



Flood of the Century: Warning of Things to Come

The worst flood in a century, in terms of water volume and number of those affected, caused severe suffering for millions of Thais and incalculable damage to the country. The World Bank estimated the damage at 1.4 trillion baht.¹ Thailand's floods were also the world's third largest disaster to beset the insurance industry in 2011.² But the Thai government's measures to address the floods and provide redress are still woefully inadequate, demonstrating the complacency at every level of Thai society in dealing with disasters. The "Flood of the Century" has become a warning of the need for a serious transformation so that Thai society can cope with future disasters in a more systemic manner than what has been seen recently.

Thailand's floods began around the end of July 2011 covering more than 150 million rais in 684 districts of 65 provinces and affecting 4,086,138 households and 13,595,192 people. 815 people were killed and 3 are still missing.³ The damage from the floods extended to all sectors of the economy including agriculture, industry, culture,

infrastructure and the environment, costing more than 1.42 trillion baht in damage. Seven industrial estates were flooded affecting 993,944 workers.⁴ 12.99 million rais of farmland and 540,000 housing units were under water.⁵ In addition, there was significant physical and mental trauma, stress, other dangers that came with the flood, evacuation

expenses and costs of repair, difficulties in daily life, food and water shortage due to panic hoarding, transportation paralysis and traffic dangers caused by kilometer after kilometer of cars left in the street on high ground.

Whither water?

Satellite images showed an enormous water volume covering the Central region coming right up to Bangkok's doorstep. The obvious question is where all the water came from.

From the usually hot and dry month of March 2011, the Northern part of the country was experiencing an unusually cool climate with sporadic rains. The coolness even extended to the Central region of Thailand for a short period. Meanwhile several areas in the South experienced heavy rainfalls with severe flooding and mudslides. The weather for Thailand had become very unusual.⁶

From June to October 2011, Thailand was in the path of five tropical storms—'Hai Ma', 'Nok Ten', 'Hai Tang', 'Nesat' and 'Nalgae'. Even though 'Nok Ten' was the only storm that directly hit the country, all of the storms exerted a strong influence on the weather trough that cut across the Northern and Central regions of the country strengthening the seasonal Southwestern storms and leading to an unbroken period of heavy rainfall.

Dr.Seri Suparathit of the Rangsit University Centre on Climate Change and Disaster and Director of Energy for Environmental Centre, Sirindhorn International Environmental Park said that the total amount of rainfalls exceeded the 1995–2006 average by 30%. The 34,000 cubic meters of run-off from August to December 2011 also exceeded the average of the same period.⁷ Several dams were retaining more than 100% of capacity. Bhumibol Dam on one day took in more than 300 million cubic meters—the highest on record.⁸

Inevitability or mismanagement?

Even though the floods were a natural disaster, it should not be denied that the inept management of the Thai government and the Flood Relief Operation Center (FROC) also made the damage more extensive and long-lasting.

(1) A slow start. From Hai Ma's late June arrival and Nok Ten's arrival in July to Nalgae's entry in October, it took the government more than three months to recognise the impending disaster. FROC was founded on October 8th 2011 when the situation was already critical. A mass of water had already ravaged many provinces in the North in its path before entering the Central plains flooding virtually all of Lopburi, Nakhon Sawan, Singburi, Uthaithani, Chainat, Ang Thong and Ayutthaya Provinces. The immense water mass of 16 billion cubic meters on its way to the Gulf of Thailand inundated Nonthaburi and Pathumthani Provinces before surrounding Bangkok between 15th to 18th October 2011.⁹

(2) Crisis of leadership. FROC's mismanagement was criticised as erroneous and slow leading to a crisis of confidence. Prime Minister Yingluck Shinawatra came under fire for her lack of leadership, knowledge, experience, decisiveness and understanding of the various mechanisms by putting wrong people on the task, solving problems on a day-to-day basis without any foresight and lacking credibility in her commands and announcements. Her public assurance with words like "under control", "safe" and "dry" were parodied to mean the exact opposite.¹⁰

