followings are the requirements for effective disaster emergency management.

6.3.1 Disaster Warning and Situation Assessment

Government agencies which are responsible for warning are obliged to notify relevant agencies and/or Local Command Center of the imminent disaster for further and immediate disseminating warning information. The early warning will provide optimum opportunity to the intended recipients of warning in disaster threatening area to take precautionary measures such as being on alert, arranging evacuation etc. Local Command Center concerned needs to assess disaster situation basing on its severity and subsequently disseminate warning information. In addition, all facilities and arrangements relevant to warning and warning system must be checked to ensure their appropriate state of readiness to react to warning. The effective and timely warning can tremendously reduce the adverse impacts and damage triggered by the potential disaster. Chart 6.1 illustrates the relations between the time period of warning and disaster impacts.

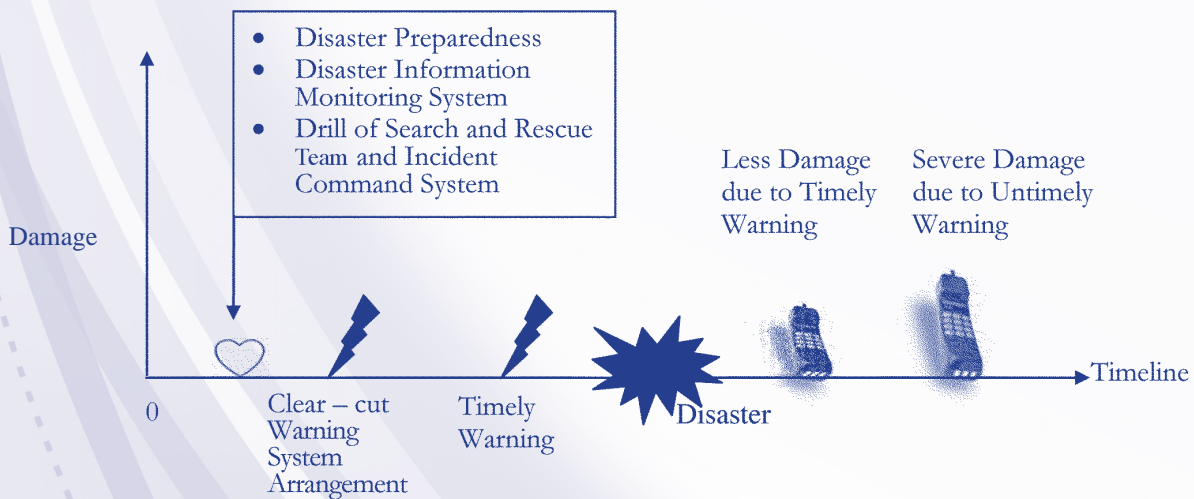


Chart 6.1 Relations between Warning Lead Time and Disaster Impact

(1) Warning Agency

(1.1) Thai Metrological Department and National Disaster Warning Center are responsible for close surveillances and warning at national level.

(1.2) Department of Disaster Prevention and Mitigation receives warning information from Thai Metrological Department and National Disaster Warning Center and further disseminates warning information to the provincial government.

(1.3) Provincial government is responsible for the watch - out and dissemination of warning information at provincial level.

(1.4) District office is responsible for surveillance and dissemination of warning information at district level.

(1.5) Civil Defence Volunteer and warning information dissemination network are responsible for surveillance and dissemination of warning information at community level.

(2) Warning Arrangement

An arrangement of warning system beforehand will ensure the quick and efficient warning information dissemination. The guidelines for warning system arrangement are as follows:

(2.1) Seek for unanimous agreement among agencies concerned on the method to disseminate the warning information.

(2.2) Assign local administration organization to erect different types of warning signs to indicate hazard threatening areas, evacuation routes and any relevant marks or signals and inform the general public of their implication.

(2.3) Keep constant watch and monitor disaster situation, collect the data and assess the situation on 24-hours basis for the useful purpose of the warning message.

(3) Disaster Warning Information Dissemination

Relevant agencies are required to clearly define and write down the warning systems and its associated procedures in plans, standard operating procedures and other relevant documents for acting officials' application guidelines. Warning information needs to be disseminated in simple, clear and understandable terms and included adequate details such as the scale and intensity, areas at risk, etc.

(3.1) Dissemination of warning information can be classified into four levels, viz.,

(3.1.1) National level: At this level, warning information will be disseminated via the networks and communication system including various mass media of both public and private sectors such as TV Pool of Thailand, Thailand Radio Broadcast Stations, Public Relations Department, television broadcast station of private sector etc.

(3.1.2) Provincial level: At this level, warning information will be disseminated via the networks and communication system including various mass media of both public and private sectors such radio broadcast, radio communication, facsimile and Provincial Public Relations Office.

(3.1.3) District level: At this level, warning information will be disseminated via the networks and communication system facilities including various mass media of both public and private sectors such as community radio broadcast, communication radio, facsimile etc.

(3.1.4) Tambon/village level: At this level, warning information will be disseminated by community-based volunteers and surveillances and warning networks via the utilization of community communication system or other warning appliances such as close-circuit radio, radio communication, village news broadcast tower, manual siren, loudspeakers, whistles or any community or village designated audio signals.

(3.2) Warning Method

(3.2.1) Direct warning is applied to disseminate warning information directly to the general public through television broadcast stations, radio broadcast stations, amateur radio communication, mobile phones, village news broadcast towers, close-circuit radio, manual sirens and warning towers.

(3.2.2) Indirect warning is applied to disseminate warning information to various intended recipients of warning through government administration mechanisms at national, regional and local level, disaster relief operations units, affected groups and the general public as illustrated in chart 6.2.

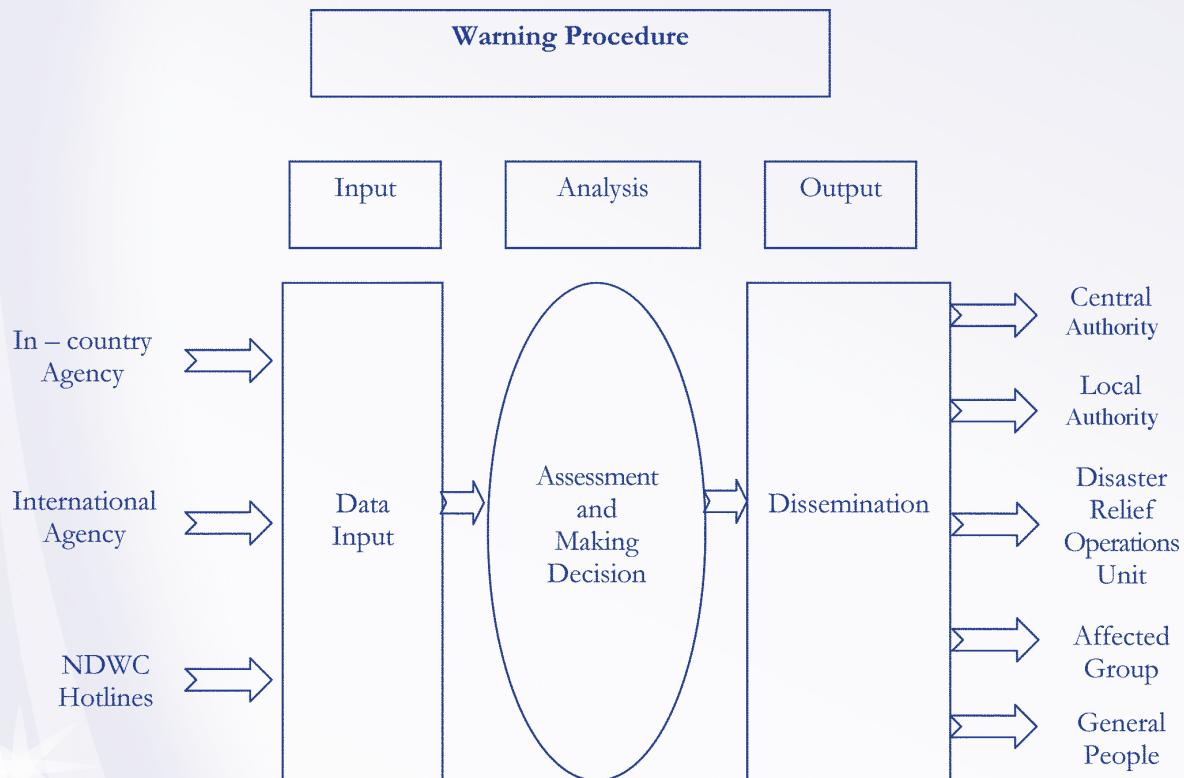


Chart 6.2 Dissemination via Government agency
Source: National Disaster Warning Center

6.3.2 Emergency Operations Center Establishment

When a disaster occurs in any area, National Command Headquarter and all Local Command Centers will be adjusted and transformed into Emergency Operations Center. Responsibilities of Emergency Operations Center among others, are to function as focal point to mobilize disaster resources from all agencies and direct the coordination with various civil agencies, and military agency as well as local administration organization and charitable organizations to jointly handle disaster situation on rapid, efficient and thorough manner.

(1) Structure of Emergency Operations Center

Emergency Operations Center should include at least eight sections and an advisory board, viz.;

(1.1) Advisory Board comprises the following members:

(1.1.1) Specialists and qualified persons.

(1.1.2) Representatives from educational establishments in the area.

etc.

The main functions of Advisory Board are to provide advice and consultancy services and support to Emergency Operations Center.

(1.2) Administration Section

(1.2.1) This section should at least include the following sub-sections :

- General Affairs
- Intelligence and Information Analysis and Report
- Logistics Management
- Command Center Affairs
- Official Field Inspection Coordination
- Complaints Management
- Relief Operations Coordination
- Finance and Accountancy

etc.

- (1.2.2) Responsibility
 - Direct, control and oversee the work of Emergency Operations Center.
 - Coordinate and conduct follow - up of task performance of each section.
 - Manage the general affairs, finance and disbursement, procurement, and the meeting.
 - Manage information and intelligence.
 - Periodically assess disaster situation and report the assessment results until the situation returns to normal.
 - Coordinate and arrange for the technical and inspecting visit of the superiors and relevant agencies.
 - Receive and file the complaints.
 - Coordinate with disaster management related agencies both of public and private sectors in order to mobilize the volunteer corps, search and rescue operations equipments, prepare basic necessity supplies such as foods, drinking water, clothes etc., emergency medical service, transportation etc.
- (1.3) Disaster Warning Section
 - (1.3.1) This section should at least include the following sub-sections.
 - Disaster Situation Monitoring and Assessment
 - Vigilance and Warning
 - Weather and Hydrological Forecast Coordination etc.
 - (1.3.2) Responsibility
 - Monitor the weather forecast and disaster situation.
 - Keep the careful watch, monitor and assess the situation round the clock and disseminate warning information.
 - Analyze the data and report the findings to decision maker.
- (1.4) Prevention and Operations Section
 - (1.4.1) This section should at least include the following sub-sections.
 - Search and Rescue Operations
 - Evacuation Affairs
 - Emergency Medical Service
 - Dead Body Management
 - Logistics Delivery etc.
 - (1.4.2) Responsibility
 - Organize search and rescue unit and deploy mobile and backup search and rescue teams to undertake search and rescue operations.
 - Evacuate affected people to safety area.
 - Provide temporary shelters to accommodate affected people and arrange security system.
 - Provide medical treatment and emergency medical service at disaster scene and at temporary shelters.
 - Appropriately and properly manage the dead bodies.
 - Arrange logistics delivery system to support disaster operations.
- (1.5) Public Relations Section
 - (1.5.1) This section should at least include the following sub-sections.
 - Public Information Affairs
 - Counter-intelligence Affairs etc.

- (1.5.2) Responsibility
 - Publicize and disseminate accurate and timely disaster information, fact on disaster relief operations to the general public on the continuous basis.
 - Coordinate with all types of mass media to mobilize their cooperation in handling disaster situation and addressing the relevant problems.
 - Enquire into contradictory information if any, and immediately publicize the accurate facts to the general public.
- (1.6) Communication Section
 - (1.6.1) This section should at least include the following sub-sections.
 - Communication System
 - Information Technology System
 - etc.
 - (1.6.2) Responsibility
 - Install communication systems in Emergency Operations Center and in the affected area for emergency use and oversee the aforesaid systems.
 - Interlink communication systems between Emergency Operations Center and all networked organizations.
 - Arrange information systems for Emergency Operations Center.
 - Interlink various databases and provide internet service to Emergency Operations Center
 - Organize VDO conference.
- (1.7) Donation Management Section
 - (1.7.1) This section should at least include the following sub-sections :
 - Donation Collection Center
 - Donated Cash and Items Allocation
 - Donated Cash and Items Accounting
 - (1.7.2) Responsibility
 - Collect cash and in – kind donations and issue the receipt to donors.
 - Prepare donated items accounting.
 - Store and deliver donated items for distribution according to assignment of Director of Emergency Operations Center.
- (1.8) Peace and Order Maintaining Section
 - (1.8.1) This section should at least include the following sub-sections.
 - Theft Prevention
 - Security Affairs
 - Traffic Management
 - etc.
 - (1.8.2) Responsibility
 - Patrol and prevent theft.
 - Arrange security system for the affected area, safety areas for evacuees, temporary shelter and nearby areas.
 - Arrange the traffic system in the affected area, safety areas for evacuees, temporary shelter and nearby areas.
- (1.9) Relief and Rehabilitation Section
 - (1.9.1) This section should at least include the following sub-sections.
 - Damage and Needs Assessment Survey
 - Relief Operations

- Basic Necessities Procurement
 - Public Facilities and Road Repair
 - Wreckage Clearance Operations
 - Affected Area Rehabilitation
- etc.

(1.9.2) Responsibility

- Conduct damage and needs assessment survey.
- Provide assistance to affected people.
- Provide the basic necessities to affected people as well as the officials and volunteers on duties.
- Repair damaged public facilities to resume normal functions as quick as possible.
- Repair damaged transportation routes and structural facilities.
- Demolish the wreckages and conduct the clearance.

The sections, sub - sections and functions organized in Emergency Operations Center can be adjusted to fit the condition of the affected area and disaster situation. The structure of Emergency Operations Center is illustrated in Chart 6.3.

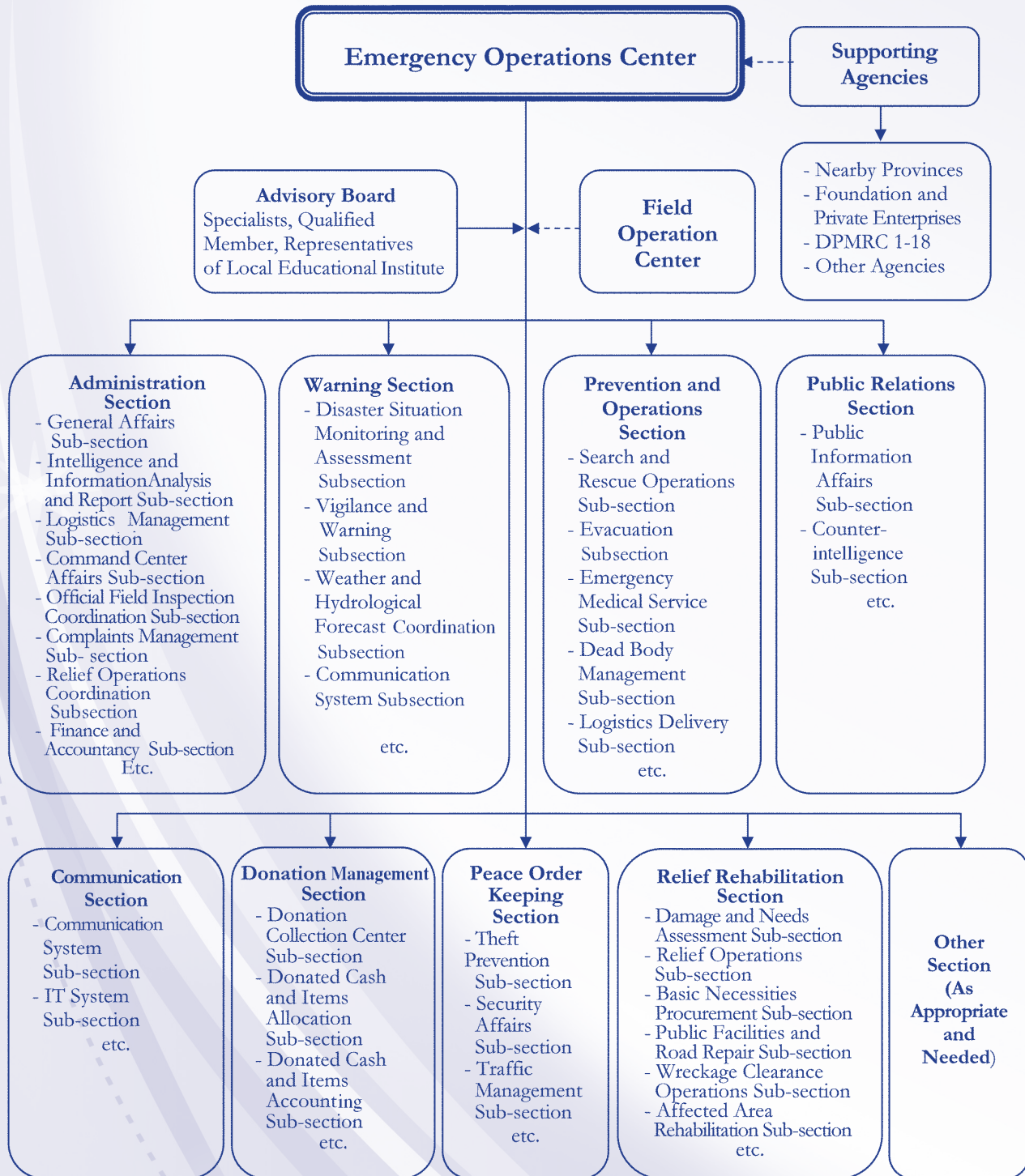


Chart 6.3 Structure of Emergency Operations Center

(2) Field Operations Center

To suppress and mitigate disaster and to provide assistance to affected people in the wake of disaster require the quick, adequate and efficient mobilization of all existing resources. And in case where disaster situation has exacerbated, it is highly essential to set up Field Operations Center.

(2.1) The organizational structure of Field Operations Center includes the four following sections namely;

(2.1.1) Administration Section which comprises Coordination Unit, Data and Reporting Unit, Public Relations Unit, Communication and Telecommunication Unit, and Finance and Accountancy Unit.

(2.1.2) Emergency Operations Section which comprises Search and Rescue Unit, Evacuation Unit, Emergency Medical Service Unit, Peace and Order Keeping Unit and Dead Body Management Unit.

(2.1.3) Relief Operations Section which comprises Housing Arrangement Unit, Donation Collection and Distribution Unit, Food Supplies and Drinking Water Provision Unit and Damage and Needs Survey Unit.

(2.1.4) Assistance Coordination Section which comprises Transportation Routes Repair Unit, Wreckage Clearance Unit, Public Facility System Repair Unit and Transport Unit.

(2.2) Task and responsibility of Field Operations Center

(2.2.1) Director of the Field Operations Center is obliged to command, control and direct disaster operations activities.

(2.2.2) Administration Section is obliged to

- Coordinate and monitor task performance of all sectors.
- Assess disaster situation and report the assessment results to the superior daily.
- Coordinate for the technical and inspecting visit of the superiors and agencies concerned.
- Coordinate with relevant agencies to jointly provide assistance to affected people.
- Provide 24-hour serviceable telecommunication system.
- Disseminate relevant information to the general public and mass media.

(2.2.3) Emergency Operations Section is obliged to

- Conduct search and rescue operations.
- Evacuate affected people to designated safety location.
- Provide medical treatment to injured persons and shift severe cases to nearby medical center.
- Arrange security system in the affected area and designated safety areas.
- Appropriately and properly manage the dead body.

(2.2.4) Relief Operations Section is obliged to

- Provide temporary shelter for affected people within the designated safety area.
- Systematize the procedure for relief commodities distribution to ensure the adequate and thorough coverage.
- Procure food and drinking water for affected people and functioning staffs.
- Survey the damage and needs and prepare the evidence inventory.

(2.2.5) Assistance Coordination Section is obliged to

- Repair damaged transportation routes for initial immediate usage.
- Demolish and clear the wreckages which obstruct disaster operations activities.
- Repair the damaged public utility facilities/provide standby public utility facilities.
- Manage traffic in the affected area.

(3) Operations Guidelines for Emergency Operations Center

When a disaster of any scale occurs or is imminent, Local Command Center is obliged to immediately integrate the efforts from all sectors of the society and activate the response operations to disaster immediate impact on life and property of the people by setting up Emergency Operations Center in disaster stricken area. This center will be under the command and control of Local Director, Central Director, Deputy National Commander, and National Commander. After the set-up, Director or Commander needs to report to the immediate superior for acknowledgement. The operating guidelines are identified to be taken by Emergency Operations Center for dealing with the occurring or impending disaster.

(3.1) Keep close watch and assess disaster situation on 24 - hour basis.

(3.2) Coordinate with relevant public and private agencies for the state of readiness in all respects.

(3.3) Disseminate warning information to district office, local entities and the general public through various types of mass media.

(3.4) Issue disaster declaration for all disaster stricken areas.

(3.5) Deploy required manpowers and equipments, vehicles, communication tools to Emergency Operations Center and arrange working spaces for all sections to set up facilities and start functioning in short notice. The name plate of each section must be clearly and visibly put up, and telephone, facsimile, mobile phone, radio communication numbers must be clearly shown to facilitate the contact.

(3.6) Direct the critical situation containing and conduct interagency coordination during joint operations to ensure harmonious, swift and thorough relief assistance efforts such as searching for the missing, arranging temporary shelter, providing primary medical care, managing traffic, maintaining peace and order as well as sealing off disaster stricken and adjacent areas to prohibit the entering of unauthorized persons.

(3.7) Conduct damage and needs assessment survey and prepare the list of affected persons and their damaged properties as evidences; procure the basic commodities and necessities; repair the damaged infrastructure facilities such as transportation routes, public utility system to resume the normal functions as well as conducting wreckages clearance.

(3.8) Continuously and periodically report disaster situation and on going disaster operations until the situation returns to normal.

(3.9) In case the scale and intensity of disaster is beyond the capacity of the affected local entity to cope with, Local Director whom affected area falls under responsibility is obliged to request for assistance and support from nearby Local Command Center or other higher level Centers or Disaster Prevention and Mitigation Regional Centers of Department of Disaster Prevention and Mitigation as the case may be.

(3.10) In case of large-scale disaster which severely affected wide area, Central Director or Deputy National Commander or National Commander is entitled to take charge of commanding and controlling the situation. Subsequently, the commanding power of Provincial Director and Bangkok Metropolitan Director will be transferred to Central Director or Deputy National Commander or National Commander as the case may be.

(3.11) In case of an occurrence of large-scale disaster which triggered catastrophic impact, National Commander is obliged to report the Prime Minister to consider assuming commanding power. In this regard, National Commander's commanding power will be transferred to the Prime Minister or the entrusted Deputy Prime Minister.

6.3.3 Public Information

It is imperative to disseminate the accurate and timely information concerning the occurring or impending disaster to the public and private sectors and the general public through the identified communication channels such as T.V. telecast, radio broadcast, community radio tower etc., to keep them informed of the situation, to take protective measures and to reduce the panic.

6.3.4 Emergency Communications

Like all aspects of disaster management, well-prepared communications are essential for effective, reliable and continuous coordination and commanding the interagency joint operations and reporting disaster situation. The followings are operating procedure for emergency communications.

(1) Install main, auxiliary and other required communication systems which are 24 - hour serviceable and can be inter-linked between every communication system in the area.

(2) Prepare and provide adequate and full-time applicable communication equipments and supplies.

(3) Establish Emergency Communication Center to serve as the focal point and set up communication networks to cover all areas.

6.3.5 Disaster Declaration

When a disaster occurs in any provinces and in case of emergency, the provincial governor is obliged to announce the disaster declaration of stricken areas which is prepared by Disaster Prevention and Mitigation Provincial Office.

In case of disaster occurrence in Bangkok Metropolitan area, Director General of Department of Disaster Prevention and Mitigation is authorized to announce disaster declaration of stricken area which is prepared by Department of Disaster Prevention and Mitigation.

The declaration of disaster stricken areas must be undertaken according to Ministry of Finance Regulations on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and the addendum. The context of the declaration must include;

- (1) Type of disaster
- (2) Disaster affected areas
- (3) Date/month/year of occurrence and termination.
- (4) Timeline of relief assistance commencement and cessation which should not exceed three months as from the day a disaster occurred.

6.3.6 Search and Rescue Operations

The relevant government agencies need to immediately assemble and organize well-equipped first responder units to conduct search and rescue operations of which encompass;

- (1) Mobile Units which can be immediately deployed to undertake search and rescue operations. Mobile unit comprises search and rescue teams, paramedic team etc.
- (2) Backup Units which are on standby and ready to be dispatched to support and assist the mobile unit upon request.

6.3.7 Evacuation: The evacuation can either be precautionary evacuation undertaken prior the impacts to protect disaster-threatened persons from the full effects of disaster or post-impact evacuation intended to move persons from disaster-stricken area into safer, better surroundings and conditions. The guidances for evacuation have been identified as follows:

(1) Formulate evacuation plan prescribing the detailed lists of number of people and government officials needed to evacuate; identify the appropriate and suitable location to accommodate the evacuees; assign and deploy manpowers to take responsibility in evacuating; identify the main and secondary evacuation routes; check and prepare vehicles, fuel supplies, and communication system required for evacuation process.

(2) Evacuation decision; when a disaster occurs or is imminent in any area, National Commander, Deputy National Commander, Directors and the authorized officials are empowered to issue evacuation instruction to evacuate persons from the aforesaid areas.

(3) Evacuation instruction ; when a disaster occurs or is imminent in any area, the early warnings and information will be disseminated to the relevant authorities in disaster threatening area to prepare for the danger, monitor the situation and coordinate for possible evacuation. Simultaneously and periodically, the aforesaid authorities must keep general public well informed of the critical situation in order to minimize the panic and disorder.

(4) Evacuation procedure

- (4.1) The vulnerable groups of evacuees requiring assistance which include the patients, the elderly and physically impaired, children and women should get first priority. The whole family which includes parents and their children should evacuate together.
- (4.2) Arrange safety recipient location and temporary shelters to accommodate the evacuees on the appropriate and actual – needed basis.

(4.3) Manage the traffic in disaster affected and the adjacent areas as well as in the evacuated settlements.

(4.4) Assist affected people in moving their properties from the affected or nearby areas upon the request.

(4.5) Register the evacuated people and government agencies in order to check their numbers and those who might be possibly left behind.

(4.6) Provide proper relief commodities for subsistent livelihoods and appropriately arrange sanitary system for the evacuated settlement.

(4.7) Provide medical cares and emergency medical service to the injured persons in the evacuated settlement.

(4.8) Assign security police or volunteers to maintain peace and order in the evacuated settlement as deemed appropriate.

(5) To safeguard the evacuees' deserted houses located the devastated area, Emergency Operations Center should contact police station nearby to deploy policemen to periodically patrol their home areas. In case of inadequacy of police staff, Emergency Operations Center can request local Civil Defence Volunteer Unit to deploy its members to assist the police in patrolling or organizing the community volunteers to function likewise. The patrolling is absolutely prohibited in case the situation is extremely dangerous and the patrolling personnel might risk their lives. It is essential to keep the evacuees informed to rid of their anxiety.

(6) Disaster situation notification procedure

(6.1) Keep close and continuous watch on disaster situation and collect the information regarding disaster situation from all types of mass media and the relevant government agencies. Periodically disseminate the aforesaid information to the general public to prevent public confusion.

(6.2) In case of termination of disaster declaration, the government agency concerned is obliged to clearly confirm the termination and inform the evacuees to prepare for returning to their home areas.

(7) Arrangement for return

When the situation returns to normal and after being informed of termination of disaster, the evacuees are required to cooperate with the movement coordinating staff and standby for further instruction. Community leader or evacuee group leader must organize and rank the priority of the groups and contact with the movement coordinating staff.

(8) Evacuation of disrupted government entity

The affected and disrupted government entities including the local administration organization offices need to be temporarily moved to and re-located in the safety location to resume their public services as usual. In this regard, the concerned Emergency Operations Center is responsible for grouping the entities requiring most urgent evacuation to resume public service function; anticipatedly identifying the recipient locations for evacuated entities along with their employees and their families; formulating "Government Entity Evacuation Plan" of which prescribing the following details.

(8.1) Survey and prepare the list of government entities requiring to evacuate beforehand as well as prioritizing their urgent requisite basing on their urgent functions to service the public.

(8.2) Identify the appropriate recipient locations to accommodate the evacuated government entities.

(8.3) Assign the staffs responsible for evacuation movement and clearly assign tasks and responsibilities to the aforesaid staffs.

(8.4) Prepare the lists of items and quantity of materials and official documents needed to bring along.

(8.5) Check vehicles, fuel supplies and communication equipments requiring for evacuation movement.

(8.6) Identify the primary and secondary evacuation routes which do not impede the military's task performance.

(8.7) Develop operating procedure for ensuring safety, peace and order of evacuation movement, staying in the evacuation settlement and returning to their original offices.

(8.8) In evacuating the government entities, the concerned authorities are required to consider which sections of the aforesaid entities whether to remain or evacuate depending on the general public's need for their service.

(8.9) Evacuation of government entities at central level including the government or the Cabinet or monarchy institution should be conducted according to the Cabinet consensus.

6.3.8 Emergency Medical Service: Whenever disasters occur, their destructive force can cause the heavy toll of deaths and injuries. To facilitate the provision of medical treatment to the injured persons, the operating guidelines are identified to be taken by concerning authorities as follows:

(1) Arrange medical unit to provide preliminary out-of-hospital medical care to the patients with injuries and transport them to alternative medical facilities for higher level of care. The preliminary medical care and transport can be undertaken during the on-going or post-disaster phases depending on disaster situation. In case the situation is extremely harmful to both injuries and the staff, the transport of the injuries must be undertaken in short notice. Whilst in case of post-disaster, the preliminary out-of-hospital medical care can be undertaken on-site before transporting the injuries.

(2) Transporting the injuries should take into consideration the following prerequisites.

(2.1) Vehicles such as ambulance, and in certain situation other means of transportation such as trucks, boats or airplanes etc. are required.

(2.2) Transporting route which links the scene of incident to the nearest medical facilities.

(2.3) Level of varied treatment capability of the recipient medical facilities.

(2.4) In case of large numbers of the injuries, a process of prioritizing the injuries based on the severity of their condition or the triage must be undertaken so as to save more lives and reduce the accidental deformity rate.

(3) Facts of recipient hospitals or infirmaries needing to be considered

(3.1) Hospital is classified into three categories, viz., field hospital, central hospital and rear-area hospital.

(3.2) Level of varied treatment efficiency of the medical facility at destination such as clinic, general hospital, large hospital, central hospital etc.

(3.3) Large numbers of injuries must be transported to separated medical facilities to facilitate and accelerate treatment.

(3.4) In case a disaster situation exacerbates the patients must be assisted to evacuate to alternative medical facilities as well.

6.3.9 Maintaining Peace and Order: It is imperative to arrange peace and order keeping system and seal disaster stricken area to keep off unauthorized persons by deploying the police force and volunteers as deemed appropriate.

6.3.10 Dead Body Identification: In case of an occurrence of large-scale or extreme disaster which inflicts massive death toll, it is imperative to identify dead bodies in compliance with the prescribed authority and practice of National Thai Police and related interagency Memorandum of Understanding. The comprehensive practices for dead body identification are as follows :

(1) Constitute a Committee on Forensic Investigation and Body Identification and Management at three levels namely, national, regional and provincial level in case of large-scale or extreme disaster occurrence.

(2) Clearly define obligations and responsibilities for each agency involved upon the collective agreement.

(3) Prepare and check level of readiness of relevant personnel, budget and equipments as well as the scientific laboratory devices of all agencies concerned.

(4) Mobilize cooperation and collaboration from all agencies concerned which include public and private sectors, medical sciences and public health institutes, people organizations and volunteer corps.

(5) Survey and prepare the particulars of relevant experts and available sources of equipments and devices to ensure immediate deployment and utilization.

(6) Manipulation of the incident area:

(6.1) Appoint the incident commander to oversee the incident area and issue an order to absolutely prohibit unauthorized persons to enter as well as specifying the unified system for marking dead bodies' location and issuing their registration numbers.

(6.2) Arrange the place or location for shifting and the storage of the corpses awaiting for identification as required by law. It is advised to organize the joint training courses for personnel from all relevant agencies to ensure their performance effectiveness.

6.3.11 Initial Damage and Needs Assessment

When a disaster occurs in any area, concerned Emergency Operations Center is obliged to conduct initial damage and need assessment survey and periodically summarize the findings in forms of disaster affected persons' roster and damaged properties inventory as the evidences. Simultaneously, the concerned authorities must issue letter of credentials to disaster affected persons as written verification for receiving relief and recovery assistance and for further proceeding of authorities concerned; and concurrently report Command Center of all levels for acknowledgement. The operating guideline for initial damage and needs assessment survey are as follows:

(1) Initial damage assessment must be conducted to cover all aspects of loss and damage involving deaths, injuries, missing, damaged houses, crop and agricultural product, basic infrastructure facilities, public utility facilities etc. The findings of damage assessment will be useful for immediate relief assistance operations and other urgent actions.

(2) Initial needs assessment must be undertaken to determine and respond to the needs of affected people in term of basic necessities such as foods, water, medicines, clothings, shelters etc.

6.3.12 Reporting: The authorities or the official concerned are obliged to prepare the periodical report on disaster situation, mitigation operations, relief operations and other relevant facts and information. The elements of the report must be clear, accurate, timely and in compliance with the following guidelines:

(1) Upon completion of initial damage and needs assessment survey, the community leader is required to report assessment results to Local Emergency Operations Center.

(2) Local Emergency Operations Center is required to prepare and submit disaster situation report to Command Center hierarchically upwards.

(3) Local Command Center of which the stricken area falls under responsibility is required to prepare and submit disaster situation report to Command Center hierarchically upwards and to National Command Center.

Format of the report includes the following key elements.

(1) Type of disaster

(2) D/M/Y of occurrence

(3) Disaster situation

(4) Stricken area

(5) Detail of damage/relief operations

6.3.13 Guidelines for Receiving Donations

In case of necessity to collect donations from the general public, charitable organizations and private sector, to supplement to public sector's relief efforts, the authorities concerned are required to follow the following guidelines:

(1) At central level ; an establishment of the main donations collecting center to collect donations and to perform the following tasks is required.

(1.1) Collect data relevant to donations collecting agencies such as their names and address including inventory of donated relief item and cash, and the storehouses etc.

(1.2) Donations collecting agencies are required to keep and safeguard donated relief items and cash and inform Department of Disaster Prevention and Mitigation of the total amount collected.

(1.3) Department of Disaster Prevention and Mitigation and relevant agencies jointly consult to identify the rules on keeping and safeguarding donated cash and commodities, storehouses, and distribution procedure to ensure timely and properly distribution and the recipients' utmost interest.

(2) At regional level, the provincial government is entitled to establish “Provincial Donations Collection Center” to collect cash and in – kind donations. Further, the provincial government is needed to discuss with all agencies concerned to designate the venue to keep and safeguard cash and relief items, and prescribe the rules for distributing the donated cash and commodities.

(3) The government agencies intending to donate cash and relief items should contact either Department of Disaster Prevention and Mitigation or provincial government as the case may be beforehand, to allow those two donations collection centers to arrange the storage for keeping or site to distribute donated relief items.

6.3.14 Guidelines for Operations Coordination of Charitable Organization

(1) Charitable organizations intending to participate in disaster operations is required to appoint their liaisons to contact and coordinate with Emergency Operations Center of all levels round the clock. In addition, they should prepare their disaster resources for immediate mobilization.

(2) In case of being contacted by the government agencies concerned such as Disaster Prevention and Mitigation Provincial Office, Police Office, municipality, tambon administration organization etc.; the aforesaid charitable organizations must deploy their mobile units to the stricken areas and identify themselves to the incident commander or at the Emergency Operations Center.

(3) In case the charitable organizations’ mobile units reach stricken area first, they must seal off the area to prevent the unauthorized persons’ entry, and immediately notify the official in charge to proceed to control the situation.

All this, the agency concerned must prepare and submit disaster situation report to the Emergency Operations Center and inform all collaborated government agencies as well as continuously keeping the general public well-informed of disaster situation.

6.3.15 Procedure for Foreign Disaster Assistance Request

In case where the needs to appeal for international disaster assistance in forms of technical service and fund, concerned Emergency Operations Center must contact Department of Disaster Prevention and Mitigation to notify Ministry of Foreign Affairs for consideration and further proceeding according to the prescribed rules.

6.3.16 Procedure for Disaster Relief Contingency Fund Request

After an occurrence of disaster which resulted in the loss of lives and heavy material damage, the government agencies concerned must provide the immediate relief assistance to disaster victims to restore their livelihood. In order to allow the government agencies concerned correctly and lawfully utilize this fund in advance to mitigate disaster victims’ hardship whilst awaiting for relevant annual budget, the Ministry of Finance Regulations on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum was enacted. The aforesaid regulation has prescribed the criteria to be taken by the relevant government agencies in utilizing Disaster Relief Contingency Fund and has earmarked the ceiling of the aforesaid fund for each relevant government agency as follows:

(1) The Secretariat of the Prime Minister	100,000,000	Baht
(2) Office of the Permanent Secretary for Ministry of Defence	50,000,000	Baht
(3) Office of the Permanent Secretary for Ministry of Interior	50,000,000	Baht
(4) Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives	50,000,000	Baht
(5) Office of the Permanent Secretary for Ministry of Public Health	10,000,000	Baht
(6) Office of the Permanent Secretary for Ministry of Social Development and Human Security	10,000,000	Baht
(7) Department of Disaster Prevention and Mitigation	50,000,000	Baht
(8) Disaster Prevention and Mitigation Provincial Office (Each)	50,000,000	Baht

Emergency Operations Center in locality is required to proceed according to the rules and criteria prescribed in the aforesaid Ministry of Finance Regulations if needed to utilize the aforesaid fund.

Chapter 7

Post-Disaster Management

Recovery and rehabilitation phase or post-disaster management is primarily concerned with actions that involve providing assistance to disaster affected people, rebuilding and restoring stricken area and damaged basic infrastructure facilities to their normal level or their actual condition prior to the occurrence of disaster and restoring the morale and mental spirit of disaster affected persons.

7.1 Objectives

- 7.1.1 To provide immediate basic relief assistance to affected people on the continuous, rapid and efficient basis.
- 7.1.2 To support and restore the livelihoods of affected people to the sufficient level.
- 7.1.3 To rehabilitate devastated areas returning to normal condition shortly.

7.2 Guiding Principle for Rehabilitation

7.2.1 In order to initiate systematic, thorough and rapid rehabilitation, the operating procedure has been developed as follows :

- (1) Provision of curative medical service to affected people on continuous basis to the full recovery, as well as arranging temporary settlements and sanitary system therein for affected people in case of their evacuation from the devastated and dangerous areas.
- (2) Arranging the robust coordination between concerned government agencies and private organizations to ensure the systematic, rapid and thorough relief operations and to avoid duplication. In addition, the preparation of relief assistance recipients' list to be used as evidence is crucial for relief operations procedure.
- (3) Pulling down ruins and clearing debris, rehabilitating and repairing public utilities, basic infrastructure facilities and affected people's damaged houses so they can return to live and resume their livelihoods as before.
- (4) Provision of relief assistance to members of affected families on the continuous basis particularly those their bread winners' lives were claimed or being incapacitated by calamity to the extent that they can no longer support their dependents. In this case, the children of such families will be awarded the scholarship to complete the compulsory education, and the jobs will be arranged for the adult members.
- (5) Launching public relations campaign to encourage affected people's morale and liveliness for the rapid return of normalcy.

7.2.2 Rehabilitation Implementing Mechanism

Command Centers of all levels are core mechanisms responsible for undertaking rehabilitation activities through mobilization and utilization of resources available across all government agencies including private sector. Rehabilitation efforts aim at providing immediate relief assistance to affected people on gratuitous and charitable basis. The operating procedures are enunciated as :

- (1) Sub – committee on Provision of Assistance to Affected People is entrusted by National Disaster Prevention and Mitigation Committee to oversee relief operations nationwide. In addition, the aforesaid Sub-committee has been entitled to acknowledge the appropriate quantum of emergency fund withdrawn from the government Central Fund to support affected people, for seeking further and final approval of the Cabinet.
- (2) Provincial Committee on Provision of Assistance to Affected People has been tasked to survey damage caused by disaster within its jurisdiction for the useful purpose of providing assistance to affected people according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum, and other prescribed rules.
- (3) District/Sub – district Committee on Provision of Assistance to Affected People has been tasked to survey damage caused by disaster within its jurisdiction for the useful purpose of providing assistance to disaster affected persons according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affect People Assistance B.E. 2546 (2003) and addendum, and other prescribed rules.

(4) Provision of assistance to disaster affected people by other government agencies concerned must be done according to the prescribed laws and regulations, and these concerned agencies must simultaneously coordinate with Command Center of all levels.

7.3 Rehabilitation of Affected People and Damaged Area

7.3.1 Rehabilitation of Affected People

(1) Set up Immediate Salvation Unit to primarily undertake relief activities in conjunction with Disaster Suppression Unit on continuous basis as follows:

- (1.1) Provide basic medical treatment to patients and injured persons.
- (1.2) Evacuate affected people and remove their assets to the safe areas.
- (1.3) Supply sufficient food items and other basic necessities for survival to affected people incapable of self-support at the initial stage.
- (1.4) Maintain order and safety of people and places in conjunction with local security units.

(2) Affected People Welfare Unit will instantly proceed its following functions after the completion of the Immediate Salvation Unit's missions :

(2.1) Survey and assess the loss and damage and prepare the list of affected people and their damaged assets, and issue them credentials for the useful purpose of verification in receiving relief and rehabilitation programmes.

(2.2) Provide relief assistance to affected people by basing on the surveyed information in the lists and according to the prescribed measures and regulations on the equitable and thorough basis.

(2.3) Repair and restore damaged houses, public utilities and roads for immediate serviceability.

(2.4) Launch public relations campaign to encourage and boost morale of people in distress to return to normalcy as soon as possible.

(2.5) Provide medical treatment to the patients and injured persons as well as health care service on continuous basis.

(2.6) Prevent the outbreak of epidemics in humans and animals.

(3) Set up Safety Control Unit to be in charge of preventing the recurrence of disaster or protecting the people from potential harm of explosive materials or toxic residue. The relevant experts will be appropriately dispatched to perform the following activities in collaboration with other authorities concerned :

(3.1) Demolish or destroying the ruins.

(3.2) Clear explosive materials.

(3.3) Cleanse toxic residues.

(3.4) Maintain peace and order and managing traffic.

7.3.2 Rehabilitation of Basic Infrastructure Facilities

Rehabilitation efforts will be undertaken following disaster occurrence through repairing and restoring damaged areas and basic infrastructure facilities to the proper level of functioning. Rehabilitation procedures are laid out as follows :

(1) Conduct the thorough survey of damage occurred to public utility system, basic infrastructure facilities including houses for the useful purposes of relief and rehabilitation works and create damage information database.

(2) Repair and restore the repairable damaged houses as soon as possible. Demolishment is inevitably required in case of beyond reparation to prevent the possible harmful incidents. And in case of demolishing the totally damaged houses, temporary shelter will be provided to dwellers.

(3) Local administration organization of which the affected areas are under responsibility is primarily responsible for repairing and restoring damaged basic infrastructure facilities on its own account. In case of being beyond its funding capacity, the affected local administration organization can request for financial support from various higher hierarchical order budget sources concerned such as provincial budget, ministerial/departmental budget, central budget as well as from non-government agency or international organization.

(4) In case where extensive damage is beyond the capacity of the affected local administration organization to repair on its own account, the government agencies of which the damaged basic infrastructure facilities are under responsibility or the government agency designated in this plan must proceed to complete the reparation and rehabilitation within 90 days. And if the aforesaid government agencies are unable to complete the works within specified time frame due to insufficient budget, they are entitled to request extraordinary budget from the Cabinet case by case in order to mitigate the people's hardship. The followings are disaster standing orders of government agencies concerned for reparation and rehabilitation works;

(4.1) Department of Highways, Department of Rural Roads, and State Railways of Thailand are responsible for repairing and restoring damaged highways, rural roads, and railway tracks respectively.

(4.2) Provincial Electricity Authority, Metropolitan Electricity Authority, and Electricity Generating Authority of Thailand Public Company Limited are responsible for electricity system failure.

(4.3) Provincial Waterworks Authority and Metropolitan Waterworks Authority are responsible for repairing damaged water supply system.

(4.4) Telephone Organization of Thailand Cooperation Public Company Limited and Communication Authority of Thailand Telecom Public Company Limited are responsible for repairing and restoring damaged telecommunication and communication systems.

(4.5) Concerned government agencies are responsible for repairing and restoring the damaged government offices, educational establishments, temples and archeological sites.

(4.6) Department of Public Works and Town & Country Planning, Department of Water Resources, Department Groundwater Resources, Royal Irrigation Department, and other relevant government agencies are responsible for debris clearance, building inspection, town and country planning and design, providing water resources for consumption, landscape designing etc.

(4.7) Department of Disaster Prevention and Mitigation is responsible for repairing and rehabilitating damaged roads and water resources which are under responsibility of local administration organization.

(5) In case of requesting for financial support drawn from Central Fund

National Disaster Prevention and Mitigation Committee has constituted "Sub-committee on Provision of Assistance to Affected People" which is chaired by Deputy Permanent Secretary for Ministry of Interior (Chief of Disaster Management and Town Development Missions Cluster), Director General of Department of Disaster Prevention and Mitigation as vice-chairperson, the representatives from Bureau of Budget, Comptroller General's Department, Office of the National Economic and Social Development Board, Ministry of Agriculture and Cooperatives, Ministry of Public Health, Department of Provincial Administration, Department of Local Administration, including representatives from engineering works related government agencies such as Royal Irrigation Department, Department of Public Works and Town & Country Planning, Department of Water Resources, Department of Highways, Department of Rural Roads, and Department of Disaster Prevention and Mitigation. This sub-committee is empowered and tasked to provide assistance to affected people as implied under Disaster Prevention and Mitigation Act B. E. 2550 (2007), and is entitled to make comments regarding the approval of the quantum of funds to the projects submitted for solving the facing problems of affected people. The appropriate projects proposed for financial support drawn from Central Fund will be submitted to Minister of Ministry of Interior for his affirmation and signature to forward to Bureau of the Budget for further dealing and seeking agreement. The approval of the quantum of the aforesaid requested funds will be done by the Prime Minister or the Cabinet as the case may be. The procedure for requesting and for consideration to grant the aforesaid funds is elaborated as follows:

(5.1) Project and estimates proposal: The affected province is required to submit project requesting for financial support to Department of Disaster Prevention and Mitigation. The project proposal must be developed according to the guidelines prescribed in the official letter issued by Department of Disaster Prevention and Mitigation. In other words, the proposed project must be developed and channeled through District Committee on Provision of Assistance to Affected People which is chaired by District Chief and Provincial Committee on Provision of Assistance to Affected People which is chaired by Provincial Governor respectively. In addition, the project proposed must be the one

unable to be funded by Provincial Disaster Relief Contingency Fund (50 million Baht) because of its depletion or the features of the project proposed do not meet specific requirements prescribed by Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum. The requested agency is required to submit the project proposal in details together with the photographs of damaged items countersigned by District Chief as chairman of District Committee on Provision of Assistance to Affected People and other two committees to certify the authenticity as well as enclosure of the estimates and drawing plans.

(5.2) Principle guidelines for project considering: Department of Disaster Prevention and Mitigation will forward the project proposal submitted by affected province to “Engineering Working Group” of which the members comprise representatives from engineering works related government agencies to consider and screen for the appropriateness of the aforesaid project. In case the proposed project requires very large quantum of funds, the representatives from engineering works related agencies, Bureau of the Budget and Department of Disaster Prevention and Mitigation will jointly visit and inspect the site to collect additional information and evidence to facilitate the proposed project and estimates screening and consideration. After the affirmation and compliance of the Sub-committee, the proposed project and estimates will be submitted to Minister of Ministry of Interior for affirmation and signature to forward further to Bureau of the Budget. The final approval of the financial support drawn from Central Fund will be done by the Prime Minister or the Cabinet as the case may be. All in all, the procedure employed in requesting for the aforesaid fund for activation of rehabilitation programmes mainly based on the Cabinet consensus dated 17 February 2009.

In addition, those who are responsible should integrate disaster preventive measures into rehabilitation programmes to ensure sustainable and well-balanced development and to prevent the recurrence of disaster in the future. The instances of this, among other things are the appropriate town and country planning system, rehabilitation and building the better, clear-cut land use measures, industrial establishments expansion control, uses of chemical and hazardous substances control, promotion of cost-effective and efficient utilization of environment and natural resources, etc.

7.4 Monitoring and Evaluation

When disaster subsides, any Command Center of which stricken areas are under responsibility is required to monitor and evaluate post impact situation and the implementation of mitigation, relief activities etc., to learn of invalidity and bottlenecks. The results of the evaluation will be applied to improve the implementation and use as guidelines for robust and effective disaster management in the future.

7.5 Lesson Learned

The lesson-learned issue has already been mentioned in Chapter 4 item 4.4.5 (2.2). In addition, post-impact situation can provide invaluable lessons and information for improving disaster management in the future.

Chapter 8

Standing Orders on Disaster

The successful implementation of disaster management activities requires the cooperations from all sectors of the nation such as the civil authority, military authority, private sector, foundation/volunteers and the charitable organization. It needs to effectively coordinate for joint operations and mobilize all relevant resources including the specific knowledge and techniques to support disaster efforts of provincial cluster, provincial government, district and the local administration organization in accordance to duties and responsibilities of the following agencies.

8.1 Department of Disaster Prevention and Mitigation

Disaster Prevention and Mitigation Act. B. E. 2550 (2007) has designated this department as the State nodal agency to carry out disaster management activities of the country. The principal responsibilities of this department are as follows :

- 8.1.1 Formulate and propose Disaster Prevention and Mitigation Plan to National Disaster Prevention and Mitigation Committee to further seek for the Cabinet's approval.
- 8.1.2 Take steps to organize operational research in order to acquire the measures for the efficient disaster management
- 8.1.3 Create risk area, safety area and disaster statistics databases.
- 8.1.4 Take action, conduct disaster operations coordination, provide the support and assistance to government agencies, local administration organizations, and private sector to deal with disaster.
- 8.1.5 Provide relief assistance to people affected by disaster or by other harmful incidents.
- 8.1.6 Provide advisory and consulting services and organize disaster management training courses.
- 8.1.7 Monitor, inspect and evaluate task performance of concerned agencies as identified in National Disaster Prevention and Mitigation Plan at each level.

8.2 Office of the Prime Minister

In addition to normal functions this agency will perform the following duties.

- 8.2.1 Provide the budget for conducting disaster management activities.
- 8.2.2 Process the intelligence and counter – intelligence, as well as overseeing to ensure a compliance to the Office of the Prime Minister Regulation on National Safety to support disaster operations.
- 8.2.3 Provide relief assistance to affected people according to the policy of the government.

8.3 Public Relations Department

In addition to normal functions this agency will perform the following duties.

- 8.3.1 Launch the relevant public relations campaign to facilitate the mobilization of the public participation in disaster management.
- 8.3.2 Publicize and tactfully manage the emergency situation related information to intercept the panic.
- 8.3.3 Establish the information management center to serve as the focal point in monitoring and supplying the accurate and true information of disaster situation to the organizations concerned both within the country and abroad.
- 8.3.4 Prepare the joint information center beforehand to function as the public relations coordination center in times of need. In the emergency situation this center will be responsible for information management to ensure the accurate and timely report and publicity.
- 8.3.5 Take steps for publication of news and information on disaster relief and stricken area rehabilitation operations to keep the general public well – informed of the government agency performance.

8.4 Royal Thai Police

This government agency is the juristic person subordinated to the Prime Minister. And in addition to normal duties, this agency will perform the following duties.

8.4.1 Suppress the criminal offence, maintain the peace and order and security of the general public and of the kingdom, as well as providing the social service.

8.4.2 Stipulate the measures to create the state of readiness of Royal Thai Police in the matter of protecting and assisting affected people to support and contribute to the efficiency and timeliness of disaster operations.

8.4.3 Assess the situation, lay down the road map, and prepare to dispatch the operations unit and exchange the information with the operations unit of other relevant agencies, as well as disseminating warning information to the general public.

8.4.4 Function as communication focal point to contact and coordinate with Royal Thai Police operations units and other government agencies' operations units both at local and central levels through the appropriate, and quickest means such as facsimile, trunked radio etc.

8.4.5 Conduct dead human body identification and repatriation. The officials concerned must bring the results of the aforesaid identification to the notice of the superior for further notifying the relatives of the deaths.

8.4.6 Manage the traffic where the transport route is obstructed or severely damaged to facilitate the post - disaster operations of other agencies and provide relief assistance.

8.4.7 Establish field operations center as the police joint operations center to assume the functions in controlling, overseeing and coordinating the police responsibility performance until the situation return to normalcy.

8.4.8 Inspect the incident scene to collect information regarding missing person and in case of the dead for conducting identification and repatriation.

8.5 Ministry of Defence

In addition to normal functions this Ministry will perform the following duties :

8.5.1 Coordinate with Department of Disaster Prevention and Mitigation to identify the measures regarding disaster operations which have an effect on military personnel, building, location and property, including prepare the evacuation plan for the military unit and the family.

8.5.2 Educate and train the government official, volunteer and the general public on both technical aspect and the practice regarding military operations of specific incidents such as air threat, explosives disposal, protection and decontamination of chemical, radiological, biological materials etc.

8.5.3 Coordinate disaster related efforts, disaster exercise, and support disaster operations in various areas, and take over the rear – area protection to ensure the unified operations in war time.

8.5.4 Direct, coordinate, command and oversee disaster operations of the Ministry of Defence agencies. Additionally, address the problem at hand and conduct the rehabilitation operations on the efficient, rapid and unified basis nationwide.

8.5.5 Provide assistance to affected people according to the Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum.

8.6 Ministry of Foreign Affairs

This Ministry in additions to normal responsibilities, will perform the following duties :

8.6.1 Coordinate and contact with foreign missions (embassy and consul general) and the international organization posted in Thailand that are likely to provide assistance and support to Thai government when the disaster occurs.

8.6.2 Contact and coordinate to request for disaster assistance and support from foreign governments and international organizations.

8.6.3 Function as the coordinating focal point to clarify and provide disaster related information to foreigners and foreign governments including the embassies in Bangkok for further proceeding in case their citizens are among the dead due to disaster.

8.6.4 Support and coordinate with Department of Disaster Prevention and Mitigation in requesting for assistance and support from ASEAN member countries.

8.7 Ministry of Social Development and Human Security

This Ministry in addition to normal responsibilities will perform the following duties :

8.7.1 Enhance social development and social welfare networks to function as supportive disaster prevention mechanisms at grass – root level.

- 8.7.2 Contribute and transport the subsistence supplies to the affected area.
- 8.7.3 Provide appropriate care for the affected orphans, disabled persons and the elders.
- 8.7.4 Prepare the plan for socio – economic and mental rehabilitation of affected people and social problem victims.

