

4 Thailand in the midst natural disasters

It is often said Thailand is luckier than other countries in the region as natural disasters are infrequent and when they do happen, the consequences are mild.¹ However, this conventional knowledge may no longer be true. As the world is reeling from climate change, global warming, rising sea levels and intensifying natural disasters, to which humans have contributed, Thailand is also increasingly suffering the consequences.



<http://www.isnhotnews.com>



<http://4.bp.blogspot.com/>



<http://www.howmanypeopledied.net>

As natural disasters are causing unprecedented damage, it is surely time for Thailand also to review its preparedness in dealing with such occurrences that have intensified over the past ten years and will become even more frequent in the future.

Disasters in the backyard

Thailand Meteorological Department classifies natural disasters into 8 categories, namely: tropical cyclones, earthquakes, floods, thunderstorms, landslides, storm surges, wildfires and droughts.² Some of these natural disasters are regular occurrences whilst others, for example earthquakes, are rare.

There are even rarer natural disasters that only happen once in a century or millennium. One example is a meteor disaster that happened in

February 2013 when a 7,000-ton meteor exploded 30–50 kilometers over Chelyabinsk in Russia’s Ural region. The explosion spread over more than 100,000 square meters damaging more than 3,000 buildings whilst around 1,100 people were injured generally by broken glass.³

This blast warned of the need for a planet-wide strategy to handle this kind of extraterrestrial danger. In particular, the number and orbits of meteors bigger than 30 kilometers in diameter need to be mapped out as their impact with Earth would cause planet-wide extinction similar to what happened to dinosaurs millions of years ago. In addition, there are many meteorites little known to astronomers.⁴

Internationally, disasters can be classified into natural, epidemic or man-made occurrences. The latter category include wars, riots or destruction of natural resources. For Thailand, the

Disasters in Thailand by category

Category (period)	Number of occurrences	Damages		
		Injuries	Deaths	million baht
Floods (1989–2011) ^a	>40,000	>2,000	>2,000	12,591,810
Tsunami (2004) ^b	1	11,775	5,401	44,491
Mudslides (1988–2012) ^c	35	>500	541	>2,053
Storms (1989–2009) ^d	36,024	1,367	842	505,155
Fire (1989–2009) ^d	46,986	3,775	1,635	2,441,861
Droughts (1989–2009) ^d	No data	No data	No data	1,331,474
Transportation-related hazards (1989–2009) ^e	1,771,018	1,135,923	248,357	39,762
Wildfires (1998–2009) ^f	60,307	>1,027,288 <i>rais</i> in 60 provinces		

Source: Thai Health. 2012. Modified from 18 Disasters Facing Thailand and Risk Managements. 12 October 2012. Retrieved on 27 January 2013, from Thai Publica online newspaper website: <http://thaipublica.org/2012/10/18-disaster-risk>

^a Department of Disaster Prevention and Mitigation, and Thai Health 2012 titled “The Greatest Flood of a Century: Warnings for Change) *Thai Health 2012* (pp. 34–40). Nakhonpathom: IPSR, p. 38.

^b Research and International Cooperation Bureau, Department of Disaster Prevention and Mitigation

^c Do not occur every year. More details at Bureau of Environment Geology, Department of Natural Resources. 30 March 2012. “Landslide records”. Retrieved on 27 January 2013 from website: www.dmr.go.th/download/Landslides/event_landslide1.htm

^d Disaster Mitigation Directing Center, Department of Disaster Prevention and Mitigation.

^e Central Information Technology Center, Royal Thai Police.

^f Forest Protection and Fire Control Office, National Park, Wildlife and Plant Conservation Department.

Ministry of Interior's Disaster Mitigation Directing Center classifies disasters in similar way to the Meteorological Department. The Center also collects and utilises data on non-natural disasters such as transportation-related disasters, emerging and re-emerging diseases, disasters caused by insects, animals and pests, fires, hazards from chemicals and other hazardous materials as well as drought and unusually cold conditions.

From the table, floods appear to cause more damages in Thailand when compared to other disasters, particularly the great floods of 2011. However, more people are killed and injured by motor vehicle accidents that rank among the top causes of death in Thailand. Such incidents also result in damages to families and society, medical expenses, loss of labour and productivity as well as emotional and economic distress to families. Ninety percent of motor accidents are caused by negligence, traffic rule violations and drunkenness.

