

APPENDIX 8: DAMAGES CAUSED BY NATURAL DISASTERS

A8.1 Flood & Typhoon

Table A8.1.1 Record of Flood & Typhoon (Cambodia)

Place	Date	Damage
Cambodia		
Flood	Aug 1999	The flash floods, triggered by torrential rains during the first week of August, caused significant damage in the provinces of Sihanoukville, Koh Kong and Kam Pot. As of 10 August, four people were killed, some 8,000 people were left homeless, and 200 meters of railroads were washed away. More than 12,000 hectares of rice paddies were flooded in Kam Pot province alone.
Floods	Nov 1999	Continued torrential rains during October and early November caused flash floods and affected five southern provinces: Takeo, Kandal, Kampong Speu, Phnom Penh Municipality and Pursat. The report indicates that the floods affected 21,334 families and around 9,900 ha of rice field. IFRC's situation report dated 9 November stated that 3,561 houses are damaged/destroyed. So far, there has been no report of casualties.
Flood	Aug 2000	The second floods has caused serious damages on provinces in the North, the East and the South, especially in Takeo Province. Three provinces along Mekong River (Stung Treng, Kratie and Kompong Cham) and Municipality of Phnom Penh have declared the state of emergency. 121,000 families have been affected, more than 170 people were killed, and some \$10 million in rice crops has been destroyed. Immediate needs include food, shelter, and the repair or replacement of homes, household items, and sanitation facilities as water levels in the Delta continue to fall.
Flood	Aug25th 2001	Floods triggered by the deluge of the Mekong River killed at least 10 people in Cambodia
Flood	Aug27th 2002	While southern provinces of Cambodia are still facing severe drought conditions, northeastern, eastern and southwestern provinces located along the Mekong River are now being affected by floods. According to media reports, one million people have been affected by the floods, 14 people have been killed and around 450,000 people have been displaced.
Floods	Aug22th 2006	In Cambodia, torrential rains swelling the annual Mekong floods have killed at least eight Cambodians and damaged several thousand hectares (acres) of paddy fields, officials said.
Typhoon	Sep30th 2009	At least nine people have died in Kampong Thom province in central Cambodia due to Typhoon Ketsana on 30 September 2009.
Flash Flood	Oct14th 2010	Continouuce heavy rain since 11 October 2010 in the catchment area of Pursat River caused flash flooding along the Pursat River.
Flash Flood	Oct15th 2010	The report from Banteay Meanchey province, Cambodia indicated that at 7:40PM on 15 October 2010, rain flooding and water flooding from the collapse of the K5 dike caused floodwater to reach up to the roof of houses in Kaun Damrey village, O'Chrov district.
Flood	Sep10th 2011	At least 14 Cambodians died in flooding that was caused by heavy rain falls just in a week.
Floods since the monsoon	Sep2nd 2013	Since then 13 people have died and as many as 10,000 people have been displaced. The worst affected areas are Banteay Meanchey, Preah Vihear, Kampong Thom, and Kratie. The floods have also damaged at least 20,000

		hectares of rice paddy fields.
Typhoon Flood	Sep24th 2013	Heavy monsoon rains exacerbated by Typhoon Usagi have pounded parts of Vietnam and Cambodia killing at least 36 people.
Flood	Sep30th 2013	Heavy rains since the third week of September have resulted in floods in at least 10 provinces throughout the north-west and along the Mekong River in central Cambodia. 30 confirmed deaths, more than 81,000 households affected and more than 9,500 households evacuated to safe areas.
flooding of the Mekong river and heavy rainfall	Oct3rd 2013	In their statement, they said: <ul style="list-style-type: none"> · The recent flooding has claimed 39 lives · 13 of the country's 24 cities and provinces have been affected · 100,000 families affected by the floods · 89,200 houses have been damaged by the floods · Around 10,000 families have been forced to flee their homes · 533 schools have been damaged · 291 Buddhist pagodas also suffered flood damage · 100,000 hectares (247,000 acres) of rice fields destroyed
Floods	Aug8th 2014	4,400 families have been evacuated after the flooding along the Mekong river and also in the Tonlé Sap lake and river area. So far at least 6 provinces have been affected. Most of the families were evacuated from Stung Treng, Kratie, Kampong Cham and Tbong Khmum. Ratanakiri and Prey Veng have also been affected. Reports say that at least 4 and as many as 8 people have died in the flooding over the last few days.

Source: JICA Project Team based on Information of ADRC, Floodlist and AHA Centre

Table A8.1.2 Record of Flood, Storm Surge and Cyclone (Indonesia)

Place	Date	Damage
Indonesia		
Flood	May 2000	Floods caused by heavy rain over the last 3 days, have drenched the southern part of Belu district in West Timor, Indonesia. The affected area is flat and very low-lying, and forms a major rice growing area with an estimated 100,000 people living in the region. The rains continue and the death toll is expected to rise. According to unconfirmed information, 125 people have died as a result of the floods. In all, an estimated 20,000 people have been affected and 100 houses have been destroyed.
Flood	20 th - Nov 2000	The torrential downpour over the last few days has wrought havoc in Aceh, northern Sumatra Island, Indonesia. No official information is available to date, an estimated of 100 people are thought to have perished, with at least 4,200 families having lost their homes.
Flood & Land Slide	10 th Feb. 2001	A Landslide and Flood are happened at Lebak in East Java, affected more than 100 people are dead
Flood	26 th June 2001	Three days of heavy rain led to flooding in inhabited areas of Los Palos in Lautem District (Population: 55,000), in the east of East Timor.
Flood	31 th Dec	Flooding triggered by heavy rain has hit Indonesia's North Sumatra province, an important area for commodity output, leaving at least 3 people dead, 17 people missing and forcing thousands more to flee their homes.
Flash Flood	11 th Jan. 2002	A flash flood killed 21 people as it swept through a village on the Indonesian island of Sumatra while residents were sleeping
Flood	14 th Jan. 2002	Floods in the Indonesian city of Medan have killed at least four people, left seven others missing and closed the airport.
Flood	14 th Feb. 2002	Heavy rain showers lashed Jakarta on Thursday causing more floods as health workers said at least 16 people, mostly children, had died in the capital of diseases brought on by the recent downpours.
Flood & Land Slide	17 th Feb. 2002	Landslides triggered by torrential rain have killed at least seven people in Indonesia's central Java capital of Semarang and more are feared dead,
Flood & Land Slide	8 th Mar. 2002	Flood hit Sulawesi on 8 Mar. Damaged houses were estimated 190 houses. Two people were killed in a landslide in West Java. The Jakarta Post reported at least four people were killed on 12 Mar in Central Java.
Flash Flood	28 th mar. 2002	Flash floods following heavy rain have killed at least nine people and destroyed dozens of homes in Indonesia's Nias island,
Flood & Land Slide	27 th Dec. 2002	Heavy rains caused floods and landslides in a hilly region of southern Sumatra island, leaving at least 11 people dead and one missing.
Flood	15 th Jan. 2003	Floods which have hit Singkawang district in West Kalimantan province,

		one hour flight west of Jakarta, have paralysed almost all parts of the city. According to updated records from the local administration, No casualties have been reported but the flood disaster has displaced 1,410 families or some 4,711 people.
Flood	13 th Feb. 2003	Thousands of homes in the Indonesian capital Jakarta are under water after torrential rains overnight triggered serious floods. Floods influenced more than 10 million people.
Flash Flood	3 rd Nov. 2003	A flash flood caused by heavy rain has swept through a tourist resort on the Indonesian island of Sumatra, killing at least 100 people, rescue officials say.
Flash Flood	27 th Apr. 2004	Flash floods occurred in the tsunami-hit Indonesian province of Aceh when river banks burst after heavy rain, killing at least 15 people.
Land Slide & Flash Flood	18 th Oct. 2005	A number of landslides and flash floods hit the tsunami-devastated Indonesia's Aceh province, killing at least 16 people with several others still missing.
Flash Flood	2 nd Jan. 2006	Flash floods swept away houses and schools in central Indonesia early Monday, 2 January 2006 killing at least 24 people, said a government official, predicting the toll would rise.
Flood & Land Slide	21 st Feb. 2006	At least 24 people have been killed in floods and landslides triggered by several hours of torrential rain in the city of Manado, Indonesia's eastern province of North Sulawesi.
Flash Flood & Land Slide	20 th Apr. 2006	Flash floods and landslides triggered by heavy rain have killed at least 23 people on Indonesia's main island of Java, state news agency Antara reported.
Flood	20 th Jun. 2006	Rescuers searching for survivors on an Indonesia island ravaged by floods and landslide retrieved scores of bodies on 21 June 2006, bringing the death toll to 94, officials said.
Flood	24 th Dec. 2006	Floods in Indonesia's Aceh and North Sumatra provinces have left at least 30 people dead and forced tens of thousands to flee their homes, Health Ministry official Rustam Pakaya said on 25 Dec.
Flood	3 rd Feb. 2007	Floods in Indonesia's capital, Jakarta, have killed five people and forced about 100,000 to leave their homes.
Flood	19 th Feb. 2007	On February 2007, landslides triggered by torrential rain hit two places on Indonesia's main Java island over the weekend, leaving eight people dead and six missing.
Flood & Land Slide	23 rd Jul. 2007	At least seven people have been killed and many thousands forced to flee their homes because of floods and landslides on the Indonesian island of Sulawesi.
Flood & Land Slide	7 th Feb. 2008	Two people were killed and five more were missing after heavy rainfall triggered a landslide on the Indonesian island of Java, an official said.
Storm Surge	4 th Jun. 2008	Residents in the Indonesian capital, Jakarta, braced for further flooding after a high tide of over 2 metres resulted in flooding in parts of the city on Wednesday (4 June 2008).
Flood	27 th Oct. 2008	More than 11,000 Indonesians have fled their homes because of floods caused by torrential rain in Gorontalo city on Sulawesi Island, an official said on Monday, 27 October 2008.
Flood	24 th Feb. 2009	More than 4,000 people have fled their homes in Java island of Indonesia after floods hit the areas since 24 February 2009.
Flash Flood	27 th Mar. 2009	A dam on the outskirts of the Indonesian capital, Jakarta, burst on 27 March 2009, killing 28 people and flooding hundreds of houses nearby, officials said.
Flash Flood	16 th Sept. 2009	At least 38 people have been killed as flash floods struck six villages in a remote region of Indonesia. Dozens more are missing after the floods swept through an area of the Madina district in North Sumatra province early on Tuesday.
Flood	24 th Jul. 2010	A flood hit five villages in Tanah Bumbu district, South Kalimantan, on 24 July 2010 following heavy rains over the past few days.
Flash Flood	5 th Oct. 2010	Flash floods and landslides triggered by several days of heavy rain in Indonesia have killed at least 26 people.
Flood	8 th Mar. 2011	A heavy flood crushed five sub districts in South Garut district in West Java, Indonesia, killing nine people.
Flood	1 st Jun. 2012	Entering in January as the peak rainfall for most parts of Indonesia, the threat of flooding will also be increased. Ten areas are flooded in almost

		the same time.
Cyclone	29 th Jun. 2012	Cyclone Iggy killed fourteen people and another 60 were injured in Indonesia over a four-day period
Flash Flood	25 th Aug. 2012	Three people died on 25 August 2012 after flash flooding struck Parigi Moutong regency, in the province of Central Sulawesi, Indonesia.
Flash Flood	8 th Nov. 2012	At least 11 people were killed and seven missing after a flash flood triggered by heavy rains hit a village on Indonesia's Sulawesi island.
Flood	15 th Jun. 2013	Floodwaters have inundated Jakarta, Indonesia since 15 January 2013, claiming one life and displacing some 6,000 residents.
Flood & Land slide	17 th Feb. 2013	On 17 February 2013, thousands of people fled their homes in Manado, Indonesia and surrounding areas to escape the floods.
Flood	14 th Dec. 2013	Heavy rainfall affected the island of Java on 14-15 December 2013, causing floods, overflown rivers and landslides. Approximately 5,000 households have been affected.
Heavy Rain & Flood	13 th Jun. 2014	At least 8,064 people in 10 districts across Jakarta were affected by the flooding on 13 January 2014.
Flood	1 st Nov. 2014	Continued flooding occurred from 1 to 3 November 2014 in Aceh, northern Sumatra, Indonesia. About 53,000 people are affected.
Flood	Jan. 2015	Floods were reported in several parts of Indonesia. In West Sumatra and West Kalimantan, over 12,800 people were affected.
Flood & Land Slide	19 th Jan. 2016	Floods were reported in Sumatra, Java and Sulawesi of Indonesia between 19 and 23 January 2016. Some 4,900 houses were inundated.
Flash Flood & Landslide	1 st Feb. 2016	Torrential rains during the first week of February have caused severe flooding in eight provinces in Indonesia, heavily affecting Aceh, North and West Sumatra, Riau and Bangka Belitung. The floods isolated more than 89,000 people and forced them to evacuate to safer areas.
Flood	29 th Feb. 2016	Local authorities report one fatality in Cengkareng district (Jakarta city) and over 34 000 people affected in East Java province, as of 29 February early morning (UTC). Local media also report hundreds evacuated in Jakarta due to the overflow of the river Cengkareng.
Flood	8 th mar. 2016	2 People Died and 3 people missing, 3,000 people displaced. A total of 5,900 families / 24,000 inhabitants affected by the floods. March 15, 2016, flood condition in Bandung regency slowly began to recede. Weather in the area of Bandung regency looks bright.
Flood & Land slide	27 th Mar. 2016	High rainfall intensity has triggered flooding in West Sumatra Province. In Padang City, the flood has caused 1 death and submerged about 11,500 houses. Moreover, flood also inundated 1,800 houses in Padang Pariaman District. Flood in Nabire, Papua Province has affected 7,800 people. Flood also affected Cirebon, West Java Province. Media said that around 2,000 houses were submerged by the flood. In Sarolangun District, Jambi Province, flood has affected 300 houses. Flood also submerged 200 houses in North Barito, Central Kalimantan Province. 209 families were reportedly affected. Landslide occurred in Banjarnegara District, Central Java Province. The incident has damaged 21 houses. Responding to the situation, the local government evacuated 283 people to the evacuation centre.
Flood in Bekasi	Apr21th 2016	The continuous rain has caused Cikeas River in Bekasi, West Java Province to overflow. Hundreds of houses were reportedly inundated by water. Impact: 600 families or 9,000 people were reportedly affected 500 houses were lightly damaged
Padang Flood	Mar29th 2016	The high rainfall intensity has triggered flooding in Pariaman city and Padang Pariaman District, West Sumatera Province. Based on the local authority report, 1,857 families were affected in both location. Local government included the BPBD as well as other responding organisation have provided assistance. Impact: Estimated families affected 1,857 (823 in Padang Pariaman district and 1,034 in Pariaman City) 41 houses damaged (38 in Padang Pariaman district and 3 in Pariaman city) 1 people dead in Padang Pariaman District 8 bridges damaged
Flood in Padang-West	Mar22th 2016	Heavy rainfall on 22 March 2016 has caused flooding in Padang , West Sumatera Province and affected 3 subdistricts which are . The flood has inundated numbers of houses, damaged 2 bridges and also caused 2 people