8.8 Ministry of Agriculture and Cooperatives

This Ministry in addition to normal responsibilities will perform the following duties :

- 8.8.1 Assess the agricultural disaster situation through the analysis of relevant data such as weather condition, amount of rainfall, water situation, land – use and agricultural products, including data on the areas likely to be affected and the past affected areas.
- 8.8.2 Ensure the formulation of action plan regarding vegetation, livestock, fishery, agricultural areas likely to be affected and water resources to prevent and mitigate disaster.
- 8.8.3 Take the required steps for the development of water resources to prevent and mitigate the flood and drought.
- 8.8.4 Develop flood forecasting system and keep the close watch on the situation for timely warning.
- 8.8.5 Keep the close monitoring of agricultural disaster situation to ensure the timely warning of the outbreak of plant and animal epidemic, and conduct the agricultural disaster prevention and mitigation work through Agricultural Disaster Monitoring and Management Center.
- 8.8.6 Through Tambon Agricultural Service and Technology Transfer Center, take the necessary steps to quantify the agricultural loss and damage for providing assistance according to the government regulations.
- 8.8.7 Arrange and dispatch the ad – hoc task force to the stricken areas to give the advice and guidance to the farmers, carry out the royal rainmaking operations, adjust the water allocation plan etc.
- 8.8.8 Take the appropriate and legal steps to distribute cash compensation to the farmers in distress according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum. The time frame of distribution has been stipulated not to exceed 3 months. In addition, the rules and time frame for requesting for the Central Fund have been as well stipulated.
- 8.8.9 Improve the affected agricultural area for the recovery and restoration of the affected farmers' livelihood.

8.9 Ministry of Transport

As part of its normal functions, this Ministry will perform the following responsibilities :

- 8.9.1 Arrange for the vehicles and drivers including essential implements, equipments, fuel supplies as appropriate and required to support disaster operations.
- 8.9.2 Take the necessary steps to ensure the improvement and maintenance of road transportation network for uninterrupted mobilization of logistics, as well as improving the road condition likely to induce road traffic accident and other disasters such as flood due to obstructing watercourse.
- 8.9.3 Improve the waterway to prevent flood, drought and other marine transport accidents.
- 8.9.4 Arrange for transportation through constructing temporary roads, railways and other facilities such as bridges to facilitate and ensure uninterrupted mobilization of logistics and disaster operations in the event of their disruption.
- 8.9.5 Support the evacuation operations of affected people from the stricken or likely to be stricken for the interest of their safety.
- 8.9.6 Provide assistance and support the traffic management of the affected roads.
- 8.9.7 Take the quickest steps to rehabilitate damaged transportation routes to resume normal function.

8.10 Ministry of Natural Resources and Environment

This Ministry will perform the following duties in addition to its normal functions :

- 8.10.1 Assess threatening factors regarding natural resources and environment through the analysis of the relevant data on weather condition, amount of rainfall, water situation, land – use including area at risk and the past stricken areas.
- 8.10.2 Coordinate and collaborate with other agencies concerned to formulate the action plan, control and prevent people and environment from the negative impacts of specific disaster such as forest fire and haze, flashflood and landslide, and various types of pollution etc.

8.10.3 Plan to develop the locations of natural resources and environment to ensure their sustainability and viability, and reduce their vulnerability to disaster.

8.10.4 Plan to develop and improve natural water resources for the useful purpose of sustainable prevention and solution of flood and water shortage.

8.10.5 Take the necessary steps to rehabilitate and restore affected locations of natural resources, environment and national parks to normalcy as well as enhancing their disaster resilience.

8.10.6 Rehabilitate affected water resources and deep wells to ensure their rapid return to normalcy.

8.10.7 Monitor, inspect and evaluate disaster impacts on environment, and plan to rehabilitate damaged environment to sustain its balancing situation and suitability for the living of people and other organisms.

8.11 Ministry of Information and Communication Technology

In addition to its normal functions this Ministry will perform the following duties.

8.11.1 Take the steps required to prepare the main, auxiliary and standby communication and telecommunication systems to ensure their full time serviceability.

8.11.2 Through National Disaster Warning Center, take the precaution steps to disseminate warning information and signals, and through Communicational Crisis Management Center, prepare to provide both main and auxiliary communication systems database service.

8.11.3 Provide communication apparatus, ensure the allocation of frequency for the standby communication system in emergency situation, and prepare to dispatch the additional personnel to provide full time communication service during disaster to facilitate the acceleration of disaster relief operations both at the center and in the field.

8.12 Ministry of Energy

In addition to its normal functions, this Ministry will perform the following duties :

8.12.1 Check and prepare fuel, gas and energy supply for the useful purpose of disaster operations.

8.12.2 Procure and produce fuel, gas and energy supply to ensure their sufficient requirement for disaster operations.

8.13 Ministry of Commerce

In addition to its normal functions, this Ministry will perform the following duties :

8.13.1 Take the necessary steps to ensure sufficient supply of subsistence basic necessities.

8.13.2 Operate a special rationing system and keep the price of commodities under control in the wake of shortage.

8.14 Ministry of Interior

The responsibilities of this Ministry regarding disaster operations are noted as follows :

8.14.1 Give directives and coordinate with provincial government and local administration organizations to carry out disaster operations within the respective jurisdiction, including in the jurisdiction nearby upon the request.

8.14.2 Take the legal steps to enforce Building Control Act, Land Excavation and Landfilling Act, Dangerous Goods Trading Control Act and other relevant Acts to ensure the safety and well – being of the general public.

8.14.3 Proceed to ensure the strict compliance with criteria regarding town and city and country planning for the useful purpose of disaster management.

8.14.4 Take the steps required to issue and declare disaster declaration according to the following norm; in case of the provincial areas, the declaration will be made by the provincial governor whereas the Bangkok Metropolitan areas, the declaration will be made by Director General of Department of Disaster Prevention and Mitigation.

8.14.5 Direct and coordinate disaster operations, provide relief and assistance to affected people and rehabilitate the affected areas due to large – scale disaster with widespread catastrophic impacts.

8.14.6 Promote and maintain internal security, law and order and ensure the efficient provision of government services to the people in affected areas.

8.14.7 Take the urgent steps to provide assistance to affected people in compliance with the Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum.

8.15 Ministry of Justice

Through the subordinated Institute of Forensic Sciences, this Ministry will perform the following duties in addition to its normal functions :

8.15.1 Develop and standardize the forensic sciences practice, and prepare the list of forensic science personnel of all agencies.

8.15.2 Take the necessary steps to coordinate with all agencies regarding forensic practice to prepare beforehand their personnel, equipments and implements and the budget to ensure all – inclusive operations.

8.15.3 Gather the unknown dead bodies, parts of the unknown dead body due to disaster for identification.

8.15.4 Perform scientific and medical verification of the evidences for further legal proceeding, and take the necessary steps to ensure the strict compliance to the same standard operating procedure among agencies concerned.

8.15.5 Keep the close contact with other agencies regarding the missing person issues.

8.16 Ministry of Labour

Besides normal functions, this Ministry will perform the additional duties on disaster as follows:

8.16.1 Prepare and seek for the technical employees for the interest of disaster operations.

8.16.2 Arrange the appropriate educational programmes, training and practicing for the industrial establishment employees on occupational safety, and to enhance their capacity to safeguard their own workplaces and to maintain the safety therein.

8.16.3 Inspect, prepare and seek for disaster related equipments and implements through demanding, procuring or leasing for the use of disaster management.

8.16.4 Examine the data relating affected workers due to disaster for the use of assisting them to solicit the entitled right prescribed under the Labour Law.

8.16.5 Arrange the vocational training and seek the employment for affected people.

8.16.6 Establish the social security service center to provide the relevant service to the affected workers.

8.17 Ministry of Culture

Besides normal functions, this Ministry will additionally assist, restore and repair the damaged temples or the religious places, archeological sites and objects to resume the normal function and condition as necessary.

8.18 Ministry of Sciences and Technology

In addition to its normal functions, this Ministry will perform the following duties :

8.18.1 Develop its own preparedness plan and keep ready to support local authorities to handle chemical substance and hazardous material - related incident, including the prevention and containment of radioactive hazard.

8.18.2 Arrange the study and research on sciences and technology appropriate for disaster management.

8.18.3 Make all efforts to create disaster management related databank through producing, searching, collecting and analyzing the data supplied by earth observation satellites and information technology.

8.18.4 Provide full support of various technical issues including the research and development of space technology for the interest of disaster prevention and mitigation efforts.

8.18.5 Ensure to provide full support of technology in the forms of equipments and implements or in any other forms to facilitate and strengthen disaster operations during state of emergency. Moreover, this Ministry will dispatch additional personnel to provide technological service regarding disaster operations in the stricken and the surrounding areas.

8.18.6 Provide the support of knowledge and technology regarding affected people rehabilitation through arranging the vocational training, searching for missing person etc, as well as deploying additional manpower to provide technological service for assisting and rehabilitating the affected persons.

8.19 Ministry of Education

In addition to normal functions, this Ministry will perform the following duties :

- 8.19.1 Develop the educational curricula of all levels to include disaster related subjects, from primary to higher education institutions.
- 8.19.2 Publicize handbook, bulletins; arrange and promote the educational research for the useful purpose of supporting disaster management efforts.
- 8.19.3 Develop and inspire the educational establishments to involve in disaster management efforts.
- 8.19.4 Take initiative steps to educate students of all educational levels and inspire them to participate in disaster management efforts.
- 8.19.5 Educate and support the role and involvement of boy and girl scouts, girl guides, and students of all levels in disaster management activities.
- 8.19.6 Provide disaster management education to general public and community.
- 8.19.7 Deploy educational personnel to arrange the schooling in evacuation settlements as necessary.
- 8.19.8 Provide educational materials to the affected students.
- 8.19.9 Proceed to repair, improve and modify damaged educational buildings for primary functionality, as well as arranging for educational materials and implements to continue the schooling.
- 8.19.10 Support vocational training courses for the affected households.

8.20 Ministry of Public Health

In addition to its normal functions, this Ministry will perform the following duties.

- 8.20.1 Prepare and procure medical and public health resources as well as taking necessary steps to mobilize and synergize medical and public health personnel for immediate deployment.
- 8.20.2 Create medical and public health specialist database as well as medical equipments and implements database of both public and private sectors to ensure their availability and operability in the wake of disaster.
- 8.20.3 Develop emergency medical service and ambulance service to ensure their operational readiness and effectiveness in assisting the people in distress. In addition, through the cooperation with the agencies concerned, systematize the public health service and supportive networks nationwide to keep them in state of readiness to take action in the wake of disaster.
- 8.20.4 Develop communication systems to ensure their efficiency in coordinating with other agencies concerned as well as in coordinating with and giving directives to public health agency.
- 8.20.5 Take the necessary steps to arrange the modernized and standardized laboratory to ensure its readiness.
- 8.20.6 Arrange for the development of database system on the damaged public health facilities as well as reporting system to ensure the accuracy and timeliness.
- 8.20.7 Develop and enhance the knowledge and skills of public health personnel and volunteers to be ready for action at the onset of disaster, and to safeguard themselves while undertaking responsibilities.
- 8.20.8 Educate the people and the community about basic medical care, sanitation and environmental health for the useful purpose of assisting themselves and the others in case of experiencing danger.
- 8.20.9 Keep the close watch and control the outbreak of epidemic and arrange for the provision of medical and health care, sanitation and preventive care to the affected people.
- 8.20.10 Rehabilitate and keep mental spirit of the affected people high and bringing normalcy to livelihood.

8.21 Emergency Medical Institute of Thailand

This Institute functions as the center to coordinate with both domestic and foreign public and private emergency medical service organizations. Under Emergency Medical Service Act B. E. 2551 (2008), Section 15 (7), it has been tasked to perform the following functions :

- 8.21.1 Take the necessary steps to request the support from both public and private organizations at national, regional, and local level when disaster occurs.
- 8.21.2 Ensure the preparedness of communication arrangement for the use in emergency notifying and giving directions round the clock such as hotline number 1669 and 1646, and VHF SSB communication radio.
- 8.21.3 Coordinate for the mobilization of the advanced, basic and primary emergency medical service teams.
- 8.21.4 Coordinate for the mobilization of marine and air operation teams.

8.22 Ministry of Industry

In addition to its normal functions, this Ministry will perform the following duties :

8.22.1 Control and sustain the prevention system regarding the chemical substance and hazardous material incidents.

8.22.2 Supply data and deploy the experts to handle the chemical substance and hazardous material incidents.

8.23 Metropolitan/Provincial Waterworks Authorities

These authorities will direct and supervise the maintenance, modification, reparation and rehabilitation of disrupted water supply system as well as provision of alternative sources and facilities to keep the existing service operational and return to normalcy as soon as possible.

8.24 Metropolitan/Provincial Electricity Authorities

These authorities will function the following additional duties.

8.24.1 Take necessary steps to control and prevent the danger triggered by the electricity during disaster.

8.24.2 Maintain, modify, fix and provide the alternative sources and facilities of illuminating utility as well as repairing the damaged facilities to return to normalcy.

8.25 Thai Red Cross Society

This organization will complement government efforts in the overall disaster preparedness and disaster relief programmes as follows :

8.25.1 Prepare and secure blood, medicines, medical supplies and implements as well as the basic necessities for the useful purpose of supporting and relieving hardship of affected people.

8.25.2 Arrange the training course for the members of Thai Red Cross Society, Red Cross Volunteers, Provincial Red Cross members and the people on disaster preparedness, first – aid practice and public health to become capable of helping themselves and the others in the wake of disaster.

8.25.3 Ensure the arrangement of assistance to affected people during and after disaster stages through the provision of curative and preventive medical service, distribution of consumables as well as household materials and utensils, and other services to meet their needs.

8.25.4 Contact and coordinate for the cooperation with foreign Red Cross Societies through International Federation of Red Cross and Red Crescent Societies Committees.

8.26 Rajaprajanugroh Foundation Under Royal Patronage

8.26.1 Provide the volunteers to support disaster operations.

8.26.2 Support the relief operations through the provision of basic necessities and other household materials and implements required for sustaining the livelihood to affected people.

8.26.3 Collect the donated cash and in - kind for distribution to affected people.

8.27 Central Civil Defence Volunteers Center

The Center will perform the following additional duties.

8.27.1 Arrange the training courses for civil defence volunteers to ensure their standard and efficient involvement in disaster management.

8.27.2 Support the training programmes for civil defence volunteers at all levels nationwide.

8.27.3 Coordinate with different categories of volunteer to support and assist the commander at all levels upon request.

8.28 Private Sector/Foundation

These auxiliary organizations will perform the following duties in association with government agencies.

8.28.1 Support Emergency Operations Center of all levels.

8.28.2 Join the operations as Emergency Operations Center Commander has assigned according to their own capacity and resources.

Chapter 9

Putting Plan into Action

9.1 Concept and Principle

The rising trend of disaster occurrence in terms of frequency and intensity due to the climate and environmental changes as earlier mentioned, has driven the need for close vigilance and preparedness in the interest of continuous and long-term prevention efforts. Since disaster risk exposure and vulnerability are our collective problems, they required the close and continuous joint efforts of all sectors of the society to address. Subsequently, National Disaster Prevention and Mitigation Plan B.E. 2553 – 2557 (2010 – 2014) has identified the guiding principle and disaster strategy basing on disaster management cycle to facilitate the integrative efforts among all agencies concerned in combating disaster of all phases, and to ensure the fulfillment of the objectives and achievement of expected outcomes. In addition, National Disaster Prevention and Mitigation Committee that is chaired by the Prime Minister or the entrusted Deputy Prime Minister, has been constituted as the steering mechanism at national level to ensure that the execution of national disaster strategies by all concerned sectors is heading towards the same direction and in harmonious manner.

9.2 Executing Mechanism

National Disaster Prevention and Mitigation Committee has been advised to constitute Sub – committee on National Disaster Strategy Implementation Coordination, of which the members comprise the representatives from all agencies concerned as its administrative machinery in coordinating the joint implementation of national disaster strategies. The main tasks of the Sub-committee are as follows:

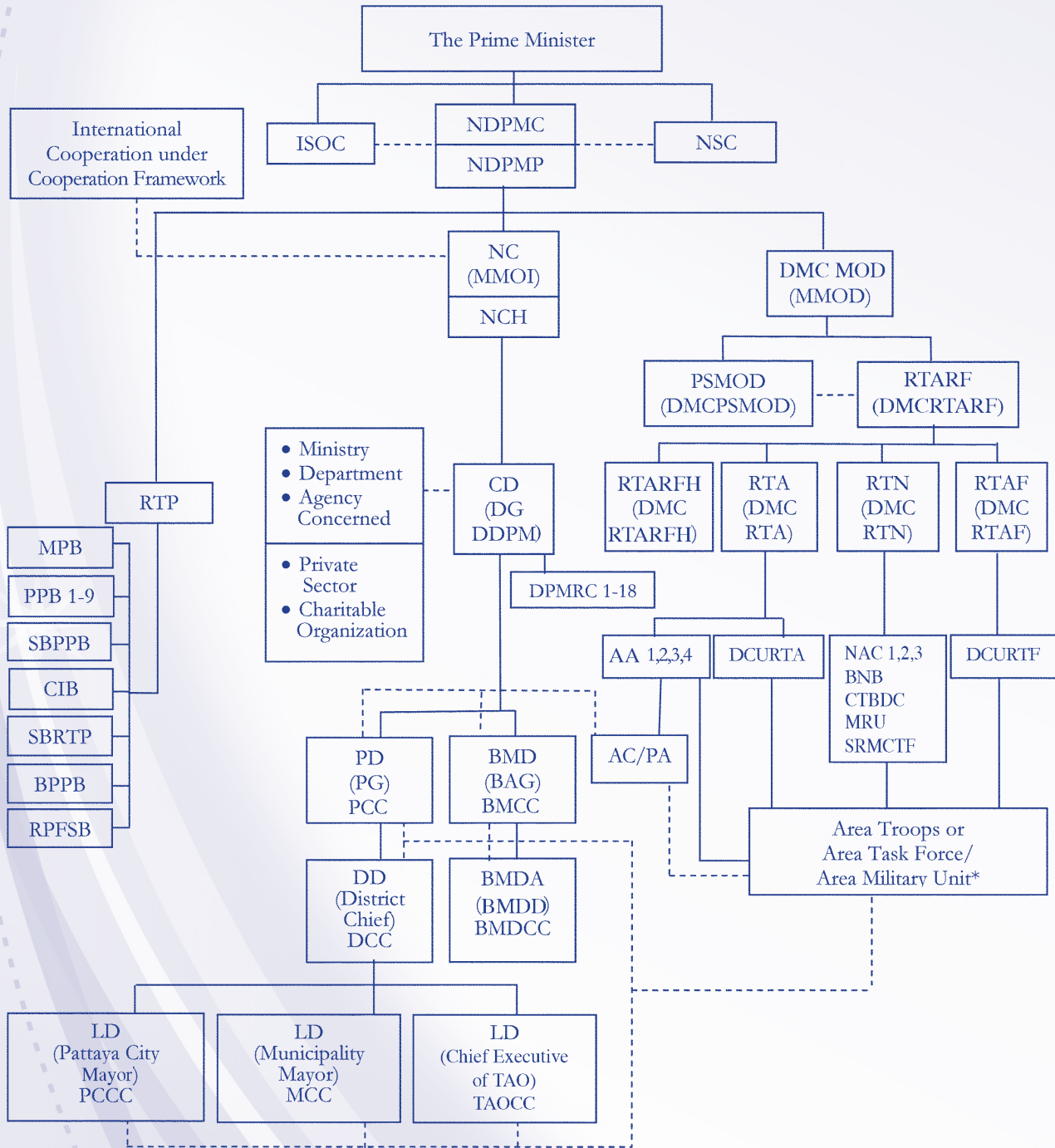
9.2.1 Take necessary steps to coordinate with the agencies concerned to efficiently and efficaciously implement the programmes prescribed under the national disaster strategies, and to prepare budget for the implementation.

9.2.2 Monitor and evaluate the implementation of national disaster strategies as well as the relevant action/main plan. In addition, take notes of all problems and obstacles as the basis in improving National Disaster Prevention and Mitigation Plan to become more appropriate and more compatible with the situation.

9.2.3 Function as coordination center regarding disaster management techniques and international cooperation.

9.3 Operations Coordination

Generally, disaster management in Thailand relies on the integrative efforts and cooperation from all sectors of the nation such as civilian government agencies, military, private sector, charitable organizations as well as foundations/volunteers to achieve the identified objectives. The joint actions require the systematic, agreeable and ever coordination during emergency and non-emergency situations or war time. Department of Disaster Prevention and Mitigation has been assigned as the intermediary government mechanism to coordinate with all sectors concerned in interpreting the programmes/activities identified under national disaster strategies into concrete action. Charts 9.1 and 9.2 illustrate the structures of chain of command and chain of coordination as identified in this plan.



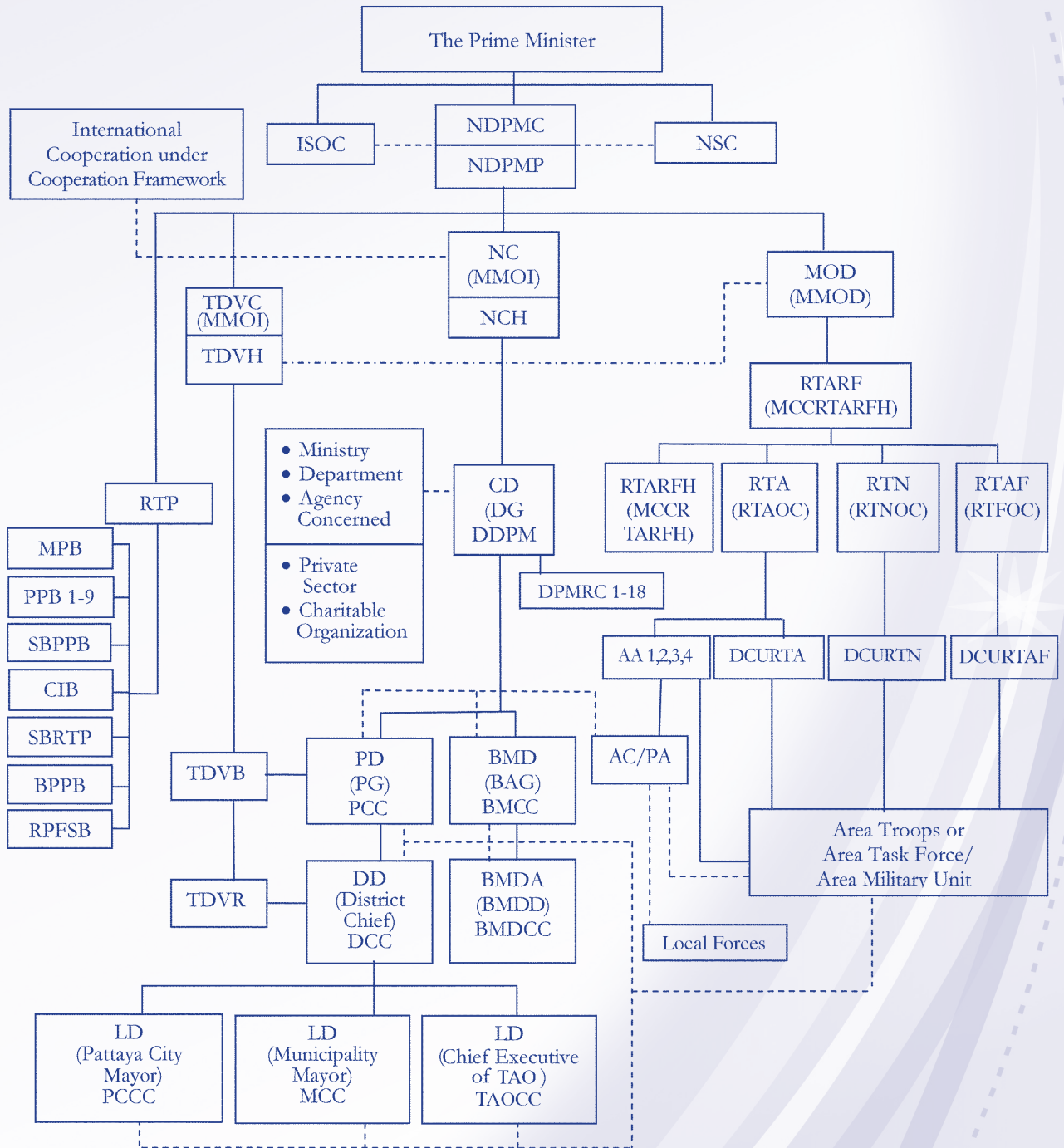
N.B.

— Chain of Command

- - - - Chain of Coordination

* Division of responsible areas must be done according to Disaster Mitigation Plan of Ministry of Defence and Memorandum of Understanding on Disaster Prevention and Mitigation Operations between the Provincial Director and the Area Military Commandant

Chart 9.1: Structure of Chain of Command during Non-emergency Situation



N.B.

- Chain of Command
- Chain of Coordination

Chart 9.2: Structure of Chain of Command during Emergency Situation or War Time

9.4 Interlinkage between National Disaster Prevention and Mitigation Plan and other Relevant Plans

National Disaster Prevention and Mitigation Act B.E. 2550 (2007) has defined “disaster” to encompass natural and man-made disasters, and the State security threats.

9.4.1 Natural and Man-made Disaster Aspect

Ministry of Interior, through Department of Disaster Prevention and Mitigation has formulated National Disaster Prevention and Mitigation Plan B.E. 2553 - 2557 (2010 – 2014) basing on concerned policy identified by National Disaster Prevention and Mitigation Committee. Upon the Cabinet’s approval, it has served as the principal machinery for national disaster management as well as supporting National Preparedness and Policy. In addition, each government administration entity of all levels such as provincial government, district office, local administration organization and Bangkok Metropolitan Administration are required to formulate their own disaster prevention and mitigation plan as the supportive mechanism to National Disaster Prevention and Mitigation Plan. These supportive sectoral plans will facilitate the preparedness arrangement to mitigate disaster risk and vulnerability and build resilience in the respective areas.

Regarding preparedness arrangement to deal with current and future disaster, the Office of the National Security Council in conjunction with Ministry of Interior (Department of Disaster Prevention and Mitigation) and other agencies concerned have formulated the Ministerial Level Integrative Disaster Prevention and Mitigation Action Plan. Subsequently, the government agencies at the ministerial and provincial levels will have the aforesaid plan in place as the mechanism in transferring resources and specialized technical knowledge of each Ministry to the government entities at provincial and district levels as well as local administration organization.

On account of accident (excluding accident triggered by natural disaster), the National Safety Council of Thailand has formulated National Safety Major Plan (B.E. 2553 – 2557: 2010 – 2014) and submitted for the Cabinet’s approval. Subsequently, all agencies concerned are required to formulate their own action plan based on the National Safety Major Plan (B.E. 2553 – 2557). Both National Safety Major Plan and the concerned agencies action plan are considered as the sub-plans under National Disaster Prevention and Mitigation Plan B.E. 2553 – 2557.

The above delineation has shed the light on the interlinkage between plans that Thailand’s disaster management system based on. This interlinkage can be summarized as follows:

- Interlinkage between National Disaster Prevention and Mitigation Plan and Military Defence Plan that further links with and support National Economic and Social Development Plan and 4 - Year Government Strategy Plan.
- Under National Disaster Prevention and Mitigation Plan, the main programmes/ activities have been identified to be implemented by all agencies concerned, and the master plan for dealing with each type of hazard and threat has been formulated to ensure the concrete implementation of the plans in a step-by-step manner.
- Ministerial Integrative Disaster Prevention and Mitigation Action Plan has as well been formulated to support Military Defence Plan and Disaster Prevention and Mitigation Plan of each government administration unit such as province government, Bangkok Metropolitan Administration and other local administration organizations.

9.4.2 Security Threat Aspect

Office of the National Security Council has enunciated National Preparedness Policy to serve as the policy framework that identifies strategies, guidelines, measures and implementing plans to be taken by all relevant agencies for managing emergencies in the most effective ways. All sectors are required to coordinate and cooperate beforehand to ensure the readiness for prevention, mitigation, suppression as well as rehabilitation during post-disaster stage.

National Preparedness Policy has placed its priority on two main plans, namely National Disaster Prevention and Mitigation Plan formulated for handling emergency situation triggered by disaster, and Military Defence Plan formulated for managing emergency situation spawned by armed conflict or war. Thus, the Ministry of Defence has formulated two supportive plans namely, Ministry of Defence Disaster Prevention and Mitigation Plan as mechanism to facilitate the availability of military assets to support disaster operations, and Efforts and Resources Synergy for Military Defence Plan as mechanism for preparing and mobilizing all sectors’ resources to support the military operations in emergency situation caused by armed conflict or war.

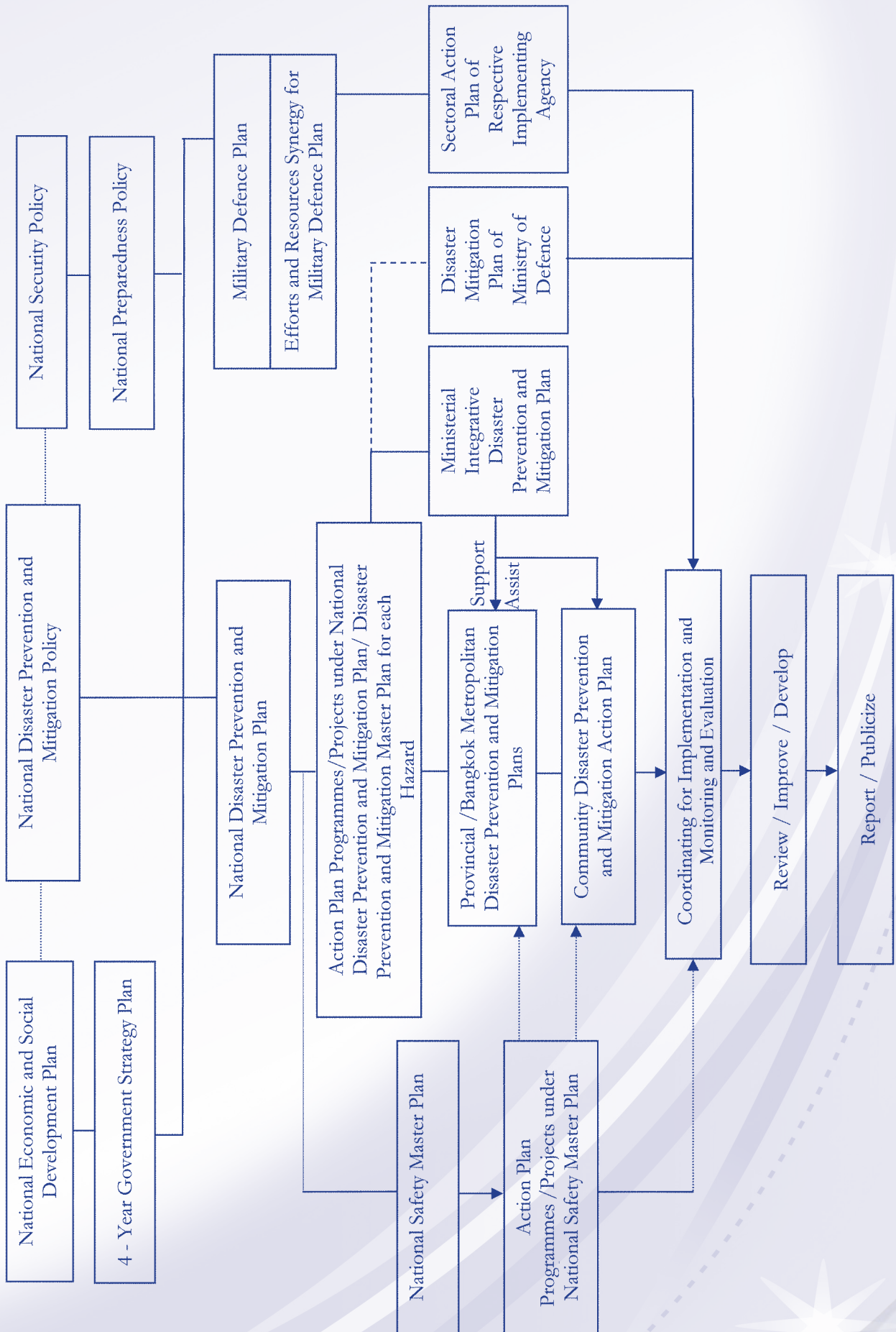


Chart 9.3 : Illustration of interlinkage between National Disaster Prevention and Mitigation Plan and Other Relevant Plans

9.5 Monitoring and Evaluation of Implementation

The process employed to monitor and evaluate the implementation of National Disaster Prevention and Mitigation Plan has focused on conducting follow-up, inspecting, directing, promoting and supporting aspects of the Plan which include its formulation, condition, implementation and achievement. Consequently, the results gained from the aforesaid process will be applied to review and improve the policy, measures and implementation method. The process includes :

9.5.1 Plan Outcomes Monitoring and Evaluation Mechanism

Under the subordination of National Disaster Prevention and Mitigation Committee, the Sub – committee on Coordinating National Disaster Strategy Implementation has been constituted as the mechanism to coordinate the implementation and monitoring and evaluating the outcomes of National Disaster Prevention and Mitigation Plan B.E. 2553 – 2557, as illustrated in chart 9.4.

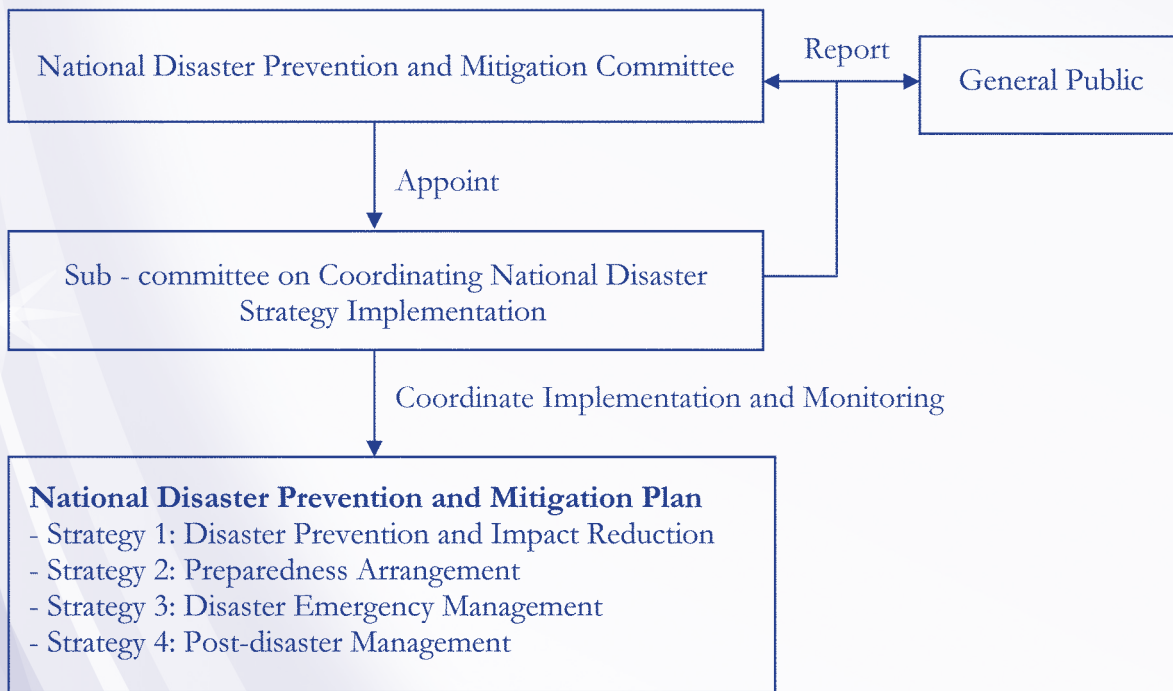


Chart 9.4: Plan Outcomes Monitoring and Evaluation Mechanism

9.5.2 Identify the levels for monitoring and evaluation from national to regional and local level and the agencies or persons to be in charge of monitoring and evaluation at each level.

9.5.3 Identify evaluation format, methods and techniques, issues, time frame and the frequency of conducting to serve as the tools for monitoring and evaluating the four aspects namely, input, process, output, and outcome as follows:

- (1) Input will be monitored and evaluated in terms of 1) completeness of resource, 2) quality of the resources, and 3) adequacy of the resources.
- (2) Process will be monitored and evaluated in terms of 1) work schedule, 2) conformity of programmes implementation with work schedule, 3) progress of programmes/ projects/activities implementation, and 4) implementation problems and hindrances.
- (3) Output will be evaluated in terms of 1) its compliance with the plan, and 2) the knowledge or lesson-learned gained from implementation.
- (4) Outcome will be evaluated in terms of 1) affected people’s satisfaction, 2) number of dead, injured persons and value of damaged properties due to disaster, and 3) achieving new knowledge which applicable for disaster management.

The performance outcome monitoring and evaluation process of National Disaster Prevention and Mitigation Plan is illustrated in Chart 9.5

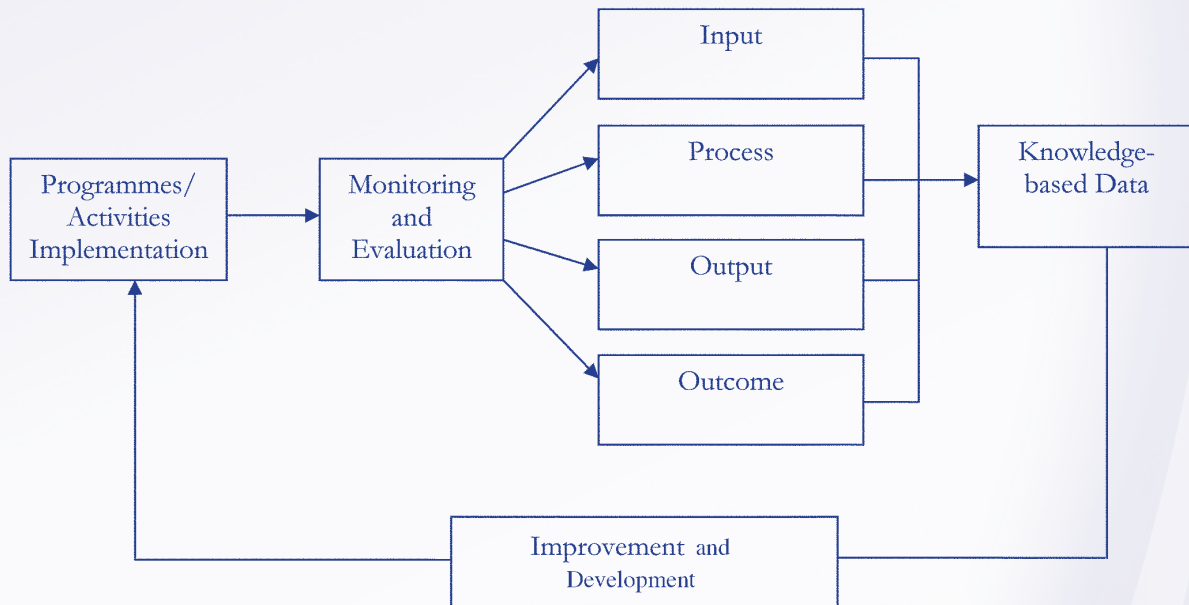


Chart 9.5: Performance Outcome Monitoring and Evaluation Process

9.5.4 Identify the key performance indicators as the tool to indicate the success or the achievement of the desired targets and objectives which will be highly beneficial for conducting the monitoring and evaluation efforts as well as for reviewing and improving the Plan.

9.5.5 Conclude the results of monitoring and evaluation and disseminate to agencies concerned for acknowledgement and improvement of their performance to ensure the compliance with National Disaster Prevention and Mitigation Plan B.E. 2553 – 2557 (2010 – 2014)

9.6 Revision of National Disaster Prevention and Mitigation Plan

Disaster Prevention and Mitigation Act B.E. 2550 (2007), Section 44 prescribes that in case where the facts regarding disaster or disaster management stipulated in various plans under this Act have changed or the plans have already been used for five years; the person responsible for formulating the plan is obliged to improve or revise the plan under responsibility.

In case the results of performance outcomes monitoring and evaluation have shed the light on the defects of the plan or the conducting of disaster management related research and development has yielded the appropriate and advanced innovations, as the consequence, National Disaster Prevention and Mitigation Plan requires the revision and improvement as appropriate and necessary.



Part 2

DISASTER COUNTERMEASURE PROCEDURE



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Chapter 10

Flood and Landslide

10.1 Introduction

Thailand has long been traditionally vulnerable to flood and landslide particularly during the monsoon season which lasts from May to September each year. During this time of the year, the heavy and continuous downpour has triggered the severe flood in both agricultural and inhabited areas which sometimes resulted in heavy casualties and always tremendous economic loss. As the consequence, water management has become the challenging issue for all concerned.

In addition to the natural cause, the anthropogenic activities such as community settlement, physical construction, slash and burned cultivation and deforestation have exacerbated flood situation. This exacerbation eventually causes the landslides in mountainous regions.

Recognizing the importance of preparedness arrangement for preventing and minimizing the impacts of these natural hazards on life and property as well as national economy, Department of Disaster Prevention and Mitigation has formulated “Flood, Tropical Cyclone and Landslide Management and Provision of Relief Assistance Master Plan” (5-Year Plan), and submitted for the Cabinet’s approval on 25 September, 2007. This master plan has stipulated frameworks and guidelines to be taken by all agencies concerned for dealing with these natural hazards. And on 5 August, 2009, the Cabinet has approved the Plan along with the budget for putting it into motion.

10.2 Objectives

- 10.2.1 To prevent and mitigate the adverse impact of flood and mudslide on life and property of people.
- 10.2.2 To facilitate and ensure effective and timely provision of assistance to affected people as well as rehabilitation of the stricken areas to normalcy as soon as possible.
- 10.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies as well as non-government network organizations concerned for dealing with flood and landslide hazards.

10.3 Terminology

10.3.1 **Flood** is defined as an overflow or accumulation of an expanse of water that submerges land. It is usually due to heavy rainfall events produce a large volume of water within a body of water such as river or canal, exceeding the total capacity of the body, and as a result, some of the water flows or sets outside of the normal perimeter of the body. In addition, human activities such as blocking the natural flow of water either intentionally or unintentionally can produce flood, often causing significant fatalities and material and environmental damage.

(1) Inundation/Over Bank Flow

Inundation is a gradually rising and spreading of water from continuous heavy downpour due to slow dissipation or ineffective drainage system. Whilst overbank flow is slow kind of flooding due to the large volume of rainfall navigated to a river at a too rapid speed beyond the coping capacity of a river channel. These floods mainly occur in the river basins, urban areas and in the lowest reach area of a river.

(2) Flash flood is a rapid or sudden flooding in the poorly absorbent areas and precipitous terrains due to the massive and sudden rainstorm. Flash flood can also occur after the significant and unexpected event such as a collapse of man-made structure such as dam, reservoir etc. Flash flood most often occurs in normally dry areas that have recently received precipitation, but may be seen anywhere down the stream from the source of precipitation, even the very long distance from the source. Flash flood is extremely dangerous due to its sudden nature and rapid flow that provide little protection or evacuation.

10.3.2 **Landslide or Mudslide or Debris Flow** is defined as the downslope movement of earth mass, rock or debris due to the force of gravity. Landslide can occur on any terrain given the right conditions of soil, moisture and the angle of slope. The rate of movement of a landslide can range from extremely slow or extremely rapid owing to the types of materials, gradient, environment and volume of rainfall. In addition to water related

factor, earthquakes and volcanic eruptions are other natural causes of landslide. Landslide causes severe property damage, injury, and death and adversely affects variety of resources.

10.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Headquarters, Local Command Center of all levels, and all agencies concerned for preparing to deal with flood and landslide hazards in all aspects of disaster management cycle, have been identified as follows:

10.4.1 Pre-Disaster

(1) Prevention and Impact Reduction:

The designated disaster management mechanisms are required to take the following actions:

(1.1) Undertake risk assessment by analyzing potential flood and landslide hazard and evaluating existing conditions of vulnerabilities to reveal the probability of their occurrence. In addition, the concurrent flood and landslide impact study is required to achieve information which is important to help identify appropriate and tangible measures for handling flood and landslide hazards. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Thai Meteorological Department, Land Development Department, Department of Water Resources, Royal Irrigation Department, Department of National Park, Wild Life and Flora, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(1.2) Review and update the existing data on flood and landslide prone areas as well as on safety area to accommodate the evacuees. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Land Development Department, Thai Meteorological Department, Department of Water Resources, Royal Irrigation Department, Department of National Park, Wild Life and Flora, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(1.3) Create flood and landslide hazard map through the use of the same standardized format both in terms of the scale and detail of the map. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Land Development Department, Department of Water Resources and Bangkok Metropolitan Administration.

(1.4) Survey, design, and construct relevant structural facilities or improve water resources or roads for the useful purpose of flood and landslide prevention and mitigation in the area under responsibility (**in compliance with guidelines identified in Chapter 4, item 4.4.4**). The key implementing agencies include Department of Water Resources, Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Department of Highways, Department of Rural Roads, Provincial Government, District Office and Local Administration Organization.

(1.5) Create database on relevant personnel, mechanical equipments, rescue equipments, and supplies to ensure their immediate availability and serviceability in the event of disaster. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Department of Mineral Resources, Department of Water Resources, Department of Public Works and Town & Country Planning, Department of Highways, Department of Rural Roads, Emergency Medical Institute of Thailand, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, foundation and private sector.

(1.6) Develop flood and landslide interagency information sharing system. The key implementing agencies include The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Disaster Prevention and Mitigation, Thai Meteorological Department, Royal Irrigation Department, Land Development Department, Department of Mineral Resources, National Disaster Warning Center, Department of Water Resources, Department of Public Works and Town & Country Planning, Department of Highways, Department of Rural Roads, Geo-Informatics and Space Technology Development Agency, Department of National Park, Wild Life and Flora and Bangkok Metropolitan Administration.

(1.7) Organize public education training and campaign to raise awareness among all members of the community at risk and to deliver information to help them understand potential disaster as well as measures to be adopted for self-protection and safety (**in compliance with guidelines identified in Chapter 4,**

item 4.3.3). The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Department of Water Resources, Land Development Department, Royal Irrigation Department, Thai Meteorological Department, Public Relations Department, Bangkok Metropolitan Administration and educational establishment.

(1.8) Summarize and document lessons learned from past major flood and landslide disasters to gain valuable information useful for reference and future management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Thai Meteorological Department, Royal Irrigation Department, Land Development Department, Department of National Park, Wild Life and Flora, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following preparatory actions.

(2.1) Arrange the specific training programme and organize civil defence volunteer corps, village-based disaster warning volunteers, and search and rescue volunteers to provide assistance to government officials' efforts. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Department of Water Resources, Land Development Department, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and foundation.

(2.2) Organize the orientation training programme to promote and strengthen people involvement in disaster management by using community-based disaster risk management approach (**in compliance with guidelines identified in Chapter 5, item 5.3.3 (3.2)**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society and educational establishments.

(2.3) Prepare the particulars of the related field experts or the list of relevant personnel from all concerned agencies. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Department of Water Resources, Department of Mineral Resources, Land Development Department, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.4) Take the required steps to formulate Flood and Landslide Prevention and Mitigation Integrated Action Plan at all levels in a way that it is compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Department of Water Resources, Department of Mineral Resources, Land Development Department, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.5) Develop flood forecasting system, install flood warning equipments in the areas at risk, and assign the officials to keep careful watch to ensure timely warning of potential flood and landslide. The key implementing agencies include Thai Meteorological Department, Department of Water Resources, Royal Irrigation Department, Department of Disaster Prevention and Mitigation, National Disaster Warning Center, Department of Mineral Resources, Hydrographic Department Royal Thai Navy, Department of National Park, Wild Life and Flora, Electricity Generation Authority of Thailand, Kasetsart University and Bangkok Metropolitan Administration.

(2.6) Arrange for the stock of basic necessities for immediate distribution to affected people in the event of disaster. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Energy, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration and Thai Red Cross Society.

(2.7) Arrange for emergency stock of energy supplies (**in compliance with guidelines identify in Chapter 5, item 5.3.7**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Energy, Petroleum Authority of Thailand and private sector.

(2.8) Arrange for the preparedness of main, auxiliary and standby communication systems and take all necessary steps to ensure the adequate availability and round the clock serviceability of communication equipments and supplies **(in compliance with guidelines identified in Chapter 5, item 5.3.8)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, Royal Irrigation Department, Department of Water Resources, Department of Mineral Resources, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.9) Arrange and earmark safety areas as well as indispensable public utilities for receiving the evacuees. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.10) Organize disaster exercise based on flood and landslide scenario **(in compliance with guidelines identified in Chapter 5, item 5.3.9)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

10.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle disaster emergency situation.

(1) Upon obtaining confirmation of flood and slide, take the immediate steps to set up Emergency Operations Center of which level is compatible with the prescribed scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2))** and deploy personnel to base and perform the functions of the Center as identified in item 6.3.2 (3).

(2) In case of necessity to collect donations both in cash and in-kind from general public, Emergency Operations Center concerned is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper, equitable, and timely distribution **(in compliance with guidelines identified in Chapter 6, item 6.3.13)**.

(3) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed. **(in compliance with guidelines identified in Chapter 4, item 4.2.6)**. The key implementing agency is Ministry of Foreign Affairs.

(4) Conduct identification of dead body **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Science Bureau.

10.4.3 Post-Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the stricken areas are under responsibility is required to conduct initial damage and needs assessment survey, prepare the lists of affected people and damaged property, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11)**.

(2) Take immediate steps to provide temporary shelter and basic necessities; improve and restore physical and mental health as well as livelihoods of affected people to normalcy as soon as possible. The key implementing agencies include The Office of Permanent Secretary for Ministry of Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(3) Management of Dead Bodies

(3.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Provincial Government, District Office and Local Administration Organization.

(3.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**.

(3.3) In case where transport of dead bodies is required, Emergency Operations Center concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police and other agencies will provide support as needed.

(4) Take all measures required to prevent, keep close watch and control the outbreak of epidemic and disease that might affect the physical and mental well-beings of people. The key implementing agencies include Department of Disease Control, Department of Health, and Department of Mental Health.

(5) Take immediate steps to improve and restore physical and mental health and livelihood of affected people to normalcy as soon as possible **(in compliance with guidelines identified in Chapter 7, item 7.3.1)**. The key implementing agencies include Ministry of Social Development and Human Security, The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Labor, The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Thai Red Cross Society and other agencies concerned.

(6) Rehabilitate, repair, and improve community environmental condition including waste water treatment system, garbage and waste disposal system, and deep wells disrupted by flood and landslide to resume their normal serviceability. The key implementing agencies include Pollution Control Department, Department of Groundwater Resources, Department of Health, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(7) Ensure appropriate repair and maintenance of basic infrastructure facilities and public facilities to resume their normal functions such as government offices, school building, tourist attractions etc., as well as improvement of damaged environment and solution of pollution issues **(in compliance with guidelines identified in Chapter 7, item 7.3.2)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, The Office of Permanent Secretary for Ministry of Information and Communication Technology (TOT Corporation Public Company Limited and CAT Telecom Public Company Limited), Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Department of Highways, Department of Rural Roads, Royal Irrigation Department, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Provincial Electricity Authority and Metropolitan Electricity Authority, and Provincial Waterworks Authority and Metropolitan Waterworks Authority.

(8) Emergency Operations Center of which the stricken areas are under responsibility is required to carry out the primary disaster rehabilitation efforts by using budget of the local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum.

(9) Organize the studies of the impact of flood and landslide on life and property of the people to gain valuable information useful for reference and future flood and landslide management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Department of Water Resources, Department of Mineral Resources, Land Development Department, Department of National Park, Wild Life and Flora, Bangkok Metropolitan Administration and educational establishment.

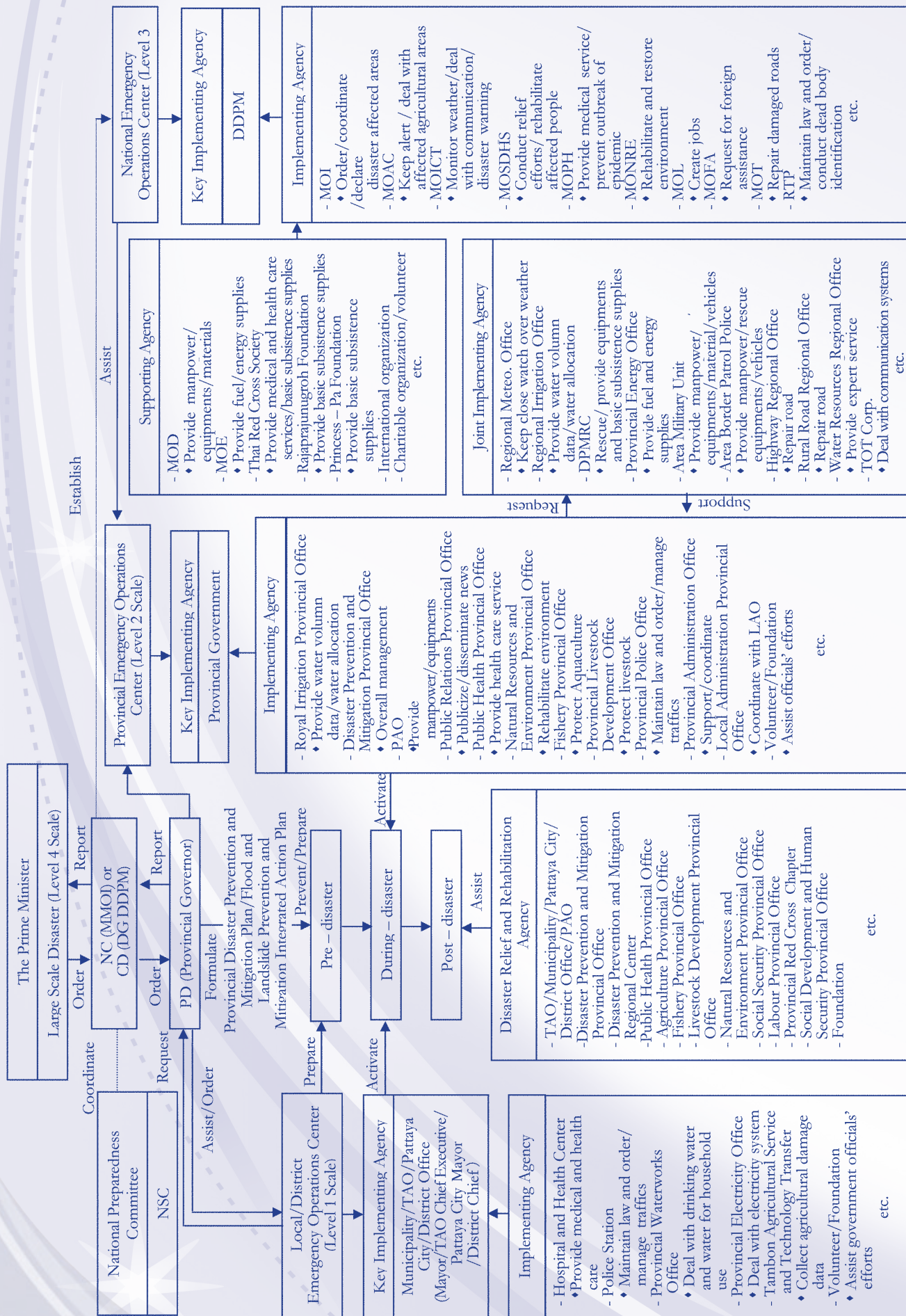


Chart 10.1 Countermeasure Procedure against Flood and Landslide and Joint Operations at Provincial Level

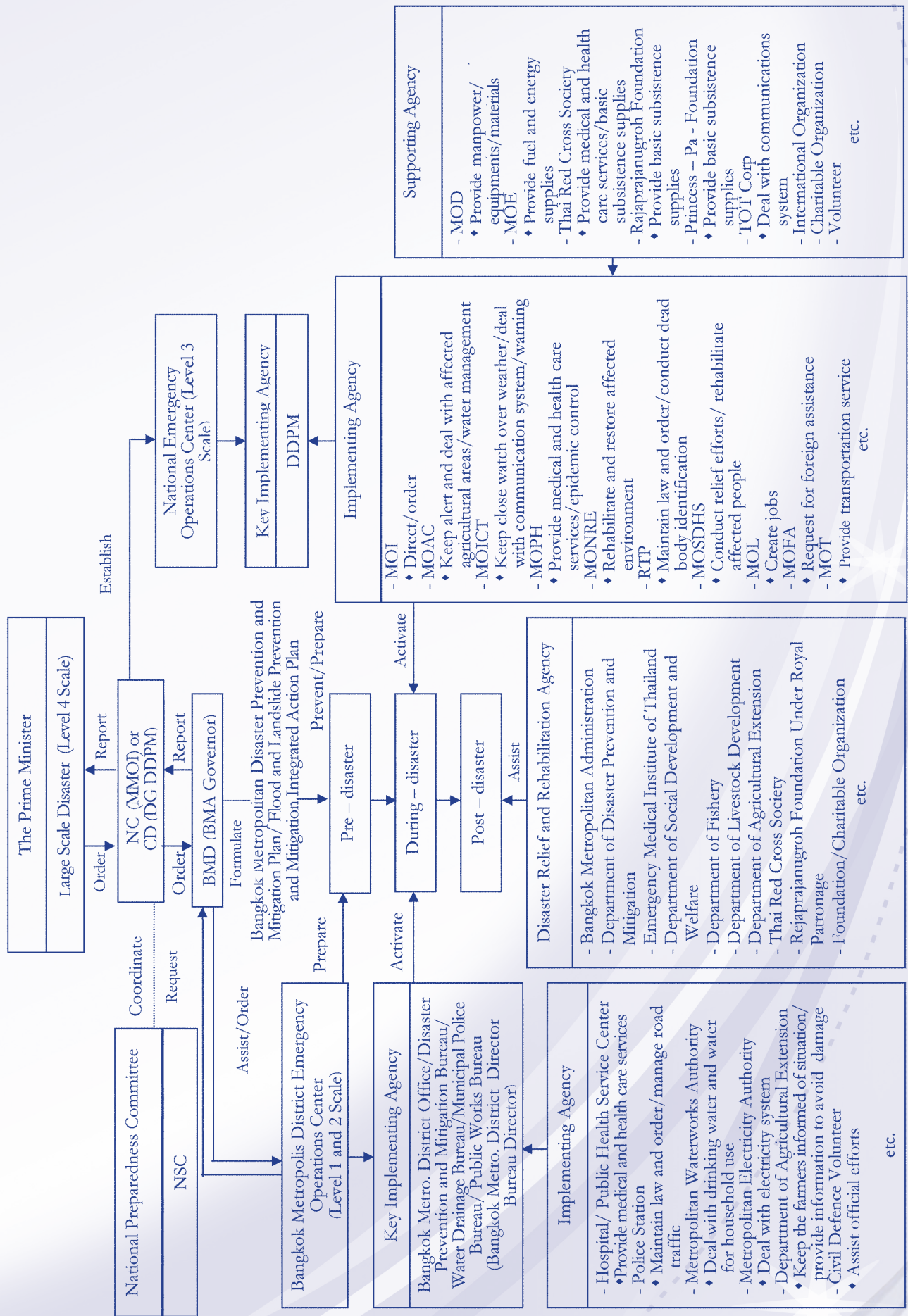


Chart 10.2 Countermeasure Procedure against Flood and Landslide and Joint Operations in Bangkok

Chapter 11

Tropical Cyclone

11.1 Introduction

Because of geographical location in tropical zone in between Indian and Pacific Oceans, Thailand has been subject to frequent tropical cyclones which trigger disastrous effects on life and property, particularly ones that directly approach towards and make landfall on southern part of the country. The levels of damage caused by cyclone vary according to their wind speed of which typhoon is the most destructive while tropical cyclone and tropical depression are less destructive respectively.