Meanwhile, the Northern region of Thailand suffers from smoke caused by wildfires every dry season. This situation has become worse since 2007 seriously affecting the health of local populations. Dr. Phongtape Wiwatanadate, Director of Chiangmai University's Air Quality Management and Research Center, revealed that Chiangmai residents are seven times more at risk of lung cancer than the general population and the risk will only increase in the future.⁵

Many natural disasters are exacerbated by men. An obvious example was the mudslide in Nakhon Si Thammarat's Ban Katoon Nua village on 22nd November 1988. Carrying along logs and other debris, the landslide caused wide destruction reaching as far as Ban Kiriwong which, like Ban Katoon Nua, is a low-land area surrounded by mountains. The disaster caused 230 casualties, damaged around 1,500 houses and 6,150 *rais* of farmland and results in total damage of around 1 billion baht.⁶

More recently, the heavy rains from 10th to 11th August 2001 at Phetchaboon's Ban Nam Kor village caused a landslide that wiped out many houses and killed 147 persons.⁷ *Both tragedies were a result of deforestation that reduced the water-holding capacity of the soil and this causing abrupt landslides.*

Another human aggravation increasing the risk of natural disasters is construction and 'development' that obstructs waterways. A serious flood occurred in Hat Yai between 21st to 23rd November 2000 as the floodways that used to flow from U-Taphao canal and Hat Yai to Songkhla Lake were replaced by the Lopburi Ramesuan Road (built in 1990), Airport-Kuanlang Road and railway tracks. Meanwhile other canals had become shallower, leaving low-lying Hat Yai District vulnerable. This big flood caused more than 10 billion baht in economic damages and the death toll was officially put at 35, not including foreigners (An unofficial death count was however as high as 233).⁸

It seemed that Thailand had become so used to such natural disasters that recurring damages did not translate into awareness and preparedness. This complete complacency, however, suddenly changed on 26th December 2004 when a massive earthquake west of Sumatra in Indonesia caused a tsunami that devastated six Andaman coast provinces.

Tsunami: A Wakeup Call

Most Thais feel earthquakes to be a remote matter. But as a matter of fact, people who settled in Thailand have long faced earthquakes, as can be gleaned from stories, legends, inscriptions and historical annals. For example, the Ngoen Yang Chiang Saen annals tell of repeated earthquakes in 1015 that flattened the city of Yonok into a swamp while the Nan annals record an earthquake that rocked and toppled the tops of several stupas



and viharas in the Lanna region including Nan, Chiangmai, Lampoon, Lampang, Phrae and Payao. Dr. Bradley also recorded an earthquake that originated in Burma that was felt in Bangkok in 1839 during the reign of King Rama III.⁹

These historical records have never been used by modern Thailand as a foundation of knowledge and preparedness to handle earthquakes. Most Thais only know about the occasional mild tremors and the 14 groups of fault lines in 22 provinces.¹⁰

As earthquakes are felt to be remote, Thailand was left off guard when a 9.3-richter earthquake occurred at a depth of 28.6 kilometers in the ocean west of Northern Sumatra in Indonesia on 26th December 2004. With energy equivalent to 23,000 times the Hiroshima atomic bomb¹¹, a resulting tsunami ravaged many countries ringing the Indian Ocean including Indonesia, Sri Lanka, India, Thailand, Somalia, Maldives, Myanmar, Tanzania, Bangladesh and Kenya. In Thailand, six provinces (Phuket, Phangnga, Ranong, Krabi, Trang and Satun) faced the worst tsunami in the Andaman Sea's history without any protection or preparedness.

Paying the price of ignorance means a high number of casualties, as Thai people learned for the first time the danger of tsunamis. According

to the Department of Disaster Prevention and Mitigation's Research and International Cooperation Bureau, this tsunami killed 5,401 people, injured 11,775 whilst 2,921 persons went missing. The total damage was put at 44,491 million baht–14,491 million in physical damages and 30,000 million in economic and tourism losses.¹² In addition, the tourism industry was destroyed along with local fisheries, natural resources and much coastal environment.

The 2004 tsunami ranks amongst the most deadly natural disasters in modern history killing more than 230,000 people in 14 countries whilst 44,000 more are still missing. The most affected countries were Indonesia, Sri Lanka, India and Thailand respectively with total damages of approximately US\$2.8 billion or 840 billion baht.¹³

As a result of the tsunami, Thailand started to implement multi-level preparedness for tsunamis in order to reduce losses to life and property. These measures included national and local warning systems, awareness-raising campaigns to educate the public and evacuation plans.

While the tsunami was a wakeup call to people living on the Andaman Coast, the 2011 floods played the same role providing a wakeup call for those living in the Chao Praya plains.