		dead. Impact: 11,500 houses inundated (est.). Water level of the flooding 11.2 m. There are 2 bridges were damaged in Pasia Nan Tigo and Bungus Timbalun Village. 1 people dead and 1 missing.
Flooding in Nabire	Mar22th 2016	Heavy rains resulted to flooding on 22 March 2016 LOCATION: Nabire, Papua, Indonesia Impact: 7,868 people were affected 1 bridge was damaged
Flood in Bireun	Jan11th 2016	Heavy rain has triggered flooding in Pandrah and Jeunib subdistrict, Bireun, Aceh Province. The flood has inundated numbers of houses and agriculture lands. Based on the report, the affected area in Pandrah included village of Meunasah Garot, Meunasah Panton, Pandrah Kandeh, Pandrah Janeng, Gampong Blang, Meunasah Reudep and Lancok Ulim. While in Jeunieb, the flood has inundated village of Cot Geulumpang Tunong, Cot Geulumpang Baroh, Janggut Sengkoe, Ulee Rabo, Meunasah Tambue, Meunasana Keutapang, Lheu Simpang, Meunasah Kupula and Meunasah Dayah. Impact: at least 27 houses were submerged in Gampong Janggut Senkoe about 234 ha of paddy fields were inundated
Flood Affecting Kuantan	Jan7th 2016	Based on the Social Office Province of Riau, flooding has affected 10 sub-districts in Kuantan Singingi District. The affected sub-districts are Kuantan Hilir Seberang, Sentajo Jaya, Kuantan Mudik, Gunung Toar, Kuantan Tengah, Pangean, Benai, Kuantan Hilir, Inuman and Cerenti. Impact: 4,552 houses were affected
Flood in Sijunjung	Jan6th 2016	Due to torrential rains, flood occurred in the District of Sijunjung, West Sumatra. There were also landslides that buried a portion of the road at Kilo 159 from Kota Padang to Pekanbaru, Riau. Impact: 271 houses inundated (total) 47 houses in Nagari Sungai Lansek (52 families) 23 houses in Kamang (26 families) 201 houses in Si Aua (221 families) 299 families affected
Flood affected west Kotawaringin	Jan4th 2016	The Disaster Management Agency of West Kotawaringin, Central Kalimantan Province reported that 600 families being affected by flood that triggered by the overflow of Arut River. The flood also inundated houses in Pangkut, Panahan, Riam, Nanga Mua, Pandau, Sukarami, Penyombaan, Sambu, Gandis and Kerabu villages. Impact: 600 families were affected 596 houses were inundated
Flashflood hit Pematang	Decfirst 2015	Torrential rain has triggered flashflood and landslide in Pematang Siantar City, Province of North Sumatra. The local authority reported that the incident has killed two men and damaged several houses. Impact: 2 death 29 houses were damaged 11 families/40 people were evacuated
Flood in South Jakarta	Marfirst 2015	The rainfall in the upstream area has sent huge volume of water to the downstream. This situation has triggered flooding in the lower area, particularly in South Jakarta. 16 villages were reportedly inundated. Impact: 2,581 families/7,232 people were affected.
Flood affecting Pidie	Jan15th 2015	Continuous rain has caused flooding in nine (9) subdistricts in Pidie, Aceh Province. The affected areas are Pidie, Sigli, Mila, Delima, Padang Tigi, Kembang Tanjung, Sakti, Grung-grung and Mutiara subdistrict. Impact: 4,000 houses were inundated 10,000 ha of crops and fish pond were submerged
Flooding affected Tebing Tinggi and Langkat	Jan13th 2015	Flood occurred in Tebing Tinggi, North Sumatra Province. The incident was triggered by the heavy rainfall over the last days. Meanwhile, flood has been widely affected Langkat's area since 13 January 2015. Five (5) subdistrict in Langkat were inundated, namely Tanjungpura, Sawit, Batang Serangan, Hinai, Wampu and Simalungun district. Impact: 700 houses in Padang Hulu subdistrict were submerged 7,178 families were affected in Langkat over 557 ha of agriculture area were inundated
Flood in Manado	Jan11th 2015	Due to the high rainfall intensity, flood affecting Manado City, Province of North Sulawesi. The affected areas are Singkil, Tuminting, Wenang, Bunaken, Paal and Tikala subdistrict. Impact: 3,000 people were displaced hundreds of homes were submerged
Flood affected Rokan Hilir	Jan9th 2015	The high rainfall intensity has caused Rokan River to overflow. Consequently, water flooded the many houses in Rokan Hilir District, Riau Province.

		Impact: 11,880 people were affected 1,980 houses were inundated
Flood in South Sulawesi	Jansecond 2015	Flooding affecting Barru District and Makassar City in South Sulawesi Province. The incident was triggered by heavy rain that poured the area. Impact: : 899 houses were inundated and 3,484 people were affected in Barru. In Makassar, the flood submerged 417 houses and affected 1,474 people.
Flooding in Jakarta	Apr21th 2013	Three thousand people have been affected by flooding in Jakarta on April 19 and 20. The floods were a direct result of heavy rainfall on Wednesday.
Floods in Sulawesi	Jul29th 2013	Severe floods have now spread to northern Sulawesi. Gornotalo saw extreme heavy rainfall on 26th July which resulted in the deaths of 4 people, with a further 3 still missing. Over 200 people have been evacuated from the region.
Eastern Indonesia Floods	Jul30th 2013	8 people have been killed and 10 injured in a landslide after flooding and heavy rain in eastern Indonesia. The tragedy was in city of Ambon on the Maluku chain of islands.
Floods in North Sumatra	Oct18th 2013	Thousands of families had to evacuate their homes after severe flooding in North Sumatra, Indonesia, over the last few days. Heavy rainfall led to flash floods inundating thousands of homes in the area, forcing people to evacuate and head for higher ground.
Flash Floods in Jakarta	Nov15th 2013	The heavy rainfall began late on Wednesday 13 November, and continued for several hours. According to the Jakarta Globe, at least 3 districts of the city were flooded, affecting around 2,770 people. The city's drainage system again came under criticism as it yet again failed to deal with the heavy rainfall.
Flash Floods in West Papua	Nov15th 2013	As many as 12 rivers in the area have overflowed, worsening the situation for local residents. According to local media reports, 100s of homes were destroyed and victims had to evacuate. For many living on this peninsula, ferry boat was the quickest and safest route away from the flood zone.
Floods and landslide	Decfirst 2013	Heavy rains and floods caused a landslide that killed 9 people, including four children, in Indonesia on Saturday 30 November 2013.
heavy rainfall in Sukabumi regency	Dec17th 2013	The heavy rain caused flooding in East Java, where as many as 43 villages were inundated. Around 20,000 people had to be evacuated from their homes in the areas around Bojonegoro, Tuban, Gresik and Mojokerto. One person was reported as missing. Around 1,800 hectares of rice fields have been inundated. The heavy rainfall is expected to continue.
Flood in Java Island	Dec18th 2013	Initially the floods in East Java affected around 43 villages. Indonesia's National Disaster Mitigation Agency today said that figure is now closer to 100 villages, all located in the areas around Bojonegoro, Tuban, Gresik, Mojokerto and also Lamongan.
Floods in Jakarta	Jan11th 2014	The Jakarta Disaster Mitigation Agency (BPBD) reported that 20 locations had suffered flooding, varying from 10 centimeters to 80 cm, half of which were located in West Jakarta, with traffic on Jl. Mangga Dua Raya paralyzed as the floodwaters reached 50 cm.
Flooding in North Sulawesi	Jan15th 2014	Two days of heavy rainfall in North Sulawesi province, Indonesia, has brought severe flooding, killing at least 1 person and forcing around 2,000 people from their homes. The worst affected area is Manado, although the victim died in a landslide in Minahasa district. One person is still missing.
More Floods in Jakarta	Jan20th 2014	Widespread flooding continues to affect Jakarta, the capital of Indonesia, over the weekend, with the number of people forced to leave their homes jumping from less than 5,000 on Saturday 18 January 2014 to more than 30,000 on Sunday after heavy rain fell overnight.
Floods in district of Kudus in central Java	Jan24th 2014	Most recently affected has been the district of Kudus in central Java, where heavy rain since Friday 17 January has caused floods and landslides that have left 13 people dead. As many as 4,000 people had to evacuate their homes to take shelter in 20 relief centres. Five rivers in the region have overflowed, flooding surrounding villages, leaving some areas of Kudus under 1.5 metres of flood water.
Flash floods in Siau island North Sulawesi	Jan27th 2014	Flash floods on remote Siau island, North Sulawesi, killed at least 2 people and left 27 missing. The fatalities occurred after flash floods surged down a mountain side. The force of the flood water was so strong that it capsized a boat in the sea below. Eight people managed to escape the boat.
Floods in Jakarta	Jan30th 2014	Many areas of Jakarta, particularly East Jakarta, were under water yet again after heavy rainfall caused widespread flooding in the city. Some

		affected areas were under as much as 60cm of water, and in Pondok Jaya area in Mampang Prapatan, South Jakarta, floodwaters reached a depth of 100 cm.
Floods and Landslides in East Java	Feb3rd 2014	It is believed he was working on the river banks at the time. Landslides have also been seen in Pujon subdistrict. Overall the floods have affected 1,100 families. In Jombang, a massive landslide has killed at least 12 people. Two people are still missing and two were rescued.
Floods in Jakarta and Semarang	Feb5th 2014	Jakarta Heavy rain that lasted from Monday through to Wednesday 5 February has left many of the usual flood prone areas of Jakarta under as much as 70cm of water and some areas as high as 150cm. Remarkably, this is not usual in Jakarta in recent times. Areas of West Jakarta have been worst hit so far this time around. Semarang Flash flooding struck in Semarang, Central Java on Tuesday 4 February after 2 days of heavy rain. The floods and rainfall caused a landslide in Tinjomoyo, Banyumanik district which left one person dead.
Floods in Jakarta	Feb25th 2014	Over 2,300 people have been evacuated in these areas, except the sub-district in Central Jakarta, where Junaedi is reported to have said that the water level "is not too high".
Floods in Sulawesi	Aug11th 2014	In a statement made by the Central Sulawesi Disaster Mitigation Office (BPBD) earlier today, severe flooding in Banggai, Central Sulawesi province has forced over 15,000 people from their homes, seeking temporary accommodation in safer areas. Many of them are now living in tents in relief camps provided by Banggai Regency.
Floods in Bogor	Aug16th 2014	Elsewhere in Indonesia, heavy rain also caused flash floods in the Bone Bolango regency of Gorontalo province where 600 had to evacuate their homes for safer ground. Several houses were damaged or completely destroyed in the deluge. Rail and road infrastructure has also been damaged. The floods came after a nearby river had burst its banks.
Floods in Medan	Oct6th 2014	The flooding was a result of heavy rainfall that began on Friday 03 October and soon forced the rivers of Babura and Deli to overflow, inundating nearby houses in and around Medan. Some areas were said to be under 1.5 metres of flood water by Saturday. Aur village in Aur subdistrict, Medan Maimun, was reported as the worst hit.
Floods in Borneo and Sumatra	Jan20th 2014	Heavy rainfall in Borneo and Sumatra over the last 3 days has left parts of Malaysia and Indonesia struggling with yet more flooding. Malaysia is still recovering from the floods of December 2014 in the north of the country, which were some of the worst flooding seen in years.
Flash floods in the province of West Sumatra	Jan28th 2014	However the floods have severely damaged 2,600 homes in the area, as well as 2 schools, roads and several bridges. Over 200 hectares of agricultural land has also been damaged by the flooding.
Floods in Papua	Jan30th 2015	Papua, East and West Java and Sulawesi have all seen increased levels of rainfall. Surabaya in East Java had 113.1 mm of rain in 24 hours 28 to 29 January 2015. In South Sulawesi, 107.1 mm of rain fell in Makassar during the same period. In Timika, Papua, 183 mm fell between 29 and 30 January 2015.
Floods	Feb2nd 2015	Bali Floods and landslides killed two people in Karangasem district, Karangasem, Bali on 31 January 2015. Two others were injured in the landslide which occurred after heavy rainfall in the region. West Nusa Tenggara Floods have damaged at least 4,000 houses in the Dompu and Woja districts, West Nusa Tenggara.
Floods	Feb8th 2015	Over 80 homes were damaged by floods in Gorontalo Province in the north of the island of Sulawesi on the Minahassa Peninsula, Indonesia, on 6 February 2015.
Floods in Jakarta	Feb9th 2015	Some areas were said to have flood water up to 80cm deep. West, north and central areas of the city have been worst affected. Even the president got to experience the flooding, as areas in front of the presidential palace in central Jakarta's Medan Merdeka Utara area were under 30cm of water.
Floods	Feb12th 2015	Heavy rain is also affecting other areas of south-east Asia, notably