A group of flood victims under the lead of "Stop Global Warming Association" filed a complaint at the Administrative Court against the government for mismanagement which they claimed caused damage to lives, mental health and property. It is perhaps the world's first example of where

flood victims took a government to court for mismanagement.¹¹

(3) Communication failure. FROC's failure to communicate effectively with the public lost the organisation its credibility. Likewise, other government agencies also failed to communicate in a way that was easy to understand. Many people turned to the internet for information and used their own common sense in assessing the situation. This communication failure was reflected in a parody that made its round on the Social Media, "The government should stay calm, the public will assist you."¹² FROC spokespersons were criticised for their lack of efficiency and unity in informing the public. The head spokesperson was later replaced by Assoc Prof. Thongthong Chandrangsru as a measure to regain public confidence.¹³

(4) Mismanagement of donations and relief packages. Amid all the problems, public volunteerism emerged around FROC's operation to help flood victims. But even then FROC was plagued with accusations of favoritism and corruption.¹⁴ In particular, Pheu Thai Party MP Karun Hosakul of Don Muang constituency, responsible for donated items, was accused of delay and unfair distribution and for putting his name on donated items from relief packages to boats, toilets and tents.¹⁵ This severely affected FROC's credibility causing many people to donate instead to private foundations, charities and media channels.

Sea of conflicts

This water mass that amassed in Thailand not only brought a lot of debris but also shored up a host of conflicts and questions.

(1) Dam mismanagement? Hydro and Agro Informatics Institute (Public Company) pointed out that the 2011 influx volume into Bhumibol Dam, Sirikit Dam and Pasak Dam was a factor causing

the floods as the 2011 volume was the highest since the construction of these dams.¹⁶

An inevitable question arises therefore as to whether the dams were mismanaged.

Dr.Chinnawat Surussavadee, at the Faculty of Technology and Environment, Prince of Songkhla University's Phuket campus, studied past data for water retention and release of Bhumibol Dam, the biggest of the three dams, and concluded that the rate of influx into Bhumibol Dam increases between March and May. This should cause the dam to increase its efflux rate. Instead, the rate was decreased and maintained at low levels for an unusually long period. Although water volume above the dam was more than an average year, water release from the beginning of the year until July 31 was much lower than in other years.¹⁷

Dr.Somsak Jeamteerasakul from Thammasat University suggested this water mismanagement water was caused by EGAT and the Royal Irrigation Department and not by the government as it occurred during the power vacuum of government change between July and August 2011. Dr.Somsak recommended an independent committee should be established to find facts and identify the causes of the floods, analyse lessons to be learnt and evaluate the country's flood crisis management as well as produce recommendations to prevent future floods.¹⁸

Later, Theera Wongsamut, 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."¹⁹ Soon after EGAT issued a statement that the release of water from Bhumibol and Sirikit Dams did not cause the floods.²⁰ The definite answer to the questions left unanswered therefore will perhaps need to be resolved by a future independent committee.

(2) Communal conflicts. The two most significant conflicts during the floods were the forced openings, led by Pheu Thai MPs, of the water gates on Sam Wa Canal on 31st October 2011 and on Phaya Suren Canal on 27th November 2011.²¹ These conflicts were sparked between those in areas long under water and those at Bangkok's outskirts. The communal conflicts also led to political conflicts between the Pheu Thai government in control of FROC and the Democrat Party in control of the Bangkok Metropolitan Administration.

(3) Sacrifice for Bangkok?! The clash between two views came head to head when water reached Bangkok's doorstep: "Water as the enemy on the verge of taking over the capital" was one view whilst another was that "Water finding its way to the ocean". On one hand, Bangkok is an economic and administrative strategic area that should have been given priority for flood protection. On the other hand, the areas north of the sandbag lines were filled with massive amounts of water for some time. This situation stirred up questions about justice and whether the government could sacrifice livelihoods of rural people to save those of Bangkokians without any discussion on compensation. This debate added to the existing divisions between the city and the village in Thailand.

(4) Western diversion? Although Bangkok's eastern zones have been designated "floodway areas" since 1992, city planning regulations were largely ignored. In practice, there are a large number of constructions blocking the water path. More than 100,000 *rais* of previously designated floodway areas around Suvarnabhumi Airport have been rezoned. As a result, the water mass was more effectively flushed through the western part of Bangkok, despite lower capacity, with the collaboration of the Thonburi canal side communities, three senatorial commissions, Bangkok Metropolitan Administration, the Department of Drainage and Sewerage and SCG foundation who all agreed that water must be

flushed as quickly as possible to relieve the burden of upstream flooded areas.