The Great Floods of Urban Suffering

According to the Department of Disaster Prevention and Mitigation, total flood damages in Thailand amounted to 130 billion baht from 1989 to 2010. The year 2010 was the year with the highest damage at 16.338 billion baht.¹⁴ This amount, however, pales into insignificance in the face of what would occur in 2011.

Beginning in June 2011, heavy rains from several tropical storms including “Hai Ma”, “Nok Ten”, “Hai Tang”, “Nesat” and “Nalgae”¹⁵ put Northern Thailand in distress early in the rainy season. Flooded areas expanded down the Central Region as the government failed to cope with the vast volume of water. Already retaining the biggest volumes of water in their history, large dams including Bhumiphol, Sirikit and Pasak were unable to deter the flow and had to release flood water downstream unopposed. Had the Irrigation Department released some water during the August lull, the disaster would have been mitigated.

The immediate question that required answering in the face of these floods was *whether there was water mismanagement*. Theera Wong-samut, then Minister of Agriculture and Cooperatives, admitted in a Parliamentary session that his agency ordered the delay of water release to allow rice farmers to harvest.¹⁶ Soon after, the Electricity Generating Authority of Thailand issued a statement that the release of water from Bhumibol and Sirikit Dams did not cause the floods.¹⁷ Even today, two years later, such questions still remain unanswered.

The vast volume of water that existed at that time continued down the Chao Praya plains unopposed. After dikes burst, Nakhon Sawan was flooded. This was a warning for people in the capital of Bangkok further downstream where drainage channels such as rivers and canals in the path were in similarly neglected un-dredged conditions and obstructed by various constructions

including buildings and bridges. Compounded with disorganised water management, the draining of flood water was at best chaotic at that time.

Mr Premisiri Kasemsan, Director of Bangkok’s City Planning Department, said that the previous Bangkok Metropolitan Administration Ordinance No. 25 designated as water draining areas the 72 square kilometers beyond the dikes in Minburi, Nong Chok, Lad Krabang and Klong Sam Wa. However, that area is now full of water obstructions including the Suvarnabhumi International Airport, Lad Krabang Industrial Estate, a Motorway and Bangna–Trad Road, essentially turning this designated water draining area into a water-retaining area.¹⁸

Along with the attack of the quickly expanding floods, chaos descended on Bangkok and neighboring Pathum Thani and Nonthaburi provinces. High-rise public spaces like expressways and crossovers were turned into parking lots by panicking car owners, leaving little room for transportation. Evacuation orders were repeated to deaf ears as some people refused to leave their houses for fear of burglary and continued to live on the upper floors or roofs of buildings. Food and water were in shortage. Electricity and tap water were cut. The large amount of distributed relief bags failed to meet demand.

With no experience of living with water, *the number of deaths from drowning during the floods was as high as 1,085. Shockingly, 155 (14.3%) of these persons died from electrocutions*, mostly in Bangkok Metropolitan area. This chaos caused the Ministry of Public Health’s Bureau of Epidemiology to conduct a study for the purpose of prevention as the percentage of flood-related electrocution deaths should be lower than 3% of all electrocution cases.¹⁹

Ironically, the Flood Relief Operation Center (FROC) formed by the government to coordinate relief operation was submerged under water at its location in Don Muang Airport leaving relief bags floating in the water.

With the water showing no sign of receding, popular pressure mounted at water gates around Bangkok. Several were forced to open and shut at the whim of local masses. Sandbags and dikes were destroyed as fast as they were built. As a result, Prime Minister Yingluck issued Directive no. 17/2011 on 20th October 2011 to designate Bangkok as a “serious disaster zone” according to the Disaster Prevention and Mitigation Act 2007, thus ordering the police force to maintain public order and prevent people from destroying the Klong Sam Wa draining gate, its equipment, structures, ground or sandbag dikes.²⁰

However, this order was not heeded as the demolition of dikes continued. In particular, the demolition of Don Muang dikes by local masses led by Pheu Thai Party MP Karun Hosakul on 20th October 2011 flooded and contaminated the water canal used for the production of tap water²¹, causing the quality of tap water to fall below WHO standards.²²

Eventually, the flooding situation ended in January 2012, leaving behind a massive garbage mountain in Bangkok piling up at the rate of 12,000 tonnes per day.²³ The World Bank estimated the total damage of the floods at 1.4 trillion baht²⁴ and the amount of money needed for economic revival at 755 billion baht.²⁵

The floods affected more than 13.5 million people and a total area of 150 million *rais* in 65 provinces.²⁶ Seven industrial estates were submerged under water. The total amount of

industrial sector damages (both within and outside industrial estates) was 474.75 billion baht with the heaviest damages in electronics and automobile industries. The floods also affected 285,000 SMEs. The amount of damage in the agricultural sector was put at 270 billion baht whilst infrastructure suffered 220 billion baht in damages, especially transportation infrastructure.²⁷

The Department of Disaster Prevention and Mitigation began to pay out compensations to the affected flood population according to government criteria as follows: 1) 30,000 baht for each house entirely damaged by the flood; 2) 20,000 for partial house damages; 3) 10,000 baht for loss of job opportunities; 4) 1,500 baht for rent; and 5) 25,000 baht for death rites.²⁸ However, even months after the floods, compensation payments were not completed in all areas. While several households have repaired their houses, others decided to leave them damaged, unsure whether floods would return.