		Indonesia. As many as 6,000 people were evacuated earlier this week. Parts of the capital city, Jakarta, have been under water for the last 4 days. Floods remain in northern and western parts of the city.
Floods in Jakarta	Marsecond 2015	Parts of Jakarta, Indonesia, were once again under water on 28 February 2015, just 2 weeks after severe flooding forced thousands to evacuate their homes.
Floods	May4th 2015	West Nusa Tenggara West Lombok regency has been the worst affected area in the province of West Nusa Tenggara where a river overflowed after 2 days of heavy rain. Three people have been reported injured in the floods. Central Java There have also been reports of some flooding in Grobogan regency in the southwestern part of the Central Java province. Affected areas include Mlangi, Kendalsari, Tajemsari and Karangpasar.
Floods in Aceh	July17th 2015	BNPD figures say that the flooding has affected 25,765 inhabitants, and damaged 7,904 houses. Roads and bridges have also been damage, although no casualties have been reported.
Sumatra Floods	Dec4th 2015	BNPB's latest report says that 2 bodies have been recovered from the landslide that is up to 5 metres deep in places. A further 15 people are still missing, and one person has been found alive but with serious injuries. All of the victims are thought to be workers from a gold mine in the area.
Floods in Aceh	Dec17th 2015	The National Disaster Management Authority – Badan Nasional Penanggulangan Bencana (BNPB) – in Indonesia report that flooding in Aceh Province since 11 December 2015 has affected over 50,000 people and left at least one person dead.
Floods in parts of East Java	Jan20th 2016	Floods in parts of East Java, Indonesia, have forced at least 500 people to evacuate their homes. Meanwhile in North Aceh, the floods that affected 12 districts have started to recede.
Floods and Landslides in Central Java and West Sumatra	Feb8th 2016	Two landslides have left at least 9 people dead and 4 missing in Indonesia after four days of heavy rain. The rain has also caused flooding that has forced 4,000 people from their homes.
Floods	Marfirst 2016	Parts of East and West Java, including Jakarta, Indonesia, experienced heavy rain that began on 25 February 2016, causing floods in the two provinces that have left one person dead and affected over 35,000.
Floods	Mar16th 2016	The Citarum River in Bandung regency, West Java province, Indonesia, once again overflowed causing flooding in as many as 15 districts in the area. At least 2 people have died in the floods.
Floods in the city of Padang and Padang Regency	Mar22th 2016	Meanwhile, floods in Magelang Regency in Central Java have left at least 1 person dead and several injured.

Source: JICA Project Team based on Information of ADRC, Floodlist and AHA Centre

Table A8.1.3 Record of Flood (Lao PDR)

Place	Date	Damage
Lao PDR		
Flood	14 th Aug. 2008	Four people have been killed in flooding and landslides in Laos, where the Mekong river has hit its highest level in at least 100 years after several months of unusually heavy rain, officials said on 15 August 2008.
Typhoon	30 th Sept. 2009	Dead: 15, Missing: 1, Injured: 91, Affected household: 27,836 HHs Displaced household: 9,602 HHs Completely damaged houses: 1,023, Affected houses: 825
Flood	24 th Jun. 2011	The Lao Red Cross will provide regular food and relief assistance to more than 5,000 people who were severely affected by tropical storm Haima. At least 35,000 people have been affected, with 19 deaths confirmed by the government.
Tropical Storm	29 th Jul. 2011	In the first week of August, Tropical Storm Nock-Ten brought heavy rains, flash flooding and landslides to Lao PDR's central and northern provinces. At least 165,247 people were affected, with some 21,800 hectares of rice fields damaged.
heavy rains flood the Nam Xan river in the Bolikhamsai Province of Laos	June 28 th 2013	Around 5,000 people have been affected in around 9 villages, although no casualties have been reported. The worst affected area is the Borikhan district of Bolikhamsai.
Heavy Rain & Flood	Jun. 2013	The heavy rainfall in Lao PDR that began in June 2013 has continued unabated and has resulted in widespread flooding, particularly in the Northern and Central parts of the country. Over 20 people have been killed by the flood.
floods between 16 th and 19 th September	Sep 24 2013	Overall the worst affected area was Soukhouma District in Champasak Province, where 1 person is reported as missing in the floods, and a further 14 injured. The floods affected more than 2,000 families in 38 villages across Soukhouma District. As many as 227 families in 21 different villages in Saravane Province were also badly affected by the flooding.
Monsoon rain	Aug 07 2014	One person has died in the floods there. The worst affected area is Soukhoum district, where over 30 villages are under water. Over 6,000 hectares of rice fields are also flooded.
Strong winds and heavy rainfall	Sep 11 th 2015	Lao news agency, KPLP, are reporting that floods and landslides in northern parts of the country have left 2 people dead in the district of Nan district, Luang Prabang province. Two people were killed in a landslide in Nafay village and destroyed 9 houses. As of 10 September 2015, two more people were still missing.
Flood	7 th Aug. 2015	In Lao PDR, continuous rains since early Aug triggered flooding in 118 villages in 12 districts in Houphan, Bolikhamsay, Khammoune and Luangnamtha provinces, over 47,800 people affected.
Flashflood and Landslide	Sep 15 th 2015 Sep 8 th 2015	Flashflood and Landslide occurred in Nan District, Luangprabang Province. Five villages were reportedly affected. According to the Disaster Management Division, Ministry of Labour and Social Welfare, the incident has caused death and damages to the property. Impact: 4 death 44 families or 221 people were affected 9 houses were totally destroyed and 35 houses were damaged Cost of damages is about 3.8 trillion LAK (484,712 USD) Response: National and local government have responded to the situation by providing relief items and financial support to the victims.

Source: JICA Project Team based on Information of ADRC, Floodlist and AHA Centre

Table A8.1.4 Record of Flood (Malaysia)

Place	Date	Damage
Malaysia		
Flood	20 th – Nov. 2000	Floods triggered by torrential rain since November 20 have killed at least 15 people at Kelantan and Trengganu district in North Malaysia and nearby areas of Southern Thai. (as of 11/24)
Flood	23 rd Dec. 2001	11 person were killed and thousands evacuated after torrential rain and strong winds hit three states in east Malaysia.
Flood	5 th Oct. 2003	More than 10,000 people have fled their homes, after three days of incessant rain sparked massive floods in northern Malaysia. No casualties

		have been reported, though an eight-year-old boy was missing after he was last seen near a swollen river.
Flood	11 th Dec. 2004	More than 4,500 people have been evacuated and at least four people drowned in the worst floods in 40 years on the east coast of peninsula Malaysia, reports and police said on 12 December.
Flood	18 th Dec. 2005	Kedah and Perlis are facing their worst floods in 30 years, with more than 16,000 people relocated to 113 evacuation centres in both States since last Saturday. Two-thirds of Perlis and most of northern Kedah have been inundated by non-stop rain over a three-day period since last Friday. The floods have destroyed an estimated 25,000ha of padi fields in Muda Agricultural Development Authority (Mada) areas in Kedah and Perlis and non-Mada areas. Losses are estimated at over RM81 million.
Flood	23 rd Dec. 2006	Malaysia's worst floods in 37 years have displaced nearly 100,000 people amid food shortages, looting and criticism on Saturday of the government's handling of the crisis.
Flood	14 th Jan. 2007	Malaysian health officials are on alert for outbreaks of disease as a second wave of floods hits southern areas, forcing more than 90,000 people to flee their homes and seek shelter at crowded relief centres.
Flood	19 th Dec. 2007	Floods in Malaysia's south, central and northeast have killed 28 people and driven 34,000 people from their homes, local media reported on 19 December, 2007.
Flood	2 nd Nov. 2010	Four people have been killed and almost 50,000 have been forced out of their homes and into relief camps as floods hit northern Malaysia, state media said Friday 5 November.
Floods	31 st Jan. 2011	Two people died and nearly 30,000 were forced to evacuate their homes on 31 January 2011 after heavy rains closed major roads and caused rivers to overflow in Malaysia's southernmost state of Johor.
Flood	25 th Dec. 2012	Heavy rain coinciding with high tide flooded hundreds of homes in three northeastern states of Malaysia -- Terengganu, Pahang and Kelantan -- with some 13,746 people moved to evacuation centres.
Flood	3 rd Dec. 2013	Floods in Malaysia caused by heavy rains have left one dead and some 19,000 people have been relocated to evacuation centres set up in schools in the east coast states of Pahang and Terengganu and Johor in the south.
Flood	16 th Dec. 2014	A total of 3,930 people have fled their homes in several areas of Kelantan due to flooding caused by two days of heavy rains. In the adjacent state of Terengganu, 4,209 people fled to evacuation centres.
Flood	24 th Nov. 2015	In Malaysia, at least 1,421 people were affected by the floods and had to move out of their homes in five different States of Sabah, Perak, Sarawak, Pahang and Kedah.
Sabah	Jan 20 th 2015	Flood has affected people in Sabah State. As reported, water inundated many areas in Beaufort, Sipitang and Tenom District. The situation was triggered by high rainfall intensity. Impact: 4,134 people were evacuated Response: The government moved the affected families to the evacuation centre and provided assistance.
Sarawak	Jan 17 th 2015	High rainfall intensity has caused another flooding in Sarawak State. National Security Council stated that flood affected district of Kuching, Samarahaan, Mukah and Limbang. Impact: 3,892 people were evacuated Response: The government provided evacuation centre and distributed relief items for the victims.
Flood (West Coast)	Nov 29 th 2014	Due to heavy rainfall in the past week, several flood situations have occurred in the Western Coast State of Malaysia. The affected area includes: Alor Gajah in Melaka, Johor and Selangor additionally landslide also occur in Daerah Seremban, Negeri Sembilan Impact: S 1 death 120 families or 436 people were evacuated Response: S local authorities provided the temporary shelter and relief items to the affected population
Flood (Several Districts)	Nov 23 th 2014	Due to continuous heavy rainfall caused by the beginning of Southeast Monsoon in the area, several states have experienced flooding. The affected states/provinces include: Perlis, Selangor and Kedah Impact: 562 people or 222 families evacuated in 18 evacuation centre

		<p>Most impacted area is in Padang Besar, Perlis indicated by number of people evacuated (297 people) Response: S Local authorities responded to this situation by providing relief and temporary evacuation.</p>
Flood (Kelantan & Terengganu)	Nov 19 th 2014	<p>Continuous rain has created flooding situation in Kelantan and Terengganu. Impact: 2 death 1,189 families or 4,756 people were evacuated Response: The authority conducted evacuation to the exposed communities and set up evacuation centres</p>
Heavy Rain & Flash Flood (Cameron Highland)	Nov 5 th 2014	<p>Heavy rain has generated flashflood and landslide incident in Cameron Highland, Pahang. Residents of Bertam Valley and Kampung Baru were suffered due to the incident. Impact: 3 death and 5 injured. 47 families or 203 people were affected. 150 people were evacuated. 20 houses were damaged. Response: Local authorities conducted search and rescue operation, and evacuation.</p>
Flood (Perlis & Kedah State)	Sep 16 th 2015	<p>The continuous rain has triggered flooding in Perlis and Kedah State . The National Security Council (MKN) was reported to have evacuated several families due to the situation. Impact: 127 families were affected in Perlis At least, 1,000 people were affected by flood in Changlun, Kedah 438 people were evacuated to 12 evacuation centres in Perlis. Response: The local government has responded to the situation and evacuated the victims.</p>
Flood (Kelantan)	Dec 16 th 2014	<p>Due to heavy rainfall caused by Seasonal Moonsoon, flood has occurred in Kelantan. Impact: S: 4,677 persons were affected Response: : local authorities responded to this situation and provides emergency evacuation shelters</p>
Kuala Lumpur	Apr10th2013	<p>Reports from Kuala Lumpur have said there was a massive thunderstorm on the early evening of 10th April, from around 17:30. The storm and heavy downpour that accompanied it lasted for about 1 hour. Incredibly the rainfall was so heavy during that short time that it wreaked havoc across the city of Kuala Lumpur. In particular the roads and transport system generally has suffered.</p>
Kuala Lumpur	Sep2th 2013	<p>After heavy rainfall on Sunday 1st September, flash floods affected several parts of Kuala Lumpur. There have been no reported casualties. The worst to suffer the city's commuters as several major highways were closed, including the Federal Highway. Some roads became impassable due to flood waters, others became blocked by stranded vehicles. Fallen trees were also a problem, and the Selangor Fire and Rescue service had to send out teams to help clear various roads. However, Kuala Lumpur is making some progress in flood prevention and protection, and currently has a project providing flood water ponds located in Batu, Jinjang and Kepong, able to accommodate high water levels of the Gombak River when necessary. Kuala Lumpur also has the SMART Tunnel (Stormwater Management and Road Tunnel), which opened in 2007 and is an innovative solution to the city's flood and traffic problems. The submerged tunnel can carry both flood water and vehicles.</p>
Sabah	Sep9th 2013	<p>Flash floods struck yesterday in the Malaysian state of Sabah after around 2 hours of heavy rainfall. The worst affected areas are around the state capital, Kota Kinabalu, and suburbs and nearby areas including many parts of Penampang. Rains were expected to ease over the next few hours. Plans have been drawn up to develop flood defences for areas most at risk. However flood mitigation has not yet gone beyond the planning and discussion stage with the Penampang District Council. Perhaps these recent floods will stress the need for flood defences to be developed. One local politician, Moyog Assemblyman, Terrence Siambun said "The mitigation plan must be implemented now. Natural disasters strike at any time and we cannot just sit and wait for something terrible to happen before taking action."</p>
Kulim	Oct21th 2013	<p>Heavy rainfall on 20th October brought flash floods which inundated villages around Kulim, in Kedah state, Malaysia. Around 200 people had to be evacuated from their homes immediately yesterday. A further</p>