Due to their catastrophic and widespread effects, the agencies concerned are required to arrange preparedness for effective and appropriate prevention and mitigation of their impact.

Recognizing the importance of preparedness arrangement for preventing and minimizing the impacts of this natural phenomena on life and property as well as national economy, Department of Disaster Prevention and Mitigation has formulated Flood, Tropical Cyclone and Landslide Management and Provision of Relief Assistance Master Plan (5-Year Plan), and submitted for the Cabinet's approval on 28 September, 2007. This master plan has stipulated frameworks and direction to be taken by all agencies concerned for dealing with this natural hazard. And on 5 August, 2009, the Cabinet has approved the Plan for putting into motion.

11.2 Objectives

- 11.2.1 To prevent and mitigate the adverse impact of tropical cyclone on life and property of people.
- 11.2.2 To facilitate and ensure effective and timely provision of assistance to affected people as well as rehabilitation of the stricken areas to normalcy as soon as possible.
- 11.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non-government network organizations concerned for dealing with tropical cyclone hazards.

11.3 Terminology

11.3.1 Tropical Cyclone refers to a storm system which forms almost exclusively in the tropical regions, characterized by a low-pressure center and inward spiraling winds that rotate counter-clockwise in the northern hemisphere and clockwise in the southern hemisphere of the earth. Tropical Cyclone is classified into 3 categories based on its wind speed as follows:

- (1) Tropical depression: sustained wind speed less than 63 kmh.
- (2) Tropical Cyclone: sustained wind speed less than 63 – 117 kmh.
- (3) Typhoon: sustained wind speed greater than 117 kmh.

Depending on the location and strength, tropical cyclone is referred to by other names, such as hurricane for northern hemisphere tropical cyclone, typhoon for Pacific and South China Sea, tropical cyclone and simply cyclone for northern Indian Ocean including Gulf of Bengal and Andaman Sea tropical cyclone.

Tropical cyclone can trigger not only extremely powerful winds and torrential rain, but also able to trigger high waves and destructive storm surge. It's powerful and destructive wind speed can cause the alarmingly high death toll and substantially loss of property along the forward track and nearby area under its influence. Heavy rains can trigger significant flooding inland while disastrous surge can substantially affect life and economic activities as well as structures along the coastline.

11.3.2 Tropical Cyclone – force winds refer to the widespread damage of residences and structures caused by inward spiraling winds of storm. This threat occurs along the forward track of storm which extends as far as 50 – 100 kms. will be the area located close to the track of tropical cyclone eye wall where the most damaging winds and intense rainfall is found.

11.3.3 Storm Surge is the rising of the sea level due to the low pressure high winds, and high waves associated with a tropical cyclone as it makes landfall. The storm surge can cause significant damage to the areas adjacent to the coastline particularly the windward side area. The degree of damage triggered by storm surge depends on wind speed, terrain, and the size of coastal community.

11.3.4 Thunderstorm is a form of weather which usually occurs between March and April, the summer months of a year particularly during the period of sweltering warm weather for several consecutive days. Thunderstorm is formed as the result of the collision between the cold front prevailing from China and the prevailing warm front in Thailand. This collision will help to lift the moist and unstable air vertically into the atmosphere to form cumulus cloud which later on matures into cumulonimbus cloud or a thunderstorm cell. Thunderstorms are accompanied by gusts, lightning thunder and occasional hails. Generally, thunderstorms are short-lived, their activities will last less than an hour and their coverage area is less than 20 – 30 kms. Usually, the winds associated with gust front are not severe, but in extreme cases, a downburst can develop and produce severe wind gusts.

11.3.5 Hail is a form of solid precipitation that falls from the sky as the balls or irregular lumps of ice. Hail forms from the super cooled droplets of rain containing in nimbus cloud collide with solid particles such as dust or the existing ice pellets. The ice is suspended in the air by the strong updrafts and will fall back down. The process will occur over and over adding layer upon layer of hailstone. Usually, hail is thunderstorm's attendant.

11.3.6 Thunderstorm – force winds: refer to narrow-area damage of residences, vegetation and other structures caused by the short period of severe gusts or hailstones associated a thunderstorm with sustained wind speed is greater than 100 kmh.

11.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Headquarters, Local Command Center of all levels, and all agencies concerned for preparing to deal with tropical cyclone hazard in all aspects of disaster management cycle, have been identified as follows:

11.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions:

(1.1) Undertake risk assessment by analyzing potential tropical cyclone hazard and evaluating existing conditions of vulnerabilities to reveal the probability of its occurrence. In addition, the concurrent tropical cyclone impact reduction study is required to achieve information which is important to help identify appropriate and tangible measures for handling tropical cyclone hazard. The key implementing agencies include Thai Meteorological Department, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(1.2) Review and update the existing data on tropical cyclone prone areas as well as the safety areas data to accommodate the evacuees, and create tropical cyclone hazard map. The key implementing agencies include Thai Meteorological Department, Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Land Development Department, Department of Water Resources, Department of Public Works and Town & Country Planning, and Bangkok Metropolitan Administration.

(1.3) Create database on relevant personnel, mechanical equipments, implements and supplies to ensure their availability and serviceability in the event of disaster. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Department of Public Works and Town & Country Planning, Department of Mineral Resources, Land Development Department, Department of Water Resources, Department of Highways, Department of Rural Roads, Emergency Medical Institute of Thailand, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, foundations, and private sector.

(1.4) Develop tropical cyclone interagency information sharing systems. The key implementing agencies include Thai Meteorological Department, Department of Disaster Prevention and Mitigation, National Disaster Warning Center, Royal Irrigation Department, Land Development Department, Department of Water Resources, Department of Mineral Resources, Department of Public Works and Town & Country Planning, Geo-Informatics and Space Technology Development Agency, and Bangkok Metropolitan Administration.

(1.5) Organize public education training and campaign to raise awareness among all members of community at risk and to deliver information to help understand potential disaster and the proper measures to be taken for self-protection and safety **(in compliance with guidelines identified in Chapter 4, item 4.4.3)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Department of Water Resources, Land Development Department, Public Relations Department, Thai Meteorological Department, Bangkok Metropolitan Administration and educational establishment.

(1.6) Summarize and document lesson-learned from past major tropical cyclone disaster for the useful purpose of future management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Department of Water Resources, Thai Meteorological Department, Royal Irrigation Department, Land Development Department, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme and organize civil defence volunteer corps, village-based disaster warning volunteers, and search and rescue volunteer to provide assistance to government officials' efforts **(in compliance with guidelines identified in Chapter 5, item 5.3.3 (3.2))**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Department of Water Resources, Land Development Department, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and foundations.

(2.2) Organize the orientation training programme to promote and strengthen people' involvement in disaster management by using community-base disaster risk management approach **(in compliance with guidelines identified in Chapter 5, item 5.3.4 (1))**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society, and educational establishments.

(2.3) Prepare the particulars of the experts in this particular field. The key implementing agencies include Thai Meteorological Department, Royal Irrigation Department, Department of Water Resources, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.4) Take the required steps to formulate Tropical Cyclone Prevention and Mitigation Integrated Action Plan at all levels in a way that it is compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Thai Meteorological Department, Department of Water Resources, Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.5) Develop tropical cyclone forecasting system, install warning equipments in the areas at risk, and assign the officials to keep careful watch to ensure timely warning of potential tropical cyclone. The key implementing agencies include Thai Meteorological Department, Department of Water Resources, Department of Disaster Prevention and Mitigation, National Disaster Warning Center, Department of Mineral Resources, Royal Irrigation Department, Land Development Department, Local Administration Organization and Bangkok Metropolitan Administration.

(2.6) Arrange for preparedness of disaster resources such as mechanical equipments, required implements and supplies to ensure their immediate availability and serviceability in the event of disaster **(in compliance with guidelines identified in Chapter 5, item 5.3.6)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Department of Disaster Prevention and Mitigation, Department of Highways, Department of Rural Roads, Thai Red Cross Society, Provincial Government, District Office, Local Administration Organization, Provincial Electricity Authority, and Provincial Waterworks Authority.

(2.7) Arrange for the stock of basic necessities for immediate distribution to affected people in the event of disaster. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Health, Emergency Medical Institute of Thailand, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and Thai Red Cross Society.

(2.8) Arrange for emergency stock of adequate energy supplies (**in compliance with guidelines identified in Chapter 5, item 5.3.7**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Energy, Petroleum Authority of Thailand, and private sector.

(2.9) Arrange for the preparedness of main, auxiliary, and standby communication systems and take all necessary steps to ensure adequate availability and round the clock serviceability of communication equipments and supplies (**in compliance with guidelines identified in Chapter 5, item 5.3.8**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, Thai Meteorological Department, Royal Irrigation Department, Department of Water Resources, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.10) Arrange and earmark safety areas as well as indispensable public utilities for receiving the evacuees. The key performing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

11.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle disaster emergency situation.

(1) Upon obtaining confirmation of tropical cyclone, take the immediate step to set up Emergency Operations Center of which level is compatible with the scale of disaster (**in compliance with guidelines identified in Chapter 6, item 6.2.3 (1) and (2)**) and deploy personnel to base and perform the functions of the Center as identified in item 6.3.2 (3).

(2) In case of necessity to collect donations both in cash and in-kind from general public, concerned Emergency Operations Center is required to set up donations collection center and should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper, equitable, and timely distribution (**in compliance with guidelines identified in Chapter 6, item 6.3.13**).

(3) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed. (**in compliance with guidelines identified in Chapter 4, item 4.2.6**). The key implementing agency is Ministry of Foreign Affairs.

(4) Conduct identification of dead body (**in compliance with guidelines identified in Chapter 6, item 6.3.10**). The key implementing agency is Royal Thai Police Forensic Science Bureau.

11.4.3 Post-Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the stricken areas are under responsibility is required to conduct initial damage and needs assessment survey, prepare the lists of affected people and damaged property and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance (**in compliance with guidelines identified in Chapter 6, item 6.3.11**).

(2) Take immediate steps to provide temporary shelter and basic necessities, improve and restore physical and mental health as well as livelihoods of affected people to normalcy as soon as possible. The key implementing agencies include The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Ministry of Social Development and Human Security, Department of Disaster Prevention and Mitigation, Department of Mental Health, Department of Health, Department of Labour Protection and Welfare, Department of Skill Development, Provincial Government, Local Administration Organization and Bangkok Metropolitan Administration.

(3) Management of Dead Bodies

(3.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Provincial Government, District Office and Local Administration Organization.

(3.2) The identification of dead bodies must be conducted according to the Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police (**in compliance with guidelines identified in Chapter 6, item 6.3.10**).

(3.3) In case where transport of dead bodies is required, Emergency Operations Center concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police and other agencies will provide support as needed.

(4) Take all measures required to prevent, keep close watch and control the outbreak of epidemic and disease that might affect the physical and mental well-beings of people. The key implementing agencies include Department of Disease Control, Department of Health, and Department of Mental Health.

(5) Take immediate steps to improve and restore physical and mutual health, quality of life as well as livelihoods of affected people to normalcy as soon as possible (**in compliance with guidelines identified in Chapter 7, item 7.3.1**). The key implementing agencies include Ministry of Social Development and Human Security, Ministry of Public Health, The Office of Permanent Secretary for Ministry of Labour, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society and other agencies concerned.

(6) Rehabilitate, repair, and improve community environmental condition including waste water treatment system, garbage and waste disposal system, and deep wells disrupted by tropical cyclone hazard to resume their normal serviceability. The key implementing agencies include Pollution Control Department, Department of Environmental Quality Promotion, Department of Groundwater Resources, Department of Health, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(7) Ensure appropriate repair and maintenance of damaged basic infrastructure facilities and public facilities to resume their normal functions such as government offices, school building, tourist attractions etc., as well as improvement of damaged environment and solution of pollution issues (**in compliance with guidelines identified in Chapter 7, item 7.3.2**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, The Office of Permanent Secretary for Ministry of Information and Communication Technology (TOT Corporation Public Company Limited and CAT Telecom Public Company Limited), Department of Disaster Prevention and Mitigation, Tourism Authority of Thailand, Department of National Park, Wild Life and Flora, Department of Groundwater Resources, Department of Marine and Coastal Resources, Pollution Control Department, Department of Highways, Department of Rural Roads, Provincial Government, District Office, Local Administration Organization, Provincial Electricity Authority, Metropolitan Electricity Authority, Provincial Waterworks Authority, and Metropolitan Waterworks Authority.

(8) Emergency Operations Center of which the stricken areas are under responsibility is required to carry out the primary rehabilitation efforts by using budget of the local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum.

(9) Organize the studies of the impact of tropical cyclone on life and property of the people to gain valuable information useful for reference and future tropical cyclone hazard management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Thai Meteorological Department, Provincial Government, Bangkok Metropolitan Administration and educational establishment.

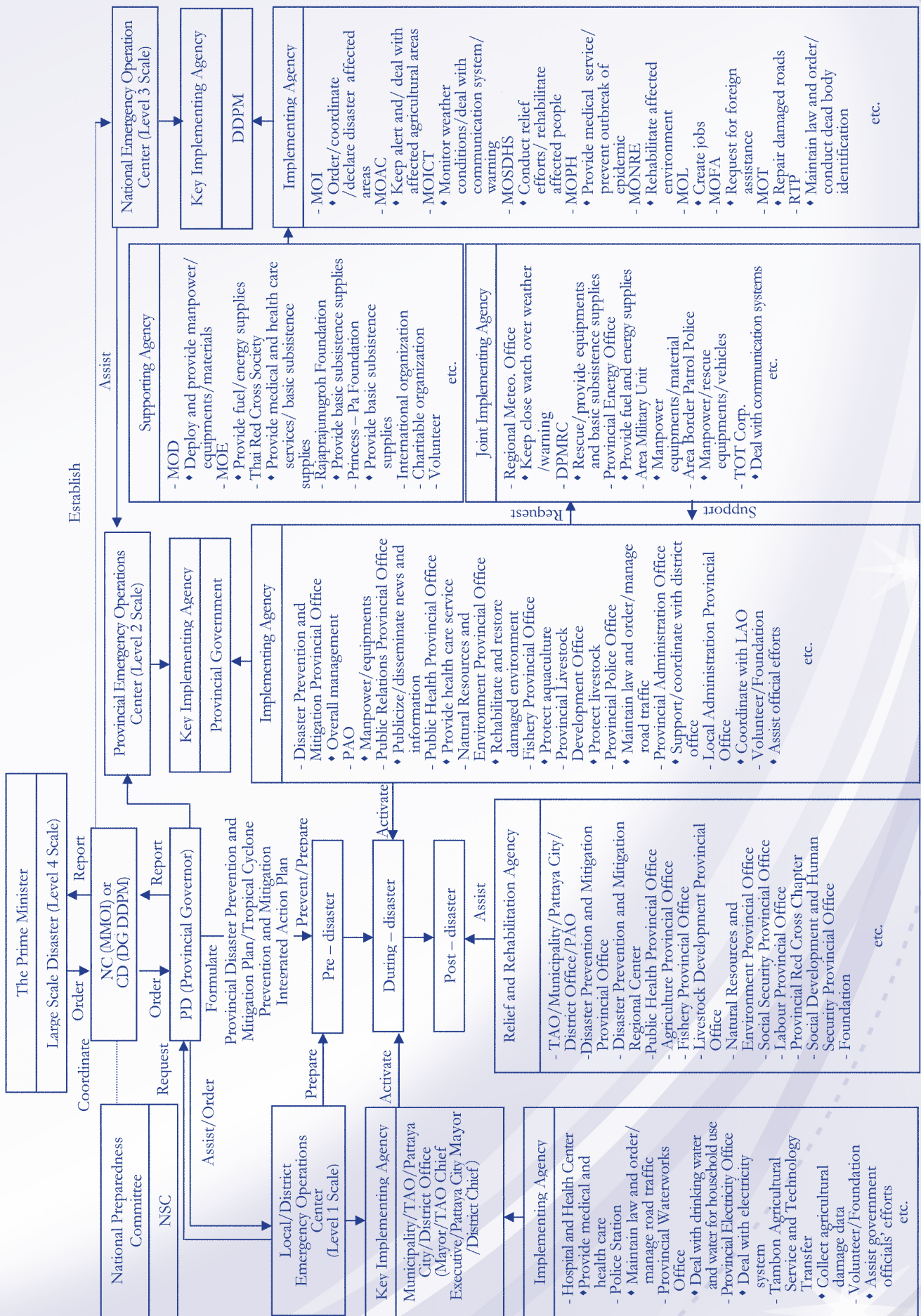


Chart 11.1 Countermeasure Procedure against Tropical Cyclone and Joint Operations at Provincial Level

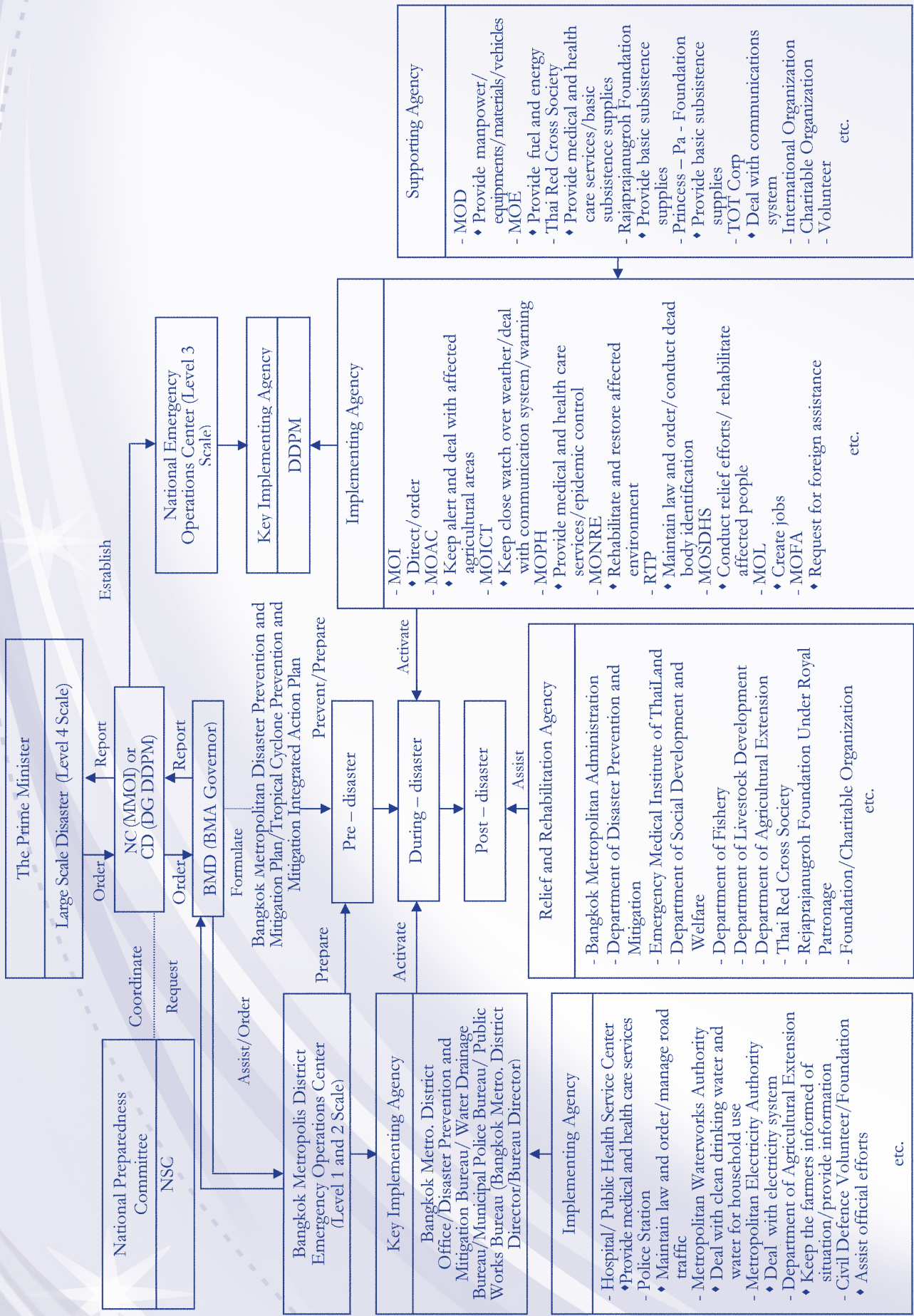


Chart 11.2 Countermeasure Procedure against Tropical Cyclone and Joint Operations in Bangkok

12.1 Introduction

Fire has been considered as one of the most frequented disaster. It can break out anytime and can produce tragic effects on life and property of people and overall national economy within considerably short time. Mostly, fire outbreak is due to human carelessness, negligence and inattention. Locations such as densely populated residential areas, high-rise buildings, industrial establishments, shopping centers and theaters are commonly vulnerable and exposed to fire outbreaks. The considerably high consumption rate of electric, heat and fuel energies in these locations has contributed the suitable condition for the frequent rampant conflagration particularly at the period of dry season which lasts from April to December of the year.

Recognizing the importance of preparedness arrangement for preventing and minimizing the impact of fire hazard on life and property as well as national economy, Department of Disaster Prevention and Mitigation has formulated National Fire Safety Development Master Plan and submitted for the Cabinet's approval on 12 December, 2006. This master plan has stipulated frameworks and direction to be taken by all agencies concerned for dealing with fire hazard. And on 2 January, 2008, the Cabinet has approved the Plan for putting into motion.

12.2 Objectives

- 12.2.1 To prevent and mitigate the adverse impact of fire hazard on life and property of the people.
- 12.2.2 To facilitate and ensure effective and timely provision of assistance to affected people as well as rehabilitation of the stricken areas to normalcy as soon as possible.
- 12.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non-government organizations concerned for dealing with fire hazard.

12.3 Terminology

12.3.1 Fire refers to the threat triggered by uncontrolled burning of which the flame has continued to spread and engulf the nearby areas where the combustible materials are in place. Fire condition can be intensified if it continuously receives augmented fuel or if there is high discharge rate of vapour of burning materials.

12.3.2 Official refers to any government employee assigned to undertake responsibilities in preventing and mitigating disaster in different locations under Disaster Prevention and Mitigation Act B.E. 2550 (2007)

12.3.3 Local Official, under Building Control Act B.E. 2522 (1979), refers to the following persons:

- (1) Mayor of any municipality
- (2) Chief Executive of any Provincial Administration Organization
- (3) Chief Executive of any Tambon Administration Organization
- (4) Bangkok Metropolitan Governor
- (5) Mayor of Pattaya City
- (6) Any executive officer of other types of local administration organization whom Ministry of Interior designated as Chief Executives of the aforesaid entity.

12.3.4 Volunteer refers to Civil Defence Volunteer.

12.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Headquarters, Local Command Center of all levels, and all agencies for preparing to deal with fire hazard in all aspects of disaster management cycle, have been identified as follows:

11.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions:

- (1.1) Take the required steps to survey and inspect the densely populated communities, buildings, gas and fuel stations, oil depots, workplaces at risk, and coincidentally prepare detailed description of the structures at risk useful for fire hazard prevention. The key implementing agencies include Department of Public Works and Town & Country Planning, Department of Disaster Prevention and Mitigation, Local Administration Organization and Bangkok Metropolitan Administration.

(1.2) Undertake risk assessment by analyzing potential fire hazard and evaluating existing conditions of vulnerabilities to reveal the probability of its occurrence. In addition, the concurrent fire hazard impact reduction study is required to achieve information which is important to help identify appropriate and tangible measures for handling fire hazard. The key implementing agencies include Department of Public Works and Town & Country Planning, Department of Disaster Prevention and Mitigation, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.3) Review and update the existing data on fire hazard prone areas as well as creating fire hazard map. In addition, take the necessary steps to promote and encourage the owner of residences, high-rise buildings, workplaces etc. to install fire detecting and alarming devices. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.4) Create database on relevant personnel, mechanical equipments, required implements and supplies such as fire engines, rescue vehicles, foam trucks, water trucks, ladder trucks, sources of water, rescue equipments etc. to ensure their availability and serviceability in the event of fire outbreak. The key implementing agencies include Ministry of Energy, Department of Disaster Prevention and Mitigation, Department of Industrial Works, Port Authority of Thailand, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.5) Organize public education training and campaign to raise awareness among all members of community at risk and to deliver information to help them understand potential disaster and the proper measures to be adopted for self-protection and safety **(in compliance with guidelines identified in Chapter 4, item 4.4.3)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(1.6) Summarize and document lessons learned from major fire outbreak for the useful purpose of reference and future management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme and organize civil defence volunteer corps, and search and rescue volunteers to provide assistance to government officials' efforts. The key implementing agencies include Department of Disaster Prevention and Mitigation, Bangkok Metropolitan Administration, Provincial Government, Local Administration Organization, charitable organization, and foundations.

(2.2) Prepare the particulars of fire management experts or list of personnel of all agencies concerned. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.3) Take the required steps to formulate Fire Prevention and Mitigation Integrated Action Plan at all levels in a way that it is compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.4) Ensure the preparedness of the following fire emergency call services.

(2.4.1) In Bangkok Metropolitan area, Disaster Prevention and Mitigation Bureau of Bangkok Metropolitan Administration functions as call center for fire emergency. The emergency call numbers used are 199 through Bangkok Metropolitan Radio Communication Center; 1555 through Bangkok Metropolitan Center. An alternative for emergency call in Bangkok Metropolitan area is through hotline number 1784 of Department of Disaster Prevention and Mitigation. Upon receiving the call, Department of Disaster Prevention and Mitigation will notify Bangkok Metropolitan emergency call center in short notice.

(2.4.2) In other provincial areas nation-wide, emergency call service has been arranged as follows:

- Within the municipality area, Municipality Command Center or Pattaya City Command Center will be responsible for arranging emergency call service as the case may be.
- Area outside municipality jurisdiction, either Provincial or District, or Tambon Administration Organization Command Centers are responsible for arranging emergency call service as the case may be.

(2.5) Encourage those who are concerned to install fire alarm system in the premises at risk. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Local Administration Organization and Bangkok Metropolitan Administration.

(2.6) Take all required steps to ensure the availability and serviceability of all equipments and supplies required for controlling and suppressing fire. The key implementing agencies include Department of Disaster Prevention and Mitigation, Local Administration Organization and Bangkok Metropolitan Administration.

(2.7) Arrange for the stock of basic necessities for immediate distribution to affected people in the event of disaster. The key implementing agencies include Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and Thai Red Cross Society.

(2.8) Arrange for the stock of energy supplies. The key implementing agencies include Ministry of Energy, Petroleum Authority of Thailand, and private sector.

(2.9) Arrange for the preparedness of main, auxiliary, and standby communication systems and take all necessary steps to ensure adequate availability and round the clock serviceability of communication equipments and supplies **(in compliance with guidelines identified in Chapter 5, item 5.3.8)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, Department of Disaster Prevention and Mitigation, Local Administration Organization and Bangkok Metropolitan Administration.

(2.10) Ensure to organize firefighting and evacuation drills on the regular basis **(in accordance to guidelines identified in Chapter 5, item 5.3.9)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

12.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle disaster emergency situation.

(1) In case of fire outbreaks in other provincial areas

(1.1) If fire breakouts in the municipality jurisdiction, Disaster Prevention and Mitigation Section of the Municipality or Pattaya City is obliged to conduct immediate response actions. Simultaneously it must notify Provincial Electricity Authority to quickly cut off the electricity at the incident scene, and coordinate with Provincial Waterworks Authority to provide waters for fire fighting. In addition, the authority in charge is obliged to bring the incident to the notice of the District and Provincial Commander at once.

(1.2) If the fire breakouts outside municipality jurisdiction, the designated staffs of Tambon Administration Organization are obliged to conduct immediate response activities. Simultaneously, they must notify Provincial Electricity Authority to quickly cut off the electricity at the incident scene, and coordinate with Provincial Waterworks Authority to provide waters for firefighting. In addition, they must bring the incident to the notice of the District and Provincial Commander at once.

(1.3) Take the immediate steps to set up Emergency Operations Center and deploy personnel to base and function at the Center **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1), (2), and (3))**.

(1.4) Take all required steps to conduct identification of dead body, if any **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Identification Bureau.

(2) In case of fire outbreak in Bangkok Metropolitan area

(2.1) Disaster Prevention and Mitigation Bureau of Bangkok Metropolitan Administration is obliged to conduct immediate response activities according to its plan. Simultaneously, it must notify Metropolitan Electricity Authority to quickly cut off the electricity at the incident scene; coordinate with metropolitan police station nearby to fend off unauthorized persons and manage traffic flow; coordinate with Metropolitan Waterworks Authority to provide waters for fire fighting; notify Bangkok Metropolitan District Offices to provide additional water trucks; and contact the nearby fire fighting brigade to control fire outbreak. In addition, it is obliged to bring the incident to the notice of Bangkok Metropolitan Command Center at once.

(2.2) Take the immediate steps to set up Emergency Operations Center, and deploy personnel to base and function at the Center **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1), (2), and (3)).**

(2.3) Conduct identification of dead body, if any **(in compliance with guidelines identified in Chapter 6, item 6.3.10).** The key implementing agency is Royal Thai Police Forensic Identification Bureau.

12.4.3 Post-Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the incident scene is under responsibility is required to conduct initial damage and needs assessment survey, prepare the lists of affected people and damaged property, and issue them the letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11).**

(2) Take immediate steps to provide temporary shelter and basic necessities, improve and restore physical and mental health as well as quality of life and livelihoods of affected people to normalcy as soon as possible. The key implementing agencies include Ministry of Social Development and Human Security, Ministry of Public Health, Department of Employment, Department of Skill Development, Provincial Government, Local Administration Organization and Bangkok Metropolitan Administration.

(3) The inquiry official in charge is required to investigate causes of fire outbreak according to assigned authority and responsibility.

(4) Management of Dead Bodies

(4.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Provincial Government, District Office and Local Administration Organization.

(4.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police **(in compliance with guidelines identified in Chapter 6, item 6.3.10).**

(4.3) In case where transport of dead bodies is required, Emergency Operations Center concerned must collaborate with District Office and Provincial Government to direct the procedure. Ministry of Transport, Ministry of Public Health, Royal Thai Police and other agencies will provide support as needed.

(5) Emergency Operations Center of which the fire-devastated areas are under responsibility is obliged to carry out primary rehabilitation efforts by using budget of local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum **(in accordance to guidelines identified in Chapter 7, item 7.3).**

(6) In case of necessity to collect donations both in cash and in-kind from general public, Emergency Operations Center concerned is required to set up donation center. Further, it should coordinate and consult with government agencies concerned about the measures to adopt for safeguarding donated cash and items, and for distributing donations in equitably, properly and timely manner **(in compliance with guidelines identified in Chapter 6, item 6.3.13).**

(7) If a fire incident has charred more than 30 houses or the charred areas has covered more than one rai (unit of area equal to 1,600 square metres) including the adjacent areas within 30 metres surrounding the fire scene, these areas are regarded as “fire devastated areas” under Building Control Act B.E. 2522 (1979) and addendum. In this case, the local officials designated under the aforesaid Act, are obliged to take the following actions.

(7.1) Post the notice to indicate fire devastated areas at local administration organization office and at the fire scene. The aforesaid notice should include the concised map of fire devastated area as well as the restriction of activities conducted in these areas according to the Act.

(7.2) Take the legal steps to prohibit any person to construct, modify, demolish, or remove the buildings located in fire devastated areas within the period of 40 days as from the date of fire outbreak.

(7.3) Take the legal steps to consider the appropriateness whether to rehabilitate fire devastated areas by taking into consideration the following issues; the useful purpose of fire prevention, public health, the maintenance of environmental quality, town planning, architectural factor, and the traffic flows facilitation. Further, the local officials concerned need to forward their comments along with the concised map of fire devastated areas to Building Control Board within 15 days as from the date of fire outbreak for further proceeding according to Building Control Act B.E. 2552 (1979).

(8) Organize the studies of the impact of fire hazard on life and property of the people to gain valuable information useful for reference and future fire management. The key implementing agencies include Department of Public Works and Town & Country Planning, Bangkok Metropolitan Administration, Department of Disaster Prevention and Mitigation, and Local Administration Organization.

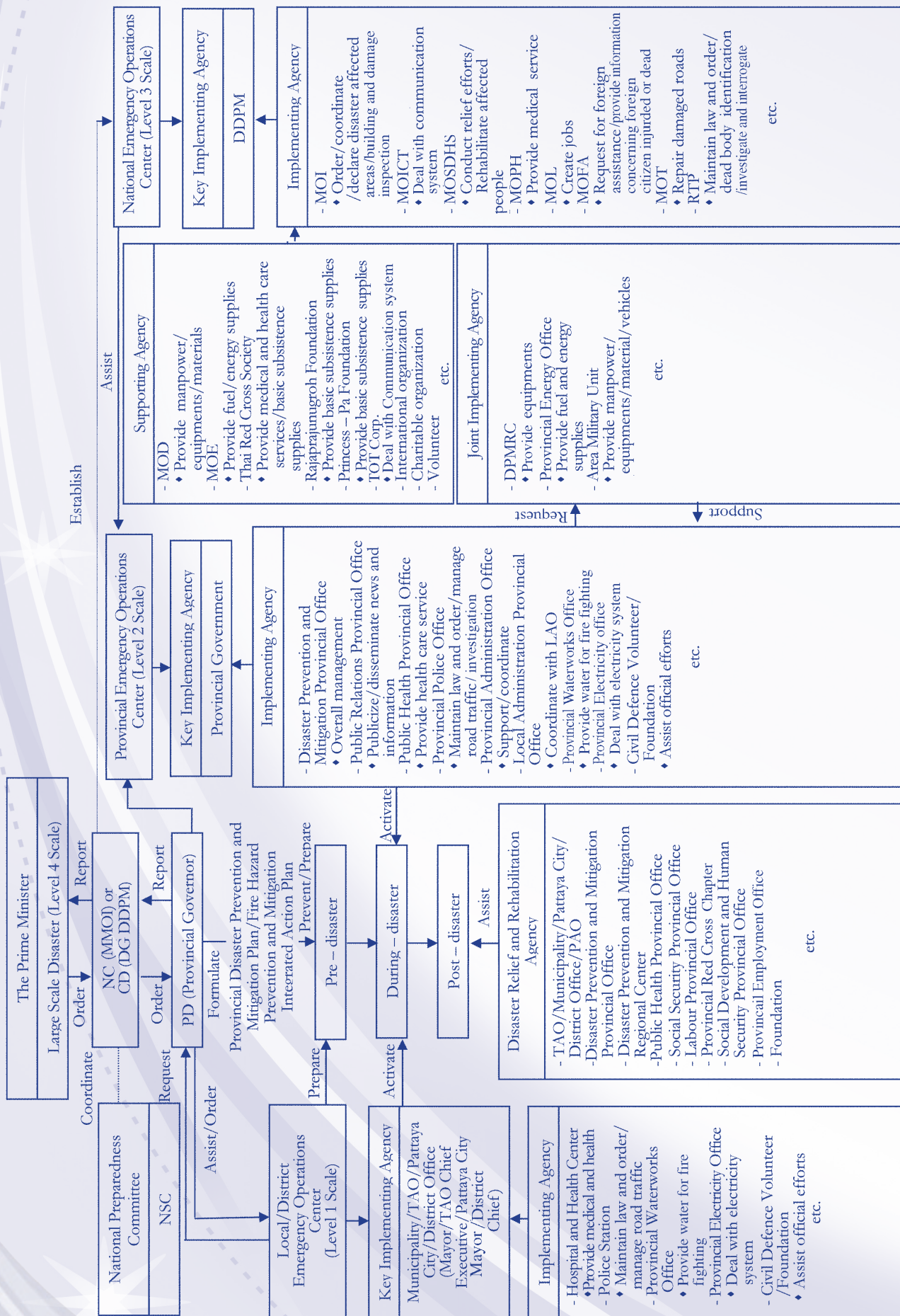


Chart 12.1 Countermeasure Procedure against Fire and Joint Operations at Provincial Level

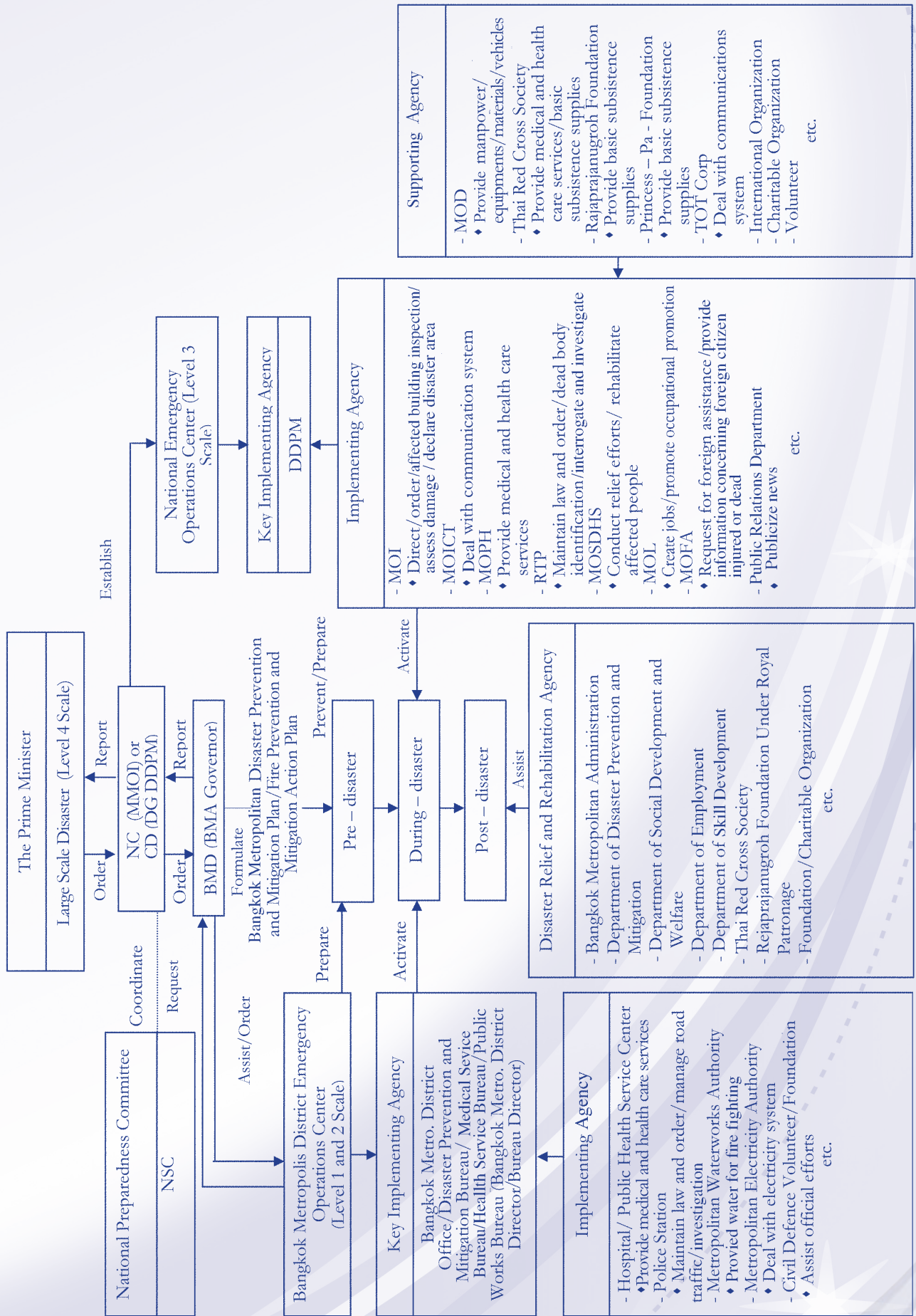


Chart 12.2 Countermeasure Procedure against Fire and Joint Operations in Bangkok

Chapter 13

Chemical and Hazardous Material

13.1 Introduction

Currently, the trend of chemical and hazardous materials use for agricultural and industrial activities, research, and simply household chores in Thailand has been on the rise at the great extent. The improper use, release, disposal or delivery with none or very little understanding of their impacts can eventually put the life and property of the people as well as the environment at risk. Subsequently, it is required to identify preventive measures and arrange for preparedness to deal with potential chemical substances and hazardous material incident.

In order to address the problems regarding chemical substances and hazardous materials, the Cabinet has approved National Strategic Plan for Chemical Substance Management proposed by Ministry of Public Health on 9 January, 2007. Basing on the aforesaid plan, Department of Disaster Prevention and Mitigation, Ministry of Interior has formulated the Preparedness Arrangement Plan for Chemical Substances/Hazardous Materials Emergency Response to stipulate frameworks and direction to be taken by all agencies concerned for dealing with such an incident.

13.2 Objectives

13.2.1 To prevent and mitigate the adverse impact of chemical substances and hazardous materials incidents on life and property of the people.

13.2.2 To facilitate and ensure effective and timely provision of assistance to affected people as well as rehabilitation of the affected areas to normalcy as soon as possible.

13.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non – government organizations concerned for dealing with chemical substances and hazardous materials emergency.

13.3 Terminology

13.3.1 **Chemical and Hazardous Materials Hazard** refers to hazard induced by leakage, explosion, and conflagration of such materials regarding both movable and immovable storage facilities, utilization, packaging, and transportation.

13.3.2 **Chemical and Hazardous Materials** refer to any material with specific physical or chemical characteristics as follows :

(1) Explosives are any explodable material when heated or exposed to flame or when compressed or ignited. The instances include ammunition, dynamite, gunpower, fire – cracker, fireworks, cracker etc.

(2) Toxic or Flammable Gases are any gas which are combustible when heated or exposed to flame such as cooking gas, hydrogen, butane etc.; or any gas of which inhalation or exposure on skin are capable of causing severely harmful or fatal effects such chlorine, ammonia etc.; or highly compressurized gas in cylinder, if violently crushed is capable of exploding such as carbon dioxide oxygen etc.

(3) Inflammable Liquid is any type of liquid which is combustible when heated or comes into contact with flame such as butane, methyl alcohol, ethyl alcohol, petrol etc.

(4) Inflammable Solid is any substance which is combustible when heated or comes into contact with flame such as match, sulphate, phosphorus, lignite etc.; or any substance when comes into contact with water or moisture, is capable of producing inflammable gas such as calcium carbide, sodium etc.

(5) Oxidizing Substance and Organic Peroxides are any incombustible material but generally may yield oxygen to enhance combustion of other materials such as ammonium nitrate fertilizer, potassium permanganate etc.; or any liquid or solid that readily give off oxygen or other oxidizing substance to enhance their combustion or the combustion of other materials such as acetylperoxide etc.

(6) Toxic and Infectious Substances are substances of which ingestion, inhalation or exposure on skin are capable of severely harmful or fatal effects. The instances include mercury, lead, cadmium, pesticide etc.; or food contaminants which are harmful if digested such as plastic product – leached toxic substance or food infectants such as microorganisms etc.

(7) Radioactive Materials are any substance or compound of which unstable atomic nucleus spontaneously loses energy by emitting ionizing particles and radiation during decaying process. The instances include cobalt – 60, radium – 226 etc.

(8) Corrosive Substance is one with chemical property to destroy body tissues which it comes to contact with such as acid, base etc.

(9) Miscellaneous Materials are the others which are not classified into any of 8 categories, but are capable of causing hazardous effects such as chlorofluorocarbon etc.

In addition, chemical and biological weapons are as well included:

Chemical Weapons refer to the following, separately or together:

(1) Toxic chemicals and their precursors, except where intended for purposes not prohibited under the Convention of Chemical Weapon, as long as the types and quantities are consistent with such purposes.

(2) Munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in (1) which would be released as a result of the employment of such munitions and devices.

(3) Any equipment specifically designed for use directly in connection with the employment of munitions and devices specified in (2).

Toxic Chemical refers to any chemical which through its chemical action on life processes, can cause death, temporary incapacitation, or permanent harm to humans and animals. This includes all chemicals regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, munitions or elsewhere.

Precursors refer to any chemical reactant which takes part at any stage of in the production by whatever method of toxic chemical. This includes any key component of a binary or multicomponent chemical system.

Key Component of Binary or Multicomponent Chemical Systems refer to the precursor which plays the most important role in determining the toxic properties of the final product and reacts rapidly with other chemicals in the binary or multicomponent chemical system.

Biological Weapons refer to munitions or devices specifically designed to deliver, disperse or spray biological agents and pest. These as well include biological agents specifically produced for delivery, dispersal or spraying by such munitions and devices regardless of their containment.

Purposes not Prohibited under Convention of Chemical Weapons refer to

- (1) Industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes;
- (2) Protective purposes, namely those purposes directly related to protection against chemical weapons;
- (3) Military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare;
- (4) Law enforcement including domestic riot control purposes.

13.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Headquarters, Local Command Center of all levels, and all agencies concerned for preparing to deal with chemical and hazardous materials incidents in all aspects of disaster management cycle, have been identified as follows :

13.4.1 Pre – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Prevention and Impact Reduction

(1.1) Undertake risk assessment by analyzing potential chemical and hazardous materials incident and evaluating existing conditions of vulnerabilities to expose the probability of its occurrence. In addition, the concurrent chemical and hazardous materials incident impact reduction study is required to achieve the information which is important to help identify appropriate and tangible measures for handling chemical and hazardous material incident. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Industrial Works, Pollution Control Department, Department of Energy Business, Office of Atoms for Peace, Industrial Estate Authority of Thailand, Bangkok Metropolitan Administration, Local Administration Organization, and educational establishment.

(1.2) Review and update the existing data on chemical and hazardous materials incident prone areas as well as on safety area to accommodate the evacuees. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Industrial Works, Pollution Control Department, Department of Energy Business, Office of Atoms for Peace, Industrial Estate Authority of Thailand, Bangkok Metropolitan Administration, and Local Administration Organization.

(1.3) Create chemical and hazardous materials hazard map through the use of the same standardized format both in terms of scale and detail of the map. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Welfare and Labour Protection, Department of Industrial Works, Pollution Control Department, Department of Energy Business, Office of Atoms for Peace, Local Administration Organization, Bangkok Metropolitan Administration.

(1.4) Create database on relevant personnel, machinal equipments, implements and supplies to ensure their immediate availability and serviceability in the event of incident. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Industrial Works, Pollution Control Department, Emergency Medical Institute of Thailand, Office of Atoms for Peace, Provincial Government, District Office, Bangkok Metropolitan Administration, and Local Administration Organization and private sector.

(1.5) Develop chemical and hazardous materials interagency information sharing system. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Industrial Works, Industrial Estate Authority of Thailand Pollution control Department, Department of Energy Business, Office of Atoms for Peace, Bangkok Metropolitan Administration, and Local Administration Organization.

(1.6) Organize public education training and campaign to raise awareness among all members of community at risk and to deliver information to help them understand potential disaster and the proper measures to be adopted for self – protection and safety (**in compliance with guidelines identified in Chapter 4, item 4.4.3**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Department of Industrial Works, Pollution Control Department, Office of Atoms for Peace, Public Relations Department, Industrial Estate Authority of Thailand, Bangkok Metropolitan Administration, and educational establishment.

(1.7) Summarize and document the lessons – learned from past major chemical and hazardous materials incident for the useful purpose of future management. The key implementing agencies include The Office of Permanent Secretary for Ministry of Transport, Department of Disaster Prevention and Mitigation, Department of Industrial Works, Pollution Control Department, Department of Energy Business, Office of Atoms for Peace, Industrial Estate Authority of Thailand, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programmes and organize civil defence volunteer corps, and search and rescue volunteers to provide assistance to government officials' efforts (**in compliance with guidelines identified in Chapter 5, item 5.3.3 (3.2)**). The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Industrial Works, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and foundation.

(2.2) Organize orientation training to promote and strengthen people's involvement in disaster management by using community – based disaster risk management approach (**in compliance with guideline identified in Chapter 5, item 5.3.4(1)**). The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society, and educational establishment.

(2.3) Prepare the particulars of the related field experts or list of personnel of concerned agencies. The key performing agencies include Department of Industrial Works, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.4) Take the required steps to formulate Chemical and Hazardous Materials Incident Prevention and Mitigation Integrated Action Plan at all levels in a way that it is compatible with National

Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.5) Arrange for the stock of basic necessities for immediate distribution to affected people in the event of incident. The key implementing agencies include Department of Disaster Prevention and Mitigation, The Office of Permanent Secretary for Ministry of Public Health, Thai Red Cross Society, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.6) Arrange for preparedness of disaster equipments, implements and medical supplies to ensure their availability and serviceability in the wake of the incident **(in compliance with guideline identified in Chapter 5, item 5.3.6)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Department of Highways, Department of Rural Roads, Provincial Waterworks Authority, Provincial Electricity Authority, Thai Red Cross Society, Provincial Government, District Office, and Local Administration Organization.

(2.7) Arrange for emergency stock of adequate energy supplies **(in compliance with guidelines identified in Chapter 5, item 5.3.7)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Energy, Petroleum Authority of Thailand, and private sector.

(2.8) Arrange and earmark safety areas as well as public utilities for receiving the evacuees. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.9) Arrange for preparedness of main auxiliary, and standby communication systems and take all necessary steps to ensure adequate availability and round the clock serviceability of equipments and supplies **(in compliance with guidelines identified in Chapter 5, item 5.3.8)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, National Disaster Warning Center, Department of Disaster Prevention and Mitigation, and Provincial Government.

(2.10) Organize disaster exercise based on chemical and hazardous material incident scenario **(in compliance with guidelines identified in Chapter 5, item 5.3.9)** The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Industrial Estate Authority of Thailand, and concerned agency.

13.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle disaster emergency situation.

(1) Outside Bangkok Metropolitan Area

(1.1) Any person who encounters, stands near the incident scene or any agency which has been informed is required to notify Command Center responsible for the aforementioned incident scene.

(1.2) Upon obtaining confirmation of chemical and hazardous materials incident, the responsible Command Center is obliged to take actions as follows :

(1.2.1) Immediately deploy emergency response team to undertake disaster response operations according to Chemical and Hazardous Materials Incident Prevention and Mitigation Integrated Action Plan.

(1.2.2) Seal off the incident scene to prohibit the entering of unauthorized persons and arrange for maintaining law and order as well as managing road traffic in the affected and nearby areas.

(1.2.3) Bring the incident to the notice of Director of higher hierarchical order.

(1.2.4) Take immediate steps to set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2) as well as deploying personnel to base and perform the functions of the Center as identified in item 6.3.2 (3))**.

(1.2.5) In case where the response teams are unsure of the proper handling or type of the threatening toxic substances at the incident scene, they must immediately notify and seek for advice or technical recommendations from Department of Industrial Works or Pollution Control Department or Department of Energy Business. And if the incident is radioactive material related, they are required to contact Office of Atoms for Peace for advice and technical recommendations for proper handling.

(1.2.6) Publicize to keep the people residing in the affected area or in the adjacent areas likely to be affected informed of the incident, provide recommendations to shelter from harms, and prepare to evacuate if needed. Moreover, in case of inevitable necessity, the affected areas must be declared as dangerous zone to prohibit the entry by unauthorized persons.

(1.3) Conduct identification of dead body, if any **(in compliance with guidelines prescribed in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Identification Bureau.

(2) Within Bangkok Metropolitan Area

(2.1) Any person who encounters, stands near the incident scene or any agency which has been informed is required to notify Radio Communication Center of Bangkok Metropolitan Disaster Prevention and Mitigation Bureau through hotline number 199 or Bangkok Metropolitan Center through hotline number 1555 or call any Bangkok Metropolitan district office, or Department of Disaster Prevention and Mitigation through hotline number 1784.

(2.2) Disaster Prevention and Mitigation Bureau of Bangkok Metropolitan Administration is required to coordinate with Health Service Bureau and fire stations to deploy emergency response team to take immediate action according to Chemical and Hazardous Materials Incidents Prevention and Mitigation Integrated Action Plan.

(2.3) Immediately bring the incident to the notice of Bangkok Metropolitan Director and Central Director.

(2.4) Take immediate steps to set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2)), as well as deploying personnel to base and perform the functions of the Center as identified in item 6.3.2 (3)**.