The government tried to rebuild confidence by using a 12 million-baht budget to hold an exhibition entitled “Dedication to Water Management for Public Interest” from 31st August to 3rd September 2012. This was followed by a water draining drill. However, after the drill was conducted in Western Bangkok on 6th September, the eastern part of the drill had to be abruptly cancelled the following day due to heavy rain.

The bursting of dikes and flooding of Sukhothai’s Muang Municipality on 9th September



2012 also destroyed the credibility of the so-called Yingluck Model that aimed to unify all information from all water-related agencies from upstream to downstream into a “single command center”.²⁹

Drought: A Farmer’s Nightmare

Thailand has always handled seasonal disasters in a reactive piecemeal manner: relief bags for flood victims; blankets for those in cold-stricken areas; water distribution and artificial rain in the dry season when farmers are usual sufferers. According to statistics, from 1992 to 2011 the number of provinces affected by drought ranged between 51 and 60. The severest drought in 2005 affected 71 provinces and caused 7.5 billion baht in damages.³⁰

In the past, the Northeastern region was known to have suffered most from drought with the largest numbers of persons facing water shortage for domestic use and agriculture, thus resulting in damages to the largest area of agricultural products. This is due to the fact that the region lies beyond the reach of the Southwest monsoons. The situation is exacerbated in the years when no tropical cyclones pass through the area.³¹ The sandy soil and lack of soil coverage due to deforestation also contribute to the poor situation.

Today, droughts have expanded beyond the Northeastern region and become more complex. For example, Lampang province in Northern Thailand recently experienced areas of severe drought and areas of heavy flooding simultaneously.³²

Thawatchai Samrongwattana, Permanent Secretary for the Land Development Department, said that Thailand could experience desertification as soil degradation and deforestation results in high rates of soil erosion as well as an increase of saline soil. This is compounded by lower than average rainfall due to climate change.³³

The situation continues despite various government measures to address the challenge such as digging of ponds and ground water tanks, installing water pumps, distribution of giant water jars and water, initiating artificial rains giving debt moratorium to farmers and declaring areas of drought disaster. Villagers in some areas of Thailand resort to traditional superstitions such as cat parades to pray for rains at such times of drought.

National Disaster Plan for Tsunamis, Floods and Droughts

Today, tsunami preparedness appears to have made more progress with drills practiced annually. However, when an 8.6-Richter earthquake again shook northwest of Sumatra in Indonesia on 11th April 2012 with a tremor that could be felt throughout the Southern region and on Bangkok skyscrapers, it was not reported by any public television channel because they were all broadcasting a special event through the national broadcasting system known as TV Pool. This incident prompted the National Broadcasting and Telecommunications Commission to make an announcement on the criteria and guidelines for radio and television broadcasters in the event of disasters and emergencies.³⁴

The worsening smoke situation in the Northern Region of Thailand also prompted Chiangmai residents to demand the government to end yearly ad hoc measures and provide short-term, medium-term and long-term solutions.

The biggest pressure for disaster preparedness however came after the great Chao Praya plains floods of 2011 as foreign investors in the industrial sector threatened to leave the country unless the government produced concrete flood prevention plans quickly.

As a result of this pressure, the Yingluck government immediately announced a water management framework by establishing three

committees: the National Rehabilitation and Future Building Strategies Committee to discuss with and regain the confidence of investors; the Water Resources and Flood Policy Committee to draft short and long term plans; and the National Water Resources and Flood Management Committee to execute plans to prevent future floods and droughts.

Following from this, a 7th February 2012 resolution to establish a permanent “single-command” water management organisation was endorsed by a Parliamentary Act. This organisation would work at three levels: the Water Resources and Flood Policy Committee was tasked with formulating policy for the Water Resources and Flood Management Committee to implement whilst the Office of the National Water Resources and Flood Policy and Management Committee would act as a Secretariat.³⁵

The government also enacted a decree to authorise a loan of 350 billion baht for the water management plan in 17 river basins in the Northern and Central Regions and across the country as well as additional water bodies in Bangkok. This included funds for the construction of water drainage systems, designated water retention areas and small and large reservoirs with a total area of no less than two million *rais*.