		300 have also since been evacuated today after rising water levels of rivers posed a further threat to residents' safety. The displaced are currently taking shelter in temporary accommodation in 9 relief centres.
Perak & Kedah	Oct23th 2013	Around 1,000 people had to be evacuated in Manjung district of Perak state. Continuous heavy rainfall since 20th October led to flooding in the district. However the situation was worsened by an unusually high tide. Some reports claimed the flood water was as high as 1.6 metres in some areas of the district. Flood water levels in Sungai Batu were up to 1.5 metres and 1.6 metres in Padang Serai. Kampung Tebuk Yan also saw some flooding, with flood waters as up to 1 metre deep.
Pahang , Kedah & Perak	Oct24th 2013	Pahang State At least two people have died and another remains missing in Cameron Highlands after the Bertam River overflowed. It is understood that the flooding of the river was caused by the release of water from a nearby dam. At least 80 houses were destroyed in the flooding. Kedah State Meanwhile, flooding in Kedah, Malaysia appears to have worsened in some areas. It was believed that the flood waters were receding, but further heavy rainfall, particularly in the Pendang district, has meant that a further 200 or more people have needed evacuate their homes and take refuge in relief centres. Perak State Elsewhere in Malaysia, flooding that had previously led to the evacuation of around 1,000 people in Perak state now appears to be receding. However, there are still over 700 people staying at relief centres and this time of year often sees heavy rainfall that could soon change the situation in Perak, as it did in Kedah state.
Cameron	Nov15th 2013	In October 2013, flash-flooding in the catchment of the Ringlet reservoir coupled with existing siltation resulted in a rapid rise in the water level, necessitating such a step. Unfortunately, even the controlled release of water resulted in the flooding of 100 houses in the village Kg Bertam Valley on the Sundai Bertam below the dam, and led to the death of four people.
Pahang & Sarwak	Dec2th 2013	There have been 2 reports of recent flooding in Malaysia. On 26 November, there were flash floods in Kampung Long Busang in Sarawak, affecting an estimated 513 people from around 70 or more families from the village, which is so remote it takes an 8 hour boat ride upstream of the Bakun dam to get there. Homes and a primary school were damaged in the floods.
Worsen	Dec3th 2013	Pahang As reported by FloodList yesterday, the area of Rompin in Pahang, Malaysia suffered flooding after prolonged heavy rainfall. Around 100 people, mostly the residents of the village of Kampung Kesing Orang Asli, were evacuated. Since then, the rainfall has continued and the floods worsened, affecting a wider area. Today it was announced that over 5,000 people have since been evacuated from Rompin, Kuantan, Pekan and Maran. Flood relief centers have been set up for all of those displaced. The heavy rainfall in Pahang is continuing and the floods are expected to worsen. Johor Over 1,000 people needed to be evacuated from floods in Johor state. Around 16 villages in the area around Mersing have been affected. This is a coastal area, and yesterday's floods were in part caused by the high tide of 3.3 meters. It is expected to be at least one week before the water fully subsides. Terengganu There were also reports of some flooding in the low lying areas of district of Kemaman, Terengganu, where around 20 people had to be evacuated last night. However, the situation today is much worse and around 450 people have evacuated and are now in a flood relief camp. Numbers evacuated so far: ·Kelantan – 232

		<p>•Terengganu – 2811 (1 person reported killed in the floods, another missing)</p> <p>•Pehang – 9030 (2 people reported killed)</p> <p>•Johor – 5,659</p>
Pehang, Terengganu, Kelantan & Johor		<p>Pehang 1 dead, 2 missing 38,323 evacuated and staying in relief centres 122 relief centres across seven districts Kuantan worst affected, with 30,307 staying in relief centres there Rompin (4,289 evacuated), Pekan (3,037), Maran (637), Jerantut (25) Lipis (21) and Temerloh (7) have also been affected. As much as 243.6 mm of rain fell in 24 hours in Kuantan on 3 December</p> <p>Terengganu 1 dead 7,780 evacuated 101 relief centres Floods have now struck in Besut district Kemaman district worst affected, with 3,840 victims in relief centres there Dungun (2,130 evacuated), Hulu Terengganu (1,654) and Marang (54) are also badly affected.</p> <p>Kelantan 986 evacuated Kuala Krai is the worst affect, with 646 evacuated. Machang (71 evacuated), Pasir Mas (24), Pasir Puteh (109) and Tanah Merah (136) also affected. River levels are of most concern in Kelantan, in particular Sungai Lebir, Sungai Kelantan and Sungai Golok. On 5 December, the river levels were: Sungai Lebir at Tualang – 36.19ms (danger level 35m) Sungai Kelantan at Tangga Krai – 25.35m (danger level 25m) Sungai Golok at Rantau Panjang – 10.21m (danger level 9m)</p> <p>Johor 8,250 evacuated Mersing was the worst affected, with 5,694 people at relief centres Segamat (1,081), Kluang (975), Kota Tinggi (212), Muar (217) and Batu Pahat (71) were also affected.</p>
Johor	Dec9th 2013	As of yesterday, 8 December, there were 65,956 people displaced by the floods across much of eastern Malaysia, staying in 217 relief centres that were set up by the authorities. It is thought that with the improvements of the situations in Kelantan and Johor, that number may now have fallen. The figure for Johor is now thought to have fallen from 1,024 to 602 still in the relief centres.
Sabah	Dec20th 2013	Local media are reporting that around 22 villages have been flooded. The worst affected area is the sub-district of Kemabong, in particular Kg Gumisi, where around 44 families were evacuated. Evacuations were also necessary in Kuala Tomani and Kg Bangkulin, although it is understood this involved around only 10 families. There have been no reports of any injuries or fatalities in the flooding.
Kuching City	Jan6th 2014	Continuous heavy rainfall on Sunday 5 January 2014 left areas of Kuching, the city in the Malaysian state of Sarawak, suffering from flash floods. Many roads were said to be under water. According to The Malay Online the worst affected areas of the city were Batu Kawa, Matang and Gita.
Kelantan	Jan11th 2014	Two districts of the state – Jeli and Tanah Merah have been worst hit. Over 1,000 people have been evacuated in Jeli. The evacuees are being sheltered in 4 special relief centres that have been set up. More than 200 people have been displaced in Tanah Merah.
Sabah	Feb17th 2014	Floods that struck the Sabah region of Malaysia on 13 February 2014 have now affected around 50,000 people. The recent flooding has been described as the worst in the region for 30 years.
Kuala Lumpur	Oct2nd 2014	Just 90 minutes of heavy rain on 01 October 2014 brought traffic in parts of Kuala Lumpur to a standstill and turned a parking lot in the Jalan Pinang area into a lake. (Flash Floods)

Sabah	Oct7th 2014	Kota Kinabalu, the capital of the state of Sabah, located in East Malaysia, saw 147 mm of rain fall in the 24 hour period between 06 and 07 October 2014.
Cameron Highlands	Nov6th 2014	The Cameron Highlands in Malaysia has once again experienced deadly flooding, just over a year after 4 people died in floods in the same region. (Flash Floods)
Thailand-Malaysia Border	Dec19th 2014	Across the region a total of four people have been reported as killed in the floods and 14,000 people evacuated (12,000 in Malaysia). Two people remain missing in the floods in Thailand.
Sabah, Kelantan, Terengganu and Pahang	Dec23th 2014	Currently 20,468 people have evacuated their homes in Kelantan. Over 6,000 people remain in relief centres in Terengganu. In Pahang over 3,000 have been displaced. Kuantan is the worst hit district, with 1,623 people being housed at 20 relief centres. Malan district has also been badly hit and over 1,000 people have been displaced there.
Sarawak	Jan19th 2015	The Malaysian Government said yesterday that 3,485 people have been evacuated in the state of Sarawak after flooding in the area.
Borneo & Sumatra	Jan20th 2015	In Borneo, over 5,000 people have been evacuated in the flood-hit state of Sarawak. This figure has dropped slightly from almost 7,000 earlier today. 38 relief centres have been set up to house those displaced by the floods. The worst affected area is around the state capital of Kuching, where at one point almost 5,000 were staying in temporary accommodation. Just over 1,000 people have been displaced in Padawan.
parts of Negeri Sembilan state	Dec15th 2015	Malaysia's National Disaster Management Agency (NDMA) report that flooding in several states has forced almost 3,000 people to evacuate since 11 December 2015.
Johor, Melaka, Negri Sembilan & Sarawak	Feb9th 2016	Floods in the states of Johor, Melaka, Negri Sembilan and Sarawak in Malaysia have displaced at least 1,600 people. Two people are reported to have died in the floods in separate incidents in Johor.

Source: JICA Project Team based on Information of ADRC, Floodlist and AHA Centre

Table A8.1.5 Record of Flood (Myanmar)

Place	Date	Damage
Myanmar		
Cyclone	28 th May. 2004	On 19 May, a storm that formed over the Bay of Bengal crossed the southwest coast in Myanmar near the border with Bangladesh. The storm with winds of over 160 km per hour caused tidal surges and flooding in the four towns of Pauktaw, Myebon, Sittway and Kyaukpyu in Rakhine State. This storm killed at least 140 people in Myanmar and left 18,000 homeless
Tropical Cyclone	4 th May. 2006	Another 14 people were still missing after the storm swept inland on April 29 and struck Kyangin Township, 130 miles (210 km) northwest of the capital, Yangon, the Kyemon newspaper said.
Flood	11 th Oct. 2006	At least 57 people have been killed and thousands forced to abandon their homes as the worst floods in recent memory wreaked havoc across Thailand and Burma on Thursday. One official says Burmese authorities evacuated 500 homes on the outskirts of the central city of Mandalay after floodwaters rose overnight, while residents say about 10,000 people had fled to emergency shelters.
Flood	6 th May. 2007	At least five people have died in the main commercial city of military-ruled Myanmar after the heaviest rainfall in at least four decades, state media and government officials said on Sunday.
Cyclone	2 nd May. 2008	A tropical cyclone has killed at least 22,500 people in Myanmar and 41,000 people are missing.
Flood	4 th Jul. 2009	Over 1,000 people have been affected and are in need of support following a landslide due to heavy rains in northern Myanmar.
Flood	16 th Jun. 2010	Heavy rain in Myanmar has triggered floods and landslides, washing away bridges, blocking roads and killing at least 25 people
Cyclone	22 nd Oct. 2010	The Government has reported that at least 45 people are dead or missing to date, while 101,923 people remain homeless and at least 20,380 houses were completely destroyed, with a total of at least 260,000 people (52,000 households) affected.
Flood	7 th Aug. 2011	In Toungoo, 3,122 persons from 621 households were evacuated to 11

		relief camps.
Flood	20 th Oct. 2011	Rainfall in Magway Region, Myanmar on 20 October 2011 caused 59 death toll and 47 missing destroying cattle, crops and buildings by the flood.
Flood	Aug. 2012	More than 68,000 people are staying in 308 camps around the country, according to the Social Welfare, Relief and Resettlement Ministry.
Flood	29 th Jul. 2013	As of 2 August, the Relief and Resettlement Department (RRD) report 38,316 people displaced by monsoon floods in Kayin, Mon, Tanintharyi and Rakhine States and the Ayeyawadi Region.
Flood	5 th Aug. 2014	Continuous rains has caused flooding in Bago Region. As of 8 Aug, the Department of Relief and Resettlement reports around 15,850 people from Bago, Kawao, Thanatpin and Wah townships are in temporary shelters.
Flood & landslide	2 nd Jul. 2015	Over the past several days, increasing heavy rains have caused severe flooding in the western state of Rakhine, Myanmar. It is estimated that 13,000 people were affected by the floods, with over 8,500 evacuated so far.
Heavy Rain & Flood	19 th Jul. 2015	Torrential rains have triggered flooding in Kachin State and Sagaing Region, Myanmar. Some 57,000 people were affected in Sagaing with 2,000 people affected in Kachin.
Heavy Rain & Flash Flood	9 th Jun. 2016	Heavy rains triggered flash floods in Kawlin, Wuntho and Pinlebu townships in Sagaing Region, Myanmar on 9 June 2016. More than 25,000 people were affected in Kawlin.
Flood	5 th Jul. 2016	130 people affected by flood in Myanmar's western Rakhine state.
Flooding	Jul28th 2015	Myanmar has experienced torrential rains starting from the end of June. The rains are associated with the Southwest Monsoon, which marks the start of the rainy season in Myanmar. Monsoon season usually begins in May or June and continues until October. The development of a tropical storm over the Bay of Bengal has also enhanced the situation by creating more heavy downpour and thunderstorm over the last days of July. The flooding affected 13 states and regions in Myanmar, which include: Rakhine, Sagaing, Magway, Chin, Ayeyarwady, Bago, Mandalay, Kayin, Kachin, Shan, Mon, Yangon and Tanintharyi. Based on most recent information from NNDMC (15 August), the flood incidents have claimed for Impact: 110 death 1,615,335 people were affected 333,178 people were displaced 16,095 houses were damaged Over 1.4 million acres (or 566,000 ha) of farm land were inundated and 910,000 acres (370,000 ha) were damaged by the floods.
Flood in several states	Jun25th 2015	The Southwest Monsoon which marks the start of the rainy season (May/June to October) has triggered flooding in Myanmar. The flood has affected several districts and townships in Rakhine State, Tanintharyi Region, Kayin State, Ayeyarwaddy Region and Bago. Impact: 7 death 14,426 were affected 2,453 houses were affected 69 ha of agricultural land was damaged in Arakan
Typhoon Kalmaegi	Sep18th 2014	Relief and Resettlement Dept (RRD) of Myanmar reported flooding and basin erosion as the effect of Typhon Kalmaegi. The affected area were: - Tachileik in Shan State - Katha in Sagaing Region - Singu in Mandalay Region - Ingapu in Ayeyarwaddy Region Impact: as of 23 September 2014 6 death 1,267 families were affected 4,905 people were displaced and stayed inside 6 evacuation centres 1,298 houses were damaged
Flashflood in Tachileik	Sep6th 2014	Due to torrential rain in the mountainous area, causing flash flooding in Tachileik of Shan State Impact: 1079 families affected 4109 people evacuated 900 houses inundated
Flooding	Aug23th 2013	As many as 25,000 people were evacuated after heavy rainfall brought floods to Karen, Mon and Rakhine states. Around 80 relief camps were set up for those displaced. Flooding continued into August in various areas of the country, including Rangoon, but especially in the border regions with Thailand.
Flooding	Sep25th 2013	In Myanmar flooding has been caused by the overflowing Ayeyarwaddy River. Particularly badly hit is the Hinthala Township, Ayeyarwaddy Region, where around 1,000 people have been displaced.