(2.5) In case where the emergency response teams are unsure of the proper handling and type of the threatening toxic substance at the incident scene, they must notify and seek for advice and technical recommendation from Department of Industrial Works or Department of Energy Business or Pollution Control Department. And if the incident is radioactive related, they are required to contact Office of Atoms for Peace for advice and technical recommendations on proper handling.

(2.6) Publicize to keep the people residing in affected area or in the adjacent areas likely to be affected well informed of the incident, provide recommendations to shelter from harms, and prepare to evacuate if needed. Moreover, in case of inevitable necessity, the affected areas must be declared as dangerous zone to prohibit the entry by unauthorized persons.

(2.7) Conduct identification of dead body, if any **(in accordance to guidelines identified in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Identification Bureau.

(2.8) In case of necessity to request for foreign assistance, concerned Emergency Operations Center is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed **(in compliance with guideline identified in Chapter 4, item 4.2.6)**.

(2.9) In case of necessity to collect donations both in cash and in-kind from general public, Emergency Operations Center is required to set up donations collection center and should coordinate with and consult government agencies about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper, equitable and timely distribution **(in compliance with guidelines identified in Chapter 6, item 6.3.13)**.

13.4.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Dispatch chemical and hazardous material experts from agencies concerned to check for chemical and hazardous materials side effects and residue in the affected areas to ensure safe and healthy environments. The key implementing agencies include Department of Industrial Works, Pollution Control Department, and Office of Atoms for Peace.

(2) Emergency Operations Center of which the stricken areas are under responsibility is required to conduct initial damage and needs assessment survey, prepare the lists of affected people and damaged property and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11)**.

(3) Arrange for provision of temporary shelter, food supplies and drinking water, medical and health care services, as well as encouraging their morale. The assistance should extend to cover the rehabilitation of affected wild and domesticated animals. The key implementing agencies include The Office of Permanent Secretary for Ministry of Natural Resources and Environment, The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, Local Administration Organization, Bangkok Metropolitan Administration, and other agencies concerned.

(4) Management of Dead Bodies

(4.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Provincial Government, District Office, and Local Administration Organization.

(4.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police (**in compliance with guidelines prescribed in Chapter 6, item 6.3.10**)

(4.3) In case where transport of dead bodies is required, Local Administration Organization concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police, and other agencies will provide support as needed.

(5) Take all measures required to prevent, keep close watch and control the outbreak of epidemic and disease that might affect the physical and mental well – being of the people. The key implementing agencies include Department of Disease Control and Department of Health.

(6) Take immediate steps to improve and restore physical and mental health, as well as livelihoods of affected people to normalcy as soon as possible (**in compliance with guidelines identified in Chapter 7, item 7.3.1**). The key implementing agencies include Ministry of Social Development and Human Security, Office of Permanent Secretary for Ministry of Public Health, Ministry of Labour, Department of Disaster Prevention and Mitigation., Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society, and other agencies concerned.

(7) Rehabilitate damaged basic infrastructure facilities and other public facilities such as government offices, schools, tourist attractions, and environment as well as ensuring the affected area clean – up as quick as possible (**in accordance to guidelines identified in Chapter 7, item 7.3.2**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Ministry of Information and Communication Technology, Department of Highways, Department of Rural Roads, Pollution Control Department, Department of Environmental Quality Promotion, Department of Public Works and Town & Country Planning, Provincial Government, District Office, Local Administration Organization, TOT Public Co. Ltd., CAT Telecom. Public Co. Ltd., Tourism Authority of Thailand, Provincial Electricity Authority, and Provincial Waterworks Authority.

(8) Emergency Operations Center of which the affected areas are under responsibility is required to carry out the primary disaster rehabilitation efforts by using budget of the local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum.

(9) Organize the studies of the impact of chemical and hazardous materials incident on life and property of people to gain valuable information useful for reference and future chemical and hazardous materials incident management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Industrial Works, Office of Atoms for Peace, Pollution Control Department, Department of Energy Business, Industrial Estate Authority of Thailand, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

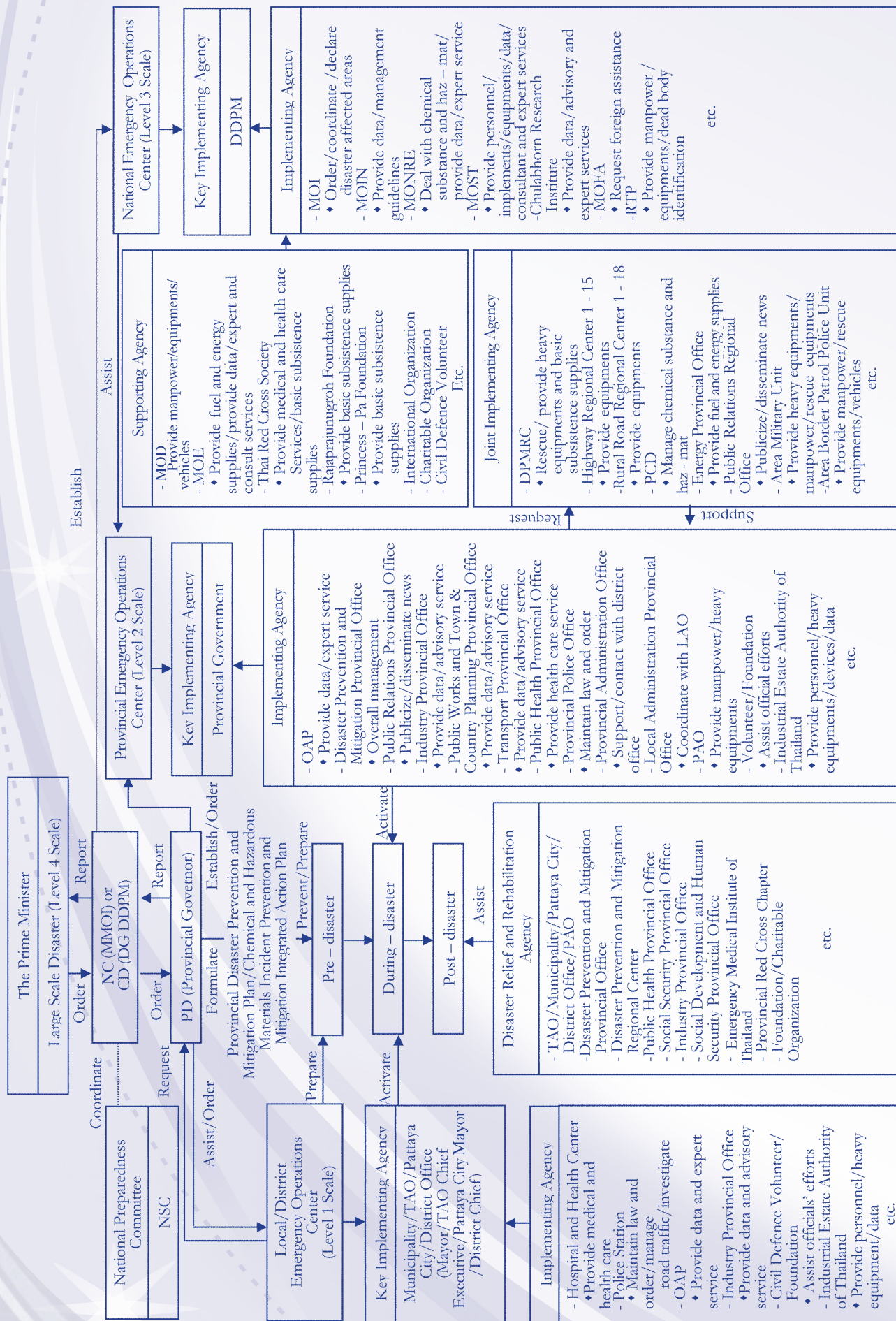


Chart 13.1 : Procedure and Countermeasure against Chemical and Hazardous and Joint Operations at Provincial Level

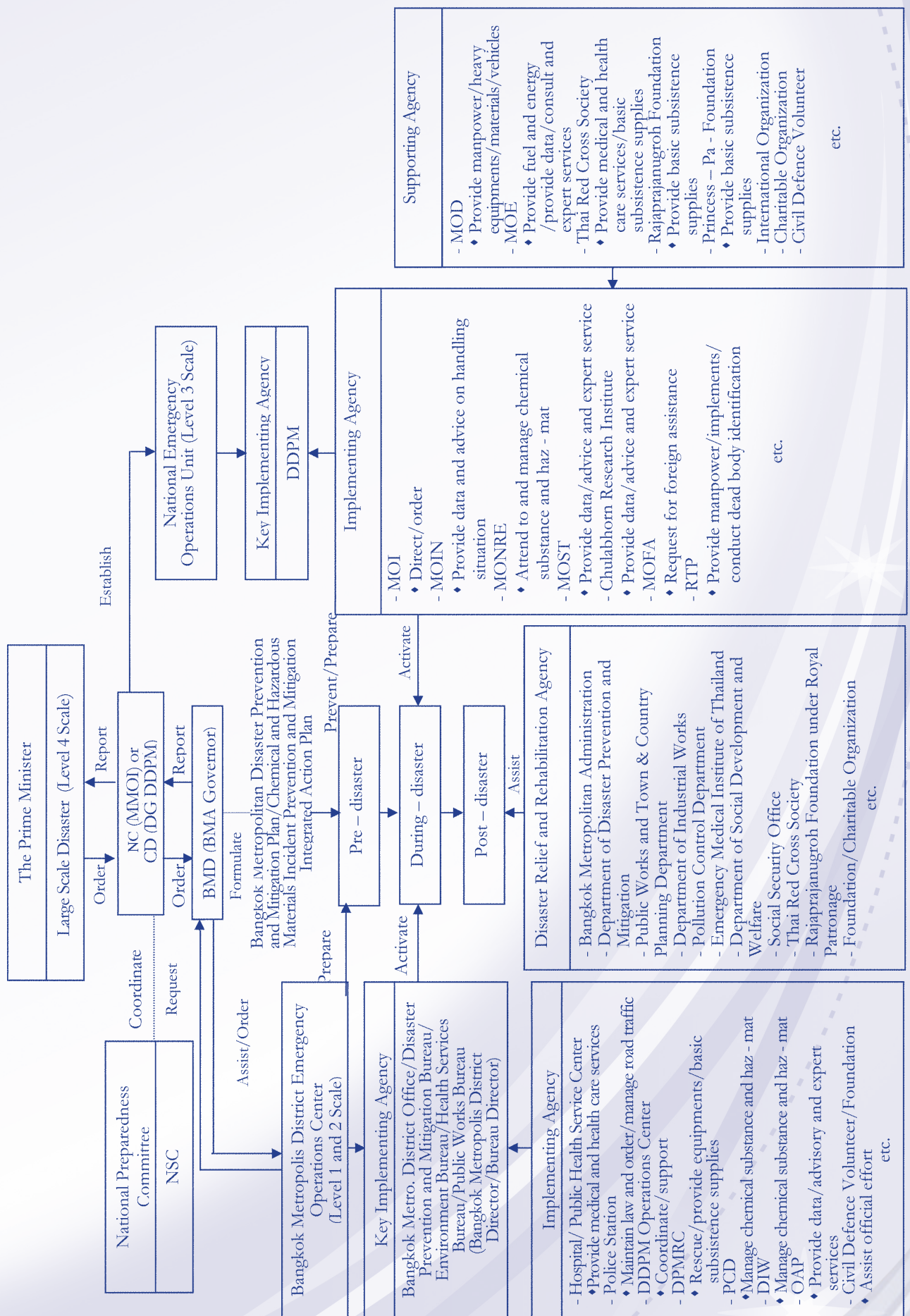


Chart 13.2 : Procedure and Countermeasure against Chemical and Hazardous and Joint Operations in Bangkok

Chapter 14

Transport Hazard

14.1 Introduction

Among other major causes, rapid and continuous economic growth has contributed to the increase of the feasibility and frequency of transport hazard which can cause substantial loss of life and property as well as to national economy. Moreover, transport hazard tends to cause accompanied complex disasters such as the ones created by hazardous substance that is being transported, chemical spills or oil spills into water sources, and large – scale mass transportation system incidents.

Recognizing the importance of preparedness arrangement for preventing and minimizing the impacts of this hazard, Department of Disaster Prevention and Mitigation has formulated Road Safety Master Plan B. E. 2552 – 2555 (2009 -2012) which has stipulated frameworks and direction to be taken by all agencies concerned for dealing with transport hazard, and to enhance and strengthen road safety system to meet international standard.

14.2 Objectives

- 14.2.1 To prevent and mitigate the adverse impact of transport hazard on life and property of people.
- 14.2.2 To facilitate and ensure effective and timely provision of assistance to affected people as well as rehabilitation to normalcy as soon as possible.
- 14.2.3 To identify the clear and integrated tasks and responsibilities to be taken by all government agencies as well as non – government network organizations concerned for dealing with transport hazard.

14.3 Terminology

Transportation Hazard refers to an incident or a condition created by land, maritime and air travel. This includes large – scale mass transportation incident, chemical and hazardous materials transportation incident, oil spills and chemical spills into water bodies as well as discharging oil or waste into river or sea.

14.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Headquarters, Local Command Center of all levels, and all agencies concerned for preparing to deal with transport hazard have been identified as follows:

14.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential transport hazard and evaluating the existing conditions of vulnerabilities to reveal the probability of its occurrence. In addition, the concurrent disaster impact reduction study is required to achieve information which is important to help identify appropriate and tangible measures for handling transport hazard. The key implementing agencies include The Office of Permanent Secretary for Ministry of Transport, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.2) Create hazard map of transport hazard prone routes and the routes which are most frequent used for transporting chemical and hazardous materials. The key implementing agencies include The Office of Permanent Secretary for Ministry of Transport, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.3) Create resource database on relevant personnel, mechanical equipments, implements and supplies to ensure their immediate availability and serviceability in the wake of the incident. The key implementing agencies include The Office of Permanent Secretary for Ministry of Transport, Department of Disaster Prevention and Mitigation, Emergency Medical Institute of Thailand, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, foundation, and private sector.

(1.4) Take all required steps to set up Road Traffic Accident Information Center as focal point to collect and update related data where all agencies can access related data such as data on oil spills clearance operations etc. The key implementing agencies include The Office of Permanent Secretary for Ministry of Natural Resources and Environment, The Office of Permanent Secretary for Ministry of Transport, Royal Thai Police, Royal Thai Navy, Department of Disaster Prevention and Mitigation, Bangkok Metropolitan Administration, private sector, and international organization.

(1.5) Organize public education training and campaign to raise awareness among all members of community at risk and to deliver important information to help them understand potential disaster and the proper measures to be adopted for self protection and safety (**in compliance with guideline identified in Chapter 4, item 4.4.3**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Transport, Public Relations Department, Department of Environmental Quality Promotion, Department of Disaster Prevention and Mitigation, Bangkok Metropolitan Administration and educational establishment.

(1.6) Take all necessary steps to strictly enforce all relevant laws and regulations as well as launching public campaign to keep the general public well-informed of penalty prescribed under those laws and regulations for violation. The key implementing agencies include The Office of Permanent Secretary for Ministry of Transport, Royal Thai Police, Department of Disaster Prevention and Mitigation, Provincial Government, and Bangkok Metropolitan Administration.

(1.7) Summarize and document lessons – learned from major transport incident for the useful purpose of future management (**in accordance to guidelines identified in Chapter 4, item 4.4.5**). The key implementing agencies include Department of Disaster Prevention and Mitigation, The Permanent Secretary for Ministry of Transport, Provincial Government, and Bangkok Metropolitan Administration.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme and organize civil defence volunteer corps, and rescue volunteers to provide assistance to government officials' efforts, and to disseminate the accurate information of the potential harm as well as basic protective measures to be adopted among the general public (**in compliance with guidelines identified in Chapter 5, item 5.3.3 (3.2)**). The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and foundation.

(2.2) Prepare the particulars of chemical and hazardous substance experts useful for dealing with chemical and hazardous material incident (**in accordance to guidelines identified in Chapter 5, item 5.3.2**). The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Industrial Works, Pollution Control Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.3) Take the required steps to formulate Transport Hazard Prevention and Mitigation Integrated Action Plan in a way that it is compatible the condition of areas at risk, for instance the coastal province is required to formulate Integrated Action Plan for Oil Spills Clearance etc. The key implementing agencies include The Office of Permanent Secretary for Ministry of Transport, Royal Thai Navy, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.4) Arrange for preparedness of disaster resources such as mechanical equipments, implements and supplies to ensure their immediate availability and serviceability in the wake of the incident. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Transport, Department of Disaster Prevention and Mitigation, Marine Department, Provincial Government, District Office, Local Administration Organization, Provincial Electricity Authority, and Thai Red Cross Society.

(2.5) Arrange for emergency stock of adequate energy supplies. The key implementing agencies include The Office of Permanent Secretary for Ministry of Energy, Petroleum Authority of Thailand Public Co. Ltd, and private sector.

(2.6) Arrange for the preparedness of main, auxiliary, and standby communication system and take all necessary steps to ensure adequate availability and round the clock serviceability of communication equipments and supplies (**in compliance with guidelines identified in Chapter 5, item 5.3.8**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and

Communication Technology, National Disaster Warning Center, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.7) Organize disaster exercise based on transport incident scenario (**in compliance with guidelines identified in Chapter 5, item 5.3.9**). The key implementing agencies include Ministry of Transport, Royal Thai Navy, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

14.4.2 During Disaster

The designated management mechanisms are required to take the following actions to handle chemical and hazardous materials emergency.

(1) Upon obtaining confirmation of chemical or hazardous materials incident, Local Command Center of which the incident scene is under responsibility must take immediate step to set up Emergency Operations Center of which level is compatible with scale of disaster (**in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2)**) as well as deploying personnel to base and perform the functions of the center as identified in item 6.3.2 (3).

(2) Within Bangkok Metropolitan area, Disaster Prevention and Mitigation Bureau of Bangkok Metropolitan Administration as the coordinating center is required to contact agencies concerned to deploy emergency response teams to handle the incident and shift the injuries to hospital; notify police station to seal off the areas and to maintain law and order, and keep the general public well – informed of the accurate situation through radio and television broadcast and other media (**in compliance with guidelines Identified in Chapter 6, item 6.2.2**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Royal Thai Police, Department of Industrial Works, Pollution Control Department, Public Relations Department, and Bangkok Metropolitan Administration.

(3) In case the incident scene is outside Bangkok Metropolitan area, Local Command Center of which the incident scene falls under responsibility is responsible for coordinating with all agencies concerned to deploy emergency response teams to handle the incident and shift the injuries to the hospital; notify police station to maintain law and order and to manage road traffic in the affected area; and arrange for deployment of civil defence volunteer corps to provide assistance to officials' effort (**in compliance with guidelines identified in Chapter 6, item 6.3.2**). The key implementing agencies include Royal Thai Police, The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and foundation/volunteer.

(4) In case of oil spill into water bodies, Local Command Center concerned is required to coordinate with all agencies concerned for joint operations in containing and clearing marine oil pollution. This joint operations must be carried out according to Office of The Prime Minister's Regulation on Prevention and Control of Marine Oil Pollution B. E. 2547 (2004) and National Prevention and Control of Marine Oil Pollution Plan. The aforesaid center is as well required to submit situation report to chairman of Prevention and Control of Marine Oil Pollution Board (Minister for Ministry of Transport) and Department of Disaster Prevention and Mitigation for bringing further to the notice of the Prime Minister. The key performing agencies include The Office of Permanent Secretary for Ministry of Transport, Department of Disaster Prevention and Mitigation, Department of Environmental Quality Promotion, Pollution Control Department, Royal Thai Navy, and private sector concerned.

(5) In handling marine transport incident, the agencies concerned are required to apply the marine transport incident prevention and reduction measures stipulated in Ministry of Transport's Marine Transport Safety Master Plan as well as the Action Plan. The key implementing agencies include Marine Department, Bangkok Metropolitan Administration, and private sector concerned.

(6) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed (**in compliance with guidelines identified in Chapter 4, item 4.2.6**). The key implementing agency is Ministry of Foreign Affairs.

(7) In case of necessity to collect donations both in cash and in-kind from the general public, Emergency Operations Center concerned is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper, equitable and timely distribution **(in compliance with guidelines identified in Chapter 6, item 6.3.13)**.

(8) Conduct identification of dead body, if any **(in compliance with guideline identified in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Identification Bureau.

14.4.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the affected areas are under responsibility is required to carry out initial damage and needs assessment survey, prepare the lists of affected people and damaged property and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11)**

(2) Management of Dead Bodies

(2.1) Arrange temporary mortuary for the storage dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Provincial Government, District Office, and Local Administration Organization.

(2.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**.

(2.3) In case where transport of dead bodies is required, Local Administration Organization concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police and other agencies will provide support as needed.

(3) Take immediate steps to decontaminate toxic substance residues in the areas. The key implementing agencies include Pollution Control Department, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, and Bangkok Metropolitan Administration.

(4) Arrange rehabilitation programmes for assisting large – scale and small – scale enterprises affected by transport hazard. The key implementing agencies include The Office of Permanent Secretary for Ministry of Finance, The Office of Permanent Secretary for Ministry of Industry, and financial institute.

(5) The local inquiry officers are responsible for investigating cause of the incident in accordance to the assigned duty and authority. The key implementing agency is Royal Thai Police.

(6) Emergency Operations Center of which affected areas are under responsibility has been tasked to carry out the initial rehabilitation efforts by using budget of Local Administration Organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum.

(7) Organize the studies of the impact of transport hazard on life and property of the people to gain valuable information useful for reference and future transport hazard management. The key implementing agencies include The Office of Permanent Secretary for Ministry of Transport, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

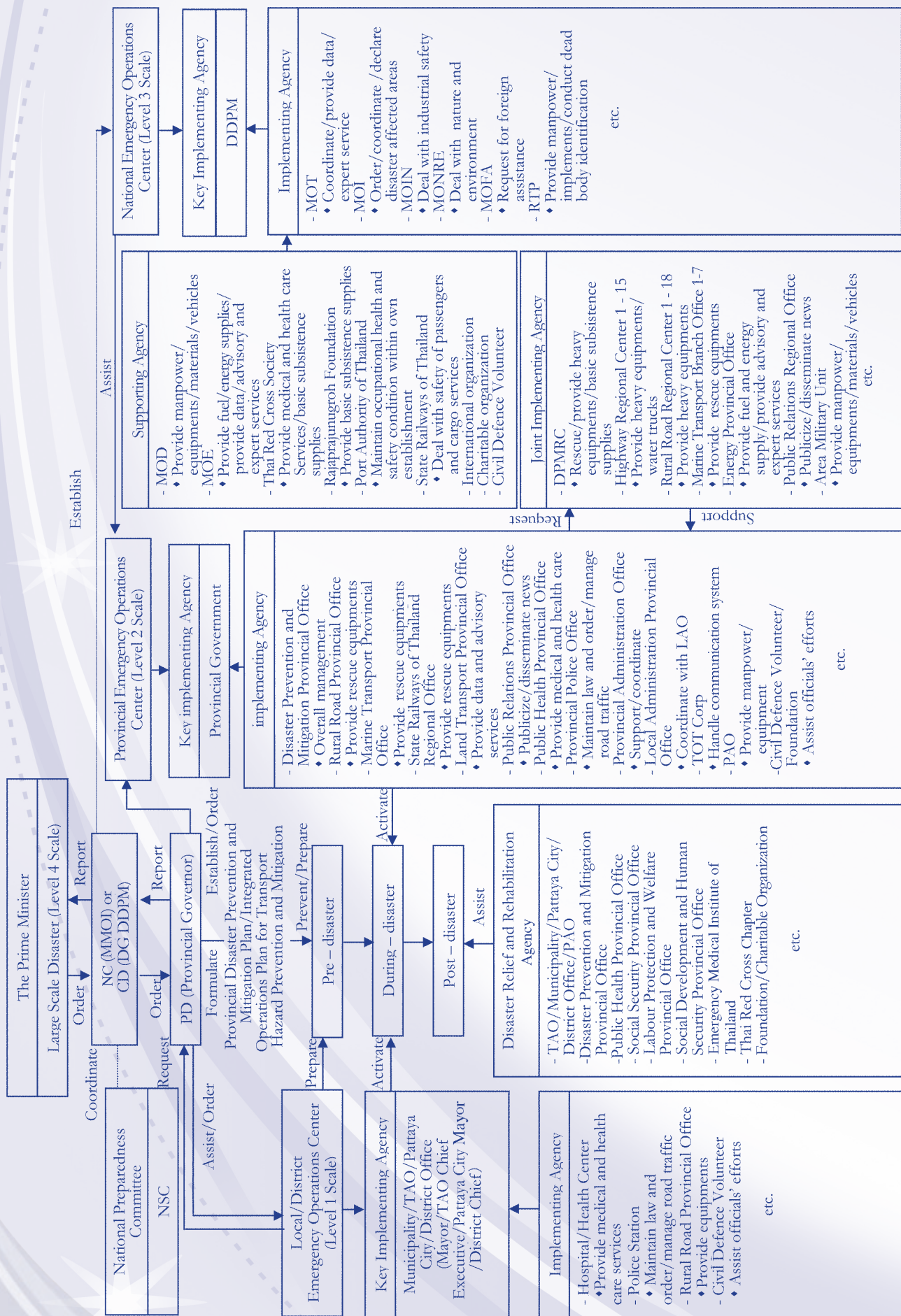


Chart 14.1 : Countermeasure Procedure against Transport Hazard and Joint Operations at Provincial Level

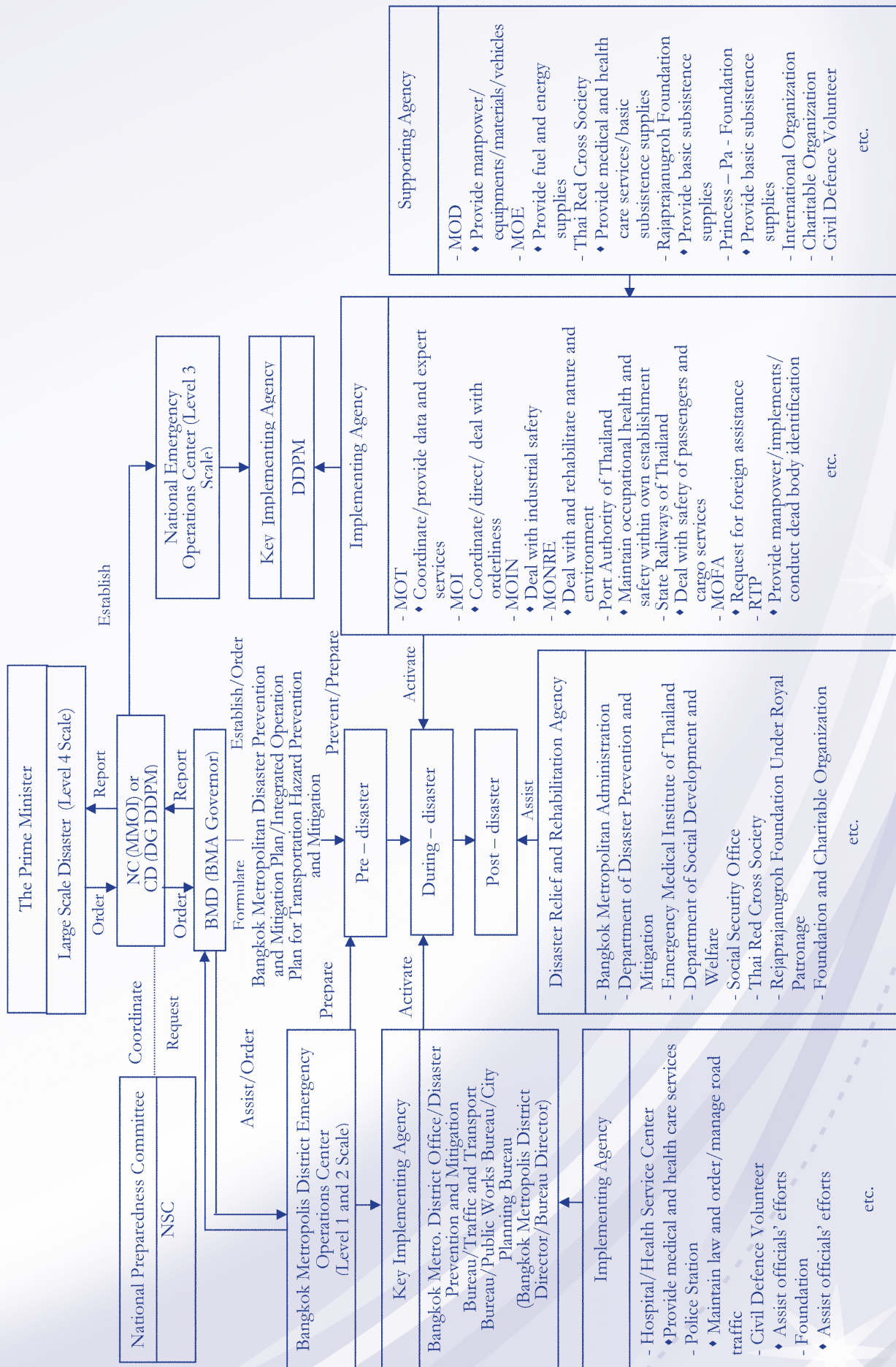


Chart 14.1 : Countermeasure Procedure against Transport Hazard and Joint Operations in Bangkok

Chapter 15

Drought

15.1 Introduction

Generally, the atmospheric condition in Thailand during December to May is usually hot and dry with high daily temperature, particularly in April the temperatures might reach 40 - 43°C. Subsequently, during this period of the year, most parts of the country will be under the influence of sweltering to extremely hot weather. Coupled with the prolonged period of abnormally low rainfall, the period of unusual dryness have led almost all parts of Thailand to encounter critical drought hazard which further leads to shortage of water for drinking, household consumption, and agricultural purpose.

Since these days some parts of the country are still affected by the persistent and prolonged drought, it is urgently required all agencies concerned to synergize resources and efforts to mitigate the adverse impact of prolonged drought on the farmers and the general public.

15.2 Objectives

- 15.2.1 To prevent and mitigate the adverse impact of drought on well-being and property of the people.
- 15.2.2 To facilitate and ensure effective and timely provision of assistance to affected people as well as rehabilitation to normalcy as soon as possible.
- 15.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies as well as non – government network organizations for dealing with drought.

15.3 Terminology

Drought refers to the prolonged dry period of weather condition caused by the long period of deficit or no rainfall spanning over large areas. Periods of prolonged drought can trigger widespread and severe effects among people, animals, and vegetation, for instance shortage of water for drinking and household use as well as for agricultural and industrial purposes, substandard or highly limited crop or yield productions, death of livestock etc.

15.4 Countermeasure Procedure

Procedure and countermeasures required to be taken by National Command Headquarters, Local Command Center of all levels, and all agencies concerned for preparing to deal with drought in all aspects of disaster management cycle, have been identified as follows :

15.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential drought hazard and evaluating the existing conditions of vulnerabilities to reveal the probability of its occurrence. In addition, the concurrent disaster impact study is required to achieve information which is important to help identify appropriate and tangible measures for handling drought. The key implementing agencies include Thai Meteorological Department, Royal Irrigation Department, Land Development Department, Department of Agricultural Extension, Department of Water Resources, Department of Groundwater Resources, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(1.2) Review and update the existing data on drought – prone areas, and create drought hazard map as well as water resources database. The key implementing agencies include Department of Water Resources, Department of Groundwater Resources, Royal Forest Department, Department of National Park, Wild Life and Flora, Department of Disaster prevention and Mitigation, Royal Irrigation Department, Land Development Department, Department of Agricultural Extension, Thai Meteorological Department, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(1.3) Prepare database on relevant personnel, mechanical equipments, implements and supplies to ensure their immediate availability and serviceability in the event of drought. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Water Resources, Department of Groundwater Resources, Department of National Park, Wild Life and Flora, Royal Irrigation Department, Department of Agricultural Extension, Land Development Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.4) Develop drought interagency information sharing system. The key implementing agencies include Department of Disaster Prevention and Mitigation, Thai Meteorological Department, Geo Informatics and Space Technology Development Agency (Public Organization), Department of Water Resources, Royal Irrigation Department, Land Development Department, Department of Agricultural Extension, Provincial Government, District Office, Land Administration Organization, and Bangkok Metropolitan Administration.

(1.5) Develop drought forecasting system and keep close watch on weather phenomenon for timely drought warning. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, Department of Disaster Prevention and Mitigation, Department of Water Resources, Royal Irrigation Department, Department of Agricultural Extension, Land Development Department, Public Relations Department, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(1.6) Organize public education training and campaign to raise awareness among all members of community at risk and to provide important information to help them understand potential drought as well as an instruction of drought mitigation strategies. The instances include water restriction to regulate water use, planting less water – dependent crops in dry season etc. **(in compliance with guidelines identified in Chapter 4, item 4.4.3)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Department of Water Resources, Department of National Park, Wild Life and Flora, Royal Irrigation Department, Department Agricultural Extension, Land Development Department, Public Relations Department, Provincial Government, District Office, local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(1.7) Summarize and document lessons learned from past severe and large – scale drought hazards for the useful purpose of future management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Department of Water Resources, Department of National Park, Wild Life and Flora, Land Development Department, Department of Agricultural Extension, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(2.) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme to train and organize civil defence volunteer corps to provide assistance to government officials' efforts **(in compliance with guidelines identified in Chapter 5, item 5.3.3 (3.2))**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, charitable organization, and foundation.

(2.2) Take the required steps to formulate Drought Prevention and Mitigation Integrated Action Plan as well as identifying water restriction measures at all levels in a way that they are compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Department of Water Resources, Department of Groundwater Resources, Royal Irrigation Department, Department of Disaster Prevention and Mitigation, Land Development Department, Department of Agricultural Extension, Rice Department, Department of Agriculture, Department of National Park, Wild Life and Flora, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.3) Arrange for preparedness of disaster resources such as mechanical equipments, implements, vehicles, materials and supplies to ensure their immediate availability and serviceability in the wake of hazard **(in compliance with guidelines prescribed in Chapter 5, item 5.3.6)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Water Resources, Department of Groundwater Resources, Department of Energy Business, Provincial Government, District Office, Thai Red Cross Society, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.4) Take the required steps to formulate Dry Season Crops Cultivation Promotion Plan in a way that it is compatible with Agricultural Water Management during Dry Season Plan to ensure the farmers' sustainable source of income. The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Royal Irrigation Department, Department of National Park, Wild Life and Flora, Electricity Generating Authority for Thailand, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.5) Ensure availability of adequate supply of seeds, seedlings, fertilizers and other relevant agricultural inputs for distribution to affected farmers. The key implementing agencies include Department of Agricultural Extension, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

15.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle the on – going drought.

(1) Upon obtaining confirmation of drought occurrence, take immediate steps to set up Emergency Operations Center of which level is compatible with scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2))** as well as deploying personnel to base and perform the functions of the Center as identified in item 6.3.2 (3)).

(2) Publicize and keep affected people well-informed of drought and water status in order to encourage them to save water used for household and agricultural purposes.

(3) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed **(in compliance with guidelines identified in Chapter 4, item 4.2.6)**.

15.4.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the affected areas are under responsibility is required to carry out preliminary damage and needs assessment survey, prepare the lists of affected people and damaged property, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11)**.

(2) Take immediate steps to improve and restore quality of life and livelihood of affected people **(in compliance with guidelines identified in Chapter 7, item 7.3.1)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Labour, The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, The Office of Permanent Secretary for Ministry of Social Development and Human Security, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(3) Emergency Operations Center of which the affected areas are under responsibility is required to carry out the initial rehabilitation efforts by using budget of the Local Administration Organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum **(in compliance with guidelines identified in chapter 7, item 7.3.2)**. The key implementing agencies include Ministry of Social Development and Human Security, The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(4) Organize the studies of the impact of drought on well-being and property of the people to gain valuable information useful for reference and future drought management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Irrigation Department, Department of Water Resources, Department of National Park, Wild Life and Flora, Land Development Department, Department of Agricultural Extension, Bangkok Metropolitan Administration, and educational establishment.

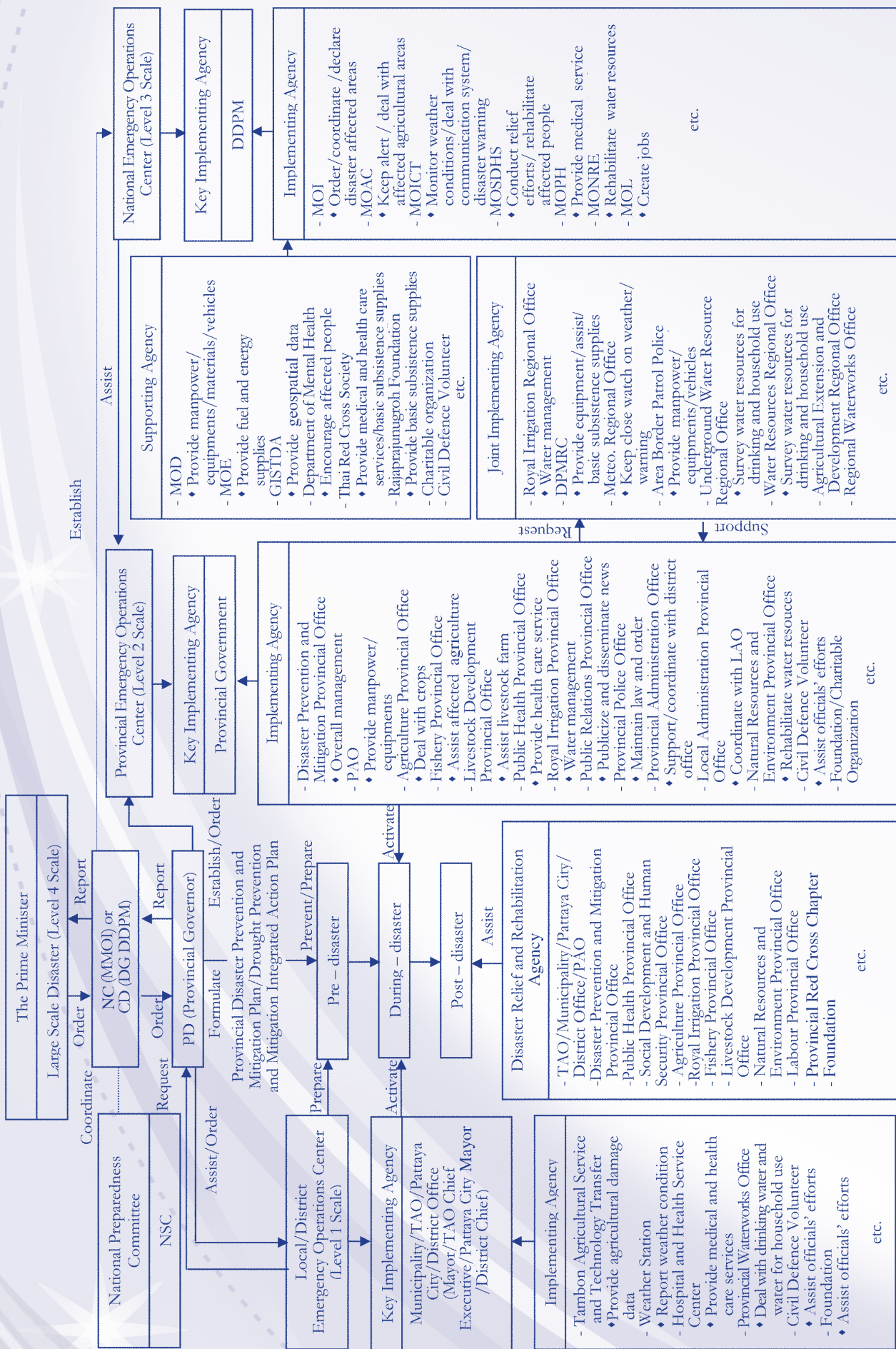


Chart 15.1 : Countermeasure Procedure against Drought and Joint Operations at Provincial Level

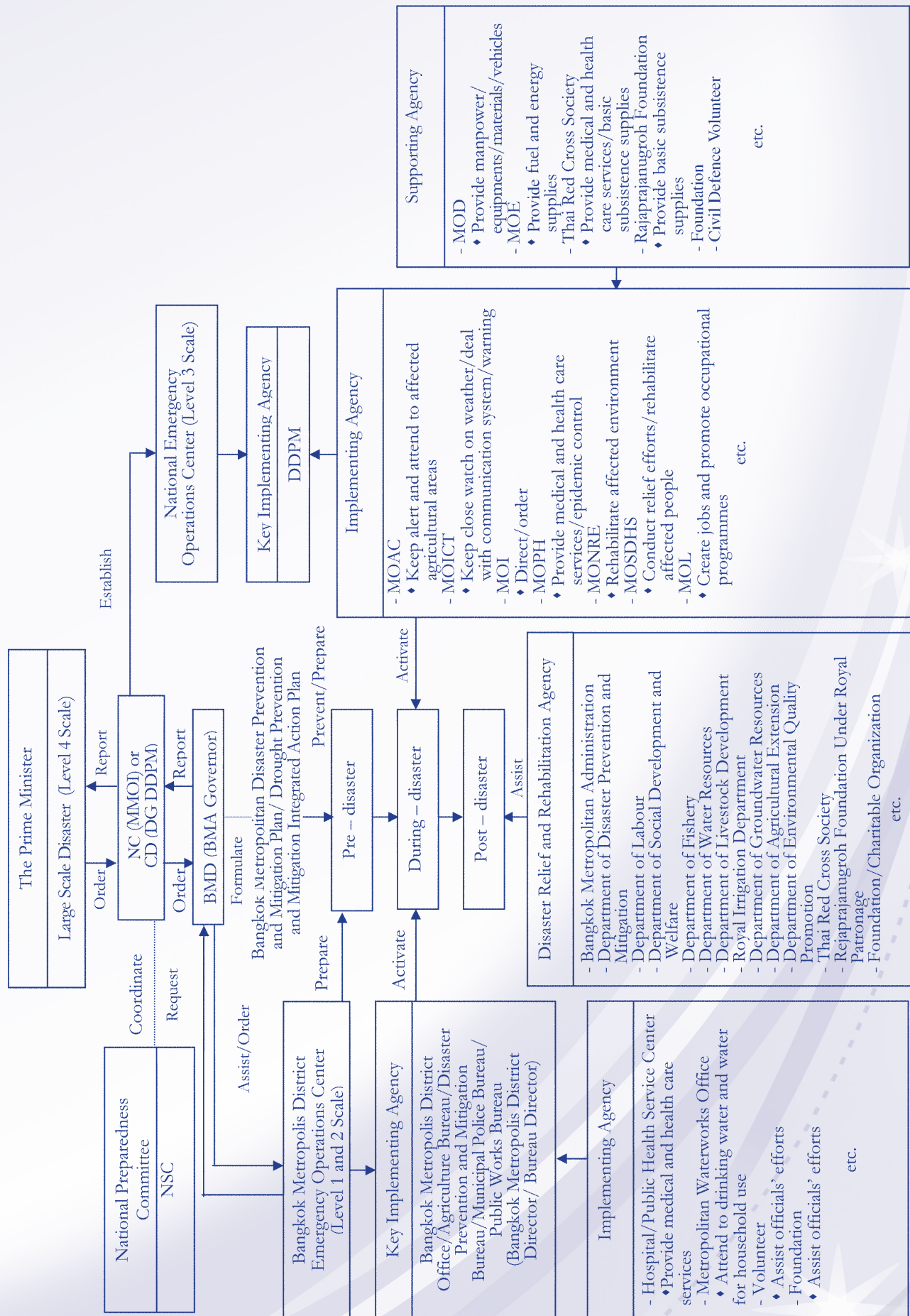


Chart 15.1 : Countermeasure Procedure against Drought and Joint Operations in Bangkok

Chapter 16

Cold Spell

16.1 Introduction

Normally, the annual cold weather will set in over most of tropical Thailand during December to February due to the dominance of prevailing dry and cold northeast monsoon current. In addition, the change of climate pattern due to the coincidental seasonal transition from rainy to cool season and the prevailing cold front from China have intensified usual – cold weather into severe cold spell extending to cover most part of the country particularly the northern and northeastern regions. Severe cold weather can be a potential hazard to health, adversely affecting physiological functions and well-being as well as property of the people.

16.2 Objectives

- 16.2.1 To prevent and mitigate the adverse impact of cold spell on life and property of the people.
- 16.2.2 To facilitate and ensure effective and timely provision of assistance to affected people as well as rehabilitation of affected areas to normalcy as soon as possible.
- 16.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non – government network organizations concerned for dealing with cold spell.

16.3 Terminology

Cold Spell can be referred to the atmospheric condition marked by the severe cold weather with the drop in temperature to lower than 15°C. The drop in temperature will persist to the extent that that atmospheric condition can create severe and widespread hazardous effect on people. Generally, cold spell occurs during December to February when the intense high pressure ridge from China has extended to cover upper Thailand.

16.4 Countermeasure Procedure

The operating procedure and countermeasures required to taken by National Command Headquarters, Local Command Center of all levels, and all agencies concerned for preparing to deal with cold spell in all aspects of disaster management cycle, have been identified as follows :

16.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential cold spell and evaluating the existing conditions of vulnerabilities to reveal the probability of its occurrence. In addition, the concurrent disaster impact study is required to achieve information which is important to help identify appropriate and tangible measure for handling cold spell and its harmful impact on general public, property, and environment. The key implementing agencies include Department of Disaster Prevention and Mitigation, Thai Meteorological Department, Provincial Government, District Office, and Local Administration Organization.

(1.2) Review and update the existing data on cold spell – prone areas and create cold spell hazard map. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial government, District Office, and Local Administration Organization.

(1.3) Prepare database on relevant personnel, cold weather gear, and implements to ensure their immediate availability and serviceability in the wake of cold spell. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Agricultural Extension, Provincial Government, District Office, and Local Administration Organization.

(1.4) Develop cold spell interagency disaster information sharing system. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Agricultural Extension, Geo Information and Space Technology Development Agency, Provincial Government, District Office, and Local Administration Organization.

(1.5) Develop cold spell forecasting system and keep close watch on weather phenomenon for a cold spell warning. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, Department of Disaster Prevention and Mitigation, Thai Meteorological Department, Provincial Government, District Office, and Local Administration Organization.

(1.6) Organize public education training and campaign to raise awareness among all members of the community at risk and to deliver information to help them understand potential hazard as well as measures to be adopted for self-protection and safety (**in compliance with guidelines identified in Chapter 4, item 4.3.3**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Public Relations Department, Provincial Government, District Office, Local Administration Organization, and educational establishment.

(1.7) Summarize and document lessons learned from past severe cold spell to gain valuable information useful for reference and future management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions:

(2.1) Arrange the specific training programme to train and organize civil defence volunteer corps to provide assistance to officials' efforts (**in compliance with guidelines designated in Chapter 5, item 5.3.3**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, charitable organization, and foundation.

(2.2) Take the required steps to formulate Cold Spell Prevention and Mitigation Integrated Action Plan at all levels in a way that it is compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, and Local Administration Organization.

(2.3) Arrange for the emergency stock of cold weather protection items such as blankets, warm clothing etc. for quick and timely distribution to affected people. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Thai Red Cross Society

16.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Upon obtaining confirmation of severe cold spell take immediate steps to set up Emergency Operations Center of which level is compatible with the scale of disaster (**in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2)**) and deploy personnel to base and perform the functions of the Center **as identified in item 6.3.2 (3)**.

(2) Publicize and keep affected people well informed of severe cold spell and about the measures to be adopted for self – protection.

(3) In case of necessity to collect donations both in cash and in-kind from the general public, Emergency Operations center concerned is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper, equitable, and timely distribution (**in compliance with guidelines identified in Chapter 6, item 6.3.13**)

(4) Conduct dead body identification, if any. The key implementing agency is Royal Thai Police Forensic Science Bureau.

16.4.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the affected areas are under responsibility is required to carry out preliminary damage and needs assessment survey, prepare the lists of affected people and damaged property, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance (**in compliance with guidelines identified in Chapter 6, item 6.3.11**).

(2) Management of Dead Bodies

(2.1) Arrange temporary mortuary for the storage dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**.

(2.3) In case where transport of dead bodies is required, Local Administration Organization concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police and other agencies will provide support as needed.

(4) Take immediate steps to improve and restore physical and mental health, quality of life and as well as livelihood of affected people to normalcy as soon as possible **(in compliance with guidelines identified in Chapter 7, item 7.3.1)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Labour, The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Ministry of Social Development and Human Security, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(5) Emergency Operations Center of which the affected areas are under responsibility has been tasked to carry out the initial rehabilitation efforts by using budget of the local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum.

(6) Organize the studies of the impact of cold spell on physical and mental well-being, life and property of the people to gain valuable information useful for reference and future cold spell management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, and educational establishment.

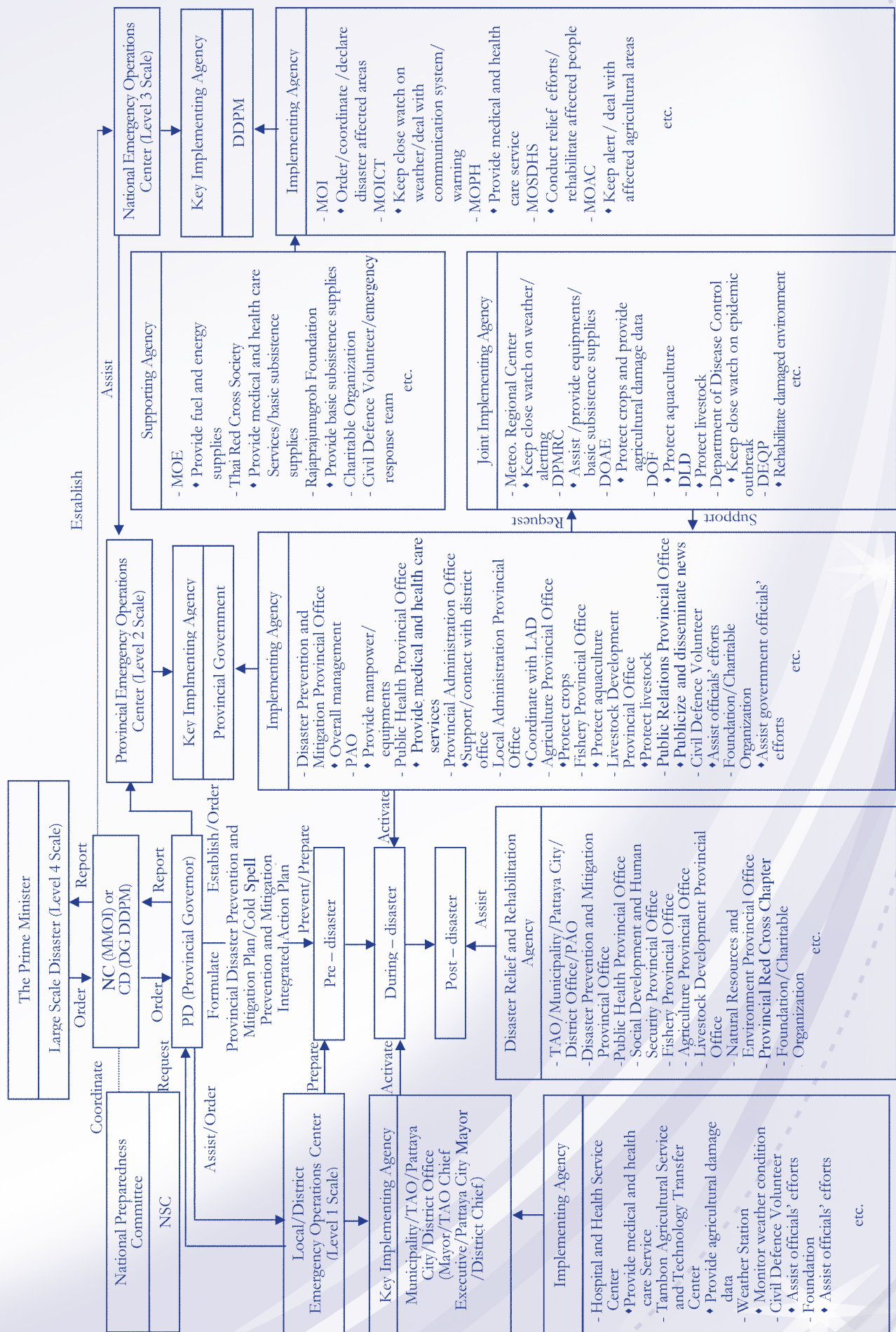


Chart 16.1 : Countermeasure Procedure against Cold Spell and Joint Operations at Provincial Level

Chapter 17

Forest Fire and Haze

17.1 Introduction

The occurrence of forest fire and haze has become the common phenomenon in Thailand during December and March each year due to the prolonged hot and dry weather and the subsequent evasion of accumulated humidity of forested regions. Apart from natural causes, human activities whether deliberate or negligent have contributed to the frequent occurrence of forest fires and haze spreading across vast areas. Moreover, from time to time Thailand has been affected by transboundary haze fanning from neighboring countries. Forest fire can create extensive damage, both to human life and property including the negative environmental and natural resources effects. And thick haze can cause negative health effects and obscure the visibility that may lead to other complex disaster.

17.2 Objectives

- 17.2.1 To prevent and mitigate the adverse impact of forest fire and haze on life and property of people.
- 17.2.2 To facilitate and ensure effective and timely provision of assistance to affected people as well as rehabilitation of the stricken areas to normalcy as soon as possible.
- 17.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non – government network organizations concerned for dealing with forest fire and haze.

17.3 Terminology

- 17.3.1 **Forest Fire** refers to any uncontrolled fire regardless the cause of ignition, that occurs in the natural forest or forestry plantation.
- 17.3.2 **Open Burning** refers to any combustion, fire outbreak, smouldering phenomena, or burning of materials in the open space where dust particles, smoke, gas and other toxic substances emitted during combustion dispersed into the atmosphere.
- 17.3.3 **Haze** refers to atmospheric phenomenon where dust, smoke, and airborne suspended particulate accumulated during cloudy sky conditions.

17.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Headquarters, Local Command Center of all levels, and all government agencies concerned for preparing to deal with forest fire and haze in all aspects of disaster management cycle have been identified as follows :

17.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential forest fire and haze including open burning incidents and evaluating existing conditions of vulnerabilities to reveal the probability of their occurrence. In addition, the concurrent forest fire and haze as well as open burning incident impact study is required to achieve information which is important to help identify appropriate and tangible measures for handling forest fire and haze. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.2) Review and update the existing data on forest fire and haze prone areas as well as safety areas data to accommodate the evacuees. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, Pollution Control Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.3) Create forest fire hazard map through the use of the same standardized format both in terms of the scale and detail of the map. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, Pollution Control Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.4) Create database on relevant personnel, mechanical equipments, implements and supplies to ensure their immediate availability and serviceability in the event of forest fire. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, Emergency Medical Institute of Thailand, Provincial Government, District Office, Bangkok Metropolitan Administration, foundation and private sector.

(1.5) Develop forest fire, haze and open burning, interagency information sharing system. The key implementing agencies include The Office of Permanent Secretary for Ministry of Natural Resources and Environment, Department of Disaster Prevention and Mitigation, Thai Meteorological Department, Department of National Park, Wild Life and Flora, Royal Forest Department, Pollution Control Department, Geo-Informatics and Space Technology Development Agency, and Bangkok Metropolitan Administration.

(1.6) Organize public education training and campaign to raise awareness among all members of the community at risk and to deliver information to help them understand the potential disaster as well as the measures to be adopted for self – protection and safety (**in compliance with guidelines identified in Chapter 4, item 4.3.3**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, Pollution Control Department, Department of Environmental Quality Promotion, Public Relations Department, Bangkok Metropolitan Administration, and educational establishment.