"Thonburi side of Bangkok was abandoned to the vagaries of nature. All the government did was dispatched rescue boats. The government should provide budgets to allow civil society to use their expertise and traditional wisdom to solve the problems. Instead, the government failed to adequately utilize the capability and wisdom of local civil society"²²

Warning of things to come

As the flooding situation eased, the government set up the "Strategic Committee for Water Resources Management" (SCWRM) to review all water-related policies, programmes and action plans in Thailand, come up with policy recommendations to address the challenges, establish water-management systems, produce a water management master plan and lay down investment plans for water management. Among the twenty five committee members, Dr. Royol Chitradon, Dr. Anond Snitwong Na Ayudhya and Dr. Seri Suparathit, some of the most reknown and trusted names on water informatics, shared the following thoughts:

(1) The overall picture²³ Dr. Royol Chitradon, Director of the Hydro and Agro Informatics Institute at the Ministry of Science and Technology said that this flooding crisis had revealed Thailand's failures in information analysis. An important issue that contributed to the floods was the inflexibility of the water-draining structure. He argued that there should be a clear division between residential areas and industrial areas, thorough surveying of elevation levels of all areas, dredging of canals, identifying reservoir areas to collect excess water and specifying the height of walls around protected areas given that the more water that walled off meant more water to be flushed.²⁴ Community-level water management should be encouraged to



build capacity, he argued, and there should be a water-management master plan.

(2) The social time bomb. Dr.Anond Snidvongs Na Ayudhya, Southeast Asia Regional Director of the Global Change System for Analysis, Research and Training Network pointed out that if the existing water management tools were put to function to their full capacity, whether relating to water gates, dikes, canal systems, reservoir areas and pump stations the floods would have been eased by as much as 60 to 70%. Long term measures should take into consideration everything from the upstream to the downstream with emphasis on public participation, he suggested.

The most important concern Dr.Anond raised is the social conflicts waiting to erupt²⁵ as these floods revealed a public distrust in government capability. Communities laid sandbags around their own areas and pumped water from their own land into neighboring areas

causing widespread conflicts. The ongoing construction of roads, landfills, dams and dikes, if not properly coordinated, will only add to the future crisis.

(3) Learning to live with water²⁶ Dr.Seri Suparathit concluded that making decisions during a crisis must rely on a database, tools and strategy as well as assessing available options for coping with water and damage control. After flood water recedes, compensation should be

timely. Most importantly, Dr.Seri suggested that the government failed to communicate risk and allow the public know how the water would affect them and how to prepare themselves. In the future, he argued there would likely be an increased risk of natural disasters with temperature rises,

Table 1: Floods and Damages 2002–2011

Year	Affected population (million)	Affected families (million households)	Affected farmland (million rais)	Damage (million baht)
2002	5.13	1.37	10.43	13,385
2003	1.88	0.48	1.59	2,050
2004	2.32	0.62	3.30	850
2005	2.87	0.76	1.70	5,982
2006	6.05	1.67	6.56	9,627
2007	2.33	0.57	1.62	1,688
2008	7.92	2.03	6.59	7,602
2009	8.88	2.31	2.96	5,253
2010	13.49	3.92	10.91	16,339
2011	13.60	4.09	12.99	1,356,810*

Note: * Assessed by the Post Disaster Needs Assessment (PDNA) of the World Bank, <http://thaipublica.org/2011/12/world-bank-flood-damage/> accessed on 31 January 2012

Source: Thai Health project, IPSR, Mahidol University (calculated from situations Thailand's flood statistics 2002–2011, Disaster Mitigation Directing Center, Department of Disaster Prevention and Mitigation, Ministry of Interior and Natural Disasters summary at 31st December 2011 by Emergency Operation Center, Department of Disaster Prevention and Mitigation, Ministry of Interior).

heavier rainfalls, severe floods and droughts and disasters with an increase in intensity and frequency also. He therefore recommended that it is essential to find a place for water in the form of reservoirs.