Floods	Aug5th 2014	Heavy monsoon rain has flooded 5 villages near Hlegu, Yangon (Rangoon) region, Myanmar. Local media say that around 3,000 people have been affected, with some areas under as much as 1 metre of flood water. The heavy rain flooded the nearby Bago (Pegu) river and Ngamoeyeik creek, which inundated the villages of Ngwenanthar, Malit, Sinhpon, Sitpinmyauk and Yaekyaw.
Flooding	Jul3rd 2015 Jul22th 2015	The ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre) is reporting that floods caused by heavy rain since 15 July have affected around 60,000 people in Kachin State and Sagaing Region in Myanmar.
Cyclone Komen	Aug3rd 2015	According to initial figures from the Government's Relief and Resettlement Department (RRD), as of 01 August, 2015, over 156,000 people have been affected across Sagaing, Kachin, Shan, Mandalay, Chin, Rakhine, Kayin, Mon, Bago, Magway, Ayeyarwady and Yangon.

Source: JICA Project Team based on Information of ADRC, Floodlist and AHA Centre

Table A8.1.6 Record of Flood (Philippines)

Place	Date	Damage
Philippines		
Typhoon	Sep-Oct. 1998	Massive flooding, brought about by rising waters in the lowlying areas, caused the death of 27 persons. Extensive floods triggered by back-to-back typhoons have affected a wide area on the main island of Luzon, Philippines
Typhoon	Dec. 1998	Typhoon Faith hit Philippine on 12 Dec 1998, and caused damage in 17 provinces. 8 people have been killed, 5 people have been injured by 15 Dec 1998. Dead: 8 Injured: 5 Missing: 17 Provinces affected: 17 Displaced populations: 9,214 families or 51,785 people
Flood	4th Feb. 1999	Flash floods occurred along the Lampan river on 21 February. The floods were caused by continuous rains in the province of Lanao del Norte in Mindanao.
Flood & Land Slide	Aug. 1999	The heavy rainfall have been pouring down for a week. It have provoked lethal floods and landslides in the Metropolitan Manila and nearby provinces. Most severely affected is the Rizal Province. Other provinces, such as Pangasinan, Pampanga or Bulacan have also been inundated. Heavy monsoon rains left 177 people dead and 1.3 billion pesos (33 million dollars) in damage.
Flood	2nd Jan. 2000	A week of torrential rain at the end of January 2000 has caused flash floods on the island of Mindanao in the southern Philippines. Affected population is 153,885, evacuated population is 14,460, fatalities is 34, missing persons is 16. Houses totally destroyed is 55.
Tropical Cyclone	4-10th Jul. 2000	Tropical Depression Edeng in conjunction with the southwest monsoon has brought heavy rains over the entire area of Luzon and the Visayas in the Philippines. According to a report issued by the Philippine National Disaster Coordinating Council (NDCC) on 6 July 2000, 12 persons have been killed, 5 persons have been injured and 1 person is missing. Meanwhile, the local news agency reports that 22 people have been killed so far.
Typhoon	4th Jul. 2001	Typhoon Utor has killed at least 163 people, injured 180 people and left 60 others missing in the Philippines.
Typhoon	7th Nov. 2001	At least 22 people were killed and more than 100 were missing as tropical storm Lingling slammed across the Philippines' central and southern regions.
Flood	21st Nov. 2001	Rising flood waters forced 29,000 people from their homes, washed out several roads and damaged 66 houses after several days of heavy rains in the central Philippines
Tropical Storm	1st Dec. 2001	Tropical Storm Nanang cut a wide swathe of destruction in Central Visayas, where damage to agriculture, fishery, livestock and infrastructure reached P364.3 million, the biggest amount in recent catastrophes, said the final report of the Regional Disaster Coordinating Council
Flood	7th Dec. 2001	Tropical storm Kajiki departed the Philippines on Friday leaving two people dead and more than 6,400 people displaced by flashfloods and landslides.
Flash Flood	5th Jan. 2002	Seven people have been killed and three others are missing after flash

		floods caused by heavy rains hit the southern city of Davao.
Flash Flood	27th Mar. 2002	Twenty-eight people were killed and two others were missing after flashfloods triggered by heavy rains swept through two southern Philippine provinces Dead: at least 35 people Missing: 4 people More than 55,000 people displaced. Damaged: nearly 1,000 homes More than 50 bridges were damaged.
Flood & Landslide	7th Jul. 2002	At least 27 people were killed in the Philippines when monsoon rains triggered floods and landslides and forced more than 24,000 people to flee their homes.
Flood	13th July 2002	At least 50 people have died in rain and floods brought by a succession of typhoons and tropical storms over the past week
Flood	21st Jul. 2002	Three people drowned in floods and a landslide buried alive a family of three as heavy rains pummelled the Philippines' main island of Luzon, including Manila.
Strom Flood	26th Jul. 2002	A week of heavy rains and flooding has left 18 people dead in the Philippines
Floods	12th Aug. 2002	At least 17 people have been killed as torrential rains unleashed floods over a wide area of the Philippines.
Flash Flood	5th Nov. 2002	Three people were killed and 40 others were missing when a Dolbo passenger bus loaded with 60 passengers capsized in a flashflood while trying to go through the temporary overflow bridge along the Daang Maharlika at Siffu River in this province
Flash Flood	25th Mar. 2003	A family of five drowned in a flash flood that hit three interior barangays of Malita, Davao del Sur
Tropical Storm	26th May. 2003	A tropical storm lashed the northern Philippines for a third day on Wednesday, raising the death toll to 10 and causing widespread flooding. Death toll:37 people Injured:16 people Missing:1 people Displaced:8,000 people Sheltered:3,704 thousand people
Tropical Storm	14th Jun. 2003	Landslides and floods caused by tropical storm "Soudelor" hit central and northern Philippines and 11 people were killed, three were injured and two others remain missing. DEATHS: 12 MISSING: 2 INJURED: 3 AFFECTED FAMILIES: 18,832 AFFECTED PERSONS: 49,489 HOUSES DESTROYED: 176 TOTAL DAMAGE PROPERTIES (AGRI/LS, FISHERIES, INFRA): 4.299 MILLION PESOS (81,116 Thousand Dollars)
Typhoon	22th Jul. 2003	On 22 July 2003 Typhoon Imbudo which was centered about 360 kilometers (225 miles) southeast of Aparri town in Cagayan province, hit the Philippines with peak sustained winds of nearly 200 kilometers (nearly 120 miles) an hour, rescuers and radio reports said. Typhoon Imbudo has reportedly killed 21 people in the Philippines this week.
Tidal Waves	23th Jan. 2004	Giant waves occurred in the province of La Union of the Philippines on 23 January 2004. Four fishermen have been confirmed dead and 23 are still missing.
Typhoon	18th May. 2004	Landslides set off by a super typhoon "NIDA" (Dindo) have destroyed hundreds of houses in an eastern coastal town of the Philippines, on May 18, 2004. Typhoon Nida killed at least 19 people and displaced thousands.
Typhoon	30th Jun. 2004	Rescuers in the Philippines have recovered the bodies of five more victims from typhoon Mindulle, raising the death toll to 30, with 12 others still missing and feared dead.
Typhoon	26th Aug. 2004	Death toll rose to at least 29 and 1.3 million people have been affected in the Philippines as heavy rain whipped up by two typhoons caused floods and landslides in Manila and neighbouring areas. Disaster officials said the death toll rose to at least 29 on Monday. About 1.3 million people have been affected by floods and landslides during five days of heavy rain caused by two typhoons churning north of Philippine .
Typhoon	20th Nov. 2004	At least three people were killed and more than 3,300 others evacuated after a typhoon, Muifa, hammered the northern Philippines. At least 65 people have died and thousands were left homeless in the Philippines as fresh rains and flooding from a tropical storm on Tuesday compounded the misery and damage from a typhoon over the weekend.
Typhoon	30th Nov. 2004	The death toll from landslides and flash floods in the eastern Philippines jumped to nearly 350 with 150 others missing Tuesday, most of them from a region still reeling from last week's deadly typhoon.

Tropical Storm	17th Mar. 2005	Two passenger ferries capsized during a fierce tropical storm in the central Philippines on Thursday, killing at least three people and leaving eight missing, officials said. The death toll from a tropical storm that hit the central Philippines this week has risen to 15, with at least 16 people still missing. Local officials say a fishing boat sunk off Tarangan town on the eastern island of Samar, killing eight crew members and leaving up to 15 missing.
Flood	19th Sep 2005	Floods, landslides and a boat accident following days of heavy rains have left at least seven people dead in the Philippines, officials said. The Office of the Civil Defense said the flooding affected more than 25,900 people, including 2,242 who were evacuated from their communities in seven northern provinces and Metro Manila. Many have since returned home. The OCD said 43 villages in Pampanga and Nueva Ecija were still underwater on Saturday. Officials blamed garbage-clogged drains for the quick rise and slow recession of floodwaters in Metro Manila. The seasonal monsoon rains that drenched wide areas of Luzon were aggravated by a low-pressure system that swept through the region.
Typhoon	23rd Sep. 2005	At least 16 people were killed and about 20,000 people are staying in shelters after Typhoon Damrey swept the main Philippines island of Luzon on Friday.
Flood	6 th Dec. 2005	Two people were killed and nearly 50,000 were displaced by floods triggered by continuous monsoon rains in the Philippines. Affected: 192,946 (42,843 families) In shelters: 6,995 (1,399 families) Houses totally destroyed: 29 Houses partially damaged: 47
Flash Flood	14 th Feb. 2006	Philippine social welfare officials say six people have now died in flashfloods that hit four provinces in the south of the country.
Typhoon	13 th May. 2006	Typhoon "Chanchu" whipped through the northwestern Philippines on Saturday, after killing six people in stormy seas and leaving more than 10,000 people stranded as air and ferry services were suspended. At least 37 people are thought to have died in tropical storm Chanchu, now heading towards southern China.
Typhoon	13 th Jul. 2006	Tropical storm Bilis became a full-fledged typhoon after killing at least nine people in the northern Philippines as it headed toward Taiwan, dumping heavy rains and shutting down schools and offices.
Flood	15 th Aug. 2006	Floods and landslides triggered by heavy monsoon rains have killed 16 people in the southern Philippines and displaced tens of thousands, a disaster official said on Tuesday. Tens of thousands were displaced by the floodwaters and landslides. Eight people, including two children, were reported missing when soil, loosened by almost five days of rain, buried a cluster of shacks in the southwestern province of Zamboanga del Sur on Monday.
Typhoon	27 th Sep. 2006	On September 28, 2006, at least eight people have been killed and several are missing in the Philippines after Typhoon Xangsane brought fierce winds and rain.
Typhoon	30 th Oct. 2006	Typhoon Cimaron battered the northern Philippines on Monday, killing at least 10 people in a barrage of landslides and flooding, officials said.
Typhoon	6 th Dec. 2006	Tens of thousands of people spent the night in makeshift shelters as Typhoon Utor plowed through the central Philippines on Sunday, killing three and causing blackouts and cutting communication lines in the archipelago.
Flood Landslide	9 th Aug. 2007	On 9 August, three people were killed, 17 wounded and 13 were missing as tropical storm Wutip left the Philippines, after causing floods and landslides in parts of the north. Tropical storm Wutip kills 3 in Philippines, 17 hurt
Flood Landslide	19 th Nov. 2007	Landslides caused by a tropical storm LANDO, have killed people 13 in the central and southern Philippines on 19-20 November 2007. 9 Dead 5 Injured 18,084 Affected 11 Houses totally damaged 7 Houses partially damaged
Typhoon	25 th Nov. 2007	Heavy rain from an approaching Typhoon Mitag lashed the Philippines on 25 November, 2007, killing at least 12 people and destroying homes and rice paddies.
Floods	7 th Jan. 2008	Due to northeast monsoon affecting eastern and southern Luzon, the Philippines, rains and floods caused 2 missing and 2,330 affected. Dead: 1