(1.7) Summarize and document lessons learned from the past major forest fire, haze and open burning events to gain valuable information useful for reference and future management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forestry Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme and organize civil defence volunteer corps, village – based disaster warning volunteers, and search and rescue volunteers to provide assistance to government officials' efforts (**in compliance with guidelines identified in Chapter 5, item 5.3.3 (3.2)**). The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forestry Department, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and foundation.

(2.2) Organize the orientation training programme to promote and strengthen people involvement in disaster management by using community – based disaster risk management approach (**in compliance with guidelines designated in Chapter 5, item 5.3.4 (1)**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society, and educational establishment.

(2.3) Develop forest fire, haze and open burning forecasting system, as well as keeping close watch of the situations for timely warning (**in compliance with guidelines identified in Chapter 6, item 6.3.1**). The key implementing agencies include Thai Meteorological Department, Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, and Pollution Control Department.

(2.4) Take the required steps to formulate Forest Fire and Haze Prevention and Mitigation Integrated Action Plan as well as identifying large – scale open burning restrictions at all levels in a way that it is compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(2.5) Arrange and earmark safety areas as well as indispensable public utilities for receiving the evacuees. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.6) Arrange for the stock of basic necessities for immediate distribution to affected people in the event of disaster. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society.

(2.7) Arrange for emergency stock of adequate energy supplies. The key implementing agencies include The Office of Permanent Secretary for Ministry of Energy, Petroleum Authority of Thailand, and private sector.

(2.8) Arrange for the preparedness of main, auxiliary, and standby communication systems and take all necessary steps to ensure adequate availability and round the clock serviceability of communication equipments and supplies in the wake of forest fire, haze and open burning incident **(in compliance with guidelines Identified in Chapter 5, item 5.3.8)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forestry Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.9) Organize disaster exercise on forest fire and haze scenario **(in compliance with guidelines identified in Chapter 5, item 5.3.9)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and other government agencies concerned.

17.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle the emergency situation.

(1) Upon obtaining confirmation of fire forest and haze, take the immediate steps to set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2))** and deploy personnel to base and perform the functions of the Center as identified in item 6.3.2 (3).

(2) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed **(in compliance with guidelines identified in Chapter 4, item 4.2.6)**. The key implementing agency is Ministry of Foreign Affairs.

(3) In case of necessary to collect donations both in cash and in-kind, Emergency Operations Center concerned is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper, equitable, and timely distribution **(in compliance with guidelines identified in Chapter 6, item 6.3.13)**.

(4) Conduct identification of dead bodies **(in accordance to guidelines identified in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Identification Bureau.

17.4.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the affected areas are under responsibility is required to carry out initial damage and needs assessment survey, prepare the lists of affected people and damaged property, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11)**

(2) Take immediate steps to provide temporary shelter and basic necessities; improve and restore physical and mental health as well as quality of life and livelihoods of affected people to normalcy as soon as possible. The key implementing agencies include Ministry of Social Development and Human Security, The Office of Permanent Secretary for Ministry of Public Health, Department of Employment, Department of Skill Development, Provincial Government, Local Administration Organization, and Bangkok Metropolitan.

(3) The inquiry official in charge is required to investigate causes of forest fire according to assigned authority and responsibility.

(4) Management of Dead Bodies

(4.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Provincial Government, District Office, and Local Administration Organization.

(4.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police (**in compliance with guidelines identified in Chapter 6, item 6.3.10**)

(4.3) In case where transport of dead bodies is required, Local Administration Organization concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police, and other agencies will support as needed.

(5) Emergency Operations Center of which affected areas are under responsibility is required to carry out the initial rehabilitation efforts by using budget of local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum (**in compliance with guidelines identified in Chapter 7, item 7.3.1**)

(6) In case of necessity to collect donations both in cash and in-kind from the general public, Emergency Operations Center concerned is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper, equitable, and timely distribution (**in compliance with guidelines identified in Chapter 6, item 6.3.13**)

(7) If a forest fire has spreaded and charred more than 30 houses or the charred area has covered more than one rai (unit of area equal to 1,600 square metres) including the adjacent areas within 30 metres surrounding the forest fire scene, these areas are regarded as “fire devastated areas” under Building Control Act B. E. 2522 (1979) and addendum. In this case, the local officials designated under the aforesaid Act, are obliged to take the following actions.

(7.1) Post the notice to indicate fire devastated areas at local administration organization office and at the fire scene. The aforesaid notices should include the concised map of fire devastated areas as well as the restriction of activity conducted in these areas according to the Act.

(7.2) Take the legal steps to prohibit any person to construct, modify, demolish, or remove the buildings in fire devastated areas within the period of 40 days as from the date of fire outbreaks.

(7.3) Take the legal steps to consider the appropriateness whether to improve fire devastated areas by the taking into account the following issues ; the useful purpose of fire prevention, public health, the maintenance of environmental quality, town planning, architectural factor, and the traffic flow facilitation. Further, the local officials concerned need to forward their comments along with the concised map of fire devastated areas to Building Control Board within 15 days as from the date of fire outbreak for further proceeding according to Building Control Act B. E. 2522 (1979).

(8) Rehabilitate the affected areas and repair damaged basic infrastructure facilities to normal condition (**in compliance with guidelines designated in Chapter 7 item 7.3.2**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology (TOT Public Com Ltd. and CAT Telecom Public Co. Ltd.), Department of Disaster Prevention and Mitigation, Department of National Park, Wild life and Flora, Royal Forest Department, Department of Environmental Quality Promotion, Pollution Control Department, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(9) Organize the studies of the impact of forest fire and haze on life and property of the people to gain valuable information useful for reference and future forest fire and haze management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of National Park, Wild Life and Flora, Royal Forest Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

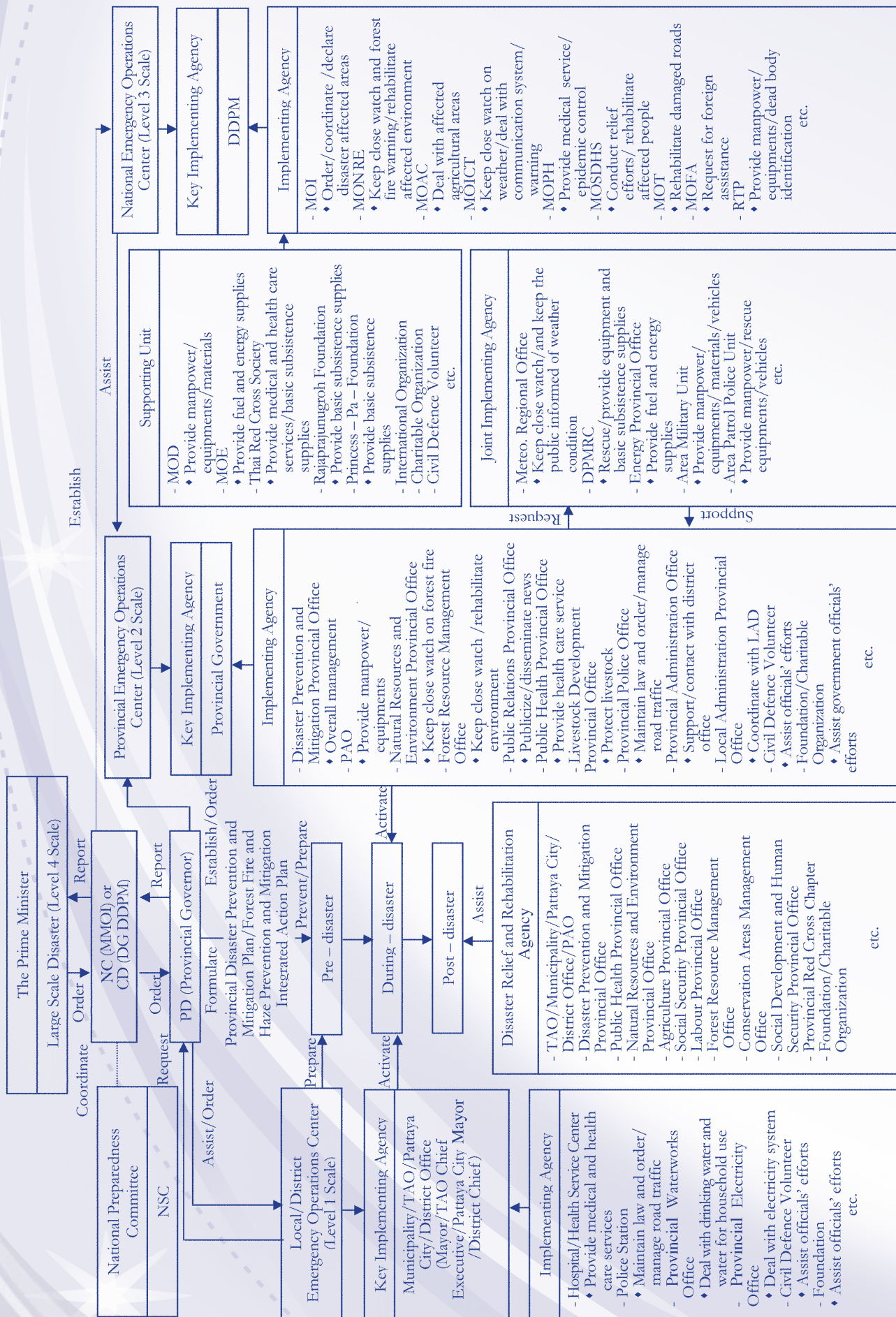


Chart 17.1 : Countermeasure Procedure against Forest Fire and Haze and Joint Operations at Provincial Level

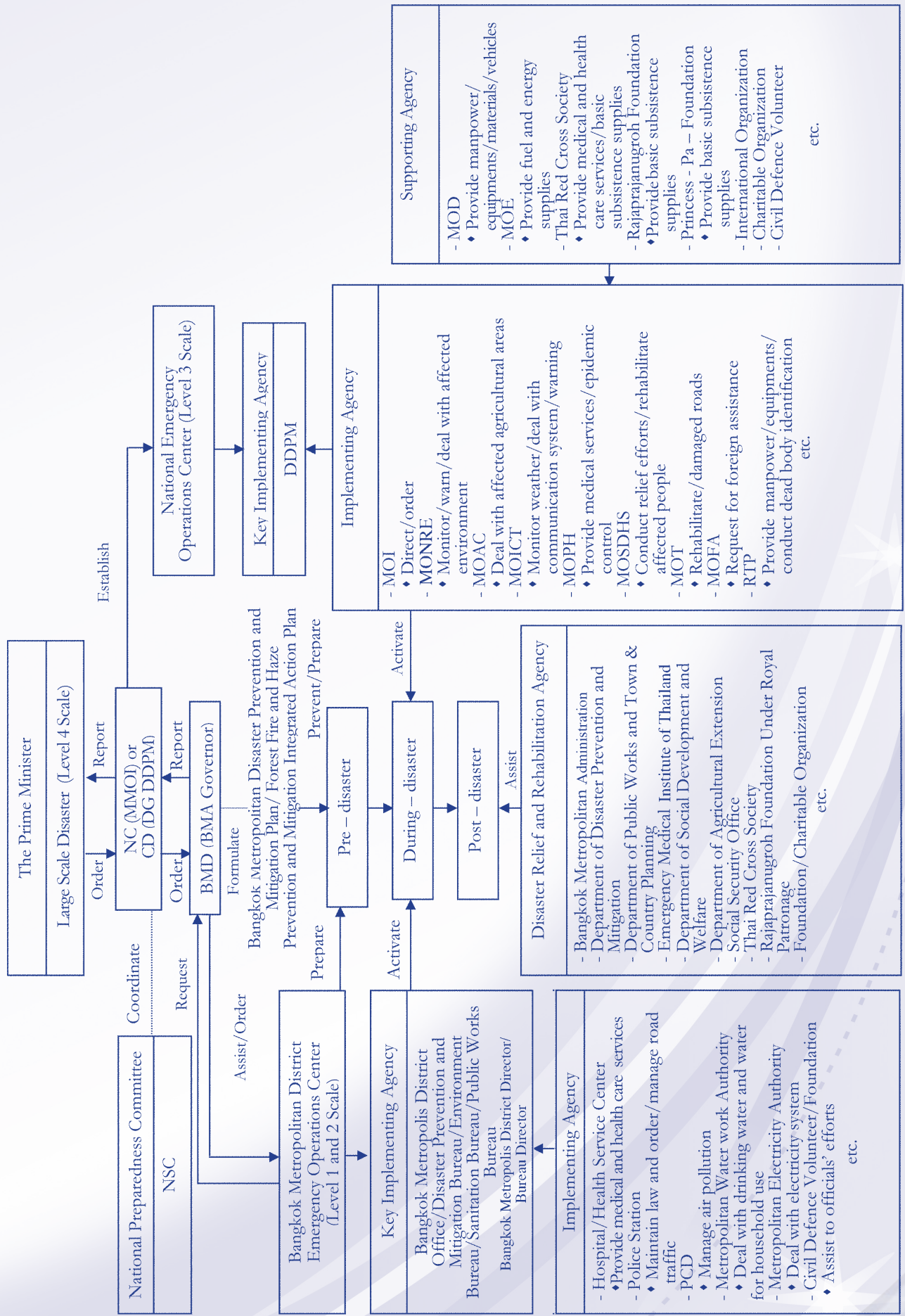


Chart 17.2 : Countermeasure Procedure against Forest Fire and Haze and Joint Operations in Bangkok

Chapter 18

Earthquake and Building Collapse

18.1 Introduction

An earthquake is one of the most destructive natural phenomena usually triggered by the sudden movement of the plates where the earth's crust lies on, particularly at location of plate boundaries, due to the continuous ascent of magma towards the earth's surface. These plates move in different directions and in relations to one another. Subsequently, the countries which locate on the path or close proximity of plate boundary movement will be more earthquake – vulnerable, for instances Japan, The People Republic of China, Indonesia etc. In addition, other phenomenon such as volcanic eruption, meteor impacts, underground explosions etc., are as well able to cause earthquake.

Though Thailand is considerably safe from large – scale earthquake disaster, has occasionally experienced minor ones of which epicenters locate in western and northern front zone which can be felt and cause slightly damage to residences. Notwithstanding, an occurrence of high – magnitude earthquake with epicenter located in Andaman Sea, or southern part of People Republic of China or Myanmar may cause substantial damage to the southern, western, and northern parts of Thailand including Bangkok Metropolis.

18.2 Objectives

18.2.1 To mitigate and reduce adverse impact of earthquake and building collapse on life and property of people.

18.2.2 To facilitate and ensure the effective and timely provision of assistance to affected people as well as rehabilitation of stricken areas to normalcy as soon as possible.

18.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non – government network organization concerned for dealing with earthquake disaster and building collapse.

18.3 Terminology

18.3.1 Earthquake refers to shaking and vibration at the surface of the earth mainly resulting from the underground movement along the front plane. In case where the earthquake shaking is relatively weak, it may not pose any damage, but in case of intense ground shaking it can cause catastrophic consequences.

18.3.2 Building Collapse refers to any building and other structures such as edifice, house, store, floating house, warehouse, office that are damaged by violent earthquake shaking and may lead to their collapse.

18.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Center, Local Command Center of all levels, and all agencies concerned for preparing to deal with earthquake disaster and building collapse in all aspects of disaster management cycle, have been identified as follows:

18.4.1 Pre – Disaster

(1) Mitigation and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential earthquake disaster and evaluating the existing condition of vulnerabilities to reveal the probability of its occurrence. In addition, the concurrent earthquake disaster impact reduction study on the area, large dam, building and other structures, property, and environment, is required to achieve information which is important to help identify appropriate and tangible measures for mitigation and reduction of impact posed by earthquakes and building collapse. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Department of Public Works and Town & Country Planning, Thai Meteorological Department, National Disaster Warning Center, Electricity Generating Authority of Thailand, Geo-Informatics and Space Technology Development Agency, and Bangkok Metropolitan Administration.

(1.2) Review and update the existing data on earthquake risk areas, and mapping earthquake and building collapse risk areas, as well as safety areas data for accommodating evacuees. The key implementing agency include Department of Mineral Resources, Thai Meteorological Department, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and Electricity Generating Authority of Thailand.

(1.3) Arrange for earthquake vulnerability reduction of structures through applying reinforcing techniques in construction of new buildings, and retrofitting the existing buildings to withstand the vibration in accordance to Building Control Act B. E. 2522 (1979) and addendum **(in compliance with guidelines identified in Chapter 4, item 4.4.4)**. The key implementing agencies include Department of Public Works and Town & Country Planning, Department of Provincial Administration, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

In addition, the authority concerned is required to inspect the buildings which are under construction or modification to ensure the conformity with drawings. And if the case of non – compliance with the drawings is found, the authority concerned is obliged to proceed according to official regulations to safeguard life and property of the people.

(1.4) Create database on relevant personnel, equipments, implements and supplies to ensure their immediate availability and serviceability during the emergency. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Royal Thai Police, Department of Highways, Department of Rural Roads, Emergency Medical Institute of Thailand, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Electricity Generating Authority of Thailand, Provincial Electricity Authority, Provincial Waterworks Authority, foundation, and private sector.

(1.5) Develop earthquake and building collapse interagency information sharing system. The key implementing agencies include Department of Mineral Resources, Department of Public Works and Town & Country Planning, Department of Disaster Prevention and Mitigation, Thai Meteorological Department, National Disaster Warning Center, Department of Highways, Department of Rural Roads, Geo - Informatics and Space Technology Development Agency, Bangkok Metropolitan Administration, and Electricity Generating Authority of Thailand.

(1.6) Organize public education training and campaign to raise awareness among all members of community at risk and to deliver information to help them understand potential disaster as well as measures to be taken for self – protection and safety in the wake of disaster **(in compliance with guidelines identified in Chapter 4, item 4.4.3)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Public Relations Department, Department of Mineral Resources, Thai Meteorological Department, Bangkok Metropolitan Administration, and educational establishment.

(1.7) Develop earthquake detection system and install earthquake warning system in the areas at risk, as well as assigning the official to keep close watch on seismic activity for issuing warnings. The key implementing agencies include Thai Meteorological Department, Department of Mineral Resources, National Disaster Warning Center, Department of Disaster Prevention and Mitigation, Bangkok Metropolitan Administration, and Electricity Generating Authority of Thailand.

(1.8) Summarize and document the lesson – learned from major earthquake and building collapse events for useful purpose of future management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Thai Meteorological Department, National Disaster Warning Center, Electricity Generating Authority of Thailand, and Bangkok Metropolitan Administration.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme and organize civil defence volunteer corps, village – based disaster warning volunteers, and rescue volunteers to provide assistance to government officials' efforts **(in accordance to guidelines identified in Chapter 5, item 5.3.4 (3.2))**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Department

of Health Service Support, Provincial Government, District Office, Local Administrative Organization, Bangkok Metropolitan Administration, and foundation.

(2.2) Organize the orientation training programme to encourage and strengthen people's involvement in all phases of disaster management through the application of community – based disaster risk management **(in accordance to guidelines identified in Chapter 5, item 5.3.4 (1))**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Thai Red Cross Society, Provincial Government, District Office, Local Administration Organization, and educational establishment.

(2.3) Prepare the particulars of earthquake and building collapse experts for the useful purpose of dealing with earthquake and building collapse incident. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Department of Public Works and Town & Planning, Thai Meteorological Department, National Disaster Warning Center, and Bangkok Metropolitan Administration.

(2.4) Take the required steps to formulate Earthquake and Building Collapse Preparedness Integrated Action Plan of all levels in a way that it is compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Department of Disaster Prevention and Mitigation, Thai Meteorological Department, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and Electricity Generating Authority of Thailand.

(2.5) Arrange for preparedness of mechanical equipments, vehicles, implements, as well as emergency stock of basic necessities and medical and health services to ensure their availability and serviceability in the wake of disaster **(in accordance to guidelines identified in Chapter 5, item 5.3.6)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Defence, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Electricity Generating Authority of Thailand, Thai Red Cross Society, foundation, and charitable organization.

(2.6) Arrange for emergency stock of appropriate basic necessities and medical services to provide to affected people. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Department of National Parks, Wild Life and Flora, Royal Forest Department, Thai Red Cross Society, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.7) Arrange for emergency stock of adequate energy supplies **(in accordance to guideline identified in Chapter 5, item 5.3.7)**. The key implement agencies include The Office of Permanent Secretary for Ministry of Energy, Petroleum Authority of Thailand Public Co. Ltd, and private sector.

(2.8) Arrange for the preparedness of main, auxiliary, and standby communication systems and take all necessary steps to ensure adequate availability and round the clock serviceability of communication equipments and supplies **(in compliance with guidelines identified in Chapter 5, item 5.3.8)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, The National Telecommunications Commission, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.9) Prepare safety areas as well as the indispensable public utilities for evacuees' accommodation. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and Electricity Generating Authority of Thailand.

(2.10) Organize disaster exercise based on earthquake and building collapse scenario to check the preparedness and efficiency of existing disaster management system. **(in compliance with guidelines identified in Chapter 5, item 5.3.9)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, National Disaster Warning Center, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Electricity Generating Authority of Thailand, and the general public.

18.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle earthquake and building collapse emergency.

(1) Upon obtaining confirmation of earthquake and building collapse incident, take the immediate steps to set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2))** and deploy personnel to base and perform the functions of the Center **as identified in item 6.3.2 (3)**.

(2) Conduct the identification of dead body **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Identification Bureau.

(3) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed **(in compliance with guidelines identified in Chapter 4, item 4.2.6)**.

(4) In case of necessity to collect donations both in cash and in-kind from the general public, the respective Emergency Operations Center is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper, equitable and timely distribution **(in compliance with guidelines identified in Chapter 6, item 6.3.13)**.

18.4.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the affected areas are under responsibility is required to conduct initial damage and needs assessment survey, prepare the lists of affected people and damaged property, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11)**

(2) Take immediate steps to provide temporary shelter for affected people as well as provision of relief assistance and physical and mental health care services. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Ministry of Labour, Ministry of Social Development and Human Security, Provincial Government, and other government agencies concerned.

(3) Dead Bodies Management

(3.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include Provincial Government, District Office, Local Administration Organization, Royal Thai Police, and The Office of Permanent Secretary for Ministry of Public Health.

(3.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**.

(3.3) In case where transport of dead bodied is required, Local Administration Organization concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Ministry of Defence, Royal Thai Police, Department of Health, and other government agencies will provide support as needed.

(4) Take preventive measures, remain always alert against and control the potential outbreak of diseases which might physically and mentally affect people. The key implementing agencies are Department of Disease Control and Department of Health.

(5) Take immediate steps to improve and restore physical and mental health, as well as quality of life and livelihood of affected people to normalcy **(in compliance with guidelines identified in Chapter 7, item 7.3.1)**. The key implementing agencies include Ministry of Social Development and Human Security, The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Labour, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society, and other agencies concerned.

(6) Take immediate steps to restore damaged public utilities and basic infrastructure facilities to normal function as soon as possible **(in compliance with guidelines identified in Chapter 7, item 7.3.2)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Department of Highways, Department of Rural Roads, Royal Irrigation Department,

Provincial Electricity Authority, Metropolitan Electricity Authority, Provincial Waterworks Authority, Metropolitan Waterworks Authority, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(7) Emergency Operations Center of which affected areas are under responsibility is required to carry out the initial rehabilitation efforts by using budget of local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003), and addendum. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(8) Organize the studies of the impact of earthquake and collapse of building on life and property of people to gain valuable information useful for reference and future earthquake hazard and building collapse incident management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Thai Meteorological Department, Electricity Generating Authority of Thailand, Department of Mineral Resources, and Bangkok Metropolitan Administration.

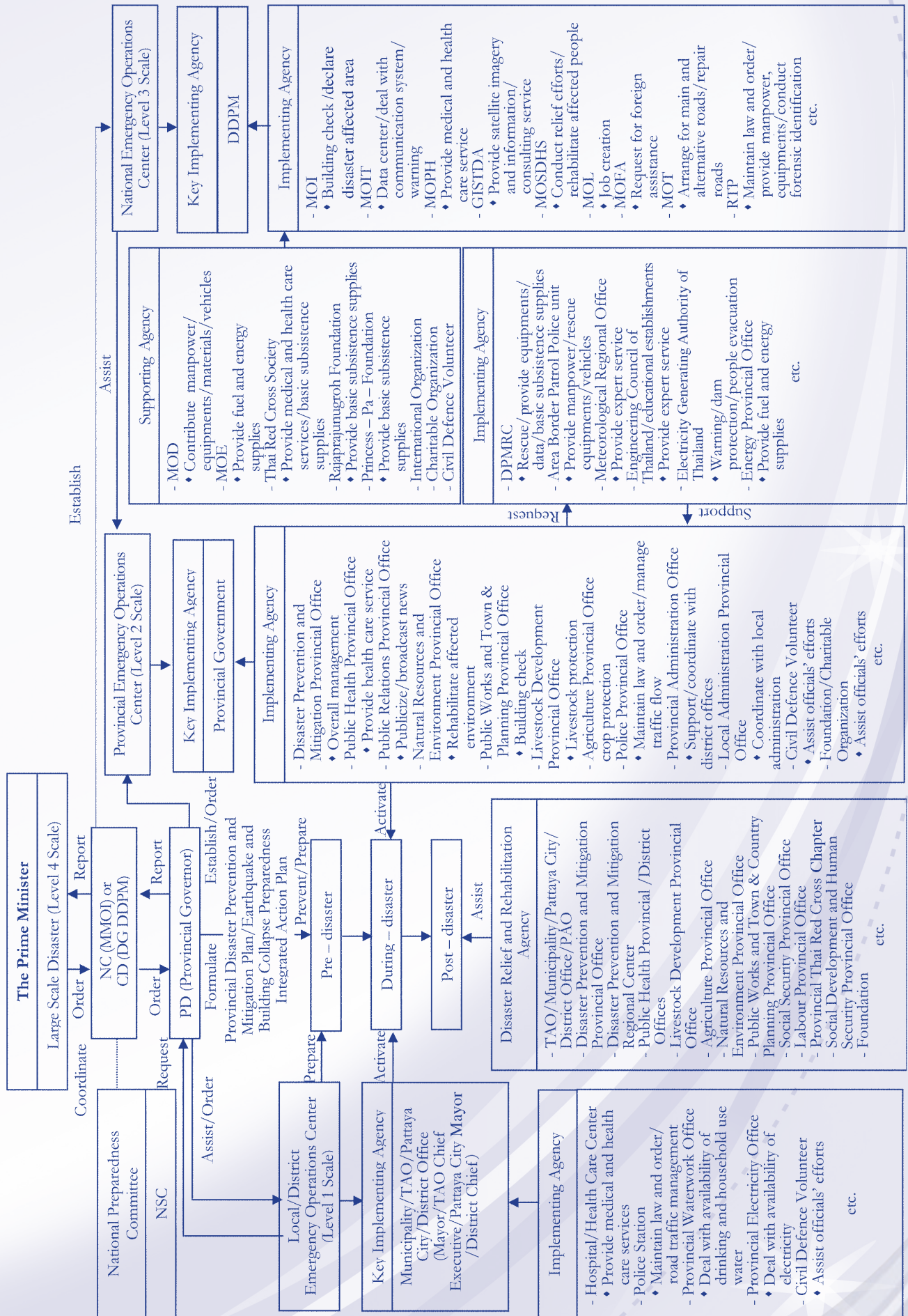


Chart 18.1 : Countermeasure Procedure against Earthquake and Building Collapse and Joint Operations at Provincial Level

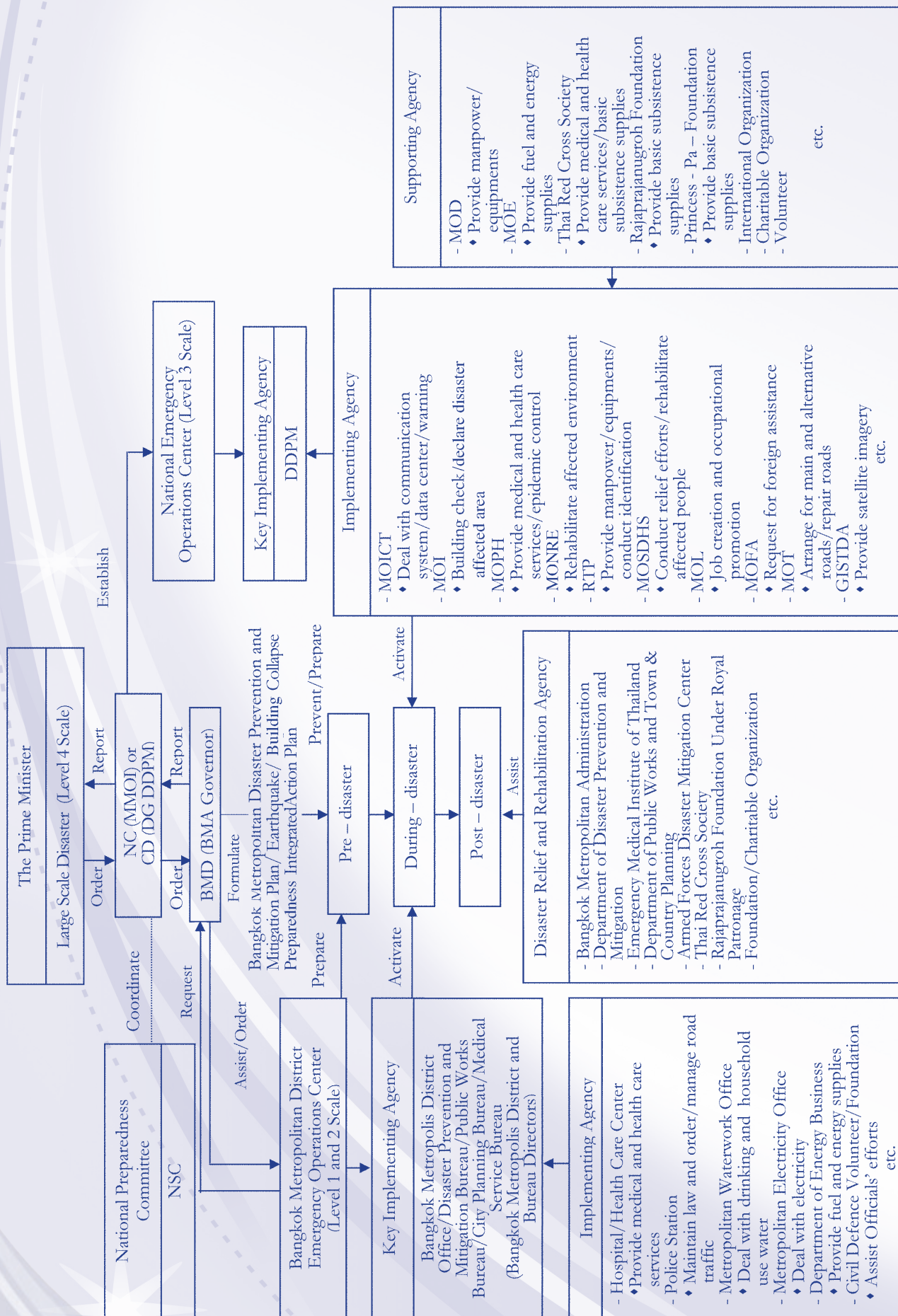


Chart 18.2 : Countermeasure Procedure against Earthquake and Building Collapse and Joint Operations in Bangkok

Chapter 19

Tsunami

19.1 Introduction

The megathrust earthquake on 26 December, 2004 with the epicenter off the west coast of Indonesian island of Sumatra has triggered a large tsunami which caused tremendous devastation in several countries. In Thailand, this unprecedented calamity has ravaged the southern coastal communities of six Andaman Sea coastal provinces and caused the worst effects on the country in the forms of losses of life, property damage and economy. Since this disastrous calamity was the first of its kind and unexpected in Thailand, consequently the lack of preparedness to handle tsunami hazard has partly contributed to such a tremendous losses. However, the relevant studies reveal that both Andaman Sea and Gulf of Thailand coastal areas are vulnerable to potential tsunami hazard triggered by megathrust submarine earthquakes originated from faults in the Pacific Ring of Fire, or in the Andaman Sea, or the Philippine Fault System etc.

Recognizing the importance of preparedness arrangement for preventing and mitigating the impact of tsunami hazard, Department of Disaster Prevention and Mitigation has formulated Tsunami Hazard Prevention and Mitigation Master Plan (5 – Year Plan) and has been approved by the Cabinet on 24 March, 2009. This master plan stipulated frameworks and direction to be taken by all agencies concerned for dealing with tsunami hazard.

19.2 Objectives

- 19.2.1 To prevent and mitigate the adverse impact of tsunami hazard on life and property of the people.
- 19.2.2 To facilitate and ensure the effective and timely provision of assistance to affected people as well as rehabilitation of stricken areas to normalcy as soon as possible.
- 19.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non – government network organization concerned for dealing with tsunami hazard.

19.3 Terminology

Tsunami refers to the series of extremely large waves. The original Japanese term literally translates as harbor wave. Tsunami can be classified as local tsunami and distance or regional tsunamis; local tsunami is a tsunami from a nearby source for which its destructive effects are confined to coast within short tsunami travelling time from its origin; and distant tsunami is a tsunami usually triggered by major earthquake and capable of widespread destruction, not only in the immediate region of its generation but across the entire ocean. Other natural events that cause Tsunami are volcanic eruption, large-scale landslide and large asteroid smashing into the ocean.

19.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Center, Local Command Center of all levels, and all agencies concerned for preparing to deal with tsunami hazard at all aspects of disaster management cycle, are identified as follows:

19.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential tsunami hazard and evaluating existing conditions of vulnerabilities to reveal the probability of its concurrence. In addition, the concurrent tsunami impact reduction study is required to achieve information which is important to help identify appropriate and tangible measures for handling tsunami hazard. The key implementing agencies include Department of Disaster Prevention and Mitigation, National Disaster Warning Center, Thai Meteorological Department, Department of Mineral Resources, and educational establishment.

(1.2) Review and update the existing data on tsunami prone areas as well as safety areas data to accommodate the evacuees, and create tsunami hazard map. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Thai Meteorological Department, Department of Public Works and Town & Country Planning, Department of Marine and Coastal Resources, Marine Department, Geo-Informatics and Space Technology Development Agency, Provincial Government, District Office, and Local Administration Organization.

(1.3) Arrange for tsunami vulnerability reduction of structures through surveying, designing, and constructing or retrofitting the residence, wave barriers, evacuation facilities which are capable of withstanding the impact of tsunami **(in compliance with guidelines identified in Chapter 4, item 4.4.4)**. The key implementing agencies include Department of Public Works and Town & Country Planning, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.4) Develop the earthquake – induced tsunami forecasting system and install warning systems in tsunami prone areas. The key implementing agencies include National Disaster Warning Center, Thai Meteorological Department, Department of Disaster Prevention and Mitigation, Hydrographic Department, Royal Thai navy, Department of National Resources, Provincial Government, District Office, and Local Administration Organization.

(1.5) Create database on relevant personnel, mechanical equipments, implements and supplies to ensure their availability and serviceability in the event of disaster. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Municipality, and Local Administration Organization.

(1.6) Develop tsunami hazard interagency information sharing system. The key implementing agency include Department of Disaster Prevention and Mitigation, Thai Meteorological Department, National Disaster Warning Center, Department of Natural Resources, and Provincial Government.

(1.7) Organize public education training and campaign to raise awareness among all members of community at risk to deliver information to help them understand potential tsunami hazard as well as measures to be adopted for self – protection and safety **(in compliance with guidelines identified in Chapter 4, item 4.4.3)**. The key implementing agencies include The office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and educational establishment.

(1.8) Familiarize the general public, fishermen, coastal and riverside dwellers with the true meanings of warning signs, signals and announcement to ensure their proper response. The key implementing agencies include The Office of Permanent Secretary for Ministry of Education, National Disaster Warning Center, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and educational establishment.

(1.9) Summarize and document lessons learned from past major tsunami incidents to gain valuable information useful for reference and future management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme and organize civil defence volunteer corps, village – based disaster warning volunteers, and search and rescue volunteers to provide assistance to government officials' efforts **(in compliance with guidelines identified in Chapter 5, Item 5.3.3 (3.2))**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, Local Administration Organization and foundation.

(2.2) Organize the orientation training programme to promote and strengthen people involvement in all phases of disaster management by using community – based disaster risk management approach **(in compliance with guidelines identified in Chapter 5, item 5.3.4 (1))**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Thai Red Cross Society, and educational establishment.

(2.3) Prepare the particulars of tsunami hazard experts. The key implementing agencies include Department of Disaster Prevention and Mitigation, National Disaster Warning Center, Provincial Government, District Office, and Local Administration Organization.

(2.4) Take the required steps to formulate Tsunami Hazard Prevention and Mitigation Integrated Action Plan at all levels in a way that it is compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Department of Disaster Prevention and

Mitigation, Department of Natural Resources, Department of Public Works and Town & Country Planning, Department of Marine and Coastal Resources, Marine Department, National Disaster Warning Center, Hydrographic Department, Royal Thai Navy, Provincial Government, District Office, and Local Administration Organization.

(2.5) Install tsunami warning system in the areas at risk, and assign the officials to keep careful watch to ensure timely warning of potential tsunami. The key implementing agencies include Department of Disaster Prevention and Mitigation, National Disaster Warning Center, Provincial Government, District Office and Local Administration Organization.

(2.6) Arrange for preparedness of safety areas, evacuation routes, warning signs and signals as well as evacuation manual to ensure quick and orderly evacuation. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, and Local Administration Organization.

(2.7) Arrange for the preparedness of disaster resources such as mechanical equipments, implements and medical supplies to ensure their availability and serviceability in the event of disaster **(in compliance with guidelines identified in Chapter 5, item 5.3.6)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Department of Disaster Prevention and Mitigation, Department of Highways, Department of Rural Roads, Provincial Government, District Office, Local Administration Organization, Provincial Electricity Authority, Provincial Waterworks Authority, and Thai Red Cross Society.

(2.8) Arrange for the stock of basic necessities available for immediate distribution to the evacuees and other affected people. The key implementing agencies include Department of Disaster Prevention and Mitigation, Ministry of Public Health, Thai Red Cross Society, Provincial Government, District Office, and Local Administration Organization.

(2.9) Arrange for emergency stock of sufficient energy supplies **(in compliance with guidelines identified in Chapter 5, item 5.3.7)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Energy, Petroleum Authority of Thailand, and private sector.

(2.10) Arrange for the preparedness of main, auxiliary and standby communication systems and take all necessary steps to ensure the adequate availability and round the clock serviceability of communication equipments and supplies **(in compliance with guidelines identified in Chapter 5, item 5.3.8)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, National Disaster Warning Center, Department of Disaster Prevention and Mitigation, and Provincial Government.

(2.11) Organize disaster exercise based on tsunami hazard scenario to check preparedness and efficiency of existing disaster management system **(in compliance with guidelines identified in Chapter 5, item 5.3.9)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, National Disaster Warning Center, Provincial Government, District Office, and Local Administration Organization.

19.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle disaster emergency situation.

(1) Upon obtaining the confirmation of submarine mega earthquake occurrence, or of tsunami triggered by any other cause, National Disaster Warning Center is required to notify Department of Disaster Prevention and Mitigation and relevant government agencies located in the areas at risk for further keeping the general public informed of the incident.

(2) Take immediate steps to disseminate warning information to government agencies, concerned agencies, and the general public to prepare for evacuation **(in compliance with guidelines identified in Chapter 6, item 6.3.1)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Provincial Administration, Public Relations Department, Provincial Government, District Office, Local Administration Organization, and radio and television broadcasting stations.

(3) Take immediate action to set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2)), and deploy personnel to base and perform the functions according to guidelines identified in Chapter 6, item 6.3.2 (3)**.

(4) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed **(in accordance with guidelines identified in Chapter 4, item 4.2.6)**. The key implementing agency is Ministry of Foreign Affairs.

(5) In case of necessity to collect donations both in cash and in-kind from the general public, Emergency Operations Center concerned is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring proper, equitable and timely distribution **(in compliance with guidelines identified in Chapter 6, item 6.3.13)**.

(6) Conduct identification of dead bodies **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Identification Bureau.

19.4.3 Post - Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the stricken areas are under responsibility is required to conduct initial damage and needs assessment survey, prepare the lists of affected people and damaged property, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11)**.

(2) Take immediate steps to provide temporary shelter, basic necessities, mental and physical health care services to affected people as well as rescuing and rehabilitating affected wild life and domesticated animals. The key implementing agencies include The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Department of Public Park, Wild Life and Flora, Department of Livestock Development, Provincial Government, District Office, and Local Administration Organization.

(3) Management of Dead Bodies

(3.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include Provincial Government, District Office, Local Administration Organization, Royal Thai Police, and Ministry of Public Health.

(3.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Forensic Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**

(3.3) In case where transport of dead bodies is required, Local Administration Organization concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police, and other agencies will provide support as needed.

(4) Take all measures required to prevent, keep close watch, and control the outbreak of epidemic and disease that might affect the physical and mental well – beings of people. The key implementing agencies include Department of Disease Control and Department of Health

(5) Take immediate steps to improve and restore physical and mental health as well as quality of life and livelihood of affected people to normalcy as soon as possible **(in compliance with guidelines identified in Chapter 7, item 7.3.1)**. The key implementing agency include Ministry of Social Development and Human Security, The Office of Permanent Secretary for Ministry of Public Health, Ministry of Labour, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, Thai Red Cross Society, and other agencies concerned.

(6) Ensure appropriate repair and maintenance of basic infrastructure facilities and public facilities to resume their normal functions such as government offices, school buildings, tourist attractions etc., as well as improvement of damaged environment and addressing pollution problems **(in compliance with guidelines identified in Chapter 7, item 7.3.2)**. The key implementing agencies include Ministry of Education, Ministry of Information and Communication Technology (TOT Corporation Public Company Limited and CAT Telecom Public Company Limited), Tourism Authority of Thailand, Department of Highways, Department of Rural Roads, Department of National Parks, Wildlifes and Flora, Department of Groundwater Resources, Department of Marine

and Coastal Resources, Pollution Control Department, Provincial Electricity Authority, Provincial Waterworks Authority, Provincial Government, District Office, and Local Administration Organization.

(7) Ensure the rehabilitation programmes for affected large – scale and small – scale entrepreneurs to rebuild their business. The key implementing agencies include Ministry of Finance, The Office of Permanent Secretary for Ministry of Industry, and financial institutes.

(8) Emergency Operations Center of which affected areas are under responsibility is required to carry out the initial rehabilitation efforts using budget of the local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum.

(9) Organize the studies of the impact of tsunami hazard on life and property of the people to gain valuable information useful for reference and future tsunami hazard management. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Mineral Resources, Thai Meteorological Department, Provincial Government, and educational establishment.

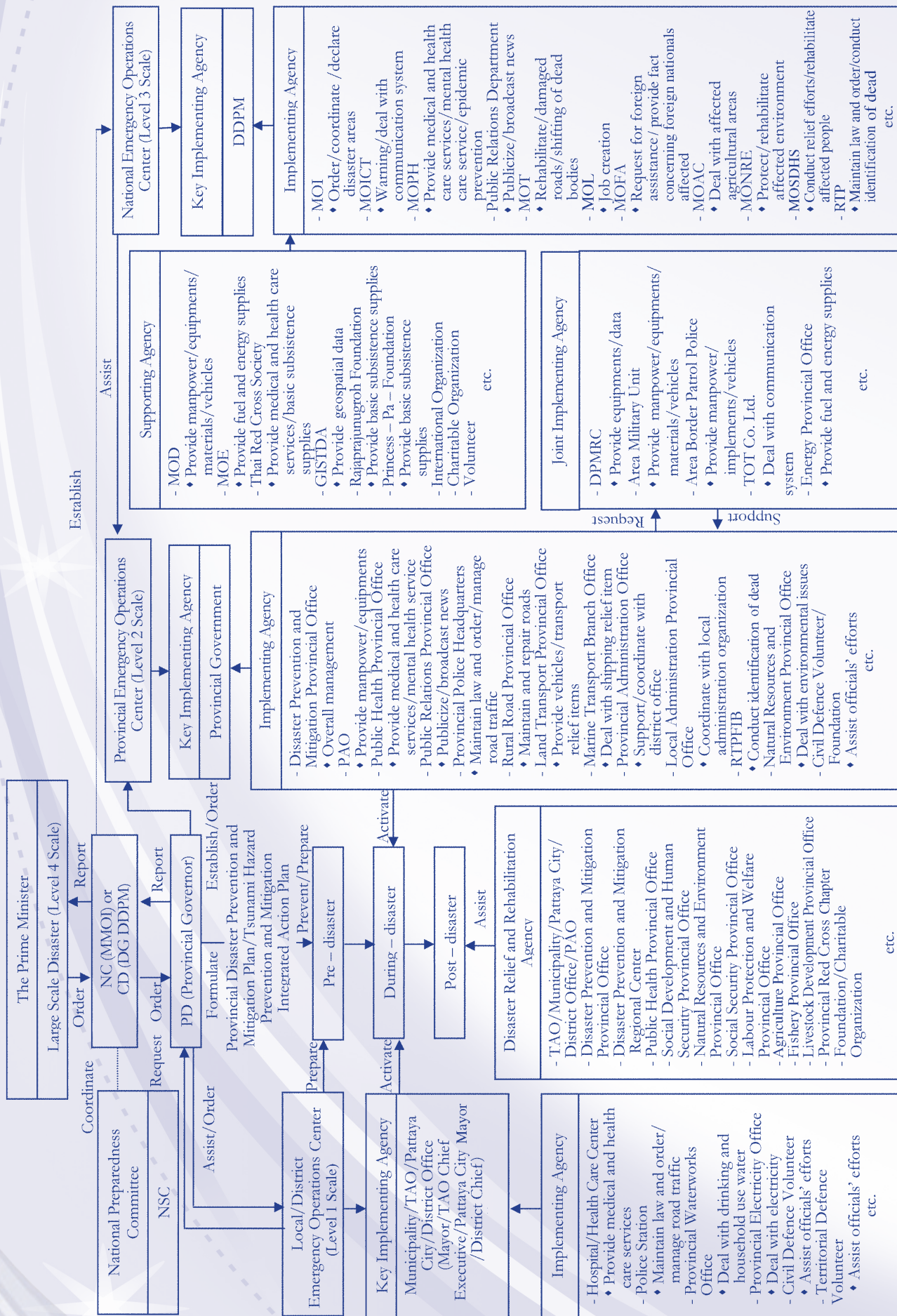


Chart 19 : Procedure and Countermeasure against Tsunami Hazard and Joint Operations at Provincial Level

Chapter 20

Human Epidemic

20.1 Introduction

Human epidemic is one of health hazards regarding a sudden outbreak and rapid spread of a disease in any given area affecting significant number of people in relatively short period of time. To be worse off, the current advanced transportation technology coupled with a variety of forms of transportation have played an important part to accelerate the spread of disease from the source to other parts of the same country or even across the national boundaries. Consequently, in the absence of adequate and effective preventive, mitigation, and control measures, the epidemic outbreak among human – beings could have significant and far – reaching health, social and economic consequences.

Thailand has given high priority to the geographically widespread outbreak of pandemic influenza. Ministry of Public Health has anticipated that if pandemic influenza breaks out, approximately 26 million people will be infected and approximately 26,000 – 143,000 people will die from the flu. In addition, the estimation of The National Social and Economic Development Board reveals that the 2004 avian flu outbreak has caused the decline of national income by 0.3%. Consequently, the arrangement needs to be put in place to ensure the pandemic influenza preparedness.

20.2 Objectives

- 20.2.1 To prevent and mitigate the adverse impact of human epidemic outbreak.
- 20.2.2 To facilitate and ensure the effective and timely provision of assistance to affected people as well as in attempting to contain the outbreak as soon as possible.
- 20.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non – government network organizations concerned for dealing with human epidemic outbreak.

20.3 Terminology

Human Epidemic refers to a disease classification when the new cases of certain disease, in a given human population and during a given period substantially exceed what is expected based on recent experience. The aforesaid disease is not required to be communicable exposure, and is capable of effecting well-being of the people residing in stricken and neighboring communities.

20.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Center, Local Command Centers of all levels and all agencies concerned for dealing with human epidemic at all aspects of disaster management cycle, are identified as follows:

20.4.1 Pre – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Prevention and Impact Reduction

(1.1) Undertake risk assessment by analyzing potential outbreak of human epidemic and evaluating conditions of vulnerability to reveal the probability of its occurrence. In addition, the concurrent study of human epidemic impact reduction study is required to achieve information which is important to help identify appropriate and tangible measures for handling human epidemic situation. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(1.2) Create database on related personnel, equipments, implements and supplies to ensure their availability and serviceability in the event of human epidemic outbreak. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Thai Red Cross Society, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.3) Take all required steps to develop human epidemic interagency information sharing system. The key implementing agencies include Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.4) Organize public education training and campaign to raise awareness among all members community at risk and to deliver information to help them understand human epidemic situation as well as measures to be adopted for self – help efforts and mutual – help efforts **(in compliance with guidelines identified in Chapter 4, item 4.4.3)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Education, Department of Disaster Prevention and Mitigation, Department of Agricultural Extension, Royal Irrigation Department, Department of Water Resources, Department of Groundwater Resources, Department of Public Parks, Wildlife and Flora, Land Development Department, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(1.5) Develop critical care expert teams to provide consulting services to local medical teams. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, and Institute of Medical Sciences.

(1.6) Summarize and document lessons-learned from past major human epidemic outbreak to gain valuable information useful for reference and future management. The key implementing agencies include Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Bangkok Metropolitan Administration, Local Administration Organization, and education establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme and organize the volunteer corps to provide assistance to government officials' efforts **(in compliance with guidelines identified in Chapter 5, item 5.3.3 (3.2))**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Bangkok Metropolitan Administration, Local Administration Organization and foundation.

(2.2) Take the required steps to formulate Human Epidemic Prevention and Control Integrated Action Plan as well as identifying measures to control epidemic spread at all levels in a way that they are compatible with the National Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.3) Ensure to procure sufficient vaccines for new strains of influenza, antivirus drugs, and medical equipments for providing to medical centers and hospitals. The key implementing agency is The Office of Permanent Secretary for Ministry of Public Health.

(2.4) Ensure the preparedness of government and private hospitals for providing medical service to patients as well as setting up field hospitals in case the permanent hospitals are crowded. The key implementing agency is The Office of Permanent Secretary for Ministry of Public Health.

(2.5) Ensure sufficient patient screening equipments through developing and enhancing their potential regarding the control of transboundary spread of communicable disease to meet international standard. The key implementing agency is The Office of Permanent Secretary for Ministry of Public Health.

(2.6) Arrange for the preparedness of main, auxiliary and standby communication systems and take all necessary steps to ensure the adequate availability and round the clock serviceability of communication equipments and supplies **(in compliance with guidelines identified in Chapter 5, item 5.3.8)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of information and Communication Technology, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.7) Organize disaster exercise based on human epidemic outbreak scenario to check the preparedness and efficiency of the existing disaster management system **(in compliance with guidelines identified in Chapter 5, item 5.3.9)**. The key implementing agencies include Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

20.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle epidemic outbreak.

(1) Upon obtaining confirmation of the new cases of epidemic in human population, take the immediate steps to set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2) and deploy personnel to base and perform the functions according to the operating procedure of the Center identified in item 6.3.2 (3)**. In addition, Director of the Center must coordinate with public health agency located in the epidemic stricken area to take the following immediate actions.

(1.1) Assign the officials to keep close surveillance and launch proactive campaign for earlier detection of disease for the useful purpose of rapid control of epidemic spread.

(1.2) Set up Surveillance and Rapid Response Team to track the epidemic situation.

(1.3) Assign the hospitals located in the stricken area to keep the close surveillance and conduct patient screening within the hospital premise.

(1.4) Surveillance and Rapid Response Team is required to stringently perform responsibilities identified in Emergency Response Plan, as well as searching for the patients, screening and conducting triage.

(2) Take immediate steps to appropriately provide treatment to patients. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(3) Publicize and keep people in the stricken area and the adjacent areas well informed of the current situation of human epidemic outbreak as well as educating the general public to take proper preventive measures to safeguard themselves against ongoing outbreak.

(4) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs **(in compliance with guidelines identified in Chapter 4, item 4.2.6)**. The key implementing agency is Ministry of Foreign Affairs.

(5) In case of necessity to collect donations both in cash and in-kind from the general public, Emergency Operations Center concerned is required to set up donations collection center. Further, it should coordinate with and consult government concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring the proper and timely distribution **(in compliance with guidelines identified in Chapter 6, item 6.1.13)**.

(6) Conduct identification of dead bodies **(in compliance with guidelines identified in Chapter 6, item 6.3.10)** The key implementing agency is Royal Thai Police Forensic Science Bureau.

20.4.3 Post Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the stricken areas are under responsibility is obliged to conduct a survey of the effects of the outbreak, prepare the lists of affected people and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11)**.

(2) Immediately launch public relations campaign to boost and encourage morale of affected people as well as restoring their physical and mental health to normalcy as soon as possible. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Public Relations Department, Provincial government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(3) Management of Dead Bodies

(3.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(3.2) The identification of dead bodies must be conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**.

(3.3) In case where transport of dead bodies is required, Local Administration Organization concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police and other agencies will provide support as needed.

(4) Take all measures required to prevent, keep close watch and control human epidemic outbreak and recurrence that might affect the physical and mental well – beings of people. The key implementing agency is the Office of Permanent Secretary for Ministry of Public Health.

(5) Emergency Operations Center of which the epidemic infested areas are under responsibility has been tasked to carry out the primary rehabilitation efforts using the budget of the local administration concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum **(in compliance with guidelines identified in Chapter 7, item 7.3)**.

(6) Organize the studies of the impact of human epidemic on life of the people to gain valuable information useful for reference and future management of human epidemic hazard. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, Local Administration Organization, Bangkok Metropolitan Administration and educational establishment.