In addition, the Ministry of Science and Technology’s Hydro and Agro Informatics Institute donated “Media Boxes” to local organisations to monitor water situations as a basis for issuance of warnings from community to national levels.³⁶

Regarding industrial estates, the government produced a Cabinet Resolution on 5th June 2012 authorising a budget of 3.2 billion baht to build dikes around 6 industrial estates within a two-month timeframe.³⁷

Even though PM Yingluck Shinawatra reassured the public of the water management plan by personally inspecting the single-command center system from upstream to downstream, a Bangkok Poll conducted by Bangkok University Research Center showed that as many as 69% of Bangkokians polled had zero to very low level of confidence in the government’s water management.³⁸

Civil Society’s Self-Help

As the shortcomings of the government’s disaster relief became evident in terms of limited coverage, untimeliness, bureaucracy and lack of coordination among different agencies, civil society and community groups filled in the gap.

One outstanding example was the emergence of a network for tsunami victims and community rights who worked with government agencies in installing warning systems for earthquakes, tsunami and landslides as well as providing manpower support for disasters in other parts of the country.

The great flood of 2011 also witnessed an impressive emergence of civil society movements. The comprehensive Thai Flood website (www.thaiflood.com) became *the* information center for flood victims to find latest flood situations and warnings, hotline numbers and other important flood related information. The website is still operational.

Another example was the distribution by volunteers of handbooks on the provision of care for children and families. Implemented by the Thai Health Promotion Foundation’s Children and Youth Project in collaboration with Mahidol University’s

Faculty of Veterinary Science, this handbook provided guidelines on how to care for flood victims and assess their physical and mental health problems in a timely manner.³⁹

Other government agencies also produced disaster management plans and conducted drills in accordance with risk mapping with the local Disaster Prevention and Mitigation offices acting as main coordinating bodies. For example the Chiangrai (Region 15) Disaster Prevention and Mitigation Office conducted an emergency drill with a scenario of heavy floods and a mudslide; Uttaradit Army Battalion conducted a drill with related agencies simulating helicopter rescue of disaster victims; Ang Thong Public Health Office conducted a drill with related agencies on the scenario of chemical leaks from an ice factory; and Ranong Disaster Prevention and Prevention Office coordinated a tsunami evacuation drill with Bang Ben villagers who were among those affected by the 2004 tsunami. A disaster relief drill was also conducted by the medical emergency response team (MERT), in collaboration with the military and Disaster Prevention and Mitigation officers at Chakrapong Reservoir in Pranburi. This was organised by the Ministry of Public Health's Department of Medical Sciences and the Emergency Medicine Association of Thailand to prepare for disasters such as floods, flash floods and landslides.

In an opening speech at the 4th National Health Assembly entitled "Disaster Preparedness and Health Management" on 2nd February 2012, Dr. Prawase Wasi said that Thai society will continue to face many disasters in the future whether of a natural type or other such kinds such as economic, social, environmental and political disasters.

Dr. Prawase Wasi proposed six ways to cope with such disasters⁴⁰:

1. Thai people should change their worldview, mentality and way of thinking to increase

vigilance against disasters as well as constantly update their information. Most Thais were previously unprepared and caught off guard by disasters as they were unaware of their own risks.

2. Strengthen local communities around the country for disaster preparedness and health management. Conduct local surveys of potential risks and prevention and mitigation, available tools and disaster communication strategies. Conduct regular drills.

3. All universities should have a disaster research center to study local geography and potential disasters and build close collaboration within local communities.

4. Build a communication system to share information and facts in an equitable manner.

5. Build national policy and strategy decision-making mechanisms for disasters by establishing a national disaster prevention committee chaired by the Prime Minister. In addition to members from related government agencies, the majority of the committee membership should include community leaders, representatives from academia and independent bodies who will appoint qualified person(s) to execute disaster management policies and strategies in an uninterrupted manner.

6. Enact a national disaster prevention law that integrates all disaster-related knowledge and defines the duty and responsibilities of related bodies.

Although no-one can have an idea what the next disaster facing Thailand will be and when it may happen, one thing that should be learnt from all these disasters is that Thailand is no longer immune to disasters. Floods, storms, landslides, unusually cold conditions, drought, earthquakes and tsunamis are all facts of life that have to be faced. The best way to handle these occurrences is to acknowledge the risks and prepare ourselves for them.