		Injured: 4 Missing: 0 Affected: 29,184 Affected families: 7,435
Flood Landslide	12 th Feb. 2008	There were 35 persons reported dead and 27 injured while 10 are still missing due to flooding and landslide in the Philippines. 597,077 affected
Typhoon	12 th May. 2008	Although typhoon Rammasun (Butchoy) did not cross mainland, the southwest monsoon and rains it brought about has triggered floodings and minor landslides in Metro Manila, Region 4-B, 6,7,12, and ARMM, the Philippines. A total of 54,252 persons were affected and 1,710 persons evacuated.
Typhoon	17 th May. 2008	A total of 416,697 persons were affected by flooding, storm surge and landslide triggered by tropical storm Halong in Regions 1, 3, 6 and CAR, the Philippines.
Flash Flood	5 th Jun. 2008	Authorities say flash floods have killed two men and sent 1,000 residents fleeing their southern Philippine riverside village.
Typhoon	Typhoon	Typhoon Fengshen has killed 155 people in the Philippines in a torrent of flashfloods and landslides, the head of the Philippines Red Cross, Richard Gordon, told local radio on Sunday. Dead: 557 Missing: 87 Injured: 826 Affected: 4,784,634 Totally damaged houses: 81,510 Partially damaged houses: 326,321
Typhoon	14 th Jul. 2008	Typhoon Kalmaegi (Helen) has caused 2 deaths killed and 31,129 people affected in the Philippines as of 18 July 2008.
Typhoon	20 th Aug 2008	Landslides and floods triggered by Typhoon Nuri in the northern Philippines have killed seven people before it started moving toward Hong Kong. Dead: 14 Missing: 23 Injured: 13 Affected: 352,135 Totally damaged houses: 706 Partially damaged houses: 7,874
Floods	7 th Sep. 2008	Rescue workers pulled eight bodies buried under tonnes of mud after days of monsoon rains loosened soil and buried about 20 makeshift houses near a mining town in the southern Philippines, an army spokesman said on Sunday. Dead: 24 Missing: 2 Injured: 31 Totally damaged houses: 83
Typhoon	19 th Sep. 2008	Typhoon Hagupit entered the Philippine Area of Responsibility as a Tropical Depression on September 19, 2008. It intensified into a typhoon, although it did not make landfall, enhanced the southwest monsoon and brought rains over southern Luzon and Visayas particularly over the western sections. Dead: 11 Missing: 17 Injured: 23 Totally damaged houses: 170 Partially damaged houses: 933
Flash Flood	21 st Nov. 2008	The population affected by the continuous heavy rains that triggered flashfloods in the provinces of Cagayan and Isabela, the Philippines on 21 November 2008 now reached 32,575 families/136,490 persons. Dead: 14 Missing: 15 Evacuated: 23,771 persons (32,049 families) Affected: 412,209 persons (87,350 families)
Flood	8 th Dec. 2008	The continuous rains on 8 December 2008 has caused flooding in Northern and Oras of Eastern Samar, the Philippines. Two persons were reported dead due to drowning and 6,485 families were affected. 10 persons died due to the flooding in Region 8 while 8 persons were injured and 143,309 persons (26,073 families) were affected.
Flood	7 th Jan. 2009	Nearly 200,000 people have been displaced by severe flooding caused by heavy rains from 7 to 13 January 2009 across the eastern coasts of the Philippines, according to disaster relief officials. So far, nine people have been killed, either by drowning or in landslides, while nine more are missing. Dead: 53 persons Missing: 12 persons Injured: 18 persons Affected: 248,307 families / 1,186,880 persons Totally damaged houses: 2,570 Partially damaged houses: 9,733
Flash Floods	5 th May. 2009	Flash floods and landslides triggered by heavy rains dumped by a typhoon have killed 20 people and left three missing in the Philippines, the country's disaster agency said on Monday. Dead: 27 Missing: 1 Injured: 5 Affected: 246,170 Totally damaged houses: 20 Partially damaged houses: 17 Damaged agricultural land: 19,012.68 ha
Typhoon	8 th May. 2009	Fifteen people were killed when a typhoon pounded the northern Philippines, triggering mudslides and tearing roofs off houses before weakening, officials said on 8 May 2009. Dead: 47 Missing: 15 Injured: 42 Affected: 161,020 Totally damaged houses: 6,084 Partially damaged houses: 17,242
Tropical Cyclone	23-25 th Jun. 2009	The Philippines was struck by the tropical cyclone "Nangka" from 23 to 25 June 2009. 7 people were killed, 8 people are missing, and approximately

		53,897 people were affected. Dead 7 Missing 8 Injured 5 Affected 53,897 Totally damaged houses 320 Partially damaged houses 2,428
Floods	30 th Jul. 2009	On 30 July, 2009, flooding affects 160,000 in southern Philippines. Heavy rains across the southern Philippines have resulted in massive flooding in many low-lying areas of Mindanao Island. Some 159,775 people in central Mindanao or about 31,955 families have been affected so far, and while flooding in some areas has subsided, large parts remain inundated.
Typhoon	8 th Aug. 2009	The fringes of Typhoon Morakot killed 10 people and injured 18 others in the Philippines, a spokeswoman for the National Disaster Coordinating Council told CNN. Dead: 22 Missing: 4 Injured: 18 Affected: 192,211 (18,618 families) Evacuated: 11,216 (2,925 families)
Flood	26 th Sep. 2009	Torrential rains and subsequent flooding from Tropical Storm Ketsana have claimed at least 50 lives in the Philippines, a government official said Sunday. Dead: 464 Missing: 37 Injured: 529 Affected: 4,730,153
Typhoon	4 th Oct. 2009	Typhoon Parma crossed the northern tip of the already storm-battered Philippines over the weekend, triggering landslides that killed at least 12 people. Dead: 465 Missing: 47 Injured: 207 Affected: 4,478,284 Totally damaged houses: 6,038 Partially damaged houses: 50,780
Typhoon	30 th Oct. 2009	The fourth storm, Typhoon Mirinae, in a month to hit the Philippines has lashed the eastern coastal province of Quezon, bringing heavy rain and winds to the region. At least seven people have been killed and several others are missing. Dead: 34 Missing: 5 Injured: 20 Affected: 802,155 Totally damaged houses: 9,868 Partially damaged houses: 57,843
Flood	24 th Nov. 2009	Agusan del Norte experienced flooding due to swelling and overflowing of Puyo and Celopan Rivers of the Philippines due to continuous rains for 5 days since 20 November 2009. 4 persons were dead and 13 were injured. A total of 12,326 families / 48,129 persons were affected in Region X and in CARAGA. 148 families / 1,132 persons were affected and displaced and are currently staying in 3 designated evacuation centers.
Typhoon	14 th Jul. 2010	Parts of Manila may be without power until Friday after Typhoon Conson hit the Philippines' main island of Luzon, killing at least 11 people with more than 50 missing.
Typhoon	18 th Oct. 2010	A fisherman is dead and two others were missing Monday as Typhoon Megi wreaked havoc in the Philippines.
Flood	3 rd Nov. 2011	Heavy rains caused flooding in Region 2, 3 and CAR of the Philippines. Seven were killed and three remain missing.
Flood	31 st Dec. 2011	Heavy rains and flooding in the Philippines have killed two people and displaced many thousands more.
Flood, Landslide	13 th Jan. 2011	The Low Pressure Area (LPA) which prevailed since January 31, 2011 to February 04, 2011 brought widespread rains over Visayas and Mindanao
Flash Flood	3 rd Jul. 2011	On 3 July 2011, a flashflood occurred in Gen. Santos City, Region 7 of the Philippines due to heavy rains and affected 866 persons.
Typhoon	28 th Jul. 2011	Typhoon Muifa affected in Regions I, III, IV-A, VI and NCR of Philippines, causing floods and landslides.
Typhoon	28 th Aug. 2011	Typhoon Nanmadol kills at least eight people in the Philippines.
Typhoon	27 th Sep. 2011	Typhoon Nesat crossed the Philippines main island late on Tuesday, leaving behind at least seven dead after it lashed crop-growing provinces and brought the capital to a near standstill as it flooded roads and villages and cut power supplies.
Flood	9 th Dec. 2011	Heavy rain and floods by the effects of Low Pressure Area have affected more than 18,000 people in the Philippines.
Typhoon, Flood	16 th Dec. 2011	Typhoon Washi (Sendong), with winds gusting up to 90km/h (56 mph), hit Mindanao late on 16 December, bringing heavy rain. More than 250 people were killed.
Flood	25 th Dec. 2011	Low Pressure Areas (LPA) and Northeast monsoon in Luzon and Visayas, the Philippines caused heavy rainfall, triggering flooding. Ten people were killed and 2 missing.
Typhoon	2 nd Jun. 2012	On 2 June 2012, Tropical Storm (later Typhoon) Ambo (Mawar) has gained strength as it moves along the eastern coast of northern Luzon in the Philippines. Flooding and landslide have occurred and four people were missing.
Flashflood	12 th Jun. 2012	On 12 June 2012, two persons died and at least 3,154 families were

		affected by flashfloods brought about by the shallow low pressure area that affected a large part of Soccsksargen Region in the Philippines.
Flash Flood, Landslide	28 th Jun. 2012	In the Philippines, Tropical Storm Dindo (Doksuri) has maintained its strength as it continues to move towards extreme northern Luzon. A flashflood occurred on 26 June 2012, 5:00 PM, affecting in Valencia Bukidnon. A total of 295 families were evacuated.
Typhoon	30 th Jul. 2012	Typhoon Saola swept past the Philippines, bringing heavy rains to large parts of the country. 8 people were killed and over 8,400 took shelter in 43 evacuation centers by 31 July.
Heavy Rain, Flood	7 th Aug. 2012	Torrential rains brought the Philippines capital to a standstill 7 August 2012, forcing at least 20,000 people to flee their homes.
Typhoon	10 th Oct. 2012	Tropical Storm Son-Tinh (Ofel) has crossed the southern part of Mindoro Island of the Philippines. Five people were killed and nine missing.
Typhoon	4 th Dec. 2012	Typhoon Bopha hit the southern Phillipine island of Mindanao early on 4 December 2012. Dead: 1,067 Injured: 2,666 Missing: 834 Affected: 6,243,998
Typhoon	12 th Aug. 2013	Typhoon Utor made landfall in the north of the main island of Luzon early on 12 August 2013, bringing winds of up to 200km/h (124 mph) and torrential rain. At least 23 fishermen were left missing.
Flood, Landslide	18 th Aug. 2013	Heavy monsoon rains aggravated by Tropical Storm Trami (locally known as Maring) caused flooding and landslides in 11 provinces and Metro Manila on the Luzon island. Three persons were reported dead and more than 94,200 persons have been affected.
Typhoon	21 st Sep. 2013	Typhoon Usagi (known locally as Odette) struck land on Saturday morning in the southern part of the Itbayat Island of the Philippines, leaving two killed, three missing and more than 19,900 people affected.
Typhoon	12 th Oct. 2013	Typhoon Nari (Santi) pounded the northern Philippines early Saturday 12 October 2013, killing 13 people.
Typhoon	8 th Nov. 2013	Typhoon Haiyan (Yolanda), the strongest storm on earth this year, slammed into the Philippines' central islands on 8 November forcing millions of people to move to safer ground and storm shelters.
Heavy Rain, Flood, Landslide	10 th Jan. 2014	Heavy rains set off floods and landslides in the southeastern Philippines, leaving at least 20 people dead, 13 missing and thousands displaced, officials said Monday, 13 January 2014.
Flood	13 th Jun. 2014	On 13 June 2014, a flooding incident occurred in Maguindanao Province due to persistent rainshowers and thunderstorms. More than 85,000 people have been affected by the flooding.
Typhoon	15 th Jul. 2014	Typhoon Rammason or Glenda in the Philippines hit eastern Rapu-Rapu island on 15 July 2014. Thousands evacuated from coastal villages. Killed: 106 Missing: 5 Injured: 1,250 Affected: 4,653,716 Totally damaged houses: 112,067 Partially damaged houses: 521,613
Typhoon	15 th Sep. 2014	Typhoon Kalmaegi swept out of the Philippines on 15 September 2014 after causing chest-deep floods in some rural areas. About 7,800 people sheltered from the typhoon in government evacuation centres. Killed: 4 Missing: 1 Injured: 5 Affected: 371,394 Totally damaged houses: 211 Partially damaged houses: 607
Typhoon	6 th Dec. 2014	Typhoon Hagupit (known locally as Ruby) made the landfall Eastern Samar province as a category 2 at 9:15 p.m. on 6 December, passing through the central Philippines. So far 2 persons were killed and about one million persons were affected. Dead: 18 persons Affected: 902,291 families/ 3,852,672 persons Injured: 916 persons Totally collapsed houses: 39,384 Partially collapsed houses: 214,040
Tropical Storm, Flood, Landslide	29 th Dec. 2014	At least 53 people have died in flooding and landslides caused by tropical storm Jangmi in the southern and central Philippines. Dead: 66 Missing: 6 Injured: 43 Affected: 124,305 families/ 578,549 persons Totally damaged houses: 610 Partially damaged houses: 2,687
Typhoon	10 th May. 2015	More than 2,000 people were fleeing their homes as Typhoon Noul struck the northern Philippines 10 May 2015, triggering warnings of possible flash floods, landslides and tsunami-like storm surges. Killed: 2 Affected: 4,523 Pre-emptively evacuated: 3,803