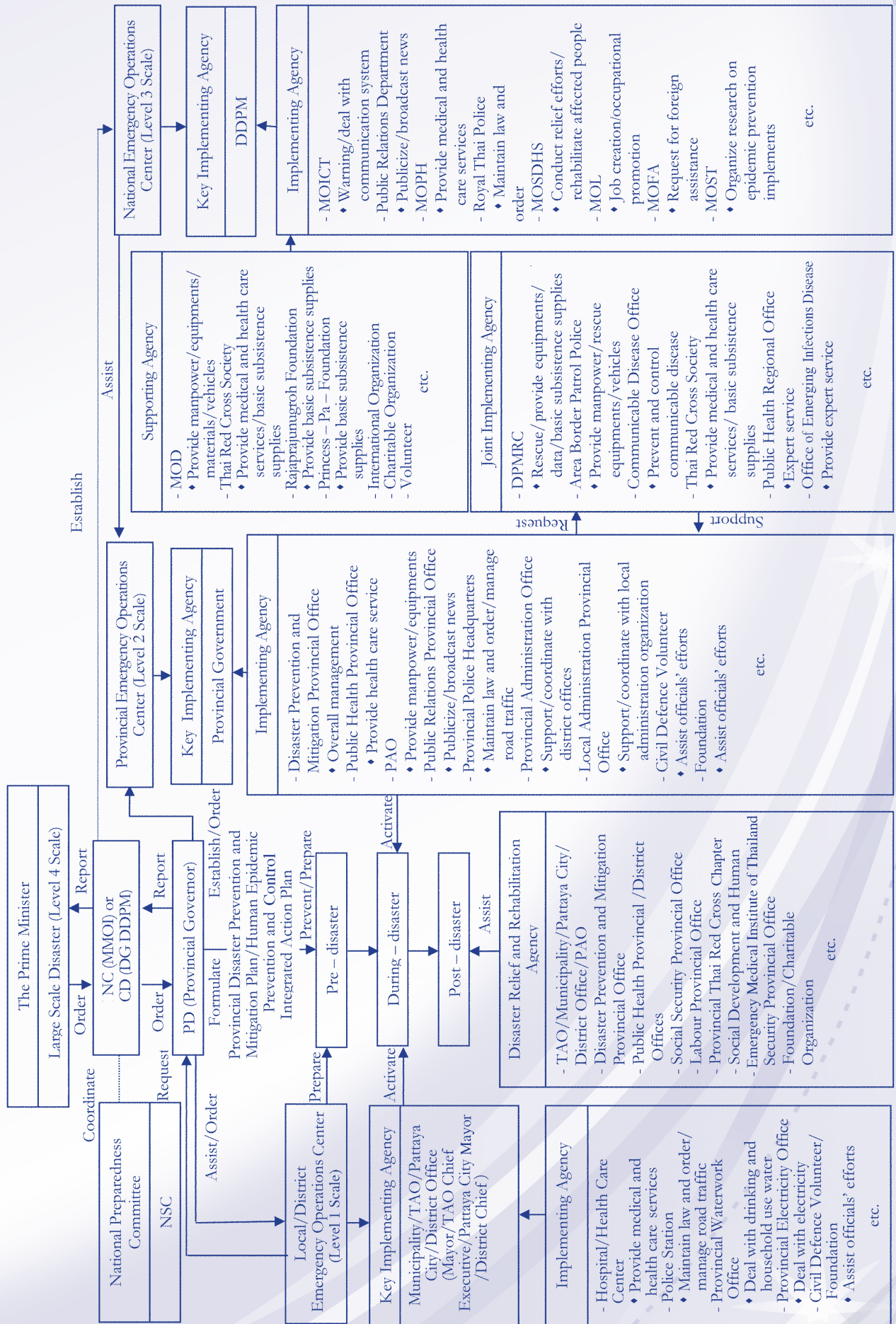


Chart 20.1 : Countermeasure Procedure against Human Epidemic and Joint Operations at Provincial Level

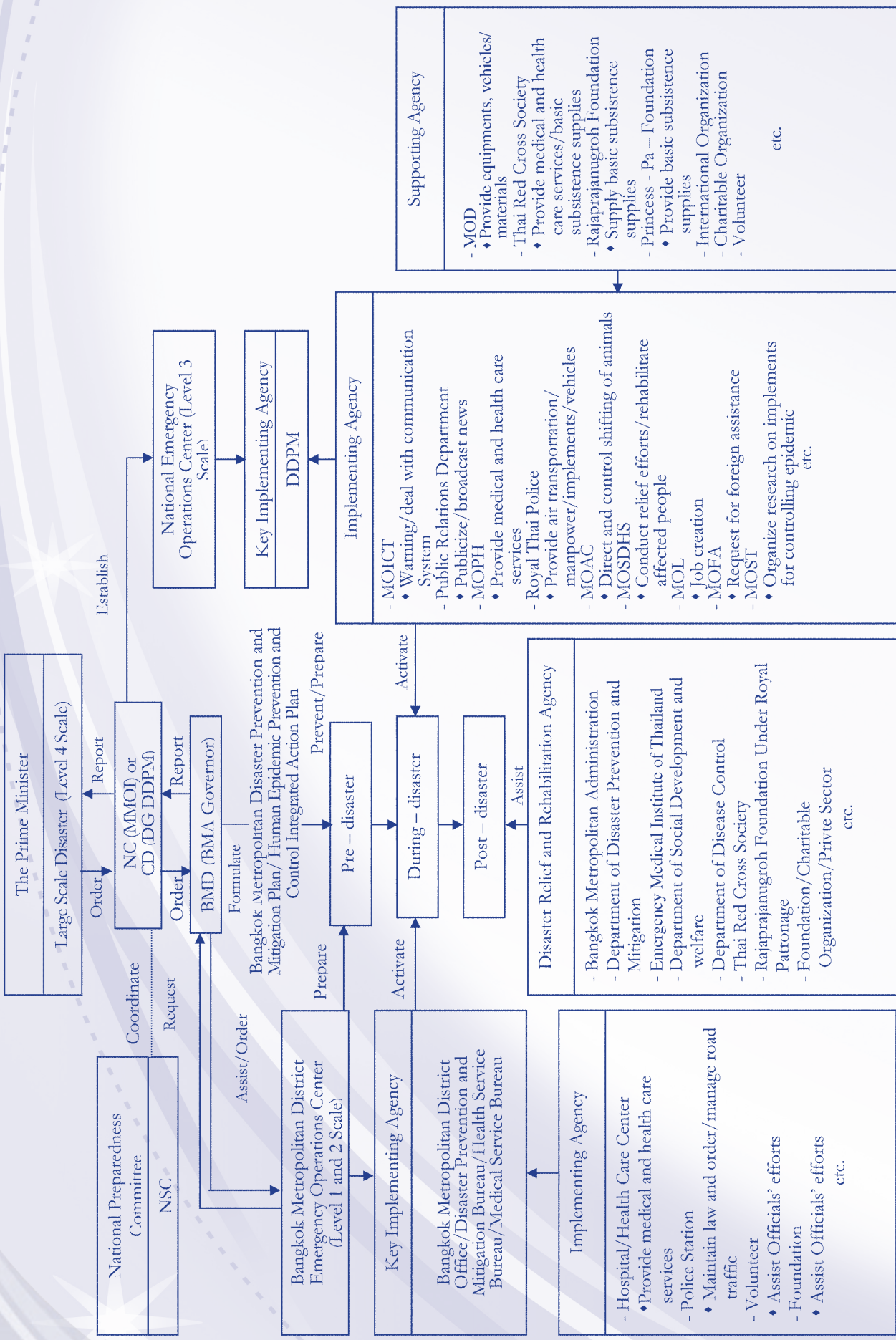


Chart 20.2 : Countermeasure Procedure against Human Epidemic and Joint Operations in Bangkok

Chapter 21

Plant Disease and Pest

21.1 Introduction

Plant disease and pest epidemic are phenomena capable of significantly devastating crops and agricultural production. Usually, plant disease and pest will break out in the presence of favorable environmental conditions caused by an unusual ecosystem such as long – term practice of single – crop farming or monocultures, the year – round nutrients for plant disease, the destruction and elimination of biological control agents or natural enemies of plant disease and pest through the application of pesticide and herbicide, effect of climate change etc. Currently, plant disease and pest epidemic has been developed to be more complex and prevalent that can have a significant effect on agricultural production which is one of the main source of Thailand’s foreign exchange.

21.2. Objectives

21.2.1 To develop coordination guidelines and disaster preparedness for plant disease and pest prevention and control.

21.2.2 To facilitate and ensure the effective and timely provision of assistance to affected people as well as restoring plant disease and pest epidemic situation to normalcy as soon as possible.

21.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non – government network organizations concerned for dealing with plant disease and pest epidemic.

21.3 Terminology

21.3.1 **Plant** refers to any species of plant which include land plants, aquatic plants, and others, as well as any part of plants such as trunks, buds, stumps, boughs, shoots, branches, leaves, roots, rootstocks, bulbs, flowers, fruits, seeds, plant spores, and mushroom spores, whether they are capable of reproduction or dead. The definition has been extended to include predators, parasites, silkworms, silkworm seeds, cocoons, bees, beehives, and microbes.

21.3.2 **Pest** refers to any organism that causes damage to plants such as plant diseases, insects, animals, parasitic plants or weeds.

21.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Center, Local Command Center of all levels and all agencies concerned for preparing to deal with different phases of plant disease and pest outbreak.

21.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential plant disease and pest outbreaks and evaluating existing conditions of vulnerabilities to reveal the probability of their occurrence. In addition, the concurrent plant disease and pest impact reduction study is required to achieve information which is important to help identify appropriate and tangible measures for handling plant disease and pest outbreak. The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Rice Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.2) Review and keep updating database on areas at risk of plant disease and pest as well as creating plant disease and pest hazard map. The key implementing agencies include Department of Agricultural Extension, Rice Department, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration.

(1.3) Create database on crop farmers. The key implementing agencies include Department of Agricultural Extension, Tambon Agricultural Service and Technology Transfer Center, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(1.4) Create database on relevant personnel, agrichemical, chemical substance, chemical materials, mechanical equipments, and implements to ensure their immediate availability and serviceability in the wake of the outbreak (**in compliance with guidelines identified in Chapter 4, item 4.4.2**). The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.5) Develop forecasting system and keep close watch for warning against the outbreak of plant disease and pest. The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Rice Department, Department of Disaster Prevention and Mitigation, Tambon Agricultural Service and Technology Transfer Center, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.6) Organize public education training and campaign to raise awareness among general public and to instruct the proper preventive measures against plant disease and pest (**in compliance with guidelines identified in Chapter 4, item 4.4.3**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Agricultural Extension, Department of Agriculture, Tambon Agricultural Service and Technology Transfer Center, Department of Disaster Prevention and Mitigation, Public Relations Department, Department of Local Administration, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.7) Summarize and document lessons learned from past major outbreak of plant disease and pest to gain information useful for reference and future management. The key implementing agencies include Department of Agricultural Extension, Rice Department, Department of Agriculture, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and higher education establishment.

(1.8) Conduct the research on and develop plant disease and pest prevention and control systems (**in compliance with guidelines identified in Chapter 4, item 4.4.5**). The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Rice Department and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange plant disease and pest prevention and control preparedness training programme for officials concerned to ensure their efficient performance in the wake of the outbreak (**in compliance with guidelines identified in Chapter 5, item 5.3.2**). The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Rice Department, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.2) Take all necessary steps to prepare agrichemical, chemical substance and chemical materials required for plant disease prevention and control, as well as equipments, vehicles, fuel and other energy supplies to ensure their availability and serviceability in the wake of plant disease and pest outbreak. In addition, concurrently prepare agricultural chemical stock inventory, the storage facilities as well as assigning management officials. (**in compliance with guidelines identified in Chapter 5, item 5.3.6 and item 5.3.7**). The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.3) Take the required steps to formulate Plant Disease and Pest Prevention and Control Integrated Action Plan at all levels in a way that it is compatible with the master plan and other relevant plans. The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Rice Department, Tambon Agricultural Service and Technology Transfer Center, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.4) Establish agricultural clinic to provide consulting services on the safe, proper and effective plant disease and pest control practices. The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Rice Department, Tambon Agricultural Service and Technology Transfer Center, Provincial Government, District Office, Local Administration, and Bangkok Metropolitan Administration.

(2.5) Arrange for the preparedness of main, auxiliary and standby communication systems and take all necessary steps to ensure adequate availability and round the clock serviceability of communication equipments and supplies in the event of outbreak (**in compliance with guidelines identified in Chapter 5, item 5.3.8**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

21.4.2 During Disaster

Upon obtaining confirmation of plant disease and pest outbreak from farmers or agencies concerned, Command Center of which the infested areas are under responsibility is obliged to take the following actions.

(1) Immediately set up Emergency Operations Center of which level is compatible with the scale of disaster (**in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2)**) and deploy personnel to base and perform the functions according to the operating procedure of the Center **identified in item 6.3.2 (3)**.

(2) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed according to relevant cooperation framework (**in compliance with guidelines identified in Chapter 4, item 4.2.6**). The key implementing agency is Ministry of Foreign Affairs.

21.4.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Emergency Operations Center of which the infested areas are under responsibility is required to conduct initial damage and need assessment survey, prepare the lists of affected farmer and damaged crops, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance (**in accordance with guidelines identified in Chapter 6, item 6.3.1**)

(2) Take immediate steps to provide immediate assistance to affected farmers. The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Rice Department, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(3) Emergency Operations Center of which the infested areas are under responsibility is required to carryout the primary rehabilitation efforts using budget of the local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum.

(4) Organize the studies of the impact of plant disease and pest outbreak on well – being and property of people to gain valuable information useful for reference and future outbreak management. The key implementing agencies include Department of Agricultural Extension, Department of Agriculture, Department of Disaster Prevention and Mitigation, and educational establishment.

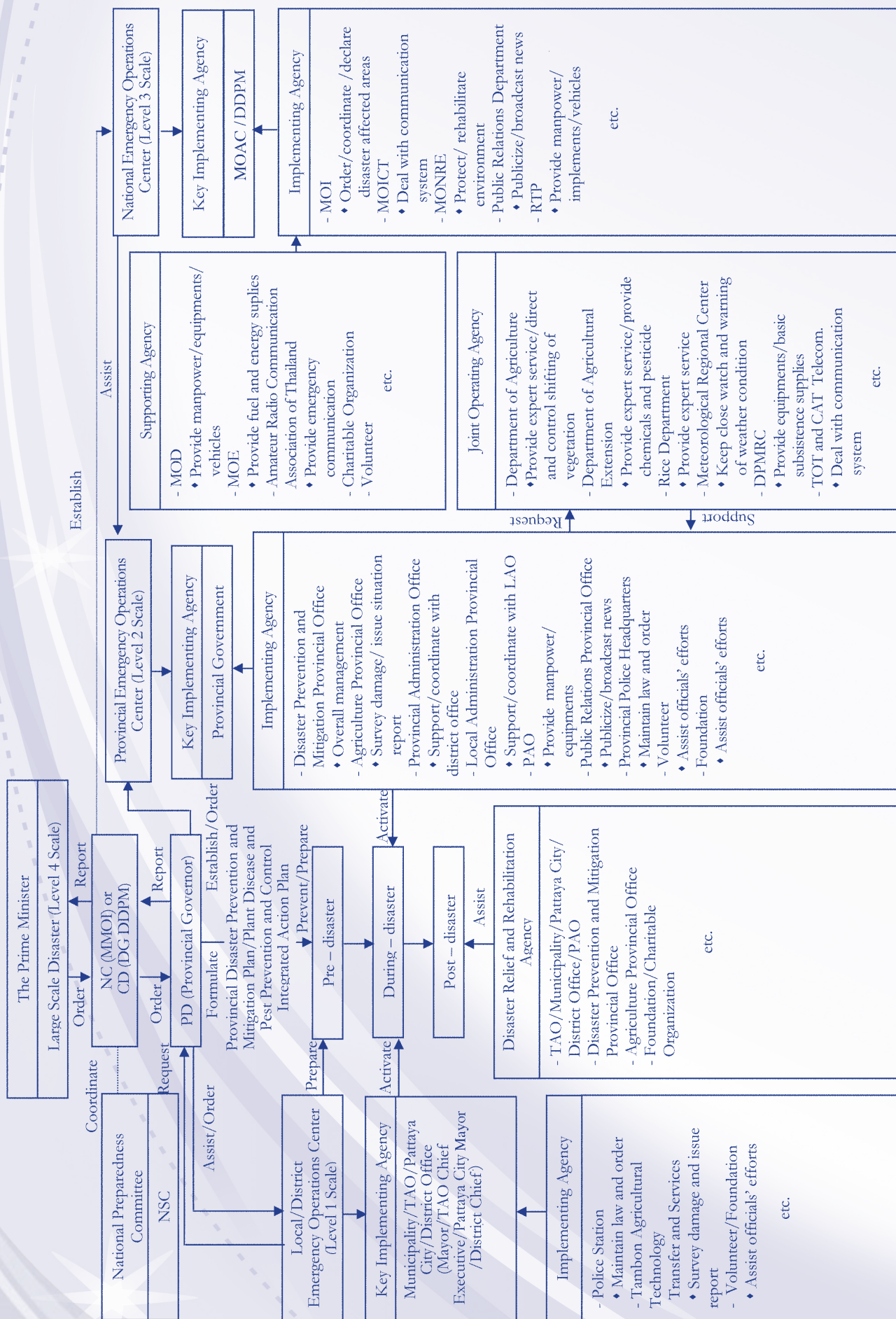


Chart 21.1 : Countermeasure Procedure against Plant Disease and Pest and Joint Operations at Provincial Level

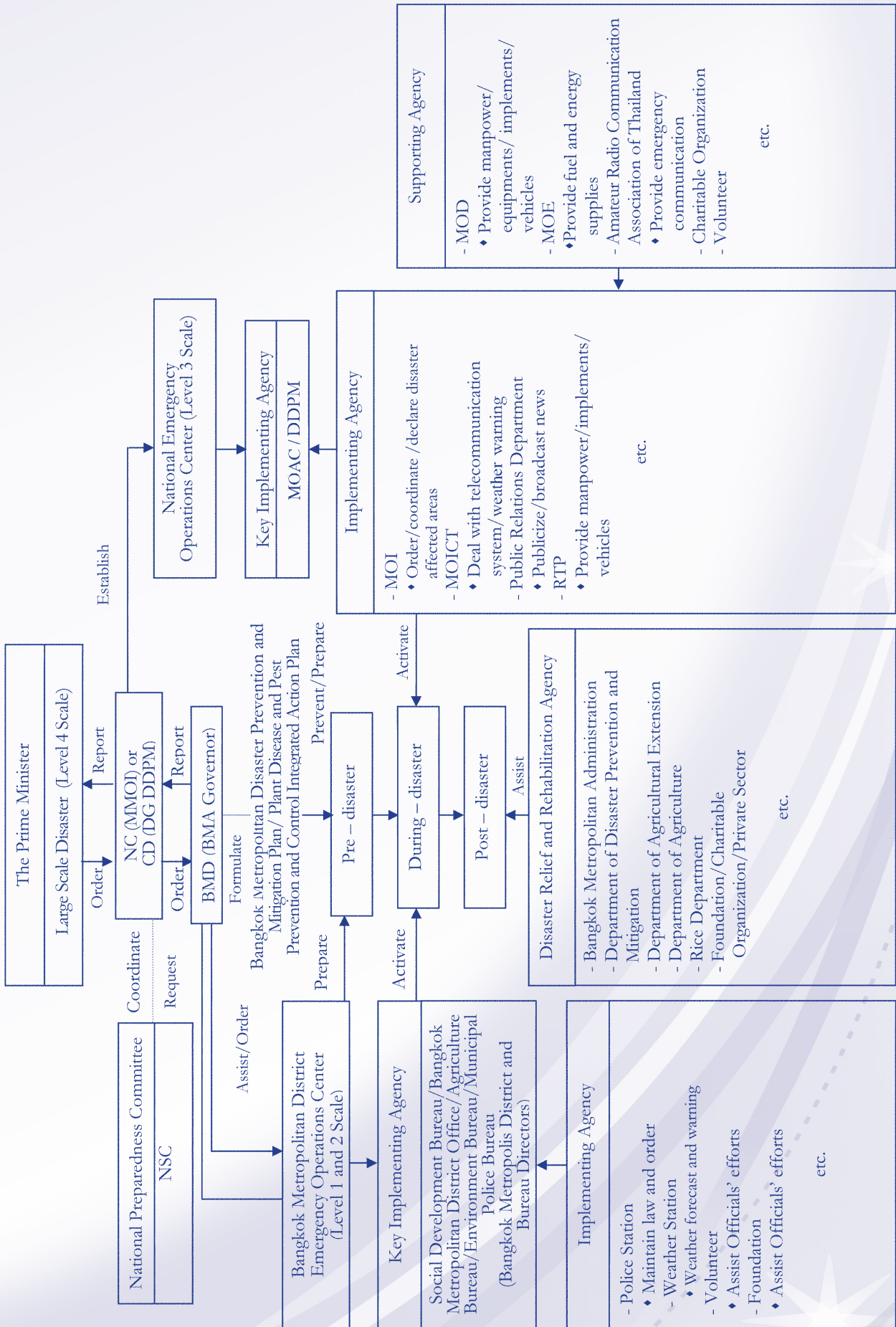


Chart 21.2 : Countermeasure Procedure against Plant Disease and Pest and Joint Operations in Bangkok

Chapter 22

Animal and Aquatic Animal Epidemics

22.1 Introduction

Animal husbandry and fishery sectors have long been and continued to be an important component of the national economy as the main source of protein supply, employment and income, and foreign exchange. As one of the world leading exports of agricultural – based manufacturing products such as frozen chicken, frozen prawns and fish etc., Thailand's economy particularly the poultry sector has been significantly affected by 2004 avian flu outbreak. The death and cull of approximately 60,811 million fowls have resulted in the decline of national export value and the loss of poultry raisers' source of income. Usually, Thailand has been affected by transboundary avian flue outbreak but it is anticipated that this virus tends to become local epidemic and can be mutated into new strain of virus which can be transmitted to human – beings. The past major of avian flu, have claimed several lives of people due to poultry – to – human transmission.

On the other hand, there is no report about the widespread outbreak of aquatic animal epidemic. Notwithstanding, if the aquatic animal disease epidemic occurs, it will spread out from the source to other aquaculture farms and on to other water bodies very rapidly. Such a phenomena can pose significant impact on aquaculture industry and the national economy as well.

Consequently, the preparedness arrangement must be in place for efficient handling of possible animal and aquatic animal epidemics.

22.2 Objectives

22.2.1 To prevent and mitigate the adverse impact of epidemic spread of animal and aquatic animal diseases on life and property of people.

22.2.2 To facilitate and ensure the effective and timely provision of assistance to affected people as well as restoring their well-being and livelihood to normalcy as soon a possible

22.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non – government network organizations concerned for dealing with animal and aquatic animal epidemics.

22.3 Terminology

22.3.1 Animal refers to

(1) Elephants, horses, buffaloes, cattle, donkeys, mules, goats, sheep, pigs, dogs, cats, rabbits, gibbons, including the semen for breeding purposes of these animals.

(2) Poultry of the classifications such as birds, chicken, ducks, geese and including their eggs for fertilization, and,

(3) Other kinds of animals as determined by Ministerial Regulation under Animal Epidemic Act B. E. 2546 (2003).

22.3.2 **Wild Animal** refers to all kinds of animals either terrestrial or aquatic, fowls, insects or arthropods which naturally exist , or things which originated from, or are found by nature and able to sustain life in the forest or water and includes the eggs of all kinds of wildlife but excludes the beasts of burden which have been registered in accordance with the Beasts of Burden Code as well as their reproduction.

22.3.3 **Carcass** refers to the body or part of the body of a dead animal which has not yet been changed into cooked food or a finally processed products, including tusks, horns, and hair cut from animals while alive but have not been changed into things in final processed forms.

22.3.4 **Aquatic Animal** refers to any animal that inhabits or has part of its life cycle in water or inhibits in inundated areas such as fish, shrimps, crabs, horseshoe crabs, mollusks, tortoises, turtles, snapping turtles, crocodiles including their eggs, marine mammals, sea – cucumbers, sponges, coral, coralline, and marine angae, as well as their carcasses or any part of them and includes water plants as specified by Royal Decree.

22.3.5 **Fish Farmers** refer to the farmers who cultivate freshwater aquatic animals, and including those who involve in cultivating all kinds of aquatic animals in coastal areas. All this, this definition only refers to those whose names appear in the list of provincial registration of aquatic animal raisers.

22.4 Countermeasure Procedure

Basing on Third Strategic Plan for Prevention and Control of Avian Influenza and Preparedness for Influenza Pandemic B. E. 2554 – 2556 (2011 – 2013), National Command Center, Local Command Center of all levels and all agencies concerned are required to take the following actions to ensure their preparedness for dealing with these hazards in all aspects of disaster management cycle.

22.4.1 Pre – Disaster

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential animal and aquatic animal epidemic outbreak and evaluating existing conditions of vulnerabilities to reveal the probability of its occurrence. In addition, the concurrent animal and aquatic animal epidemic impact reduction study is required to achieve information which is important to help identify appropriate and tangible measures for handling these hazards. The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of National Park, Wildlife and Flora, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.2) Create database on animal raiser, fish farmer, wildlife breeder and public zoo. The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of Public Park, Wildlife and Flora, Tambon Agricultural Technology Transfer and Service Center, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.3) Create and keep updating database on areas at risk of animal and aquatic animal hazard as well as the past outbreak areas. The key implementing agencies include Department of Livestock Development, Department of National Park, Wildlife and Flora, Provincial Government, District Office, and Local Administration Organization.

(1.4) Create database on relevant personnel, medical supplies, chemical supplies, mechanical equipments, and implements to ensure their immediate availability and serviceability in the event of epidemic outbreak. The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of National Park, Wildlife and Flora, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.5) Organize public education training and campaign to raise awareness among farmers and the general public and to deliver information to help them understand the potential animal and aquatic animal epidemic hazard as well as the measures to be adopted for proper practice and safety (**in compliance with guidelines identified in Chapter 4, item 4.4.3**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Livestock Development, Department of Fishery, Department of National Park, Wildlife and Flora, Tambon Agricultural Technology Transfer and Service Center, Public Relations Department, Department of Disaster Prevention and Mitigation, Department of Local Administration, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.6) Summarize and document lessons learned from past major outbreak of animal and aquatic animal epidemic to gain invaluable information useful for reference and future management. The key implementing agencies include The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Livestock Development, Department of Fishery, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

(1.7) Conduct the research on and develop animal and aquatic animal epidemic prevention and control system useful for epidemic management (**in compliance with guidelines identified in Chapter 4, item 4.4.5**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Livestock Development, Department of Fishery, National Research Institute, and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange animal and aquatic animal epidemic prevention and control preparedness training programme for officials concerned to ensure their efficient performance in the wake of the outbreak (**in compliance with guidelines identified in Chapter 5, item 5.3.2**). The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of National Park, Wildlife and Flora, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.2) Take all necessary steps to prepare vaccines, medical supplies, chemical materials required for epidemic prevention and control, as well as equipments, vehicles, fuel and other energy supplies to ensure their availability and serviceability in the wake of the outbreak. In addition, concurrently prepare chemicals stock inventory, storage facilities, as well as assigning management officials (**in compliance with guidelines identified in Chapter 5, item 5.3.6**). The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of Disaster Prevention and Mitigation, Department of Energy Business, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.3) Take the required steps to formulate Animal and Aquatic Animal Epidemic Prevention and Control Integrated Action Plan at all levels in a way that it is compatible with master plan and other relevant plans. The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of National Park, Wildlife and Flora, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.4) Take all required steps to encourage the practice of closed high – biosecurity system for commercial poultry farming, native fowl farming, fighting cock raising and open field duck raising. Moreover, strictly control transportation of poultry to prevent the spread of disease. The key implementing agencies include Department of Livestock Development, The Office of Permanent Secretary for Ministry of Public Health, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.5) Attempt to keep unowned, stray and seasonal migratory animals under control, as well as taking legal steps to inspect livestock farm, abattoir, live animal and animal remains trading locations. The key implementing agencies include Department of Livestock Development, Department of National Park, Wildlife and Flora, The Office of Permanent Secretary for Ministry of Public Health, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.6) Monitor the situation and bring the outbreak under control, and take legal steps to control transportation of both farm animals and carcasses, as well as wild animals and wild animal remains. The key implementing agencies include Department of Livestock Development, Department of National Park, Wildlife and Flora, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.7) Ensure the development of epidemic surveillance system for rapid detection of epidemic outbreak and for effective monitoring disease evolution. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Livestock Development, Department of Fishery, Department of National Park, Wildlife and Flora, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.8) Prepare the sites for animal carcasses disposal and for landfill burial of epidemic infected carcasses. The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of Public Works and Town, & Country Planning, Department of Local Administration, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.9) Set up animal clinic and aquatic animal clinic to provide medical and health care services to sick and injured animals and aquatic animals, as well as providing guidance and recommendations regarding safe and effective animal and aquatic animal epidemic disease eradication. The key implementing agencies include Department of Livestock Development, Department of Fishery, Tambon Agricultural Technology Transfer and Service Center, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration .

(2.10) Arrange for the preparedness of public communication system to ensure its availability and serviceability in the event of public health emergency. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, The Office of Permanent Secretary for Ministry of Information and Communication Technology, and Department of Disaster Prevention and Mitigation.

(2.11) Organize the simulated exercise based on animal epidemic scenario to ensure the state of readiness and efficiency of disaster management system (**in compliance with guidelines identified in Chapter 5, item 5.3.9**). The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Department of Livestock Development, Department of Fishery, Tambon Agricultural Technology Transfer and Service Center, Department of National Park, Wildlife and Flora, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

22.4.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle disaster emergency situation.

(1) Upon obtaining confirmation of animal and aquatic animal epidemic outbreak from person or agency concerned, Command Center of which the infested area is under responsibility is required to set up Emergency Operations Center of which level is compatible with the scale of disaster (**in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2) and deploy personnel to base and perform the functions according to the operating procedure of the Center identified in item 6.3.2 (3)**).

(2) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed (**in compliance with guidelines identified in Chapter 4, item 4.2.6**). The key implementing agency is Ministry of Foreign Affairs.

22.4.3 Post - Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Take all required steps to provide immediate assistance to poultry and fish farmers affected by animal and aquatic animal epidemic outbreak. The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2) Emergency Operations Center of which the infested areas are under responsibility is obliged to immediately conduct initial damage and need assessment survey, prepare the lists of affected people and property, and issue them letter of credentials as written verification for receiving rehabilitation assistance

(3) Emergency Operations Center of which the infested area is under responsibility is required to carry out the primary rehabilitation efforts using budget of local administration organization concerned. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B. E. 2546 (2003) and addendum.

(4) Launch the public relations campaign to encourage and boost the morale of poultry and fish farmers affected by the outbreak, as well as restoring their mental health to normalcy. The key implementing agencies include The Office of Permanent Secretary for Ministry of Agriculture and Cooperatives, Department of Livestock Development, Department of Fishery, Department of Mental Health, Public Relations Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(5) Organize the studies of the impact of animal and aquatic animal epidemic outbreak on well-being and property of people to gain valuable information useful for reference and future outbreak management. The key implementing agencies include Department of Livestock Development, Department of Fishery, Department of Disaster Prevention and Mitigation, and educational establishment.

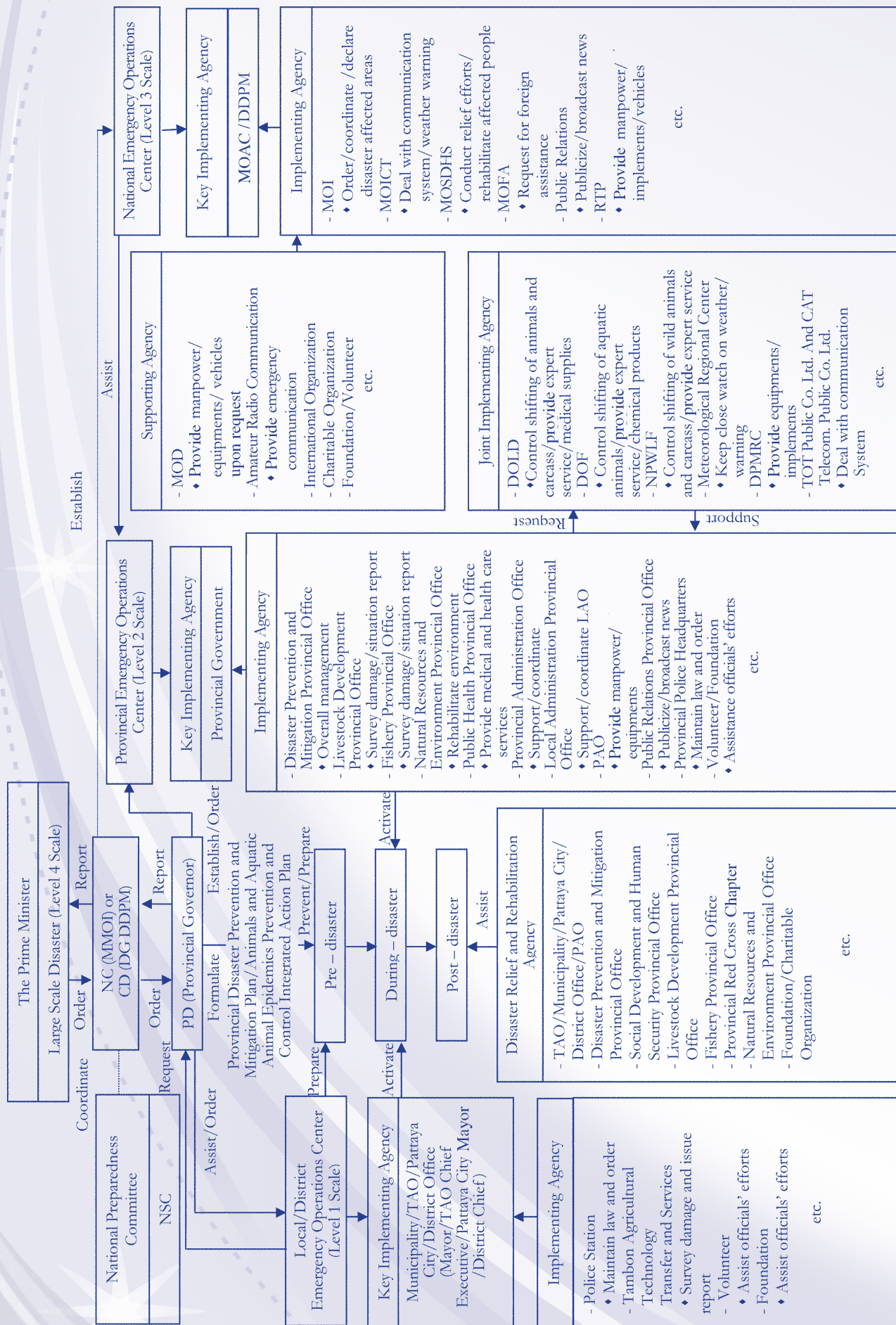


Chart 22.1 : Countermeasure Procedure against Animal and Aquatic Animal Epidemic and Joint Operations at Provincial Level

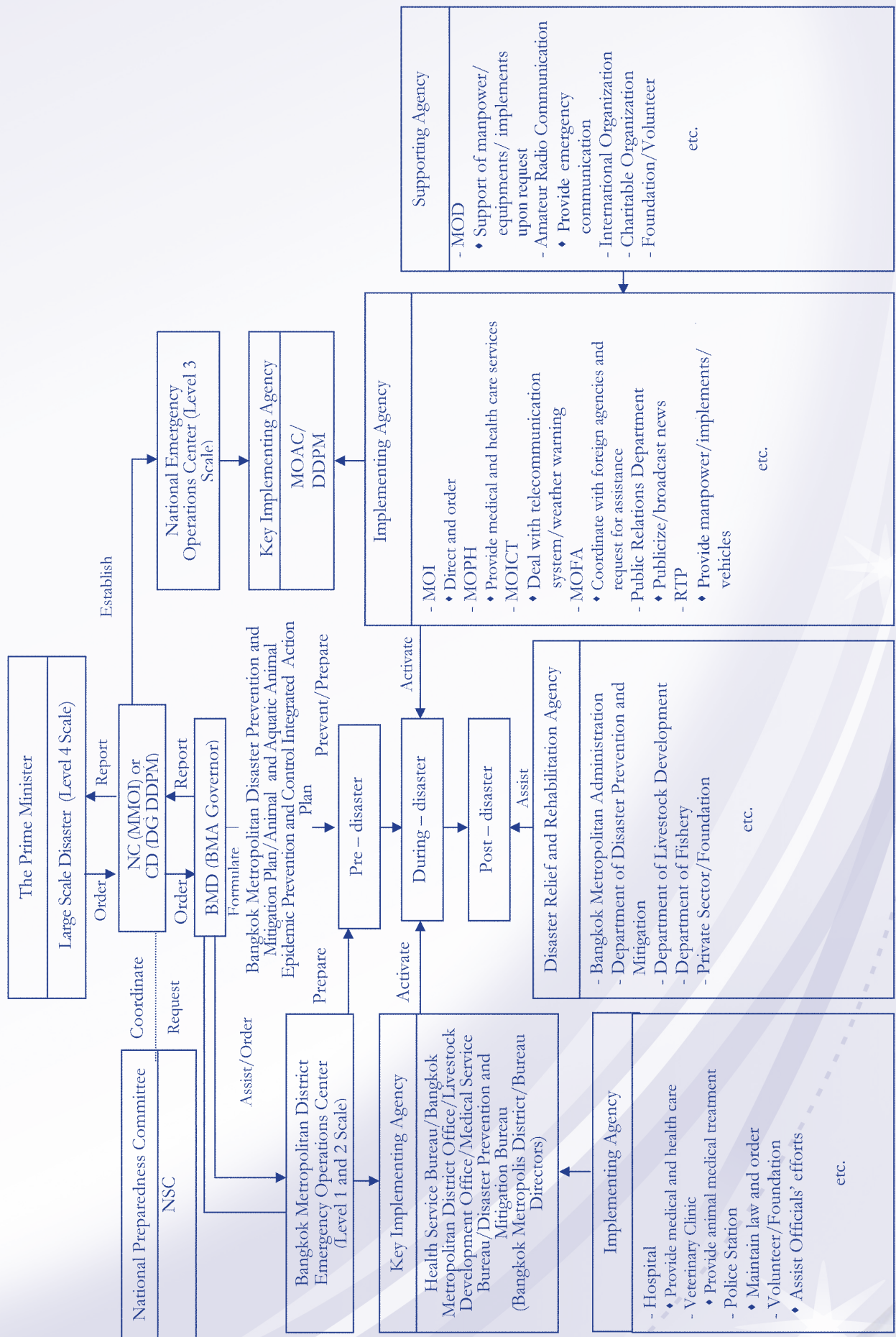


Chart 22.2 : Countermeasure Procedure against Animal and Aquatic Animal Epidemic and Joint Operations in Bangkok

Chapter 23

Information Technology

23.1 Introduction

The application of information technology can be either opportunity and threat to our society. With an aid of information technology, people can rapidly and globally access to the sources of the most recent information which are beneficial for improving our day-to-day life, as well as for economic and social development such as mass transit system etc. On the other hand, the abuse or misuse of information technology is capable of posing significant threats on the general public and may threaten the national security. The instance of this include introducing the new type of organized crimes and offences, blackmailing, use of deception for human trafficking etc. Moreover, misuse of information technology can lead to social deviation among specific group of the society, the abuse of personal information for unlawful economic gain, the rapid growth of black market etc., which resulted in moral decline and negative impact on overall economy.

23.2 Objectives

23.2.1 To prevent the information technology-based threat and to reduce the impact caused by information technology threat on life and property of people.

23.2.2 To facilitate and ensure effectiveness in providing assistance to people in distress.

23.2.3 To identify the clear and integrative tasks and responsibilities to be taken by all government agencies and non-government network organizations concerned for dealing with information threat.

23.3 Terminology

23.3.1 Information refers to data which is useful for daily life of people. In other words, information technology is the product of data processing that uses computer programme to enter data, calculate, analyze, and convert data into usable information.

23.3.2 Information Technology refers to technology that is applicable for information management. It involves collecting, recording, analyzing, publishing, disseminating, restoring data etc., and includes technology which supports data service system, applications and safeguarding data. Information technology comprises two major technologies namely, computer technology, and telecommunication technology.

23.3.3 Information Technology Threat refers to the situation where information technology system is interrupted by malware attack and posed significant damage on hardware, software, network, people ware, and file systems as well as on the other devices, which can affect the livelihood and well-being of people.

23.4 Countermeasure Procedure

The operating procedure and countermeasures required to be taken by National Command Center, Local Command Center of all levels, and all agencies concerned for dealing with this threat in all aspects of disaster management cycle, have been identified as follows :

23.4.1 Pre – Disaster

(1) Threat Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Take all required steps to encourage government agencies, private organizations and independent entities to develop information security governance framework or computer security framework, ID and password system etc. The key implementing agency is The Office of Permanent Secretary for Ministry of Information and Communication Technology.

(1.2) Examine and create database on group of people or agencies which are at risk of threat. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, The Office of Permanent Secretary for Ministry of Transport, The Office of Permanent Secretary for Ministry of Finance, The Office of Permanent Secretary for Ministry of Culture, and Bangkok Metropolitan Administration.

(1.3) Identify measures and guidelines for handling information technology threat in a way that they are compatible with Information Technology Policy Bylaw, subordinate laws under E-Business Act, National ICT Code, National Preparedness Policy (information technology relating issue), Computer Offences Act B.E. 2550 (2007), Information Technology Center's Guidelines for Information Technology Security, and other relevant regulations. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, National Electronics and Computer Technology Center, and Royal Thai Police.

(1.4) Organize public education training and campaign to raise awareness among general public, students and youth, and to deliver important information to help them understand potential threat and proper measures to be adopted for IT safety **(in compliance with guidelines identified in Chapter 4, item 4.4.3)**. The key implementing agencies include The Office of Permanent Secretary for Ministries concerned namely, Ministry of Information and Communication Technology, Ministry of Culture, Ministry of Education, Ministry of Transport, and Ministry of Finance, Department of Disaster Prevention and Mitigation, Public Relations Department, Bangkok Metropolitan Administration, and educational establishment.

(1.5) Summarize and document lessons learned from past major information technology threat to gain valuable information useful for reference and future management. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, The Office of Permanent Secretary for Ministry of Transport, The Office of Permanent Secretary for Ministry of Finance, Bangkok Metropolitan Administration, and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange the specific training programme and organize the volunteer corps to assist government officials in examining and blocking inappropriate website, patent violation website, responding to the call informing about malwares, etc. **(in compliance with guidelines identified in Chapter 5, item 5.3.3 (3.2))**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, The Permanent Secretary for Ministry of Culture, Royal Thai Police, Department of Disaster Prevention and Mitigation, Provincial Government, foundations and charitable organization.

(2.2) Prepare the particulars of information technology experts. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, Royal Thai Police, and National Electronics and Computer Technology Center.

(2.3) Take the required steps to formulate Information Technology Threat Prevention and Mitigation Integrated Action Plan. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology, Royal Thai Police, The Telecommunications Consumer Protection Institute, and National Electronics and Computer Technology Center.

23.4.2 During Disaster

The designated disaster management mechanisms are obliged to take the following actions to handle emergency situation.

(1) Upon obtaining confirmation of information technology threat incident, take immediate steps to set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified in Chapter 6, item 6.3.2 (1) and (2) and deploy personnel to base and perform the functions according to the operating procedure of the center identified in item 6.3.2(3))**.

(2) In case of necessity to request for foreign assistance, Emergency Operations Center concerned is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed **(in compliance with guidelines identified in Chapter 4, item 4.2.6)**. The key implementing agency is Ministry of Foreign Affairs.

(3) Conduct identification of dead body, if any **(in compliance with guidelines identified in Chapter 6, item 6.3.10)**. The key implementing agency is Royal Thai Police Forensic Science Bureau.

23.4.3 Post-Disaster

The designated disaster management mechanisms are obliged to take the following actions.

(1) Emergency Operation Center of which the threatened location is under responsibility is obliged to process as follows:

(1.1) Manage and restore information technology corrupted by malicious programme to normalcy and perform system testing to ensure the proper functioning, as well as installing security system to meet the prescribed standard.

(1.2) Conduct damage assessment survey, prepare the lists of affected people and damaged property, and issue them letter of credentials as written verification for receiving rehabilitation assistance.

(2) Management of Dead Bodies

If there is any death resulted from the incident, the authorities concerned are obliged to

(2.1) Arrange temporary mortuary for the storage of dead bodies and facilities for conducting identification. The key implementing agencies include The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Police, Provincial Government, District Office, and Local Administration Organization.

(2.2) The identification of dead bodies must conducted according to Agreement on Cooperation in Identification and Repatriation of Dead Bodies after Severe Disaster between Department of Disaster Prevention and Mitigation and Royal Thai Police (**in compliance with guidelines identified in Chapter 6, item 6.3.10**)

(2.3) In case where transport of dead bodies is required, Local Administration Organization concerned must collaborate with District Office and Provincial Government to direct the process. Ministry of Transport, Ministry of Public Health, Royal Thai Police and other agencies will provide support as needed.

(3) Take immediate steps to improve and restore physical and mental health, quality of life as well as livelihoods of affected people to normalcy as soon as possible (**in compliance with guidelines identified in Chapter 7, item 7.3.1**). The key implementing agencies include Ministry of Social Development and Human Security, The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Department of Mental Health, Thai Red Cross Society, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and other agencies concerned.

(4) Organize the studies of the impact of information technology incident on life and property of people in systematic manner to gain valuable information useful for reference and future information technology threat management. The key implementing agencies include The Office of Permanent Secretary for Ministries concerned, namely Ministry of Information and Communication Technology, Ministry of Finance, Ministry of Culture, and Ministry of Transport, Provincial Government, District Office, Local Administration Organization, Bangkok Metropolitan Administration, and educational establishment.

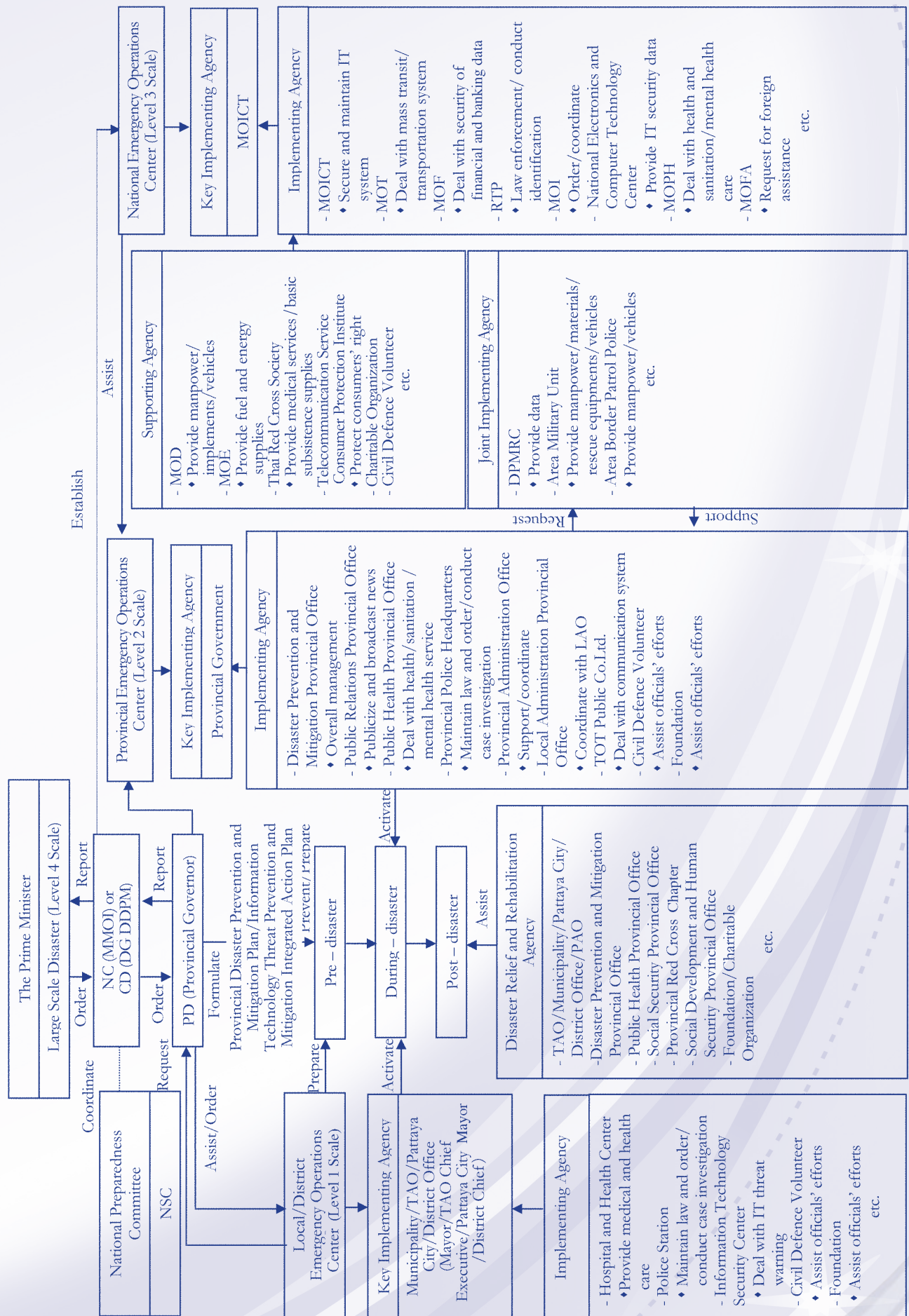


Chart 23.1 : Countermeasure Procedure against Information Technology Threat and Joint Operations at Provincial Level

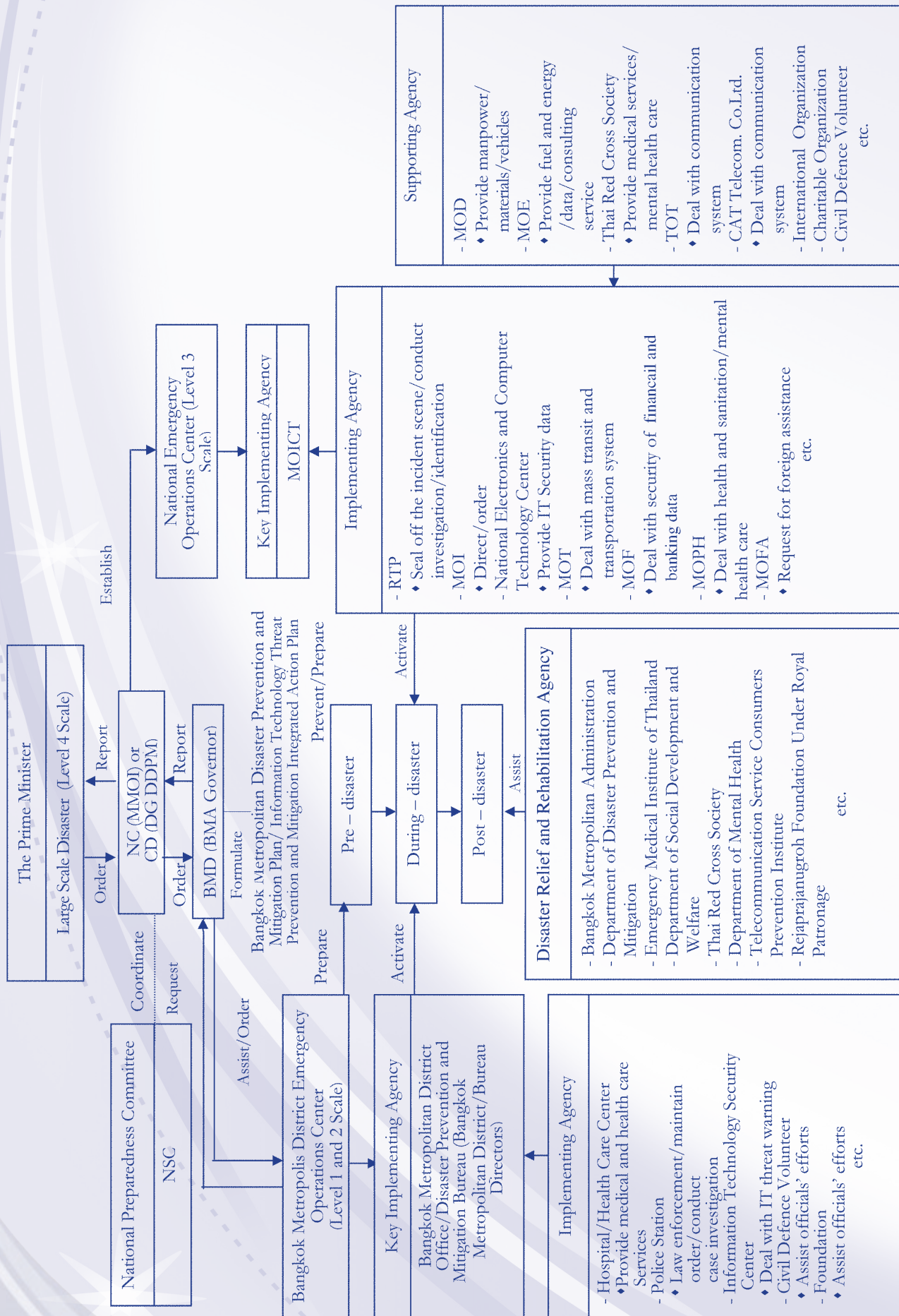


Chart 23.2 : Countermeasure Procedure against Information Technology Threat and Joint Operations in Bangkok

Part 3

SECURITY THREAT MANAGEMENT AND COUNTERMEASURE PROCEDURE



Chapter 24

Security Threat

24.1 Introduction

Unlike the past, the national security situations nowadays have changed in positive ways since there is no security threat of outside military action, consequently, the security threat risk has significantly been reduced. Notwithstanding, some areas of Thailand are still at risk and under security threat. This situation coupled with the fierce competition for natural resources, economic gains, and the state of being incapable of self-adjustment to rapid social change, may eventually escalate into a conflict or a situation that could pose a serious risk to national security and people well-being. Thus, to ensure the preparedness for civilian operations, and to support the integrity of military operations in case of security threat emergency, this Plan has been formulated to serve as a facilitation mechanism for anticipated preparedness arrangement.

24.2 Objectives

- 24.2.1 To arrange civil defence system regarding national security to ensure its effectiveness and compatibility with military operations.
- 24.2.2 To protect people's lives and their property against the impact of possible security threat.

24.3 Terminology

24.3.1 Security Threat refers to any situation that can pose threat to national security.

24.3.2 Normal Situation refers to the situation in which there is no immediate harm or risk to national security from either internal violent action, or foreign hostile aggression.

24.3.3 Non-normal Situation refers to the situation during which there is domestic violent action or foreign hostile aggression to the extent that emphasizing the need for national defence mobilization, including entering into war.

24.3.4 Internal Security Operations refers to actions taken to prevent, control, address, and restore any harmful or possible harmful situation resulted from a person or group of persons' attempt to create state of non-peacefulness, destroy, or to cause death or bodily injury, damage to property of people or of the State; to normalcy for the useful purpose of public peace and order or national security.

24.3.5 Emergency, as far as national security is concerned, refers to the situation that poses or may pose an immediate effects to public peace and order, or threaten national security; or may cause critical situation in the country or in any part of the country; or the situation in which there are terrorist offences in compliance with the criminal code, or arm conflict or waging war. The situations required urgent measures and intervention to maintain a democratic regime of government with the King as Head of State in compliance with Constitution of the Kingdom of Thailand; national independence and territorial integrity; national interest, legal conformity, public safety, peaceful living for people, protection of right and freedom, public peace and order or public interest, or the protection and mitigation of the unprecedented and adverse impact of disaster.

24.4 Scope

Operating procedure and countermeasures for handling security threat has been identified to encompass

- 24.4.1 Sabotage
- 24.4.2 Mine and landmine threat
- 24.4.3 Air threat
- 24.4.4 Protest and riot

24.5 Guiding Principles

24.5.1 Implementing Mechanism

As the key civilian implementing mechanisms, Command Center at all levels, in conjunction with all concerned government agencies, public enterprises and other supporting agencies will

coordinate security operations in a systematic, harmonious and quick manner to safeguard life and property of people as well as government property; to facilitate uninterrupted governance and administration; and to ensure peaceful livelihood of people.

24.5.2 Situation Assessment

Since security threat can occur at any time with little or no warn, and is difficult to predict, Command Center in locality is required to conduct situation analysis and assessment as well as the study of the potential impact of security threat on regular basis, and quickly issue the situation report to inform higher level of Command Center up the chain of command.

24.5.3 Procedure

(1) Pre – Threat

(1.1) Provincial Command Center is required to coordinate with military entity to formulate Security Threat Prevention and Mitigation Plan.

(1.2) Local Command Center of which the area under responsibility is at risk is required to take the following actions; monitor the situation, gather information and intelligence; conduct situation and potential threat assessment; arrange for preparedness of relevant resources such as manpower, equipments, vehicles and implements to ensure their ever availability as well as putting in place the operating procedures.

(2) During Disaster

Upon receiving the warning of the onset of security threat from agencies concerned, Local Command Center concerned is obliged to cooperate with all agencies concerned to jointly suppress, mitigate and eventually eradicate security threat through the following steps.