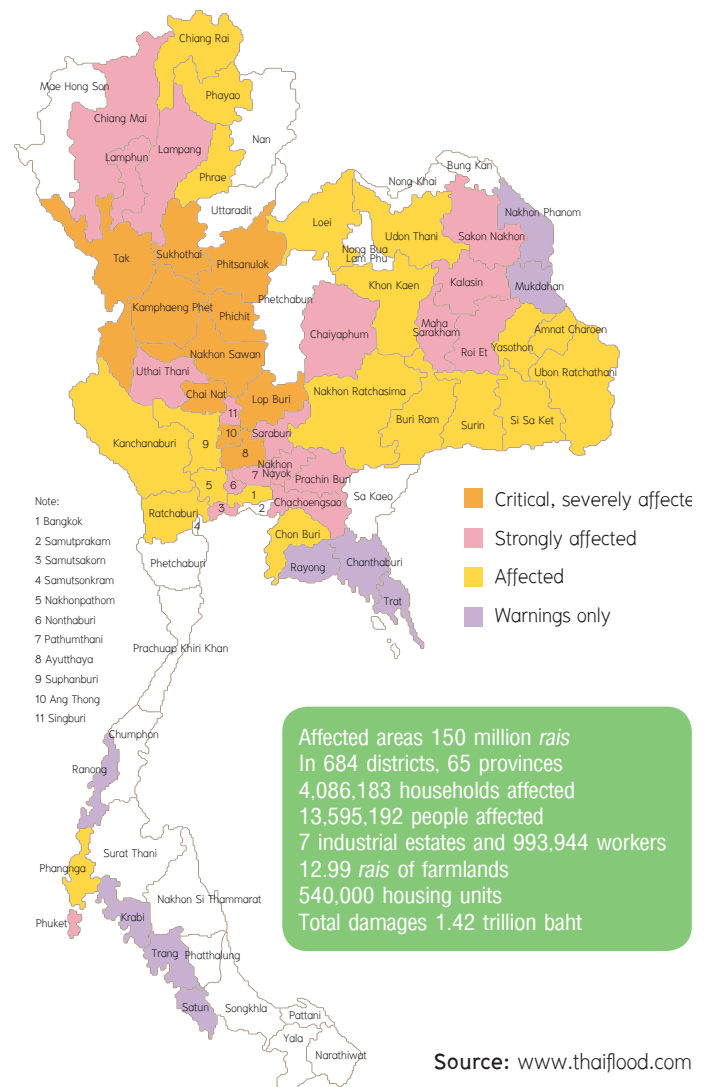
Anti-flood megaprojects

As compensation was being paid out to flood victims after the flood water receded, the government also drafted plans to prepare for possible flooding in the next few months with budgets consisting of hundreds of billions of baht. The Cabinet passed four decrees with financial recommendations proposed by “Strategic Committee for Water Resources Management (SCWRM)”²⁷ The cabinet also approved a draft to set up a permanent water-management body and a draft Office of the Prime Minister’s Regulations on National Water and Flood Management, as submitted by SCWRM on 7th February 2012. Two committees will be set up, namely, “the National Water Resources and Flood Policy Committee (NWRFPC)” and “Water Resources and Flood Management Committee (WRFMC)”, while “the Office of the National Water Resources and Flood Policy Committee (ONWRFPC)” will act as secretariat.

The government has also approved the national water resources management master plans with 3 areas of operation as follows: 1) to improve and rehabilitate existing anti-flood systems; 2) to gain confidence on anti-flood measures in residential, agricultural, industrial and economic zones; and 3) integrate participation by all relevant sectors to speed the water’s passage to the sea.

The areas of operation for solving flooding problems are divided up as follows: 1) 10 upstream provinces with a focus on absorption and delay of run-off to prevent flash floods; 2) 14 midstream provinces with a focus on building floodways and reservoirs; and 3) 7 downstream provinces with a focus on speeding the water’s passage to the sea. The short-term goal is to reduce damage from a possible flood in 2012 while the long-term goal is to build an integrated and sustainable flood mitigation system.