Flood	23-24 th Jun.2015	Due to continuous heavy rainfall from 23 to 24 June 2015, the people in low-lying areas of the Region XII (Central Visaya) in the Philippines experienced flooding. 4 people were killed and more than 20,000 people were affected. 7 dead 6 injured 126,338 affected 72 houses totally damaged 175 houses partially damaged
Tropical Storm	4 th Jul. 2015	Severe Tropical Storm (STS) "EGAY" made landfall over Palanan, Isabela in Philippines on 4 July 2015 and has moved northward. Landslides and flooding incidents were reported due to STS "EGAY". 55,567 affected 7 houses totally damaged 198 houses partially damaged
Flood	9 th Jul. 2015	Tropical Storm Linfa enhanced the southwest monsoon in Manila, causing floods in several Philippine towns in provinces. As of 09 July 2015, 1818 persons were affected and 5 persons were reported dead. 16 dead 11 injured 41,029 affected
Typhoon	21 st Aug. 2015	Ten people were killed while thousands fled to higher ground as powerful typhoon Goni brought torrential rains to the northern Philippines on 21 August 2015. Killed: 27 Injured: 22 Missing: 13 Affected: 318,359 Totally damaged house: 188 Partially damaged house: 5,554
Typhoon	1 st Oct. 2015	Tropical Storm Mujigae (Kabayan), caused several incidents of landslides, flooding, vehicular and maritime accidents in the Philippines. More than 22,000 persons were affected as of 5 October 2015. Killed: 1 Missing: 27 Injured: 2 Affected: 22,368 Totally damaged house: 27 Partially damaged house: 104
Typhoon	14 th Dec. 2015	Typhoon Melor (local name: Nona), which made a landfall in Central Philippines on 14 December 2015, caused severe damage to wide areas in the Philippines. Preemptive Evacuees: 742,991 People in Shelters: 287,227 Dead: 42 Injured: 24 Missing: 4 Totally Destroyed Houses: 98,371 Partially Destroyed Houses: 181,116 Flooded Area: 130 areas Economic Damage: PHP 6,455 million Power interruption: 7 cities and 59 municipalities
Tropical Depression	17 th Dec. 2015	Strong wind and heavy rain triggered by the Tropical Depression "Onyok" affected the CARAGA region, northeast Mindanao island, southern part of the Philippines on 17 December 2015. Preemptive Evacuees: 18,402 People in Shelters: 0, Totally Destroyed Houses: 5 Partially Destroyed Houses: 3
Heavy Rain, Flood & Landslide	8 th Jul. 2016	Typhoon Nepartak (locally called Butchoy) caused flooding in the Philippines. At least 7,500 families had been affected.
Typhoon 'Melor'	Dec 14 th 2015	The Typhoon 'Melor' or local name 'Nona' entered the Philippines Area of Responsibilities (PAR) in the morning of 12 December 2015. It made several landfalls on 14 – 15 December 2015 with sustained wind peaking up to 160 kph. On 19 December, the typhoon was gradually weakened and dissipated. Impact: As of 21 December 2015, the Philippine's National Disaster Risk Reduction and Management Council (NDRRMC) reported 40 people have died and more than 199,854 houses are damaged. So far, 362,753 people were served inside and outside evacuation centres in five affected regions in the central part of the Philippines Based on the most recent information from NDRRMC (Situation Report No 16, 21 December 2015), the Typhoon have claimed 40 lives and 199,854 houses were destroyed. There are 362,753 people were served inside and outside evacuation centres in Regions III, IVA, IVB, V and VIII. Three days after the typhoon dissipated, flooding are still reported in in Regions I, III, IVB and NCR. Floodings were reported in 425 areas where 150 of them are already subsided. An estimation cost of damage to infrastructure and agriculture from the typhoon, amounted to PHP 4,967,229,199 (USD 64 million) Four (4) cities and 16 municipalities are still experiencing power interruption. Communication network in most of affected areas are fully restored, but still limited in some areas. A total of 31 roads and 19 bridges are still not passable in Region II, III, IVA, IVB, V, VIII and CAR.
Typhoon Koppu	Oct 16 th 2015	Tropical Storm Koppu (Lando) began to form in the Pacific Ocean on Tuesday, 13 October 2015. The westward-moving storm continued to intensify as it moved across the open waters until it became a major typhoon on Friday, 16 October 2015. The typhoon made landfall in

		<p>Casiguran, Aurora Province, Philippines (16.2°N, 122.2°E) on 18 October 2015 at 1:00 AM local time (GMT+8) with maximum sustained winds of 175 kph and gustiness of 210 kph. Typhoon Koppu (Lando) steadily weakened to a low pressure area (LPA). The LPA is forecasted to linger until the weekend and bring light to moderate rains over northern Luzon provinces in the Ilocos Region, Cordillera Administrative Region (CAR), and Cagayan Valley</p> <p>Impact: (as of 29 October 2015) As of today, 29 October 2015, Typhoon Koppu (Lando) has left 48 people dead, 83 people injured, and 4 people still missing. Total affected families reached 696,027 families (3,041,979 people) in Regions I, II, III, IVA, V, National Capital Region (NCR), and the Cordillera Administrative Region (CAR).</p>
Typhoon Dujuan	Sep 27 th 2015	<p>Typhoon Dujuan (Jenny) which entered the Philippines Area of Responsibility on 23 September 2015 has enhanced the effect of the Southwest Monsoon. Many areas in Luzon, including Metro Manila, Ilocos Region, Cagayan Valley, Cordillera, Central Luzon, Calabarzon and Provinces of Mindoro and Palawan, were reported to have more rains due to the Southwest Monsoon enhanced by the typhoon. The NDRRMC have reported flashflood incident in Zamboanga del Sur as well as people being affected in Negros Occidental .</p> <p>Impact: 2 missing in Zamboanga del Sur 2,561 families/12,781 people were affected in Negros Occidental 13 houses were damaged</p>
Typhoon Goni	Aug 18 th 2015	<p>Typhoon GONI or Ineng has entered the Philippines on 18 August 2015 and exited on 23 August 2015. GONI has affected the northern Luzon with wind sustained up to 160 kph. The National Disaster Risk Reduction and Management Council has reported flooding and landslide occurrence in Region I, II, III, IV-A, IV-B and CAR.</p> <p>Impact: 21 death, 23 injured and 15 missing. 23,965 families/ 102,488 people were evacuated in Region I, II, IVA, IVB and CAR. 11,115 people stayed inside evacuation centre. 1,638 houses were damaged. Cost of damages is estimated to be USD 10 million.</p>
Southwest Monsoon	Jul 10 th 2015	<p>The National Disaster Risk Reduction and Management Centre reported several flashflood and landslides in Ilocos Region and Benguet Province which triggered by Monsoon rains. (As of 14 July 2015)</p> <p>Impact: 16 death, 11 injured and 4 missing. 8,611 families/41,029 persons were affected Region III, IVA, NCR and CAR. 172 persons served inside evacuation centre and 315 persons outside evacuation centre. 7 houses were damaged. No more reported stranded passengers, vessels and motorbancas in all ports nationwide. 7 road sections in La Union, Bulacan, Benguet and Oriental Mindoro were closed due flooding.</p>
Southwest Monsoon	Jul 7 th 2015	<p>The Intertropical Convergence Zone (ITCZ) has affected Mindanao since 22 June 2015. Hence, moderate and heavy rainshowers to thunderstorms were experienced in Region IX, XII and ARMM causing flashflood and flooding particularly in the low-lying areas. (NDRRMC Sitrep no.5, 7 July 2015)</p> <p>Impact: 7 death and 6 injured. 25,876 families/126,338 persons were affected in 199 barangays (villages) in Region XII and ARMM. 377 persons were served inside evacuation centre while 99,044 persons were outside. 247 houses were damaged.</p>
Storm Linfa	Jul 4 th 2015	<p>The Tropical Storm Linfa (Egay) which crossed the northern part of Luzon has triggered landslide and flood incidents. As reported by the National Disaster Risk Reduction and Management Council (NDRRMC), landslide happened in Palawan, Benguet and Apayao, where flood occurred in La Union, Palawan, Apayao, Mandaluyong City, Marikina City and Pasay City.</p> <p>Impact: 11,751 families or 48,307 people were affected in Region I, IVB and CAR. 424 people were served inside evacuation centre. 95 houses were damaged.</p>
Storm Linfa	Jul 4 th 2015	<p>Storm Linfa or Egay has caused flooding in Region I, IV-B and CAR.</p> <p>Impact: 13,280 families/55,567 people were affected 13,447 people were evacuated 205 houses were damaged Cost of damages is estimated to be USD 4.7 million</p>
Tropical Storm "JANGMI"	Dec30th 2014	<p>Tropical Storm "JANGMI" or "Seniang" has made landfall in Mindanao and move Northwest towards Cebu, Philippines. Although this is not a</p>

		<p>typhoon but this Tropical Storm still maintained 65 kph wind near the centre with moderate to heavy rainfall 7.5 to 15 mm per hour within 300 km of the Tropical Storm. Incidents of Flood, flashflood and landslide have been recorded in several areas in the Philippines. These include the following areas: Flooding: San Agustin, Hinatuan, Lingig, Bisig (Surigao del Sur) Butuan city (Agusan del Norte) Sibagat Bunawan, Bayugan, Prosperidad, Esperanza, Talacogon, San Luis (Agusan del Sur) Flashflood: Lanao del Sur (ARMM) Landslide: Hinatuan, Bisig (Surigao del Sur) Sibagat, Bunawan, Bayugan (Agusan del Sur) Tanauan (Leyte) Sogod (Southern Leyte)</p> <p>Impact: S 5,529 families or 23,269 persons affected 868 families preemptively evacuated to 31 evacuation centres 1 dead 1 missing 13 damaged houses 18 roads and 6 bridges are not passable in Region VIII and CARAGA Power interruption experienced in the following provinces: Bohol, Leyte, Samar, Eastern Samar, Northern Samar, Agusan del Sur and Surigao del Sur</p>
Tropical Storm Sinlaku	Dec26th 2014	<p>A tropical storm named Sinlaku or Queenie in local naming, enter Philippines Area of Responsibilities (PAR) and made a landfall on 26 November 2014 in Surigao del Sur. This Tropical Storm exit PAR by 28 November 2014. The impacted areas includes the following region: IVB, VI, VII, X, XI and CARAGA</p> <p>Impact: Based on the latest NDRRMC situation report on 1 Dec 2014 4 death 2 injured 8 missing 9,406 families or 46,954 person affected 295 families or 1,362 person in 12 evacuation centre 2,993 houses damaged</p>
Typhoon Hagupit	Dec 6 th 2014	<p>Typhoon Hagupit, or locally named as Ruby, which has developed since 1 December in Ocean Pacific, has made its first landfall over Eastern Samar area on 6 December evening. The wind speed was 160 kph and gustiness up to 195 kph. Though it was much weaker than the initial forecast, yet it has caused significant damages to the infrastructure and loss of live. Based on the NDRRMC Report No.9 on 8 December 2014, the impacts are as follows:</p> <p>Impact: 2 death 232,948 families or 1,074,080 people were affected in 35 province and cities in Region IVA, IVB, V, VI, VII, VII and XIII (CARAGA) 1,066,141 people were served inside and outside evacuation centres Airport closure for Naga city, Lagazpi, Masbate, Tacloban and Calbayog Power outage is experienced in 16 province</p>
Mindanao	Oct5th 2014	<p>Due to heavy rains caused by Intertropical Convergence Zone, flooding occurred in Cagayan de Oro city and Jasaan of Misamis Oriental province.</p> <p>Impact: S more than 69 families were affected more than 950,000 USD total cost of casualties were estimated from damaged houses</p>
Sultan Kudarat	Sep21th 2014	<p>Due to continuous rain flash flood occur in the municipality of Bagumbayan, Sultan Kudarat</p> <p>Impact: 61 families or 305 persons affected 305 persons evacuated 1 house damaged 1 bridge, dike and roads were partially damaged</p>
Storm FUNG WONG	Sep18 the2014	<p>Glide: TC-2014-000128-PHL Tropical Storm Fung-Wong (Mario) has created significant impact in Philippines since 18 Sept 2014. Tropical Fung-Wong with wind speed up to 85 km/h has triggered flooding and landslide incidents that affected Region I, II, III, IVA, IVB, V, VII, CAR and NCR.</p> <p>Impact: (25 Sept) 419,592 families/1,904,537 people were affected, mostly in Cebu, Camarines Sur, Pangasinan and Bulacan 59,307 people were displaced (previously 129,676 people) 17 death, 16 injured and 4 missing 5,697 houses were damaged Power outline still experienced in some parts of Region I,IVB and CAR Cost of Damage: 33.8 million USD Cost of Assistance: 635,000 USD</p>
Typhoon KALMAEGI	Sep14th 2014	<p>Glide: TC-2014-000124-PHL Typhoon KALMAEGI (Luis) has made a landfall on 14 September in the Northern Luzon with the wind speed 120 km/h. The typhoon caused flood and landslide in several regions in the North Luzon (Region 1, IV-A, IV-B, CAR and NCR).</p> <p>Impact: S Based on NDRRMC Situation Report No.11 19 Sept 2014 100,267 families or 431,085 people were affected. The most affected area is Pangasinan in Region 1 with 275,000 people. At the same time, about 10,000 people being affected in NCR, including Metro Manila. 10,524 people were served inside Evacuation Centre 4 death 1 injured 1,895</p>