(2.1) Take immediate steps to set up Emergency Operations Center (**in compliance with guidelines identified in Chapter 6, item 6.3.2**) to direct, coordinate, closely monitor, investigate and conduct situation assessment in conjunction with agencies concerned all the time, including the provision of efficient and quick communication links and alerting systems between military and civilian organization as well as between civilian organization and the general public. Moreover, early and concurrently prepare the reliable standby communication system to ensure its immediate availability and serviceability.

(2.2) Assign the official in charge to disseminate warning information to the general public and the officials to take shelter or prevention measures to reduce damage and harms. And in case of necessity and appropriateness, Director of Local Command Center has been entitled to issue an order to proceed as planned.

(2.3) Prepare equipments required for handling security threat, deploy the administrative officials to join the police forces, civil defence volunteer corps, territorial defence volunteer units, volunteer citizens groups etc., in inspecting, hindering, and suppressing to prevent the security threat to gain momentum.

(2.4) Improve and strengthen intelligence capacity as well as managing to seek the intelligence source, conducting the patrol mission, setting up barricades, checkpoints and intercept barriers, and engaging all types of local volunteer citizens groups to involve for useful purpose of facilitating and supporting military operations. Moreover, continue to investigate and monitor the behavior and movement of threat both against person and public place.

(2.5) Organize psychological operations to counter adversary propaganda efforts useful for boosting morale and strengthening the synergy conforming to the battle plan of field operations units.

(2.6) In case where there exists an incident that poses immediate threat to kingdom's internal security, but there's no need to declare state of emergency pursuant to the Emergency Decree on Public Administration in Emergency Situation, and the threatening incident tends to be long standing, and the responsibility to solve the on-going threat problem is in the line of duty and authority of several government agencies, as well as the Cabinet has entrusted the Internal Security Operations Center to solve the threat problem or mitigate the incident which poses immediate threat to kingdom's internal security within the area and timeframe, therefore any operation conducted by Local Command Center of each level within the specified area and timeframe must be in compliance with relevant Internal Security Act.

(2.7) In the event of the occurrence of an emergency situation and the Prime Minister considers that it is appropriate to use the force of administrative officials or police officers, civil officials or military officers to jointly prevent, remedy, suppress, withhold the emergency situation, rehabilitate or provide assistance to people, and declares state of emergency applicable to the whole kingdom or in some area or locality as necessary

for the situation, any operation conducted by Local Command Center of each level must be in compliance with relevant Emergency Decree on Public Administration in Emergency Situation. The key coordinating agency is the Office of the National Security Council.

(2.8) During a state of war or martial law has been invoked pursuant to Martial Law B.E. 2457 (1904), any operation conducted by Local Command Center will be directed and controlled by Rear Area Protection and Operations Center for the useful purpose of military operations. In addition, Local Command Center is required to synergize resources to support military operations upon request.

(3) **Post-Disaster**

When the threat is eradicated or almost eradicated, Local Emergency Operations Center is responsible for undertaking the rehabilitation efforts to restore the situation to normalcy as soon as possible, as well as providing immediate relief assistance to affected people and restoring their livelihood to normalcy. In case of protest and riot incidents, Local Emergency Operations Center is required to conduct the in-depth and comprehensive analysis of the root-cause of the incidents to gain valuable information useful for preventing their recurrence in the future.

24.5.4 Request for Support

When the security threat occurs in the area under responsibility, Local Emergency Operations Center is obliged to activate the anticipated plan. In case where it is beyond the capacity to cope with, the aforesaid Center has been entitled to request for assistance and support from neighboring Local Emergency Operations Center or from Local Emergency Operations Center of higher hierarchical order, or from area military unit or from other supporting units as actually needed.

24.5.5 Communication Procedure

The communication operations must be conducted **according to guidelines identified in Chapter 5, item 5.3.8**, and Local Emergency Operations Center should consider to utilize the communication systems of private sector and general public as supportive communication system to the utmost extent.

24.6 Rear Area Protection

In non-normal situation or during war-time or there exists an event concerning national security which leads to confrontation with the opposing army or enemy, people will live in fear of threat of war in daily lives, disintegration of morale and lack of assurance of safety to life and property. If these conditions are left unattended by the State, they will bring more harm to national stability.

In consequence, in addition to the use of military measures to defend against the enemy assault and to destroy the military capacity of the opposing army, the government sector is as well responsible for rear area security operations. The operations within rear area are joint efforts of civilian and military entities to facilitate and ensure the continuity and harmony of activities conducted therein including damage control efforts conducting in rear area for the useful purpose of preventing and mitigating the negative impacts of a threat as well as motivating and maintaining people morale.

24.6.1 Objectives

(1) Prevent and suppress a threat and state of violent disturbance and disorder triggered by acts of the opponent, obstruct enemy movement and destroy the enemy, including prevention and mitigation of air threat to boost and motivate people's morale.

(2) Provide support and facilitation to ensure the smooth and uninterrupted mobilization and reinforcement of military forces to defend the country.

(3) Prevent and protect the resources to limit the extent of damage as well as provision of relief assistance when the situation returns to normal.

24.6.2 Terminology

(1) **Rear Area** refers to any area of the country which is not declared as main battlefield by military authority.

(2) **Rear Area Defensive Operations** refers to any operation and entire activity conducting in the rear of the combat and forward areas to prevent and suppress the disturbance and disorder, prevent and mitigate air threat, facilitate and provide support to military operations, prevent and obstruct the enemy movements, as well as suppressing and mitigating the occurred threat for the useful purpose of maintaining peace and order within rear areas during non-normal situation or state of war.

24.6.3 Rear Area Protection Operating Mechanisms

(1) Key Implementing Agency

The rear area protection operations are jointly conducted by Royal Thai Army (Army Area 1 – 4, Army Circle, Provincial Army) and Provincial Command Center through constructive discussion of existing rear area operational plan, conducting the joint exercise, requesting for military support as actually needed, and performing the designated functions of Command Center of all levels **(in compliance with guidelines identified in Chapter 4, item 4.3.3).**

(2) Supporting Agency

(2.1) Ministry of Defence contributes to rear area operations as follows:

(2.1.1) Provide military land, water and air transportation services for the purpose of transporting affected people and assisting in relief efforts.

(2.1.2) Provide manpower, vehicles, communication equipments, implements and materials for the purpose of evacuating people and government agencies.

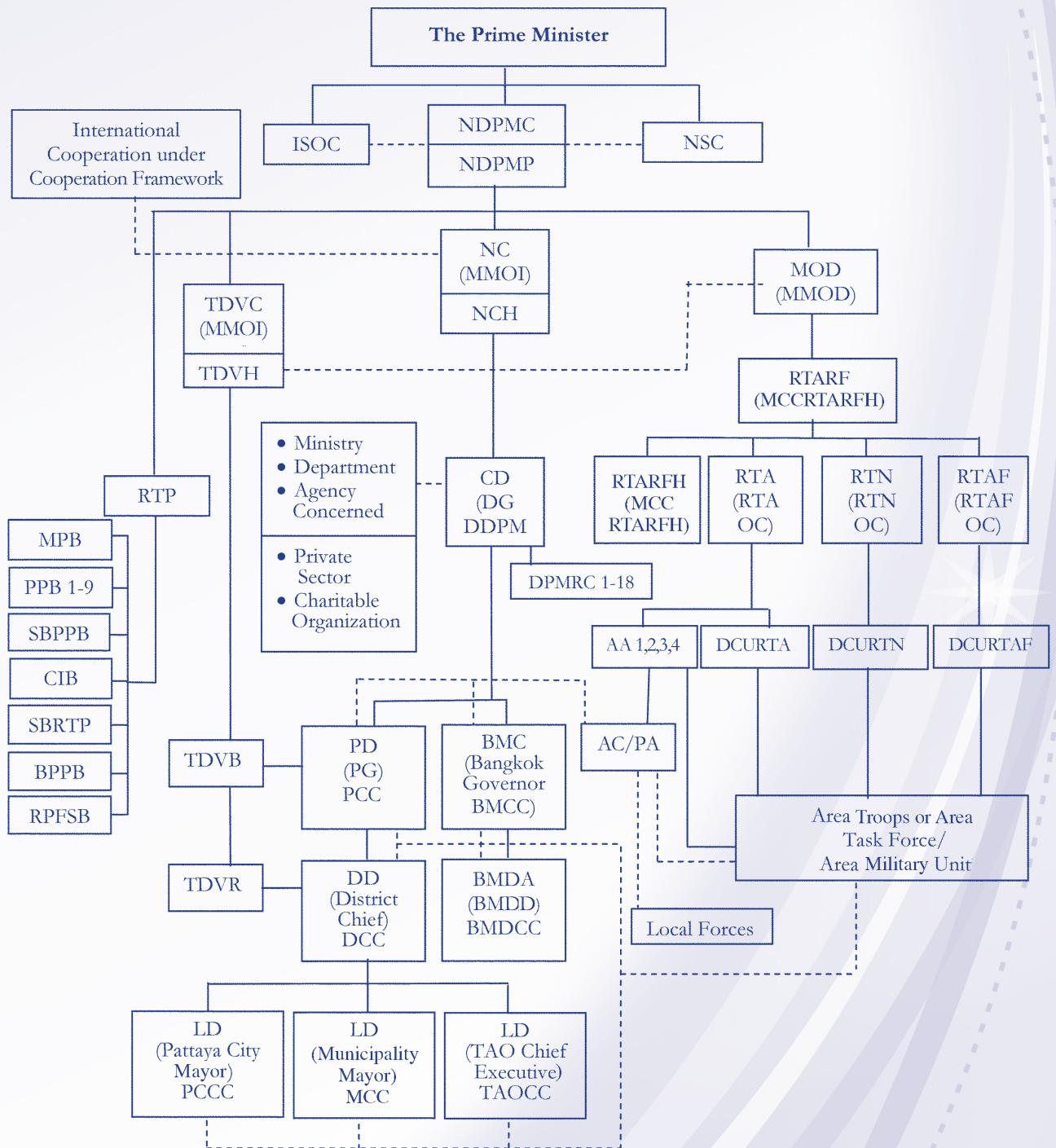
(2.1.3) Provide assistance in maintaining security in the area.

(2.2) All disaster management related government agencies located in the area are obliged to take action and cooperate according to the line of duty and authority of individual agency.

(2.3) Private organization is required to provide support upon request.

(2.4) People in a rear area are required to provide support upon request.

The command during non-normal situation or in the state of war and normal situation must be in line with the structures illustrated in chart 24.1 and 24.2 respectively.

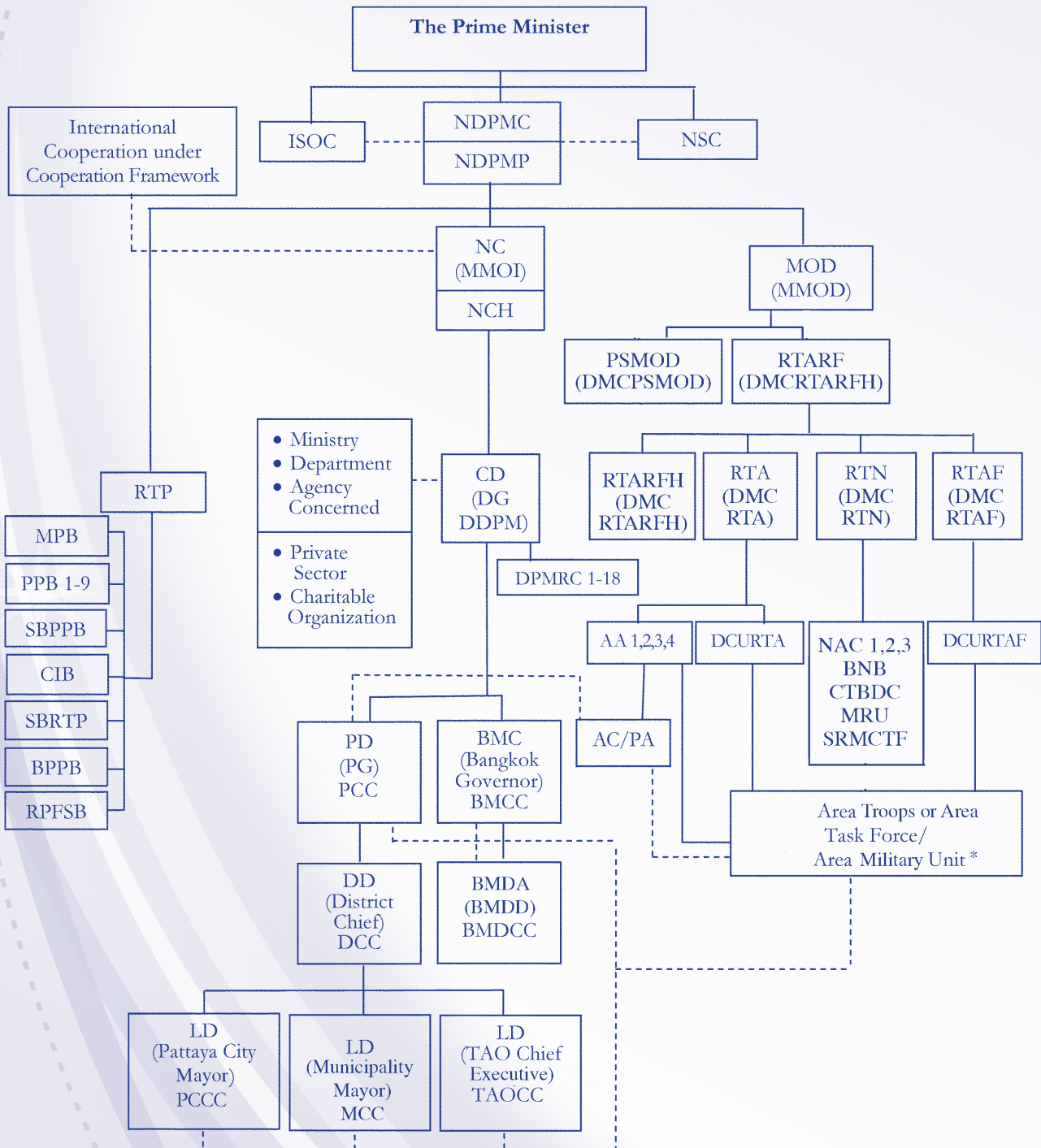


N.B.

———— Chain of Command

- - - - - Chain of Coordination or Strategically Subordinated to Military

Chart 24.1 Structure of Chain of Command during Emergency Situation or War Time



N.B.

- Chain of Command
- - - Chain of Coordination

* Division of responsible areas must be done according to Disaster Mitigation Plan of Ministry of Defence and Memorandum of Understanding between the provincial Director and the Area Military Commandant.

Chart 24.2 Structure of Chain of Command during Non - Emergency

24.6.4 Rear Area Protection Operations

When Thailand is invaded or in case of necessity to conduct military operations against enemy, and when a rear area is designated by military authorities, Provincial Command Center in conjunction with military units are obliged to undertake prevention, mitigation, rehabilitation and recovery efforts as well as attempting to control the overall situation and bringing the rear area back to normalcy as soon as possible.

(1) Pre-Threat

Preparedness Arrangement

Provincial Command Center is obliged to coordinate with Area Army (Area Army 1 – 4), Army Circle and Provincial Army to take the following actions for ensuring preparedness.

(1.1) Formulate Rear Area Defensive Operations Plan as a mechanism for threat prevention and mitigation during non-normal situation or state of war. In this plan, the rear area will be divided into three zones namely,

(A) Government Establishments Zone

Assign on-duty security personnel attached to government agency who are responsible for security operations within government establishments zone under Rear Area Defensive Operations Plan to protect and safeguard life and property of people as well as government property, and to maintain peace and order in this zone. The aforesaid security personnel will take part in patrolling and checkpoint operations, safeguarding transportation routes, arranging traffic system, suppressing panic and trepidation situation as well as boosting and motivating morale of people and officials in the area under responsibility.

(B) Town Zone and Local Administration Organization Area

Assign civil defence volunteer corps based in town zone and local administration organization area to primarily maintain peace and order in the area. In addition, assign the officials who are responsible for security operations within town zone and local administration organization area under Rear Area Defensive Operations Plan to protect and safeguard life and property of people as well as government property and to maintain of peace and order in these areas. The aforesaid security staffs will take part in patrolling and checkpoint operations, safeguarding, transportation routes, arranging traffic system, suppressing panic and trepidation situation as well as boosting and motivating morale of and officials in the area under responsibility.

(C) Industrial Zone

Assign the on-duty security personnel based in industrial zone to primarily maintain peace and order in the area. In addition, assign the officials who are responsible for security operations within industrial zone under the Rear Area Defensive Operations Plan to protect and safeguard life and property of people as well as government property, and to maintain peace and order in this zone. The aforesaid security personnel will take part in patrolling and checkpoint operations, safeguarding transportation routes, arranging traffic system, suppressing panic and trepidation situation as well as boosting and motivating morale of people and officials in the area under responsibility.

(1.2) Arrange for preparedness of civilian emergency task force which comprises staffs of Command Center of all levels, local civil defence volunteer corps, other types of volunteer corps and civilian society task force for immediate mobilization.

(1.3) Regularly inspect the areas relatively vulnerable to enemy military operations and arrange for the deployment of local forces to safeguard the area.

(1.4) Prepare for undertaking precautionary, preventive and warning initiatives by putting in place the intelligence system, setting up checkpoint, area inspecting etc., to facilitate mission execution and command.

(1.5) Conduct the mock drill to check preparedness of personnel beforehand and increase sufficient number of local forces as well as appropriate distribution of duties and responsibilities.

(1.6) Survey the needs for indispensable equipments and tools such as vehicles, firefighting equipments etc., including consumable goods, and prepare the checklist for the storing items.

(2) During Disaster

The designated disaster management mechanisms are required to take the following actions in the emergency situation.

(2.1) National Command Headquarters is responsible for controlling, directing and overseeing the actions undertaken by implementing agency as well as coordinating with supporting agency to support military operations for the useful purpose of rear area protections operations undertaken by different implementing agencies.

(2.2) Provincial Command Center and Bangkok Metropolitan Command Center are designated as the key mechanisms to order civilian authorities located in their responsible areas to coordinate joint operations with military authorities, and issue situation report to inform National Command Headquarters and area military unit.

(2.3) District Command Center, Tambon Administration Organization Command Center, Municipality Command Center, Pattaya City Command Center, and Bangkok Metropolitan District Command Center are obliged to act conforming to the order of higher level Command Center up the chain of command, and take all of the following actions.

(2.3.1) Protect and safeguard the respective establishments from destruction by an enemy, as well as espionage, spy and intelligence operations conducted by an enemy.

(2.3.2) Maintain public safety in sub-district and village and ensure the protection of life and property of the residents.

(2.3.3) Obstruct and resist against an enemy's military operations.

(2.3.4) Report the results of operations to higher level of Command Center up the chain of command respectively, and in case of urgent necessity, simultaneously submit the aforesaid report to National Command Center.

(2.4) In case where the implementing agency has received vital intelligence regarding enemy tactical operations, directly inform the commander and coordinate intelligence operations with other agencies.

(2.5) In protecting rear area, give priority to government establishment zone, industrial zone and town zone and local administration organization area respectively.

(2.6) Command Center in locality is obliged to conduct operations conforming to the existing Rear Area Defensive Operations Plan. And in case where it is beyond the capacity to cope with, the aforesaid center has been entitled to request for assistance and support from neighboring Local Command Center or from Local Command Center of higher hierarchical order.

(2.7) The evacuation of people and moving government office must be carried out according to People Evacuation and Government Office Relocation Plan **(in compliance with guidelines identified in Chapter 6, item 6.3.7).**

(2.8) In case of necessity to conduct military operations in the event of extreme emergency situation and to apply rear area protective measures, the operational control of inherent command authority of Local Command Center at all levels will be transferred to military authority upon the declaration of martial law or National Command Headquarters.

(3) Post-Disaster

The designated disaster management mechanisms are required to take the following actions.

(3.1) Firstly, conduct rapid combatant and noncombatant casualties survey and assessment, provide initial life sustaining treatment and transfer to hospital.

(3.2) Arrange and dispatch specialized rescue team to the former battlefield and other areas to conduct explosive ordnance disposal and hazardous material decontamination.

(3.3) Conduct initial damage assessment survey, prepare lists of affected people and damaged property, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified in Chapter 6, item 6.3.11).**

(3.4) Ensure appropriate repair and maintenance of damaged basic infrastructure facilities to resume normal functions and demolish the ruin of collapsed structures which can cause harms to people.

(3.5) Take immediate steps to restore mental health and livelihood of people as deemed appropriate.

Chapter 25

Sabotage Actions

25.1 Introduction

Nowadays, the deliberate acts of sabotage continue to occur in Thailand due to an ideological conflict, conflicting national interest, serious economic problems, guerrilla activities, etc.

25.2 Objectives

25.2.1 To lay down guidelines for preparing prevention initiatives and for coordinating the joint efforts among concerned agencies which include key implementing agencies, joint implementing agencies, and supporting agencies, to ensure the effective and quick response to potential act of sabotage.

25.2.2 To identify beforehand tasks and responsibilities to be taken by agencies concerned for handling state of emergency based on sabotage.

25.2.3 To safeguard people's lives and property as well as property of State.

25.3 Terminology

25.3.1 Sabotage refers to any deliberate act aims at destroying property of people or of State or public utilities and facilities or at disrupting, impeding, and delaying the functioning system, including causing bodily harm to person which trigger the national political, economic and social agitation with an extent to damage the stability of a State.

25.3.2 Terrorism refers to any deliberate act intended to provoke a state of terror or instilling fear in the general public, or to intimidate or coerce the government or international organization to act or abstain from acting which will lead to bodily harm and vital property damage.

25.3.3 International Terrorism refers to any deliberate act of a person or group of persons with an intention to attain the desired goals that are political, economic, and social in nature. The act of international terrorism is mostly carried out in a foreign country by individuals or groups who are not native to that country. Such individuals or groups may act on their own without support from any state or are supported by a state sponsor of terrorism. The occurrence of international terrorism can exert direct effects on national interest, international commitment, national defence policy, political, economic, and social-psychological policies, as well as national reputation and dignity.

25.4 Guiding Principles

The most important task in dealing with sabotage is to prevent it from being successful through the application of different principal countermeasures which include intelligence operations, psychological campaign, arresting and suppressing the saboteur, as well as the cooperation and collaboration among various government agencies and the general public. In this regard, Local Command Center concerned has been designated to give directions, control, coordinate, support the joint efforts; prevent, counter, suppress, minimize and mitigate sabotage threat in an area under responsibility to ensure the safety of life and property of people and State, as well as rehabilitating and restoring damaged public facilities to resume normal function as soon as possible.

25.5 Countermeasure

25.5.1 Pre-Disaster

To ensure the preparedness for dealing with sabotage threat, Local Command Center concerned is obliged to take the following actions.

(1) Formulate Sabotage Prevention and Suppression Action Plan basing on vulnerability condition of person and place, both in normal and non-normal situation. Sabotage Prevention and Suppression Action Plan comprised two parts as follows:

(1.1) Prevention and suppression of sabotage act directed toward domestic significant place encompassing government establishments and private workplaces including productive or vital facilities

such as educational institute, hospital, religious place, bank, airport, railways, sky train and subway stations, port, bus terminal, trade center, power plant, telephone junction; large-scale structures such as highways, elevated road, railways, railways tunnel, bridge, pipelines, oil installations, dam; vehicle such as commercial airliners, train, cargo fleets, subway and other places. To facilitate the prevention and suppression operations, the responsible area has been zoned as follows:

(1.1.1) Government Establishments Zone

All government agencies located in this zone are assigned to undertake security operations to safeguard the area and government property as in the line of duty.

(1.1.2) Private Workplace Zone

Arrange for a security guard unit of private workplace and local civil defence volunteers to take charge of conducting primary security operations to safeguard property of respective private workplace.

(1.2) Protection and suppression of sabotage act directed toward dignitary

In this context, dignitary refers to both Thai and foreign person of high rank or position entering the area. In order to ensure the safety and security of the aforesaid dignitaries, Local Command Center concerned has a duty to coordinate, plan and conduct joint security operations with the dignitaries' security guard.

(2) Organize anti-sabotage operations team attached to Operating Section of respective Emergency Operations Center and arrange specific training for its members to ensure efficient performance and immediate deployment.

Local Command Center concerned has been entitled to request for support and assistance from competent anti-sabotage operations unit attached to relevant government agency as deemed appropriate.

(3) Take all required steps to arrange for preparedness of equipments required for relevant operations such as communication equipment, detector, alarming device, firefighting vehicle, emergency medical service ambulance, EMS ambulance, vehicle etc., to ensure their immediate availability and serviceability.

(4) Draw up a security plan and arrange for security system to safeguard and protect significant place and dignitary through the application of control system to conduct security check on people, of vehicle and object etc., approaching, getting close to or delivering to dignitary or significant place.

(5) Maintain peace and order through establishing standard operating procedure for assigning area of operations under Sabotage Prevention and Suppression Action Plan, arranging communication and reporting system, as well as designating official to assume responsibility and division of task beforehand. And in conducting security operations, the key implementing agency is obligated to proceed according to the plan prepared beforehand while supporting agency will provide relevant support or take actions upon the request of the key implementing agency.

25.5.2 During-Disaster

(1) The designated disaster management mechanisms are required to take the following actions to handle the emergency situation.

(1.1) First Step: Incident Control

Upon receiving information about an incident, Local Command Center concerned is obliged to immediately deploy official concerned to verify an incident at the scene and issue initial incident report to Commander. This report must include,

(1.1.1) Date, time and location of an incident

(1.1.2) Person who involved or suspected to be involved

(1.1.3) Nature of sabotage incident

(1.1.4) Number and type of equipment or weapon which are used in conducting sabotage operations.

(1.1.5) Initial damage assessment

The implementing agencies are assigned to submit information report to National Command Headquarters, but in case of terrorism associated incident, a report must be submitted to Office of The National Security Council for information and further operational coordination.

The implementing agencies are obliged to deploy anti-sabotage unit to conduct anti-sabotage operations and simultaneously seal off the incident area through designating area of inner circle

to restrict the movement of troublemakers and area of outer circle to keep off unauthorized persons. In addition, periodically submit report to Commander up the chain of command for further provision of directions.

(1.2) Second Step: Deterring an Incident

In case where violence has not yet occurred, the implementing agencies responsible for deploying anti-sabotage unit are required to conduct negotiations with instigators. In case where the extent of sabotage incident is beyond capacity of Local Command Center in charge to handle, it has been entitled to request for support and assistance from adjacent Local Command Center or Command Center of higher hierarchical order as well as from government agency concerned as deemed appropriate.

(1.3) Third Step: Suppression

In case where the situation has escalated to the extent beyond the capacity to deter, National Command Center is required to coordinate with the Government to identify measures for controlling a situation as appropriate.

(2) Once a situation has been brought under control, take immediate steps to establish security system at the incident scene to prevent deliberate and mischievous interference of a third person from taking advantage of a situation to provoke social disorder. In addition, carry out security operations to maintain normalcy in an area.

(3) Sabotage Response

The responsible Local Command Center is required to simultaneously activate Fire Prevention and Suppression Action Plan, Chemical and Hazardous Materials Incident Prevention and Mitigation Action Plan, and other relevant disaster prevention and mitigation plans.

(4) Supporting Agency

Upon request, the supporting agencies are required to deploy supporting units and equipments to support security operations in the incident area. Upon arrival, the support units must report to Director of Emergency Operations Center or authorized official in charge of incident commanding and perform duties as assigned, and submit performance report periodically.

25.5.3 Post-Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Take immediate steps to provide emergency medical service to save the lives of injured combatant and non-combatant and transfer to hospital.

(2) Arrange and deploy Specialized Units which include Explosive Ordnance Disposal Unit, the Decon Unit to inspect, clear and clean incident area to ensure safety of personnel undertaking rehabilitation and reconstruction efforts.

(3) Assign Disaster Rehabilitation and Recovery Section to survey the extent of damage to buildings and other structures caused by sabotage incident. Give priority to the repair of repairable buildings and structures, and demolish those damaged beyond repair to ensure safety of general public.

(4) Take immediate steps to restore mental health of people to normalcy.

In case of terrorist sabotage capable of causing significant damage, Office of the National Security Council has been assigned to assume responsibility for managing the case according to operational guideline prescribed in Counter Terrorism Policy B.E. 2545 (2002).

In case of international terrorism, Committee of Counter International Terrorism as policy making agency is responsible for the coordination between policy level and operational units to ensure compliance with Counter Terrorism Policy B.E. 2545 (2002) and the National Plan for Countering International Terrorism. The Sub-Committee for Counter International Terrorism and other relevant Sub-Committees have been tasked to support the Committee to fulfill its responsibilities and duties. In addition, the Counter International Terrorist Operations Center has been assigned to coordinate the joint operations and oversee the Special Operations Unit. And in case of necessity and for benefit of controlling the situation, the government may declare state of emergency in specific area pursuant to the Emergency Decree on Public Administration in Emergency Situation B.E. 2548 (2005).

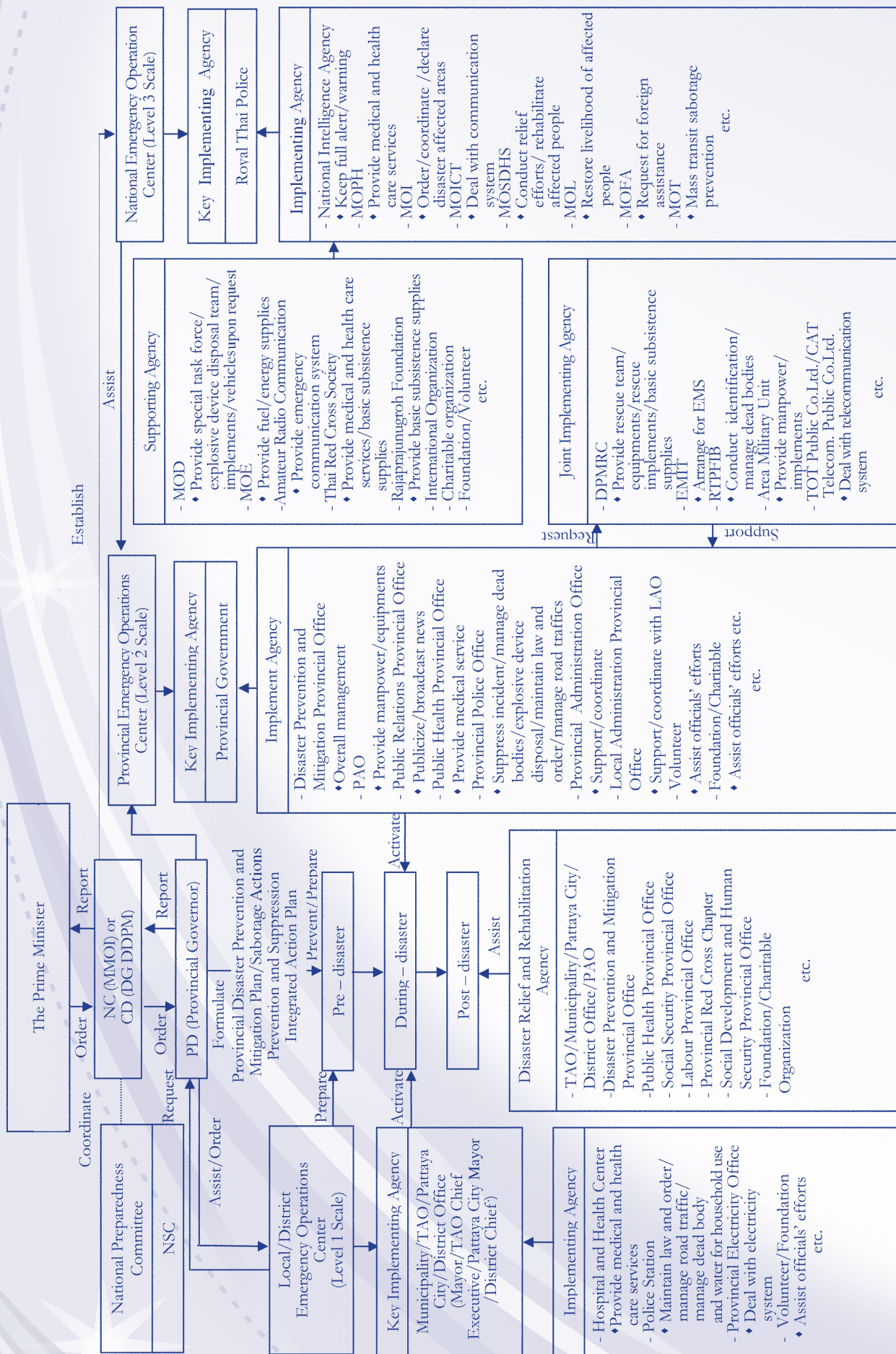


Chart 25.1 : Countermeasure Procedure against Sabotage Actions and Joint Operations at Provincial Level

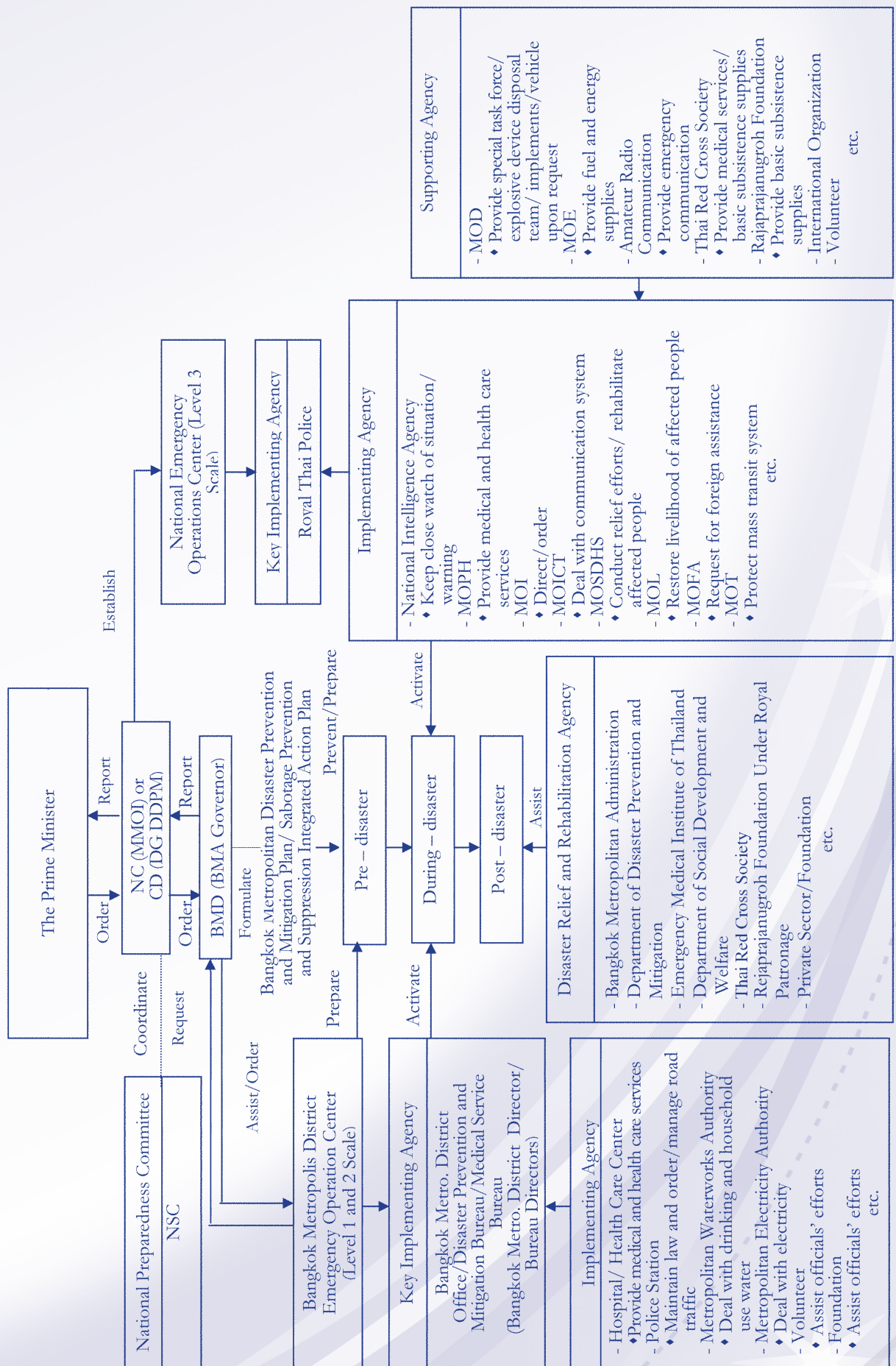


Chart 25.2 : Countermeasure Procedure against Sabotage Actions and Joint Operations in Bangkok

Chapter 26

Mine and Landmine Threat

26.1 Introduction

The deadly legacy of the past conflict with neighboring countries, landmines deployed along the border area which were considered as war zone continue to take their toll years after the return to peace. Even nowadays, many people especially those who dwell in such areas have been killed or maimed by the remaining landmines. And if the recurrence of conflict is likely, the current threat of landmine will continue to have tragic and unintended consequences for people. Thus, the preparedness arrangement for handling mine and landmine threat is required.

26.2 Objectives

26.2.1 To lay down guidelines for preparing prevention initiatives and for coordinating the joint efforts among concerned agencies to ensure the effective collaboration in dealing with potential mine and landmine threat.

26.2.2 To identify beforehand the duties and responsibilities as well as the authority of agencies concerned to deal with landmine threat.

26.3 Terminology

26.3.1 Mine refers to explosive device designed to be placed, buried, dropped or scattered on or under or near the ground or any surface area with intention to kill or maim a person and destroy vehicle. Mine will be detonated by pressure, crush or any contact as designated.

26.3.2 Landmine refers to explosive device of which the incorporated ignition mechanism is covered for the purpose of being triggered by the act of human being.

26.4 Countermeasure Procedure

The operating procedure and countermeasure required to be taken by National Command Center, Local Command Center of all levels, and all government agencies concerned for dealing with mine and landmine incident in all aspects of disaster management cycle, are identified as follows:

26.4.1 Pre-Disaster Stage

(1) Prevention and Impact Reduction

The designated disaster management mechanisms are required to take the following actions.

(1.1) Undertake risk assessment by analyzing potential landmine and mine threat and evaluate existing conditions of vulnerabilities to reveal the probability of their occurrence and impact on life and property of people. The key implement agencies include Thailand Mine Action Center, The Office of Permanent Secretary for Ministry of Foreign Affairs, the Office of Permanent Secretary for Ministry of Defence, and Royal Thai Armed Forces Headquarters.

(1.2) Review and update the existing data on landmine and mine risk areas, and create landmine and mine hazard map. The key implementing agencies include Thailand Mine Action Center, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, and Local Administration Organization.

(1.3) Create database on relevant official, volunteers, mechanical equipments, medical supply, rescue equipments, and vehicles to ensure their availability and serviceability in case of emergency **(in compliance with guidelines identified Chapter 4, item 4.4.2)**. The key implementing agencies include Thailand Mine Action Center, Royal Thai Armed Forces Headquarters, Royal Thai Police, Ministry of Public Health, Emergency Medical Institute of Thailand, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, and Local Administration Organization.

(1.4) Organize public education training and campaign to raise awareness among general public and to deliver information to help them understand potential threat from landmine and mine disaster as well as measures to be adopted for self-protection and safety **(in compliance with guidelines identified Chapter 4, item 4.4.3)**. The key implementing agencies Thailand Mine Action Center, The Office of Permanent Secretary for Ministry of Defence, Royal Thai Armed Forces Headquarters, The Office of Permanent Secretary for Ministry of Public Health, Department of Prevention and Mitigation, Royal Thai Police, Provincial Government, District Office, and Local Administration organization.

(1.5) Promote closer and more cooperation among public sector, private sector and mass media in disseminating accurate and timely data and information useful for addressing problem in different situation through the application of pro-active public relations initiatives. The key implementing agencies include The Office of Permanent Secretary for Ministry of Defence, Royal Thai Armed Forces Headquarters, The Office of Permanent Secretary for Ministry of Interior, Ministry of Social Development and Human Security, Public Relations Department, Royal Thai Police, Department of Disaster Prevention and Mitigation, The Office Permanent Secretary for Ministry of Public Health, Provincial Government, District office, and Local Administration Organization.

(1.6) Summarize and document lessons learned from past major landmine and mine disaster to gain valuable information useful for reference and future management. The key implementing agencies include Thailand Mine Action Center, Royal Thai Armed Forces Headquarter, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions.

(2.1) Arrange for preparedness of concerned official and volunteer through providing specific training programme on assisting affected people **(in compliance with guidelines identified Chapter 5, item 5.3.2)**. The key implementing agencies include Thailand Mine Action Center, Royal Thai Armed Forces Headquarters, The Office of Permanent Secretary for Ministry of Public Health, Emergency Medical Institute of Thailand, Department of Disaster Prevention and Mitigation, Royal Thai Police, Provincial Government, District Office, and Local Administration Organization.

(2.2) Ensure preparedness of medical supply, heavy equipments, implements, vehicles, fuel and other types of energy required for providing efficient and timely assistance to affected people **(in compliance with guidelines identified Chapter 5, item 5.3.6 and 5.3.7)**. The key implementing agencies include Thailand Mine Action Center, Royal Thai Armed Forces Headquarters, Emergency Medical Institute of Thailand, Department of Disaster Prevention and Mitigation, Department of Health, Department of Local Administration, Royal Thai Police, Provincial Government, District Office, and Local Administration Organization.

(2.3) Take all required steps to formulate Landmine and Mine Threat Prevention and Mitigation Integrated Action Plan at all levels in a way that it is compatible with National Disaster Prevention and Mitigation Plan and other relevant plans. The key implementing agencies include Thailand Mine Action Center, Royal Thai Armed Forces Headquarters, Emergency Medical Institute of Thailand, Department of Disaster Prevention and Mitigation, Royal Thai Police, Department of Health, Provincial Government, District Office, and Local Administration Organization.

(2.4) Arrange for preparedness of main auxiliary and standby communication system required, as well as procuring communication equipments to ensure their adequacy and round the clock serviceability **(in compliance with guidelines identified Chapter 5, item 5.3.8)**. The key implementing agencies include The Office of Permanent Secretary for Ministry of Information and Communication Technology , TOT Corporation Public Co.Ltd., CAT Telecom Public Co.Ltd., Royal Thai Armed Forces Headquarters, Royal Thai Police, Department of Disaster Prevention and Mitigation, Department of Health, Provincial Government, District Office, and Local Administration Organization.

26.4.2 During Disaster

The designated disaster management mechanisms are required take the following actions to handle disaster emergency situation.

(1) Upon receiving confirmation from eye witness or informed government agency, Local Command Center responsible for incident area is obliged to take immediate steps to set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified Chapter 6, item 6.3.2)**, and deploy manpower to base and perform the functions as follows;

(1.1) Coordinate with Thailand Mine Action Center to deploy the special task force to enter the area to assist the affected people.

(1.2) Immediately give directives to the staffs to take actions according to Mine and Landmine Threat Prevention and Mitigation Integrated Action Plan.

(1.3) Take control of mine and landmine incident area, operate security system to maintain peace and order as well as managing traffic flows in affected area and adjacent areas.

(1.4) If there is any fatality, proceed to carry out the identification of dead body as required by related regulation **(in compliance with guidelines identified Chapter 6, item 6.3.10).**

(1.5) Submit situation report to higher ranked Director up a command chain **(in compliance with guidelines identified Chapter 6, item 6.3.12).**

(1.6) In case where mine and landmine explosion triggered fire outbreak, proceed to suppress and control the fire according to Fire Prevention and Suppression Integrated Action Plan.

(1.7) In case where chemical and hazardous material incident are spawned by mine and landmine explosion, proceed to handle chemical and hazardous material incident according to Chemical and Hazardous Material Incident Prevention and Mitigation Integrated Action Plan.

(1.8) Conduct initial damage and needs assessment survey **(in compliance with guidelines identified Chapter 6, item 6.3.11)**, and further submit damage and needs assessment report to higher tier Command Center up a command chain or National Command Headquarters as the case may be until the incident has subsided.

(2) In case where the extent of a situation is beyond capacity of affected Local Emergency Operations Center to cope with, proceed to request for support from higher tier Command Center or adjacent or other Local Command Centers.

(3) The higher tier Command Center up a command chain or the adjacent Local Command Center which is requested, is obliged to provide support and assistance as required.

(4) When higher ranked Director or National Commander takes over control of a situation, Local Commander in charge is required to transfer the command to the aforesaid person as the case may be.

(5) Submit damage assessment and relief operations reports to keep higher tier Command Center and National Command Headquarters well informed and updated until the incident has subsided **(in compliance with guidelines identified Chapter 6, item 6.3.12).**

(6) Other agencies which include adjacent or nearby government agency, foundation, charitable organization, and individual people have duty and responsibility to provide equipments, materials as well as deploying personnel necessary for mine and landmine threat prevention and mitigation. The aforesaid agency and individual are required to

(6.1) Directly coordinate with respective Emergency Operations Center or its Director for mobilization of equipment and personnel.

(6.2) Upon arrival, the support units are required to report to Director of Emergency Operations Center for duty assignment.

(6.3) Act according to a command of Director of respective Emergency Operations Center or person entrusted by Director and submit the situation report periodically.

(7) In case of necessity to collect donations both in cash and in-kind from the general public, the respective Emergency Operations Center is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring proper and timely distribution **(in compliance with guidelines identified Chapter 6, item 6.3.13 and 6.3.14).**

(8) In case of necessity to request for foreign assistance, the respective Emergency Operations Center is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed according to an international cooperation framework **(in compliance with guidelines identified Chapter 4, item 4.2.6).**

26.4.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Coordinate with The Executive Committee for Humanitarian Mine Action in providing relief assistance to mine and landmine victims. The key implementing agencies include Thailand Mine Action Center, The Office of Permanent Secretary for Ministry of Public Health, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, and Local Administration Organization.

(2) Conduct the initial damage and need assessment survey, prepare the lists of affected people and damage property, and issue them letter of credentials as written verification for receiving relief and rehabilitation assistance **(in compliance with guidelines identified Chapter 6, item 6.3.11).** The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, and Local Administration Organization.

(3) Take immediate steps to rehabilitate, repair, and improve damaged basic infrastructure facilities to resume normal functions as well as environmental condition in community **(in compliance with guidelines identified Chapter 7, item 7.3.2)**. The key implementing agencies include Department of Disaster of Prevention and Mitigation, Department of Public Works and Towns & Country Planning, Department of Rural Roads, TOT Public Corporation Co.Ltd., CAT Telecom Public Co.Ltd., Provincial Electricity Authority, Provincial Waterworks Authority, Pollution Control Department, Department of Environmental Quality Promotion, Provincial Government, District Office, and Local Administration Organization.

(4) Emergency Operations Center of which the incident area is under responsibility is required to carry out primary rehabilitation efforts by using budget of concerned local administration organization. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum.

(5) Take immediate steps to launch public relations campaign to boost morale and restore mental health of affected people to normalcy as well as providing them job opportunities. The key implementing include Ministry of Social Development and Human Security, Department of Social Development and Welfares, Department of Mental Health, Department of Skill Development, Public Relations Department, Department of Welfare and Labour Protection, Provincial Government, District Office, and Local Administration Organization.

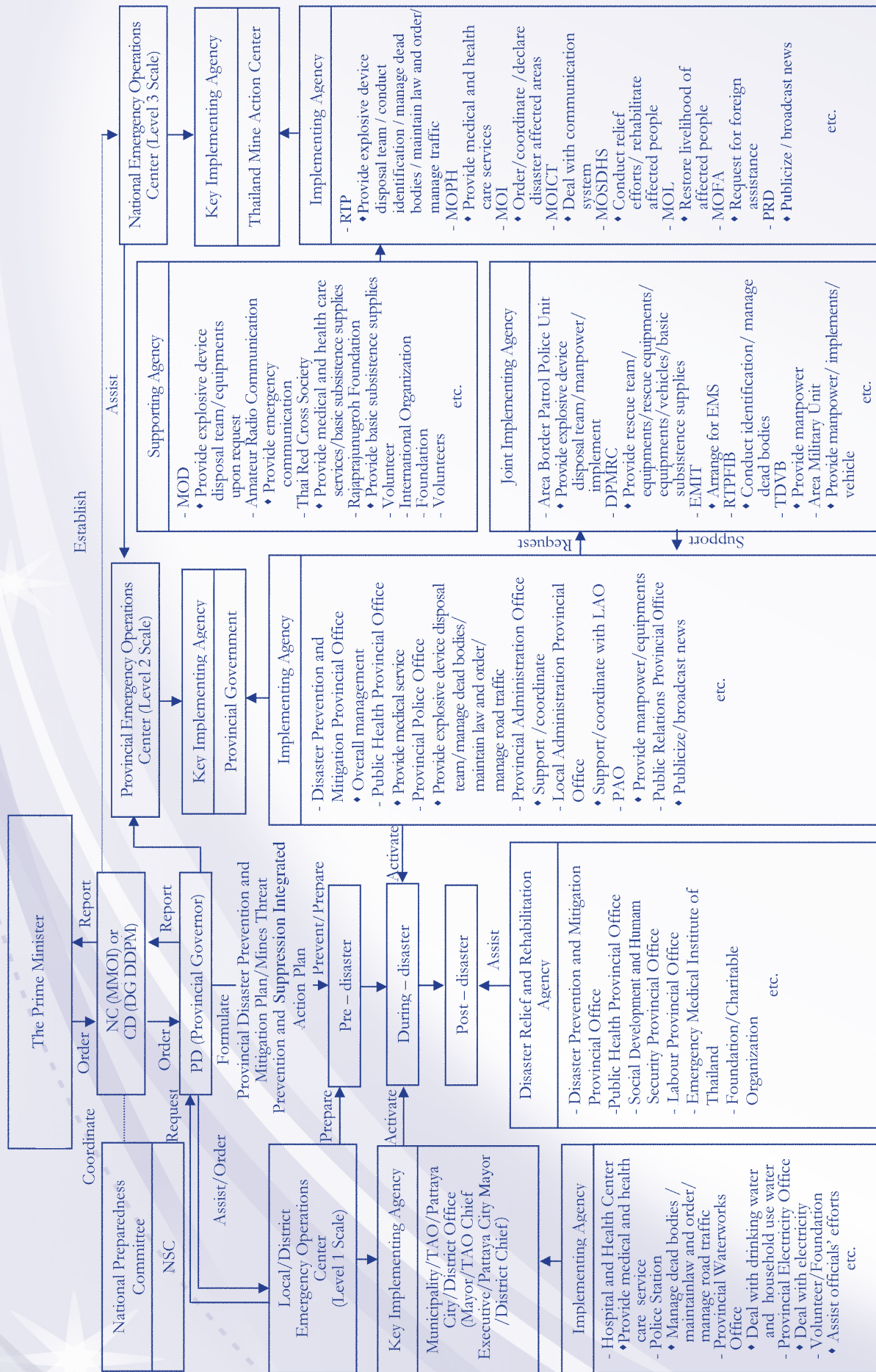


Chart 26 : Procedure and Countermeasure against Mine and Landmines Hazard and Joint Operations

27.1 Introduction

The operating procedure for responding to air threat in this context does not refer to arming the civilian officers to counter the enemy aircrafts. In a sense, it involves the provision of guidelines to be taken by civilian organizations for providing support to and fulfilling military operations regarding evacuation, provision of emergency medical services to affected people, relief efforts etc., to reduce the losses caused by air threat.

27.2 Objectives

27.2.1 To lay down guidelines for preparedness arrangement and for coordinating the joint efforts among agencies concerned to ensure the effective collaboration in dealing with potential air threat.

27.2.2 To identify beforehand the duties and responsibilities as well as the authority of agencies concerned to counteract before, during and after the potential air threat.

27.3 Terminology

Air Threat refers to harmful menace inflicted by air attack which utilizes aircraft, guide missile, ballistic missile or any air-borne vessel. The aforesaid attack can substantially affect life and property of people.

27.4 Countermeasure Procedure

The operating procedure and countermeasure required to be taken by National Command Headquarters, Local Command Center of all levels, and agencies concerned for dealing with air threat in all aspects of disaster management cycle, are identified as follows:

27.4.1 Pre - Disaster

(1) Prevention and Impact Mitigation

The designated disaster management mechanisms are required to take following actions.

(1.1) Undertake air threat assessment by analyzing potential threat and evaluate existing conditions of vulnerability to reveal the probability of its occurrence and impact on life and property of people. The key implementing agencies include National Intelligence Agency, Royal Thai Armed Force Headquarters, The Office of Permanent Secretary for Ministry of Foreign Affairs, Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.2) Create disaster resources database on official, volunteer, search and rescue equipments, heavy equipments, medical supply, and vehicles to ensure their availability and serviceability in case of emergency (**in compliance with guidelines identified in chapter 4, item 4.4.2**). The key implementing agencies include Department of Disaster Prevention and Mitigation, Emergency Medical Institute of Thailand, The Office of Permanent Secretary for Ministry of Public Health, Royal Thai Armed Forces Headquarters, Provincial Government, District Office, Local Administration Organization and Bangkok Metropolitan Administration.

(1.3) Develop air defence information transmitting and receiving system between Local Command Center and Air Defence Operations Center/Air Defence Control Center of military unit concerned. The key implementing agencies include Royal Thai Armed Forces Headquarters, Bureau of the Royal Household, The Office of Permanent Secretary for Ministry of Information and Communication Technology, TOT Corporation Public Co.Ltd., CAT Telecom Public Co.Ltd., Department of Disaster Prevention and Mitigation, Marine Department, Department of Land Transport, Department of Civil Aviation, Royal Thai Police, Territorial Defence Volunteer Headquarters, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.4) Organize public education training and campaign to raise awareness among general public and to deliver information to help them understand potential air threat as well as measures to be adopted for self-protection and safety (**in compliance with guidelines identified in chapter 4, item 4.4.3**). The

key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Thai Armed Forces Headquarters, Department of Local Administration, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.5) Promote closer and more cooperation among public sector, private sector and mass media in dissemination accurate and timely data and information useful for addressing problem in different situation through the application of pro-active public relations approach. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Thai Armed Forces Headquarters, Public Relations Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.6) Summarize and document lessons learned from the past major air threat for the useful purpose of future management. The key implementing agencies include Royal Thai Armed Forces Headquarters, Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(1.7) Conduct research on and development of air threat defence system **(in compliance with guidelines identified in chapter 4, item 4.4.5)**. The key implementing agencies include Royal Thai Armed Forces Headquarters, Office of the National Research Council of Thailand, and educational establishment.

(2) Preparedness Arrangement

The designated disaster management mechanisms are required to take the following actions:

(2.1) Arrange specific training programme regarding air defence to educate personnel to ensure their preparedness for coping with threat situation **(in compliance with guidelines identified in chapter 5, item 5.3.2 and 5.3.3)**. The key implementing agencies include Royal Thai Armed Forces Headquarters, Department of Disaster Prevention and Mitigation, The Office of Permanent Secretary for Ministry of Public Health, Emergency Medical Institute of Thailand, Territorial Defence Volunteer Headquarters, Department of Public Works and Town & Country Planning, Department of Civil Aviation, Department of Land Transport, Marine Department, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.2) Ensure preparedness of medical supply, search and rescue equipments, heavy equipments, implements, vehicles, fuel and other types of energy for providing efficient and timely relief assistance to affected people **(in compliance with guidelines identified in chapter 5, item 5.3.6 and 5.3.7)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Thai Armed Forces Headquarters, Emergency Medical Institute of Thailand, Territorial Defence Volunteer Headquarters, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.3) Take all required steps to formulate Air Threat Defence and Mitigation Action Plan. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Civil Aviation, Department of Industrial Works, Department of Land Transport, Marine Department, Department of Public Works and Town & Country Planning, Emergency Medical Institute of Thailand, Royal Thai Armed Forces Headquarters, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.4) Prepare for air raid shelter and area to accommodate evacuees, and designate evacuation route. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Land Transport, Department of Public Works and Town & Country Planning, Department of Civil Aviation, Marine Department, Department of Highways, Department of Rural Roads, Royal Thai Police, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.5) Lay down security measures to protect persons, strategic places, transportation facilities etc., issue light dimming or blackout period regulations, display the distinctive emblem for special protection under the Haque Convention, etc. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Energy Business, Provincial Electricity Authority, Metropolitan Electricity Authority, Department of Civil Aviation, Department of Land Transport, Marine Department, State Railways of Thailand, Department of Industrial Works, Department of Highways, Department of Rural Roads, Royal Thai Police, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.6) Prepare for and provide signal transmission system to all agencies concerned and the general public throughout the area under responsibility. This signal transmission system includes

- Air raid warning signal
- All-clear signal
- Instruction signal to give instruction to general public such as to blackout, to evacuate, etc.