Map of Flooded Areas as of October 10, 2011



Details of the Action Plan of Water Management for the Urgency Period (22.626 billion baht) and the Action Plans of Integrated and Sustainable Flood Mitigation in Chao-Praya River Basin (350 billion baht) are as follows:

Action Plan of Water Management for the Urgent Short Term Period	Action Plan of Integrated and Sustainable Flood Mitigation in the Chao-Praya River Basin
1. Work plan for management of major water reservoirs and formulation of National Water Management Plan (responsibility of the Royal Irrigation Department)	1. Work plan for restoration and conservation of forest and ecosystem sample projects; – Soil improvement and conservation in the upper river basin by reforestation and rehabilitation of forest areas in the river basins in the Ping, Wang, Yom, Nan, Sakae Krang, Tha-Chin and Pa Sak Rivers, totaling 330,000 <i>rais</i> in 10 upstream provinces and 6 upper midstream provinces (10 billion baht)
2. Work plan for restoration and efficiency improvement of current and planned physical structures (17,126 million baht) <ul style="list-style-type: none"> – Renovation of dikes, dams, check dams and water drainage systems (7,062.82 million baht) – Renovation of water drainage channels, digging canals, clearing canals and water drainage channels (1,695.27 million baht) – Strengthening dikes and carrying out tasks recommended by HM King's initiative (868.20 million baht) – Increasing capacity in water drainage and water run-off management (2,984.05 million baht) 	2 Work plan for construction of 5 reservoirs (50 billion baht) in 10 upstream provinces and 14 midstream provinces <ol style="list-style-type: none"> 1) Mae Cham Dam on the Ping River in Chiangmai 2) Kaeng Sua Ten Dam on the Yom River in Prae 3) Nam Tat Dam on a tributary of the Nan River in Nan 4) Small or medium-sized reservoir on the Pa Sak River in Petchaboon 5) Mae Wong Dam on the Sakae Krung River in Uthaitхани
3. Work plan for information warehouse, forecasting and disaster warning system (4.5 billion baht) <ul style="list-style-type: none"> – Formulate data bank plan/ setup national data centre – Formulate forecasting system upgrading plan – Formulate warning system development plan including setting up CCTV system 	3. Work plan for improving/adapting irrigated agricultural areas into water retention areas (Monkey cheek reservoirs) of around 2 million <i>rais</i> to catch 6–10 billion cubic meters of water (60 billion baht). Out of the one million <i>rais</i> needed for the 6 upper midstream provinces, 500,000 have already been identified and designated for 1,850 million cubic meters of water. These are in Nakhon Sawan's Thung Nua, Chum Saeng District, Bang Moon Nak District etc. For the 8 lower midstream provinces below Nakhon Sawan, one million <i>rais</i> such as in Thung Bang Ban have already been identified and designated for 3.1 cubic meters of water.
4. Work plan for response to specific area (1 billion baht) <ul style="list-style-type: none"> – Formulate evacuation plan in case of flooding – Set up tool storing system – Develop flood protection systems in important areas 	4. Work plan for construction of flood ways or water channels to drain no less than 1,500 cubic meters per second as well as roads and other structures to channel waters from the Pa Sak and Chao-Praya rivers to the East or East and West efficiently (120 billion baht)
5. Work plan for assigning water retention areas and recovery measures <ul style="list-style-type: none"> – Formulate plan for channeling water to identified monkey cheek reservoirs – Identify measures of compensation to effected people 	5. Work plan for land use zoning and land utilisation including setting up area protection systems (embankment walls and drainage system) for residential, commercial and industrial zones (50 billion baht)
6. Work plan for improving water management institutions <ul style="list-style-type: none"> – Set up task force committee to monitor operation with ONWRFPFC as secretary. 	6. Work plan for improving conditions of major rivers and dikes other than those in Work plan 3 and 5 (7 billion baht)
	7. Work plan for information warehouse and forecasting and disaster warning system, establishment of the database system, forecasting system and warning system as well as setting up the institution, rules and regulations and enhancing the public participation (3 billion baht)

Source: Thai Health Project 2012. IPSR Mahidol University (summarised from the project's news data of the flooding situation December 2011–February 2012).