The key implementing agencies include Department of Disaster Prevention and Mitigation, Royal Thai Armed Forces Headquarters, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.7) Arrange for the preparedness of main, auxiliary and standby communication systems, and take all necessary steps to ensure the adequate availability and round the clock serviceability of communication equipments and supplies **(in compliance with guidelines identified in chapter 5, item 5.3.8)**. The key implementing agencies include Royal Thai Armed Forces Headquarters, The Office of Permanent Secretary for Ministry of Information and Communication Technology, TOT Corporation Public Co.Ltd., CAT Telecom Public Co.Ltd., Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2.8) Organize simulated exercise based on air threat scenario **(in compliance with guidelines identified in chapter 5, item 5.3.9)**. The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Energy Business, The Office of Permanent Secretary for Ministry of Public Health, Department of Civil Aviation, Department of Land Transport, State Railways of Thailand, Emergency Medical Institute of Thailand, Royal Thai Police, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

27.4.2 During-Disaster

The designated disaster Management mechanisms are required to take the following actions for handling emergency situation.

(1) Upon receiving notification from a person who witnessed the incident, air defence guard, or the informed government agency, the concerned Local Command Center is obliged to take immediate steps set up Emergency Operations Center of which level is compatible with the scale of disaster **(in compliance with guidelines identified in chapter 6, item 6.3.2)** to provide direction and control air defence operations. And simultaneously deploy manpower to base and perform the following functions.

(1.1) Transmit signal to instruct general public to prepare for evacuation and to dim the light in residence, work place, structure, vehicle and roadside lamp post in case of night air raid.

(1.2) Camouflage strategic place and structure to obscure their outlook as well as displaying official emblem of the Hague Convention for special protection clearly visible to pilot.

(1.3) Evacuate people to air raid shelter **(in compliance with guidelines identified in chapter 6, item 6.3.7)**, and prepare for providing basic necessities to evacuees. In case of being unable to evacuate people to safety area, take all required measures to minimize number of people remaining in the area.

(1.4) Take control of affected area, arrange for peace and order maintenance system and manage traffic flow.

(1.5) Submit situation report to keep Commander up the chain of Command well-informed **(in compliance with guidelines identified in chapter 6, item 6.3.12)**.

(1.6) Take immediate steps to put in place emergency medical service in stricken area and conduct search and rescue operations to rescue people trapped or buried under debris.

(1.7) In case where air threat triggered fire outbreak, proceed to suppress and control the fire according to Fire Protection and Suppression Integrated Action Plan.

(1.8) In case where chemical and hazardous material incident spawned by air threat, proceed to handle aforesaid incident according to Chemical and Hazardous Material Incident Prevention and Mitigation Integrated Action Plan.

(1.9) If any unexploded ordnance is found in affected area, take immediate steps to designate the aforesaid area as danger area and prohibit an entry, and notify concerned officials to conduct a clearance.

(1.10) Conduct dead body identification and manage dead body according to prescribed regulations **(in compliance with guidelines identified in chapter 6, item 6.3.10)**.

(1.11) Publicize information regarding air threat situation to keep people residing in adjacent areas well informed as well as providing warning information to adjacent Local Command Centers.

(1.12) Conduct the initial damage and needs assessment survey (**in compliance with guidelines identified in chapter 6, item 6.3.11**), and submit assessment report to higher tier Local Command Center or National Command Headquarters as a case may be.

(2) In case where the extent of a situation is beyond capacity of stricken Local Emergency Operations Center to cope with, proceed to request for support from higher tier Local Command Center or other adjacent Local Command Centers.

(3) The higher tier Command Center up a hierarchical order or adjacent Local Command Center which is requested is obliged to provide support and assistance as requested.

(4) When higher ranked Director or National Commander take over control of a situation, Local Commander in charge is required to transfer the command to the aforesaid person as a case may be.

(5) Submit damage assessment and relief operations results reports to keep higher tier Command Center and National Command Headquarters well-informed and updated until the incident has subsided (**in compliance with guidelines identified in chapter 6, item 6.3.12**).

(6) Other agencies which include adjacent or nearby government agency, foundation, charitable organization and general public have duty and responsibility to provide equipment and material as well as deploying personnel necessary for handling emergency situation. Upon request, the aforesaid agency and individual are required to

(6.1) Directly coordinate with respective Local Emergency Operations Center or its Director for mobilization of equipment and personnel.

(6.2) Upon arrival, the supporting units are required to report to Director of respective Local Emergency Operations Center for duty assignment.

(6.3) Act according to a command of Director of respective Local Emergency Operations Center or person entrusted by Director, and submit situation report periodically.

(7) In case of necessity to collect donations both in cash and in-kind from general public, the respective Emergency Operations Center is required to set up donations collection center. Further, it should coordinate with and consult government agencies concerned about the measures to be adopted for safeguarding donated cash and items, and for ensuring proper and timely distribution (**in compliance with guidelines identified in chapter 6, item 6.3.14**).

(8) In case of necessity to request for foreign assistance, the respective Local Emergency Operations Center is required to coordinate with Department of Disaster Prevention and Mitigation to further notify Ministry of Foreign Affairs to proceed according to an international cooperation framework (**in compliance with guidelines identified in chapter 4, item 4.2.6**).

27.4.3 Post-Disaster

The designated disaster management mechanisms are required to take the following actions.

(1) Take immediate steps to provide impromptu assistance to affected people. The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(2) Conduct the initial damage and needs assessment survey, prepare the lists of affected people and damaged property, and issue them letter of credentials as written notification for receiving relief and rehabilitation assistance (**in compliance with guidelines identified in chapter 6, item 6.3.1**). The key implementing agencies include Department of Disaster Prevention and Mitigation, Provincial Government, District Office, and Local Administration Organization.

(3) Take immediate steps to rehabilitate, repair and improve damaged basic infrastructure facilities to resume normal functions as well as environmental condition in community (**in compliance with guidelines identified in chapter 7, item 7.3.2**). The key implementing agencies include Department of Disaster Prevention and Mitigation, Department of Public Works and Town & Country Planning, Department of Energy Business, TOT Corporation Public Co.Ltd., CAT Telecom Public Co.Ltd., State Railways of Thailand, Metropolitan Waterworks Authority, Provincial Waterworks Authority, Metropolitan Electricity Authority, Provincial Electricity Authority, Royal Irrigation Department, Department of Highways

Department of Rural Roads, Pollution Control Department, Department of Environmental Quality Promotion, Department of Industrial works, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

(4) Emergency Operations Center of which the stricken area is under responsibility is required to carry out primary rehabilitation efforts by using budget of concerned local administration organization. And in case of budget inadequacy, the aforesaid center has been entitled to request for Disaster Relief Contingency Fund by proceeding according to Ministry of Finance Regulation on Disaster Relief Contingency Fund for Affected People Assistance B.E. 2546 (2003) and addendum.

(5) Take immediate steps to launch public relations campaign to boost morale and restore mental health of affected people to normalcy as well as providing them job opportunities. The key implementing agencies include Ministry of Social Development and Human Security, Department of Mental Health, Public Relations Department, Department of Skill Development, Department of Welfare and Labour Protection, Provincial Government, District Office, Local Administration Organization, and Bangkok Metropolitan Administration.

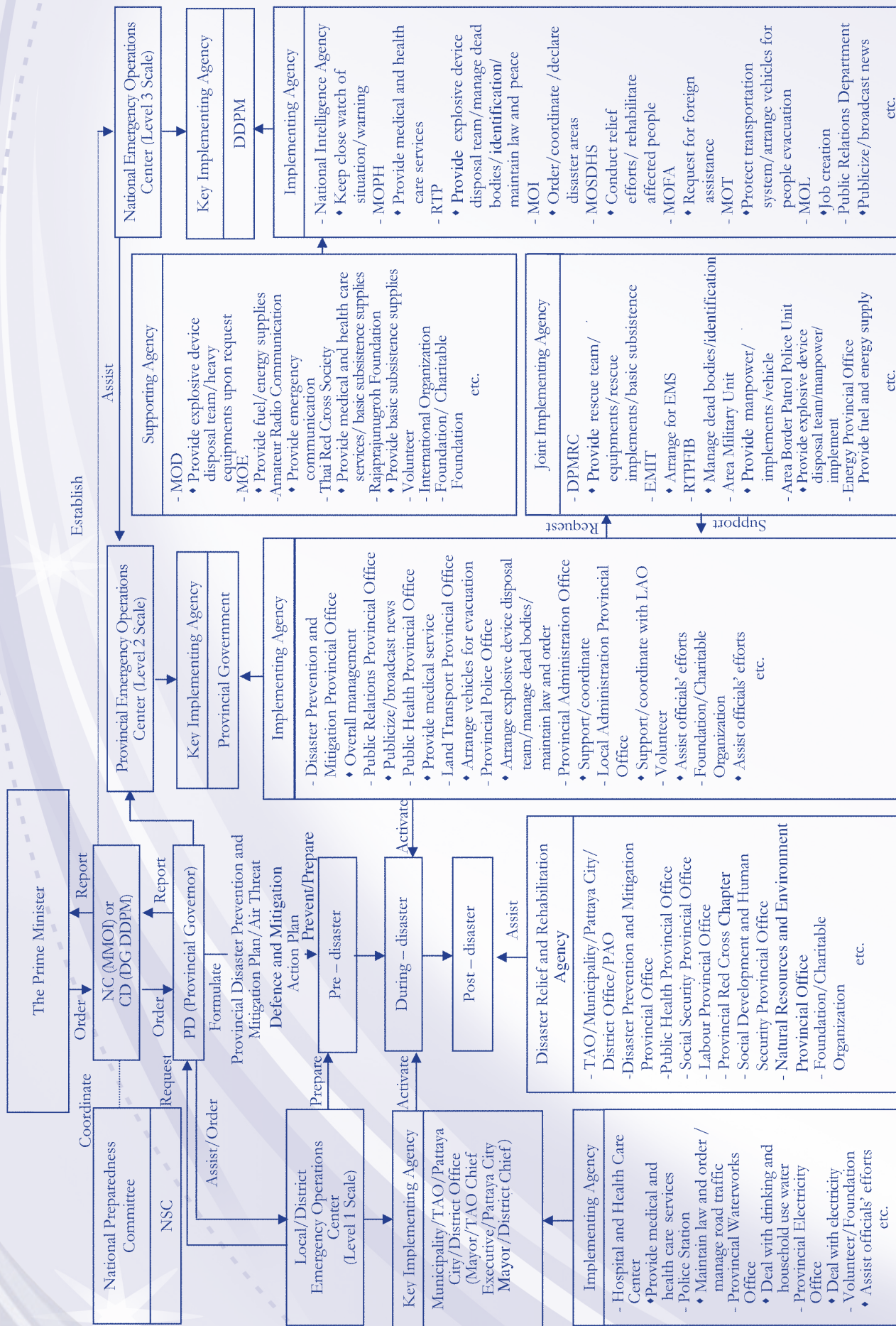


Chart 27.1 : Countermeasure Procedure against Air Threat and Joint Operations at Provincial Level

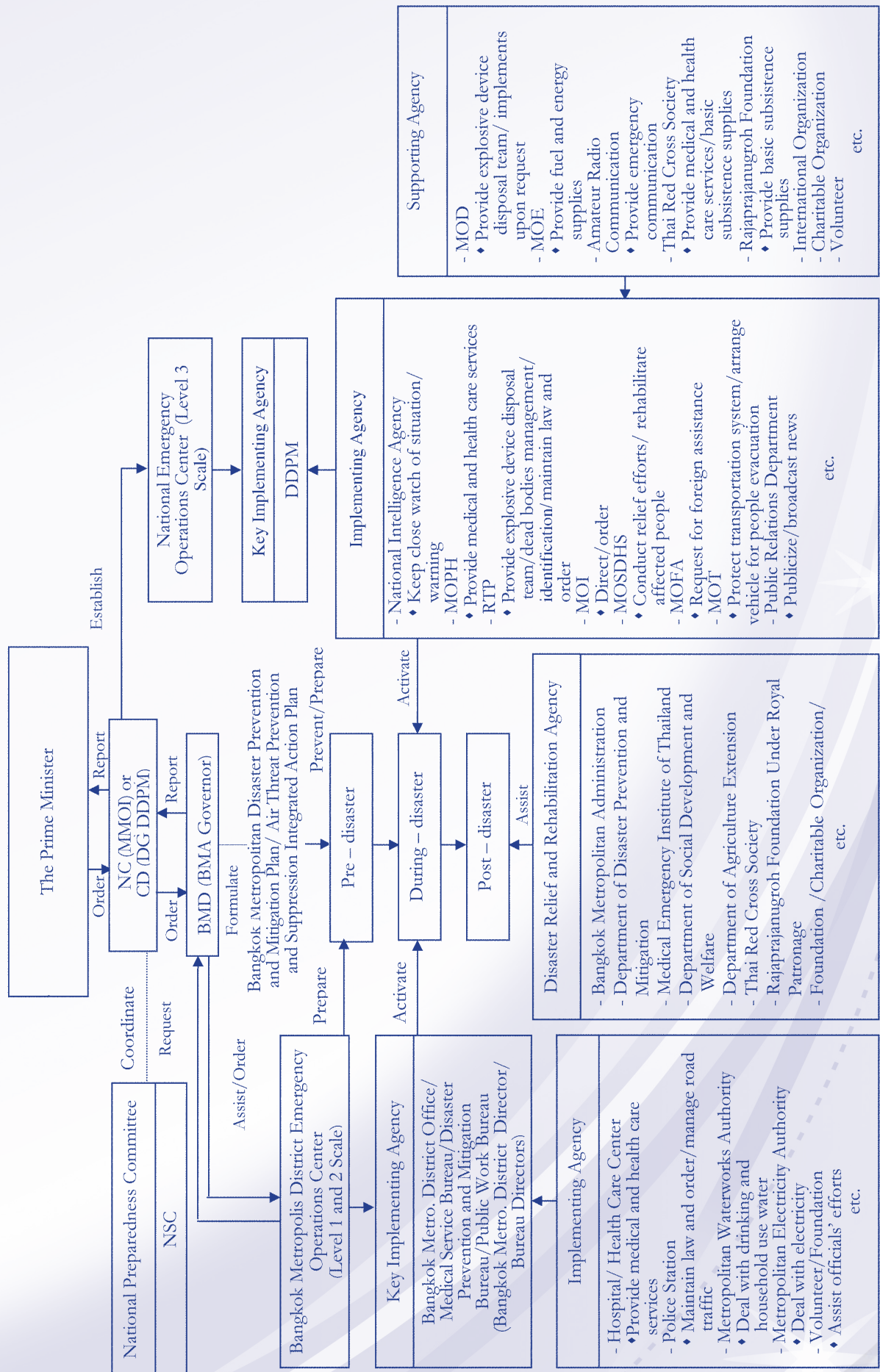


Chart 27.2 : Countermeasure Procedure against Air Threat and Joint Operations in Bangkok

Chapter 28

Protest and Riot

28.1 Introduction

The current increasing level of political awareness of the general public coupled with the socio – political problems resulted from mass migration of people from rural agricultural society to urban industrial society due to inequitable distribution of economic growth, and the encroachment on public land, can trigger social unrest phenomena. For instances, the frequent and continuous movements of political group, labour union, and the general public demand the government to address the problems affecting their interests. And if their demands are not met they may launch any form of agitation which can cause the loss of life and damage to the property of the people and of the State, as well as posing a serious risk to national security. Since the socio – political problems and unlawful movement of various advocacy groups must be quickly and efficiently addressed to maintain national peace and order, therefore the measures and operating procedure for handling protest and riot need to be prepared beforehand.

28.2 Objectives

- 28.2.1 To identify appropriate measures and guideline for protest and riot prevention and suppression.
- 28.2.2 To identify beforehand the duties and responsibilities as well as the authority of agencies concerned for dealing with all phases of protest and riot incidents.
- 28.2.3 To maintain national peace and order, national security, and to prevent unlawful act which can result in casualties and damage of property of people as well as of a State.

28.3 Terminology

28.3.1 Protest refers to relatively overt act to express opposition or disapproval mostly to social and political issues in different forms such as hunger strike, demonstration, etc. On the other hand, the use of violent tactics can lead to commotion which eventually escalates into riot.

28.3.2 Riot refers to tumultuous act of disturbing peace characterized by mass movement with a common intent to bring about change which is similar to civil war. And when the assembled mass becomes uncontrollable, the movement will escalate into a riot creating turbulence, confusion and substantive damage, and eventually leading to suppression of riot by state official.

28.4 Guiding Principles

28.4.1 In case of a protest, the authority concerned needs to take into consideration that the right to freedom of assembly include the right to stage a peaceful and unarmed protest within the framework of law. Thus, prevention and suppression of protest and riot should be carried out in a flexible and benign manners which include negotiation and launching all types of public relations initiatives.

28.4.2 The physical force should be used as the last resort to suppress protest and riot under unavoidable condition.

28.4.3 Duty and Authority of Implementing Agency

(1) Within Bangkok Metropolitan Jurisdiction

(1.1) Royal Thai Police has duty and authority to supervise, coordinate, issue an order, control and oversee the protest and riot prevention and suppression regarding the deployment of police force to prevent and suppress the protest and riot as well as bringing protesting and rioting areas under control, and managing traffic flow.

(1.2) Bangkok Metropolitan Command Center has duty and authority to supervise, coordinate, control and support the protest and riot prevention and suppression regarding the provision of public health services, facilitating the officials' execution of duties and the people's right to protest peacefully, as well as the protection of places in a manner that is compatible with Royal Thai Police operations.

(1.3.) Ministry of Interior has duty and authority to supervise, control, coordinate and support operations of Bangkok Metropolitan Administration, state agency, public enterprise and private organization.

(1.4) Ministry, department, public enterprise, and private organization have duties to collaborate with government agency concerned in suppressing protest and riot as well as following up the progress of problem solving.

(2) Outside Bangkok Metropolitan Jurisdiction

(2.1) Municipality Command Center, Tambon Administration Organization Command Center, and Pattaya City Command Center have duty and authority to control, oversee, prevent and suppress a protest and riot within their respective jurisdiction, as well as supporting District Command Center in preventing and suppressing protest and riot.

(2.2) District Command Center has duty to supervise and oversee the prevention and suppression of protest and riot and confine the unrest and prevent its spread as well as bringing the incident under control as soon as possible. For the purpose of preventing and suppressing protest and riot, District Command Center is required to coordinate with, oversee and order the local police unit, local authority, sub – district chief, village headman, and other government agency located in district area.

(2.3) Provincial Command Center has duty and authority to supervise, order, coordinate with, and support the prevention and suppression of protest and riot throughout provincial jurisdiction.

(3) Ministry, department, public enterprise and private organization have duties to collaborate with government agency concerned in suppressing protest and riot as well as following up the progress of problem solving.

(4) National Command Headquarters has duty and authority to control the protest and riot prevention and suppression operations at national level. Emergency Operations Center of Ministry of Interior functions as intelligence unit to provide data and information necessary for protest and riot prevention and suppression.

28.5 Operating Procedure

28.5.1 Pre – Disaster: Preparedness Arrangement

(1) Government agency designated to assume responsibility for protest and riot prevention and suppression is obliged to monitor the situation, investigate the existing precondition, distress and problem, and conflict in a locality for useful purpose of preventing protest and riot and addressing the problem. Additionally, formulate Protest and Riot Prevention and Suppression Integrated Action Plan.

(2) Arrange for preparedness of personnel, heavy equipments, vehicles, tools, communication system etc., and assign duty and responsibility to personnel beforehand.

(3) Launch all types of public relations campaign on the continuous basis as part of psychological operations to eradicate the existing conflict or problem between government agency and people or between private entities in a locality.

28.5.2 During Disaster

The designated disaster management mechanisms are required to take the following actions to handle emergency situation.

(1) Outside Bangkok Metropolitan Area

(1.1) District Command Center has duty and authority as follows:

- Upon obtaining confirmation from detection unit or report about the existence of conflict, affliction, or social problem in a locality, take immediate steps to analyze the root causes and coordinate with government agency, private entity and people involved. Further, District Director and officials from government agency involved must proceed to the incident scene to negotiate with the protest leader to ensure safety of life and property of people as well as state property as immediate priority.

- In the case of negotiation failure, arrange for the deployment of police officers, civil defence volunteers, or other types of volunteer to take charge of maintaining public safety, peace and order and managing the traffic flow, and take all required steps to designate a protest area where demonstrators can be placed to ensure safety of life and property of people as well as state property as first priority.

- District Command Center has been entitled to request for support from supporting agency as deemed appropriate.

- Immediately submit the situation report to keep Provincial Command Center well – informed and further submit the situation report including an analysis of the root cause and recommendations for addressing the problems.

- In the case where an incident is beyond the capacity of District Command Center to control, Provincial Command Center is empowered to intervene in controlling an incident. And if the protesters proceed to provincial center, District Director and officials concerned are obliged to work in collaboration with others at an incident area.

(1.2) Provincial Command Center

- Take action to resolve protest according to designated duty and authority. And if a situation is beyond a capacity or authority to handle, proceed to coordinate with government agency concerned both at regional and national levels for support and assistance.

- Upon receiving request for support and assistance from Provincial Command Center, government agency and public enterprise are obliged to deploy their staffs to perform relevant functions at Provincial Command Center in short notice.

- Arrange for deployment of police officers, civil defence volunteers, and other types of volunteer to take charge of maintaining public safety and peace and order through designating protest area to prevent the spread of a protest.

- On continuous basis, conduct psychological operations and launch public relations campaign of all types as well as negotiating with protest leader to contain a protest.

- Submit situation report to keep National Command Headquarters and Ministry of Interior Operations Center well – informed.

- Appoint and assign public relations staffs to provide accurate information to general public and mass media as entrusted by Provincial Director.

- In case of the prolonged protest and the protesters proceed to capital city, the respective Provincial Director is obliged to notify neighboring provinces to assign police officers in a locality and highway police unit along the route which protesters will take to proceed to capital city, to keep close watch on a protester movement. In addition, the respective Provincial Director and the chief of provincial government agency concerned must proceed to capital city for collaboration action to resolve the issue with central government officials.

(2) Within Bangkok Metropolitan Jurisdiction

(2.1) Royal Thai Police has duty and authority to

- Arrange for deployment of police officers and volunteers to take charge of maintaining public safety and peace and order, prevent the spread of protest and violence as well as mal – intentioned group interference, and managing traffic flow at protest and riot site.

- Facilitate traffic flow on streets which passes through a protest site or the movement of protesters to prevent them from causing trouble to persons uninvolved.

- Activate the Royal Thai Police’s Peace and Order Maintenance Plan.

(2.2) Ministry of Interior Operations Center has duty and authority to

- Coordinate intelligence and monitor a protest situation in conjunction with National Command Headquarters.

- Coordinate with Bureau of the Royal Household, The Secretariat of the Cabinet, National Intelligence Agency, Office of the National Security Council, foreign Embassy in Thailand, and military unit regarding relevant information.

- Assign public relations staff to provide accurate information to general public and mass media as entrusted.

(2.3) Bangkok Metropolitan Command Center has duty and authority to

- Facilitate traffic flow and availability of public place, medical equipments and health services necessary for protest and riot prevention and suppression.

- Assign staffs to coordinate with National Command Headquarters regarding protest and riot prevention and suppression.

- Provide support to government agency and public enterprise which are in charge of protest and riot prevention and suppression.
 - Deploy civil defence volunteer corps to take part in maintaining peace and order in protest and riot area.
- (2.4) National Command Headquarters has duty and authority to
- Control, oversee, coordinate and support the efforts to prevent and suppress a protest and riot nationwide in conjunction with government agency, public enterprise, private organization, and people.
 - Function as Emergency Operations Center for protest and riot management.
 - Government agency and public enterprise are obliged to assign the officials to collaborate with Local Command Center in negotiation solution to end protest and riot, as well as following up the progress of problem solving.

28.5.3 Post – Disaster

The designated disaster management mechanisms are required to take the following actions.

- (1) National Command Headquarters in conjunction with Royal Thai Police, other government agencies concerned and public enterprise arrange for transportation of protesters to place of origin.
- (2) Local Command Center, in conjunction with government agency and public enterprise continue to follow up to ensure the problem is rapidly and fully solved.
- (3) Conduct psychological operations and public relations campaign to make people understand the accurate fact of problem solution and create people's positive attitude about government performance.
- (4) Repair and restore damaged facilities caused by protest and riot to normalcy.
- (5) Take legal action against law offenders.

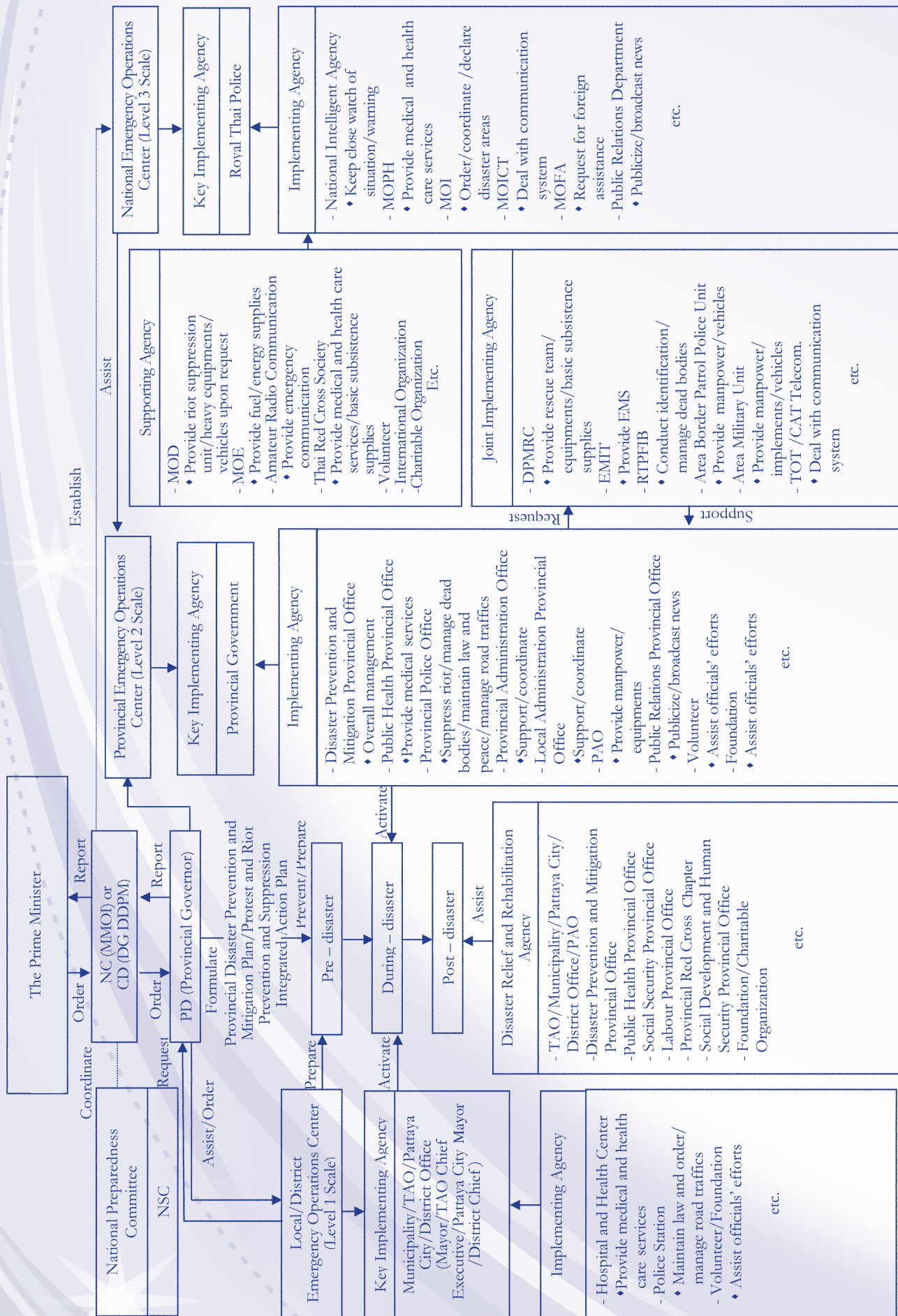


Chart 28.1 : Countermeasure Procedure against Protest and Riot and Joint Operations at Provincial Level

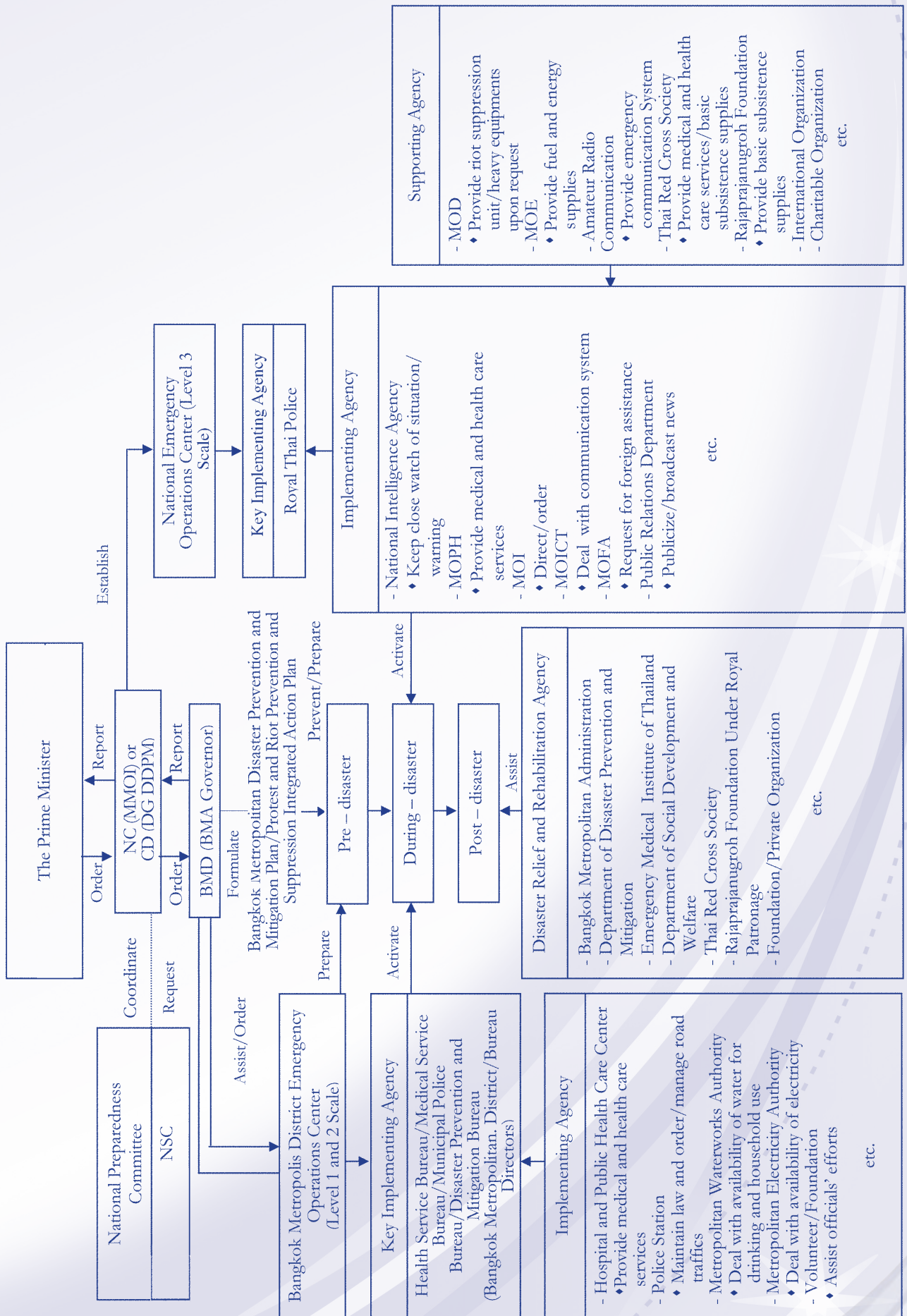


Chart 28.2 : Countermeasure Procedure against Protest and Riot and Joint Operations in Bangkok



APPENDIX





Annex: Disaster Prevention and Mitigation Measures

First Strategy: Prevention and Impact Reduction					
Measures	Main Activities	Key Agency	Supporting Agency	Remark	
1.1 Development of disaster management information system to facilitate the creation of advanced disaster database system capable of connecting to database servers of all agencies concerned both at national and local levels as well as international organization	1.1.1 Establish disaster information center.	DDPM	MOICT/NSC/all Ministries/International Organization		
	1.1.2 Install disaster information network system to link into the existing system of other related government agencies nationwide.	DDPM/NDWC/TMD/ MOICT/NSC/Pro./BMA/District/LAO/NGOs/International Organization	MOD/DOLA/RTP/all Ministries/Private Sector/Foundation		
	1.1.3 Connect disaster information network system of government agency to international organization's system.	MOICT/MOFA/International Organization	DDPM/MOD/Private Sector		
1.2 Area at risk prevention which is compatible with disaster risk exposure level	1.2.1 Conduct risk assessment and prepare flood risk map.	DDPM/DWR	RID/LDD/DDR/NTN/TDM		
	1.2.2 Conduct risk assessment and prepare landslide risk map.	DMR/LDD	TMD/DDPM		
	1.2.3 Conduct risk assessment and prepare a tropical cyclone risk map.	TDM/DDPM	-		
	1.2.4 Conduct risk assessment and prepare fire risk map.	DDPM/PWTCP/BMA	Prov./District/LAO		
	1.2.5 Conduct risk assessment and prepare risk map of area prone to chemical and hazardous material incident.	FDA/DDPM/DIW	Prov./District/LAO		
	1.2.6 Conduct risk assessment and prepare drought risk map.	DWR/LDD/DDPM/NPWL	RID		
	1.2.7 Conduct risk assessment and mapping forest fire and haze risk zone.	NPWL/RFD	Other Government Agencies Concerned		

First Strategy: Prevention and Impact Reduction				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
1.3 Development of main plan and action plan for each hazard	1.2.8 Conduct risk assessment and prepare earthquake risk map.	DMR/DDPM/TMD	Higher Education Institute	
	1.2.9 Conduct risk assessment and prepare tsunami risk map.	DDPM	HDRTN/Other Government Agencies Concerned	
	1.2.10 Conduct risk assessment and prepare mines and landmine risk map.	TMAC	Other Government Agencies Concerned	
	1.3.1 Formulate "Flood and Landslide Prevention and Mitigation Master Plan and Action Plan".	DDPM/DWR/DMR/ RID	Other Government Agencies Concerned	
	1.3.2 Formulate "Tropical Cyclone Prevention and Mitigation Master Plan and Action Plan".	DDPM/TMD	Other Government Agencies Concerned	
	1.3.3 Formulate "Fire Prevention and Mitigation Master Plan and Action Plan".	DDPM/PWTCP	Other Government Agencies Concerned	
	1.3.4 Formulate "Strategy Plan for Chemical and Hazardous Material Safety" and supplementary action plan.	MOPH/DDPM	Other Government Agencies Concerned	
	1.3.5 Formulate "Forest Fire and Haze Prevention and Mitigation Master Plan and Action Plan".	MONRE	Other Government Agencies Concerned	
	1.3.6 Formulate "Drought Prevention and Mitigation Master Plan and Action Plan".	LDD/NPWLF	Other Government Agencies Concerned	
	1.3.7 Formulate "Cold Spell Prevention and Mitigation Master Plan and Action Plan".	DDPM	Other Government Agencies Concerned	
1.3.8 Formulate "Earthquake Preparedness and Mitigation Master Plan and Action Plan".	DDPM	Other Government Agencies Concerned		
1.3.9 Formulate "Tsunami Prevention and Mitigation Master Plan and Action Plan".	DDPM	Other Government Agencies Concerned		
1.3.10 Formulate "Human Epidemic Prevention and Control Master Plan and Action Plan".	MOPH	Other Government Agencies Concerned		

Annex: Disaster Prevention and Mitigation Measures

First Strategy: Prevention and Impact Reduction				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
	1.3.11 Formulate “Plant Epidemic and Pest Prevention and Control Master Plan and Action Plan”.	DOA/DOAE	Other Government Agencies Concerned	
	1.3.12 Formulate “Animal and Aquatic Animal Prevention and Control Master Plan and Action Plan”.	DLD/DOF	Other Government Agencies Concerned	
	1.3.13 Formulate “Technology Information Threat Prevention and Mitigation Master Plan and Action Plan”.	MOICT	Other Government Agencies Concerned	
	1.3.14 Formulate “Global Warming Prevention and Mitigation Action Plan”.	DDPM/NREP	Other Government Agencies Concerned	
	1.3.15 Formulate “National Strategic Plan for Avian Influenza Control and Influenza Epidemic Preparedness”.	MOPH	Other Government Agencies Concerned	
	1.3.16 Formulate “National Counterterrorism Policy”.	NSC	Other Government Agencies Concerned	
	1.3.17 Formulate “Road Safety Master Plan”.	DDPM	Other Government Agencies Concerned	
	1.3.18 Formulate “Marine Safety Master Plan”.	MD/DDPM	Other Government Agencies Concerned	
	1.3.19 Formulate “Action Plan for Disaster Relief Operations”.	DDPM	Other Government Agencies Concerned	

First Strategy: Prevention and Impact Reduction				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
1.4 Promotion of disaster knowledge, perception and awareness of the general public including self-protection techniques through appropriate learning process.	1.4.1 Formulate “Disaster Education and Public Awareness Creation Plan”.	DDPM/MOED/PRD/ Educational Establishment	DDPM/Other Government Agencies Concerned	
	1.4.2 Develop disaster education curriculum of educational establishment and workplace.	MOED/MOL/DDPM/ Educational Establishment	DDPM/Other Government Agencies Concerned	
	1.4.3 Organize training programme to increase teaching staffs’ and students’ disaster management knowledge.	MOED	DDPM/Local Educational Establishment/LAO/ Other Government Agencies Concerned	
	1.4.4 Develop disaster education curriculum and prepare textbook, teaching material, printed media, etc. for disseminating disaster knowledge to students of all levels.	DDPM/MOED	Other Government Agencies Concerned/ Private Sector	
	1.4.5 Arrange specific training programme for youth disaster volunteer.	DDPM/MOED	Other Government Agencies Concerned	
	1.4.6 Arrange for promotion of disaster education in workplace.	DSD/LPW	DDPM/Prov./LAO	
	1.4.7 Prepare disaster handbook and public relations materials for distribution to general public.	DDPM/DMR/DWR/ Prov./District/Educational Establishment	PRD/Mass Media/ Private Sector	
	1.4.8 Disseminate disaster knowledge and information on safety measure to general public through the use of printing material.	DDPM/PRD	Other Government Agencies Concerned	

Annex: Disaster Prevention and Mitigation Measures

First Strategy: Prevention and Impact Reduction					
Measures	Main Activities	Key Agency	Supporting Agency	Remark	
1.5 Application of structural measure for disaster prevention	1.5.1 Improve road accident black spot to reduce traffic accident.	DOH/DRR	DOLA/LAO/ DDPM/ Other Government Agencies Concerned		
	1.5.2 Arrange for road network improvement and maintenance for disaster prevention and mitigation purpose.	DOH/DRR	DOLA/LAO/ DDPM/ Other Government Agencies Concerned		
	1.5.3 Construct and rehabilitate water resource to solve drought and flood problem.	MONRE/MOAC/MOT/ DDPM	LAO/Other Government Agencies Concerned		
	1.5.4 Construct check dam to solve flood, drought and landslide problems and to conserve ecosystem.	DDPM/NPWLF/LAO	MONRE/Private Sector		
	1.5.5 Construct wall or embankment or breakwater to prevent erosion.	PWTCP/DMR/NPWLF	Prov./District/LAO		

Second Strategy: Preparedness Arrangement				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
2.1 Preparation of Disaster Prevention and Mitigation Plan at all levels from national to local level	2.1.1 Formulate “Disaster Prevention and Mitigation Plan” at all levels from national to community level.	DDPM/Prov./BMA/ LAO	Other Government Agencies Concerned	
	2.1.2 Interlink disaster prevention and mitigation plan with action plan of each agency concerned.	DDPM/ District/LAO/ Prov.	NSC/MOD/ Other Government Agencies Concerned/ Private Sector	
2.2 Development of forecast and warning systems at all levels from national to local level	2.2.1 Develop a technology for forecasting and warning at every level.	MOICT/DDPM/TMD/ NDWC/HDRTN/RID/ DWR	DOLA/Prov./ District/ LAO	
	2.2.2 Interconnect warning and warning information dissemination systems between all agencies concerned both at national and local levels.	MOICT/NDWC/DWR/ HDRTN/DDPM/DMR/ TMD	RID/PRD/Prov./ District	
2.3 Strengthening the capacity of communication system	2.3.1 Promote and develop the application of local wisdom for disaster warning communication system.	DDPM/DOLA/DMR	LAO/Prov./District/ Amateur Radio Association/NGOs	
	2.3.2 Establish main and auxiliary disaster communication systems.	MOICT/DDPM/MOPH/ MOI/TMD	MOD/DOPA/Prov./ District/Amateur Radio Association/ Private Sector	
2.4 Conducting disaster exercise at all levels	2.3.3 Provide the main and standby communication equipments.	MOICT/DDPM/MOPH/ MOI/TMD	MOD/DOPA/Prov./ District/Amateur Radio Association/ NGOs	
	2.4.1 Continuously organize disaster exercise at least once every year.	DDPM/Prov./District/ LAO	NSC/MOD/Other Government Agencies Concerned	

Annex: Disaster Prevention and Mitigation Measures

Second Strategy: Preparedness Arrangement				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
2.5 Preparation and stocking of basic necessities for distribution to affected people	2.5.1 Prepare relief items which include basic necessities, medical supplies and other essential appliances.	DDPM/MOSDHS/MOPH/Thai Red Cross Society	Prov./District/ Foundation/Private sector	
	2.5.2 Arrange for systematic delivery of relief items to affected people.	DDPM/MOSDHS/MOT/ Prov./LAO/Thai Red Cross Society	MOD/ Other Government Agencies Concerned/Private Sector	
	2.5.3 Systematize procedures for collecting monetary and in-kind donations.	DDPM/MOSDHS/Prov./ LAO/Thai Red Cross Society	Other Government Agencies Concerned	
	2.5.4 Prepare spaces for the storage of relief items.	DDPM/MOPH/MOSDHS/ Thai Red Cross Society	Other Government Agencies Concerned	
2.6 Preparation of equipments and energy supply to support disaster operations	2.6.1 Create database on disaster management heavy equipment, vehicle and tool in possession of network organizations.	DDPM/MOPH/BMA/LAO	MOD/Prov./District/ Other Government Agencies Concerned	
	2.6.2 Design a standard fleet of mechanical equipment for use in disaster management compatible with an agency's assigned task.	DDPM	Prov./District/ Other Government Agencies Concerned/Private Sector	
	2.6.3 Procure disaster management heavy equipment and device.	DDPM/MOPH/BMA/LAO	MOD/Prov./ District/ Other Government Agencies Concerned/Private Sector	

Second Strategy: Preparedness Arrangement				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
	2.6.4 Conduct the local administration organization zoning to facilitate the joint utilization of disaster management equipment and device.	DDPM/LAO	Prov./District/ Other Government Agencies Concerned/ Private Sector	
	2.6.5 Conduct research and development to enhance a capacity of disaster management equipments and to ensure their compatibility with condition of area at risk.	DDPM/MOPH/BMA/LAO	MOD/Prov./ District/ Other Government Agencies Concerned	
	2.6.6 Develop equipment management system for local administration organization.	DDPM/LAO	Public Enterprise/ Other Government Agencies Concerned/ Private Sector	
	2.6.7 Prepare to secure energy supply.	MOE	Public Enterprise/ Other Government Agencies Concerned/ Private Sector	
2.7 Preparation of disaster management personnel	2.7.1 Develop training system and curriculum for disaster management personnel.	DDPM/DMR/DWR/BMA/MOPH	Other Government Agencies Concerned/ Educational Establishment	

Annex: Disaster Prevention and Mitigation Measures

Second Strategy: Preparedness Arrangement				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
2.8 Strengthening disaster management preparedness of local administration organization	2.7.2 Conduct specific training for disaster management personnel.	DDPM/DMR/DWR/BMA/MOPH	Other Government Agencies Concerned/Educational Establishment	
	2.7.3 Conduct specific training to enhance capacity and skill of Emergency Response Team.	DDPM/BMA/TAT/RTP	MOD/Other Government Agencies Concerned/International Organization	
	2.7.4 Set up the volunteer corps and conduct a specific training to enhance their capacity and skills.	DDPM/DOPA/DOLA	Prov./District/LAO/Foundation/Private Sector	
	2.8.1 Prepare disaster risk area database and create risk map at community and household levels.	Prov. /District/LAO	DDPM/DOLA/ DMR/NPWL	
	2.8.2 Formulate an evacuation plan and conduct evacuation drill.	Prov. /District/LAO	DDPM/DOLA	
	2.8.3 Put in place disaster warning information transmission system in the villages at risk.	DDPM /DMR/DWR/LAO	DOPA/Prov./District	
	2.8.4 Initiate village – based disaster warning network and provide equipment required for disseminating warning information.	DDPM/DMR/DWR/ LAO	DOPA/Prov./District	
	2.8.5 Set up Tambon Search and Rescue Teams and conduct specific training to enhance their capacity and skills as well as providing required equipments.	DDPM/MOPH/LAO	DOPA/Prov./District	
	2.8.6 Apply community-based disaster risk management approach in conducting public training programme.	DDPM/LAO/Thai Red Cross Society/ International Organization	DOLA/CDD/Prov./ District	

Second Strategy: Preparedness Arrangement				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
	2.8.7 Conduct training for disaster management personnel of local administration organization.	DDPM/LAO	BMA/TAT/Other Government Agencies Concerned/Private Sector	
	2.8.8 Develop and strengthen community capacity through “Building Community Disaster Resilience and Preparedness Programme”.	Prov./District/LAO	DDPM/DOLA/CDD/Other Government Agencies Concerned	
	2.8.9 Conduct training for marine search and rescue personnel, and arrange for provision of required equipments.	Prov./District/LAO	Other Government Agencies Concerned	
	2.8.10 Prepare community planning or arrange for safe area to accommodate the evacuees.	PWTCP	Prov./Other Government Agencies Concerned	
	2.8.11 Prepare and designate helipad on tourist destination islands.	Prov./District/LAO	MOD/MONRE/MOTS/DOLA/DDPM	

Annex: Disaster Prevention and Mitigation Measures

Third Strategy: Disaster Emergency Management				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
3.1 Setting up Command Center at all levels	3.1.1 Establish “Disaster Management Information Center”.	DDPM/Prov./District/ LAO	NSC/MOD/Other Government Agencies Concerned	
	3.1.2 Manipulate disaster management information in support of incident commanding.	MOICT/NSC/NDWC/ DDPM/TMD	Other Government Agencies Concerned	
3.2 Ensure interoperability of communication system in face of disaster	3.2.1 Set up “Emergency Management Communication Center”.	MOICT/DDPM/ NDWC/TMD	MOD/NSC/DOPA/ Other Government Agencies Concerned	
	3.2.2 Interconnect disaster communication networks in support of warning information dissemination and incident commanding.	MOICT/DDPM	MOD/NSC/DOLA/ DOPA/Amateur Radio Association/Private Sector	
3.3 Synergy of efforts to conduct relief operations and control a situation	3.3.1 Control a situation and conduct search and rescue operations. During the first 24 hours, the focus of disaster assistance efforts encompasses searching for survivors, providing medical treatment to injured persons, distributing basic necessities such as drinking water, cooked foods, clothing etc. to affected people.	DDPM/Prov./District/ LAO	MOD/NSC/MOICT/ NDWC/TMD/DOLA/ RTP/Other Government Agencies Concerned/ Private Sector/ Foundation	
	3.3.2 During 24 – 48 hours after an occurrence of disaster, the assistance efforts focus on searching for survivors and property, seeking for disaster victims’ relatives, erecting temporary shelters, providing medical treatment, managing dead bodies, providing food, drinking water, medicine, cooking utensils etc., and collecting and compiling data on post disaster situation.	DDPM/Prov. /District/ LAO	MOD/NSC/MOICT/ NDWC/TMD/DOLA/ RTP/Other Government Agencies Concerned/ Private Sector/ Foundation	

Third Strategy: Disaster Emergency Management				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
	3.3.3 During 48 – 72 hours after an occurrence of disaster, the assistance efforts focus on searching for survivors, seeking for disaster victims' relatives, erecting temporary shelters, providing medical treatment, managing dead bodies, distributing cash and non-cash compensation, searching for property, preparing disaster relief assistance database, and setting up mobile social security unit.	DDPM/Office of Social Security/Prov./District/LAO	MOD/NSC/MOICT/NDWC/TDM/DOLA/RTP/Other Government Agencies Concerned/Private Sector/Foundation	
	3.3.4 Arrange for efficient and timely delivery of disaster relief items.	MOT/DDPM	MOD/Other Government Agencies/Private Sector/Foundation	
	3.3.5. Conduct emergency repair of damaged infrastructures such as road, communication system, water and power supplies etc., to facilitate an access and disaster assistance efforts.	DDPM/DOH/DRR/EGAT/PEA/PWA/Agencies Concerned	MOD/MOICT/Prov./District/LAO/Other Government Agencies Concerned	
	3.3.6 Maintain peace and order, and manage traffic flow in disaster stricken area.	RTP	MOD/Prov./ District/LAO/Other Government Agencies Concerned	
	3.3.7 Set up “Disaster Victims Data Center” as a focal point for coordinating and providing relevant data and information.	MOICT/DDPM	Prov./District/LAO	
	3.3.8 Coordinate with international organization to request for emergency assistance.	MOFA/DDPM	-	

Annex: Disaster Prevention and Mitigation Measures

Third Strategy: Disaster Emergency Management				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
3.4 Provision of medical service to people affected by disaster	3.4.1 Organize emergency medical services system and public health services to ensure systematic, efficient and timely service.	MOPH	Medical Sciences Institute/Other Government Agencies Concerned/Private Sector	
	3.5 Dead body management			
3.6 Public relations campaigns	3.5.1 Set up temporary mortuary and prepare equipments required for storage of dead body awaiting for further proceeding.	RTP/Prov./LAO	Forensic Science Institute/Foundation/Volunteer	
	3.5.2 Conduct preliminary visual inspection of dead body, record the findings, collect and secure physical and environmental evidences and transfer dead body to the designated mortuary.	RTP	Forensic Science Institute/Foundation/Volunteer	
	3.5.3 Conduct preliminary autopsy on dead body, record concerned data, secure trace evidences and prepare for dead body identification.	RTP	Forensic Science Institute/Foundation/Volunteer	
	3.6.1 Set up media center.	PRD/DDP/Prov.	Mass Media	
	3.6.2 Prepare accurate information concerning disaster situation, and periodically disseminate to keep the general public well - informed and to reduce their panic.	PRD/DDP/Prov./Mass Media	MOD/RTP/Prov./District/LAO/Private Sector	
	3.6.3 Launch public relations campaigns to assure people affected by disaster of equal access to government relief assistance programmes.	PRD/DDP/Prov./Mass Media	MOD/RTP/Prov./District/LAO/Private Sector	

Fourth Strategy: Post – Disaster Management				
Measures	Main Activities	Key Agency	Supporting Agency	Remark
4.1 Provision of relief assistance to affected people	4.1.1 Conduct initial damage assessment survey.	DDPM/Prov./BMA/Pattaya City/LAO	DOLA/DOPA	
	4.1.2. Conduct needs assessment survey.	DDPM/Prov./BMA/Pattaya City/LAO	DOLA/DOPA	
	4.1.3 Distribute compensation and subventions to affected people.	DDPM/MOAC/MOPH/MOSDHS/Prov./District	-	
	4.1.4 Erect temporary shelter and construct permanent houses.	DDPM/Prov./LAO	Foundation/Private Sector	
4.2 Provision of rehabilitation service to affected people, domesticated and wild animals	4.2.1 Rehabilitate the mental health of affected people to return to normalcy as soon as possible.	Department of Mental Health	MOSDHS/Prov./BMA/Pattaya City/Other Government Agencies Concerned	
	4.2.2 Improve livelihoods of affected people through a provision of occupational training and creation of job opportunities.	MOL/MOSDHS	Prov./BMA/Pattaya City/Other Government Agencies Concerned	
	4.2.3 Provide assistance to rehabilitate large – scale enterprise and microenterprise.	MOF/MOIN	Financial Institution	
	4.2.4 Assist and rehabilitate affected domesticated and wild animals.	NPWLF/DLD	Foundation	
4.3 Restoration of damaged public facilities and utilities	4.3.1 Repair and rehabilitate damaged government office, educational establishment, tourist attractions site, and public utility to resume normal function as soon as possible.	MOT/MOI/MOE/MONRE	Other Government Agencies Concerned/Private Sector	
	4.3.2 Conduct inspection of damaged buildings and other structures.	PWTCP/BMA/LAO	-	

Annex: Disaster Prevention and Mitigation Measures

Fourth Strategy: Post – Disaster Management					
Measures	Main Activities	Key Agency	Supporting Agency	Remark	
4.4 Rehabilitation of damaged basic infrastructure facilities	4.4.1 Repair and rehabilitate damaged road and bridge to pre-disaster condition.	MOT/Prov.	DDPM/DOLA/LAO		
	4.4.2 Repair and rehabilitate all types of damaged water resource facilities.	RID/DWR/DDPM/Department of Land	Prov./District/LAO		
4.5 Rehabilitation of damaged environment	4.5.1 Rapidly and efficiently contain the outbreak of epidemic in disaster stricken area.	MOPH (Dept. of Disease Control and Dept. of Health)	Prov./BMA/Pattaya City/Other Government Agencies Concerned		
	4.5.2 Restore damaged environment and ameliorate pollution to meet acceptable level.	PCD/DEQP/Dept. of Health	Prov./BMA/Pattaya City/Other Government Agencies Concerned		
4.6 Report and Evaluation	4.6.1 Prepare damage assessment report.	DDPM/Prov./BMA/Pattaya City/LAO	-		
	4.6.2 Monitor and evaluate the progress of relief assistances and rehabilitation efforts.	DDPM/OPM	Prov./BMA/Pattaya City/LAO		
4.7 Appeal for rehabilitation assistance from international organization	4.7.1 Prepare and submit request for special assistance to foreign agencies.	MOFA/DDPM	Other Government Agencies Concerned/International Organization		
4.8 Learning lesson from past disaster	4.8.1 Collect and analyze data relating method and techniques employed in handling disaster in the past to achieve guidelines useful for future disaster management.	TRF/Higher Educational Establishment/DDPM/Other Government Agencies Concerned	MOED/ International Organization/ Foundation		
	4.8.2 Arrange for documentation of major disaster events/construction of disaster memorial.	DDPM/Prov.	International Organization/ Foundation		



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ISBN 978-974-458-339-0



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