		houses were damaged Cost of damage: 18.3 million USD Cost if assistance: 193,000 USD
Storm Leepi	Jun21st 2013	Cotabato, Sultan Kudarat, Sarangani and Davao. Nearly 100,000 people have been displaced by floods in the southern Philippines. Over 60,000 of those have been evacuated from their homes as a result of floods in Maguindanao, although earlier reports had the numbers much higher.
Floods in Mindanao	July21st 2013	Floods in Mindanao, Philippines, have affected nearly 500,000 people since 21st July. 3 people have been reported as killed in the floods. Heavy rain continues in the region, making the treat of floods and landslides worse.
Tropical Storm Trami	Aug20th 2013	The aftermath of Tropical Storm Trami (known as Maring locally) combined with seasonal monsoon storms to bring torrential rains that caused widespread flooding across Luzon, the largest island in the Philippines. Particularly badly hit has been the capital Manila, with some reports claiming that around half of the city is now under water.
Tropical Storm Wilma	Nov7th 2013	Tropical Storm “Wilma” (TS30W) made landfall on the morning of Monday 4 November 2013 in Surigao del Sur province on the island of Mindanao in the Republic of Philippines, thereafter weakening into a tropical depression.
Typhoon Haiyan	Nov8th 2013	Despite days of preparation for the arrival of Category 5 Super-typhoon Haiyan (referred to as ‘Yolanda’ by meteorologists in the Philippines), early reports indicate at least four people have died in storm-related incidents since its landfall 650km southeast of Manila in the Philippines earlier today, Friday 8 November 2013.
Floods in Mindanao	Jan13th 2014	A low pressure areas brought huge amounts of rainfall to Mindanao, southern Philippines, causing flash flooding and landslides. 13 people have been reported as killed as a result of floods or landslides and over 4,500 have been evacuated.
Tropical Depression Agaton	Jan21nd 2014	Instead it has been moving slowly and changing direction regularly, remaining unpredictable whilst still causing steady rainfall over the adjacent regions of Mindanao, Davao and Caraga, affecting over 800,000 people, with 42 deaths and 203,022 people displaced to 565 evacuation centres.
Tropical Storm Kajiki, named “Basyang”	Feb5th 2014	According to a February 4 update by the National Disaster Risk Reduction and Management Council (NDRRMC), the death toll from Tropical Storm Basyang stands at seven people, with more than 5,000 persons displaced and still staying in evacuation centres.
Tropical Depression Caloy	Mar21st 2014	According to the National Disaster Risk Reduction and Management Council (NDRRMC) bulletin of Friday morning 21 March, approximately 16,935 people in 3,387 households have been affected so far, with 330 families from the two municipalities having been evacuated as a precaution.
Tropical Depression “Domeng”	April17th 2014	Philippines News Agency (PNA) announced that 3 people are missing after the severe weather struck. The three, thought to be a couple with a young child, went missing in their boat during the storm. The heavy rain also cause flooding and landslides across the region. Around 1,800 families in low-lying areas have been affected. The PNA said the villages affected include:
flash floods struck in Carmen, Davao del Norte	April 22th 2014	The Philippines National Disaster Risk Reduction and Management Council (NDRRMC) confirmed in a statement yesterday that 1,302 families had to be evacuated from their homes after flash floods struck in Carmen, Davao del Norte after heavy rainfall over the weekend.
Floods in Mindanao	July8th 2015	Philippines National Disaster Risk Reduction and Management Council (NDRRMC) reported on Tuesday 07 July that 126,000 have been affected by flooding in Mindanao, with around 99,000 staying in evacuation centres. As many as 72 houses have been completely destroyed and a further 175 damaged.
Flash floods in Mindanao	Aug6th 2015	Heavy rain and flash floods in Mindanao, southern Philippines, have left at least 7 people dead and 2 missing. The cities of Malaybalay and Valencia are among the worst affected. Philippines National Disaster Risk Reduction and Management Council (NDRRMC) say that at least 880 people have been evacuated and 41

		homes have been damaged.
Tropical Cyclone Koppu	Oct20th 2015	At least 12 people have died in the Philippines after Tropical Cyclone Koppu brought heavy rainfall, strong winds, storm surge of up to 1.5 metres along its path.
Tropical Cyclone Melor	Dec21th 2015	Melor caused widespread destruction, substantial damage, and deaths in several areas, including the provinces of Albay, Northern Samar, Oriental Mindoro, Romblon and Sorsogon. Media reported that 11 people died in the cyclone, many of them from the island of Mindoro, where flood waters were as deep as 2 metres in some places.

Source: JICA Project Team based on Information of ADRC, Floodlist and AHA Centre

Table A8.1.7 Record of Flood (Singapore)

Place	Date	Damage
Singapore		
Floods	Sep5th2013	Many parts of Singapore, including central areas, suffered from flash floods during the morning of Thursday 5th September. The flash floods were caused by thunderstorms and unusually heavy rainfall. The floods blocked roads and caused difficulties for commuters.

Source: JICA Project Team based on Information of ADRC, Floodlist

Table A8.1.8 Record of Flood (Thailand)

Place	Date	Damage
Thailand		
Floods	11 th Aug. 2001	A flash flood swept down a mountainside through villages in Lomsak district of Phetchabun province, in northern Thailand. At least 48 people were killed, and 79 remain still missing.
Flash Flood	24 th Dec. 2001	Thousands of people in southern Thailand fled their houses after heavy rains triggered floods believed to have caused thousands of 296,800 dollars-worth of damage.
Storm	29 th Apr. 2002	A freak tropical storm has killed five people at Thailand's largest refugee camp. Around 40,000 Karen people live in shelters near the Myanmar border. The storm made damaged about 300 bamboo shelters as it tore through the camp some 540 km (338 miles) north of Bangkok.
Heavy Rain	3 rd Sep. 2002	At least 14 people were killed and more than 20 were missing after their makeshift houses on the banks of an overflowing stream collapsed after heavy rain in northern Thailand.
Flood	4 th Oct, 2002	Residents of the Thai capital, Bangkok, are bracing themselves for severe flooding following forecasts that floodwaters coming from the north of the country where more than 100 people have died could submerge the city.
Flood	26 th Oct. 2003	Five days of heavy monsoon rains have brought severe floods to Thailand, killing a 13-year-old boy, forcing hundreds of people from their homes and disrupting road and rail transport, officials said.
Flood	14 th Dec. 2003	Floods in Thailand have killed at least eight people and damaged tens of thousands of homes. Floodwaters in many parts of the South have begun to recede but the overall situation was likely to improve only temporarily, as the meteorological office in Songkhla has predicted another round of heavy downpour. Eight more people have died in flood-related accidents in the region since Thursday.
Flood	31 st Aug. 2005	Over 100,000 families have been affected by severe flooding in Northern Thailand in the middle of August. Torrential rains which earlier in August hammered Chiang Rai, Chiang Mai and Mae Hong Sorn inundated more than 4 500 villagers' homes in these three provinces alone leaving 11 people dead and making several roads impassable to small vehicles.
Torrential monsoon rains	18 th Dec. 2005	Torrential monsoon rains have wreaked havoc across Thailand's south, killing 12 people and leaving two missing in the past week, officials said on Sunday. Seven of the victims died in two mudslides.
Flash Flood, Mud Slide	23 th May. 2006	Heavy monsoon rains unleashed flash floods and mudslides in northern Thailand which killed at least 10 people, left 47 missing and thousands homeless, officials said on Tuesday.
Flood	9 th Oct. 2006	More than 32 dead in Thai floods since August 2006, reported on October 10. In Thailand, the death toll from flooding caused by heavy rain in the wake of typhoon Xangsane rose to 44. Ministry of Health officials say

		260,000 people are suffering from flood-related diseases.
Flash Flood	14 th Apr. 2007	Flash floods killed at least 23 holidaymakers and injured more than 20 at three waterfalls in the southern Thai province of Trang on Saturday as they celebrated the Thai New Year, disaster officials said.
Flood	5 th Sep. 2007-	The flood started on 2007-09-05 and ended on 2007-10-28, with a duration of 54 days. This flood has severity class 1. The main cause is Monsoonal rain. The recurrence interval is 13.
Flood	27 th Apr. 2008	Rains have continued pouring in Thak province, Thailand at least four consecutive days. Over 1,000 people are currently homeless.
Flood	15 th Aug. 2008	The disaster prevention special command center in Nakhon Phanom province is in the midst of assessing damage caused by inundation in 12 districts. More than 100,000 people have been affected by flooding. Meanwhile death toll has reportedly stood at 1.
Flood	8 th Sep. 2008	Heavy downpours due to a low pressure trough and the south-western monsoon in the past week have triggered more flash floods and inundated villages and farmland in north and northeast Thailand. According to disaster officials, five people have been killed, 114,345 (34,182 families) have been affected.
Heavy Rain	28 th Sep. 2008	In Thailand, the death toll from floods triggered by heavy monsoon rains has risen to 18, while nearly 190,000 people have been treated for water-related illnesses and injuries.
Flood	19 th Nov. 2008	201,434 people affected, 10 people died and 190 families homeless (685 persons) from haevy rain in southern Thailand.
Flash Flood	8 th Dec. 2008	After heavy rains in southern Yala province, Thailand, the Disasters' Prevention Special Command Centre in Yala has issued warnings on 8 December 2008 to the people in the area to be cautious of potential hazards and flash floods after over 3,000 local families being affected.
Flood	7 th Nov. 2009	The flooding which started in the southern border province in Thailand so far killed 10 people
Flood	13 th Aug. 2010	The flood struck the northern province of Lampang on Friday night (13 August 2010) with the water level as high as one meter. Over 1,200 households and 36 villages in 7 districts have been affected. The DDPM reports that a total of 13,085 households in 25 districts of 9 provinces were hit by floods last week. The stricken provinces include Chiang Rai, Chiang Mai, Lampang, Phrae, Nan, Rayong, Trat, and Lamphun.
Flash Flood	16 th Oct. 2010	Nakhon Ratchasima, Northeast of Thailand and its provincial capital have been ravaged as flash floods wreak havoc in the Northeast and Central Plains following heavy weekend monsoon rains. 8,970,653 people and 2,612,472 households were affected, and 258 people died. Out of 51 provinces that have been flooded so far, 2 provinces remain flooded.
Flash Flood	27 th Mar. 2011	Since 23 March 2011 there has been a prolonged heavy rainfall causing flash floods in many provinces in the South. Dead: 64 Affected household: 628,998 Affected people: 2,094,595
Tropical Storm, Flood	3 rd Aug. 2011	Tropical Storm Nock Ten has caused continuous rainfalls in the north and the northeast of Thailand, causing floods in 15 provinces. Killed: 744 Missing: 3 Affected: 4,176,763 (current)
Heavy Rain, Flood	6 th Jun. 2012	Continuous rain has caused flooding in five districts in Surat Thani province of southern Thailand, affecting 8,500 households and over 27,000 residents. On 7 June 2012, rain fell all day in Surat Thani in all areas, making the Phum Duang River overflow and flood a nearby community, with the water level as high as 2-3 meters.
Flood	12 th Sep. 2012	Thousands have fled their homes in Northern Thailand after heavy rain caused a major river to overflow at the start of September. The Department of Disaster Prevention and Mitigation (DDPM) has announced that 15 provinces have fallen victim to the monsoon flooding, which has rampaged several parts of the country in the past weeks. 235,545 people from 88,438 families have been hit hard by severe flooding induced by recent heavy downpours.
Flood	18 th Jul. 2013	Heavy rain has caused flooding in Trat and Ranong province, Thailand. Over 500 residents of Trat province have been affected.
Flood	17 th Sep. 2013	Two million people in 30 provinces of Thailand have been affected by floods since 17 September 2013. The widespread deluge has damaged over 30,000 homes. 80 people have been killed during the floods. The

		Department of Disaster Prevention and Mitigation revealed that 22 provinces nationwide continued to suffer from flooding and nearly 675,000 households remained affected.
Flood	5 th Dec. 2013	Floods in Thailand's South have intensified with heavy rains lashing towns and water levels rising. Water has been flowing down from nearby mountain ranges to Mueang district and affected approximately 16,500 households.
Flood, Landslide	10 th Jul. 2014	In Thailand, the northernmost province of Chiang Rai has been hit again by landslides and flash floods following three days of abundant raining. As many as a thousand families in 8 districts of the province have reportedly been afflicted.
Typhoon	21 st Jul. 2014	Rivers across several communities in northeastern Thailand have overflowed due to the effects of Typhoon Rammasun, which has caused heavy rains throughout the area.
Flood	30 th Jul. 2014	Due to the heavy rainfall in the Northeast, flooding has occurred in Sakhon Nakhon and Ubon Ratchathani provinces, Thailand, affecting 19,183 households.
Flood, Landslide	14 th Dec. 2014	Since 14 December 2014, Thailand's seven provinces in the south have been affected by floods and landslides. Seven people died and three were injured. Nearly 170 schools are closed and nearly 2,400 people were evacuated.
Heavy Rain, Storm, Flood	7 th Apr. 2015	Seasonal storms pounded about 50 villages in 11 districts of eight provinces in Thailand on 7 and 8 April 2015, damaging more than 900 houses.
Flood	6 th Aug. 2015	Several areas in the North, North East and South of Thailand have reportedly been flooded by overflowing rivers after several days of rainfall. In Nakhon Phanom, more than 3,000 homes and 30,000 rai of rice paddies have been inundated.
Flooding in Chiang Rai	Aug5th2015	Intense rains which poured Chiang Rai and Nakhom Phanom has caused flooding. Impact: 3,000 houses were reportedly inundated in Nakhon Phanom. Nearly 5,000 ha of agriculture areas were inundated.
Flashflood hit Trang	Nov10th2014	Heavy rain has generated flashflood incident in Trang Province. Indeed, the consecutive days of rain has created flooding in southern provinces of Thailand since last week. (see also http://adinet.ahacentre.org/reports/view740) Impact: Over 200 families were affected in Trang 5,000 ha of farmland have been submerged
Flood in Southern Thailand	Nov7th2014	Due to continuous heavy rainfall, flood was affecting several Southern provinces including Pattani (Muang), Nakhon si Thammarat (Phra phrom, Chang Klang) and Surat thani Impact: S 2408 households or 7,237 people were affected 2,000 acres of agricultural lands were inundated
Flooding hits Lampang	Oct20th 2014	Heavy rain has caused the Lam Huai Mae River to overflow. Consequently, flood inundated more than 200 houses in Thoen District, Lampang Province. Impact: over 200 families were affected more than 200 houses were inundated
Flood affected several provinces	Oct7th2014	Due to heavy rain since 6 October 2014, Several provinces in Central and South of Thailand. The affected provinces include: Petchaburi (6 districts), Rachaburi (2 districts), Prachuap khiri khan, Krabi (2 districts), Satun (5 districts), Suratthani (2 districts) Impact: S more than 4,700 families or more than 20,000 people affected (estimated)
Flood in Chantaburi	Octfirst2014	Due to heavy rainfall, flood is affecting Chantaburi Povice Impact: 100 families affected
Flood in Chiang Mai	Sep29th 2014	Due to continuous heavy rain, Fang District of Chiang Mai is affected by flood, Chai Nat province was also affected Impact: S 55 houses damaged 94 houses affected in Chai Nat province
Flood in Northern Provinces	Aug31th 2014	Due to heavy rainfall, several provinces in Norther Thailand experienced flooding. As of 5 September, the affected areas are 1. Nan Province: Nanoy and Namoen district 2. Sukhothai Province: Muang, Srisuchanalai,

		Srinakorn and Tung Saleam. 500 houses are still inundated. 3. Chaiyaphum Province: 80 houses are submerged. 4. Tak Province 5. Nakhonsawan Province: 30 houses are inundated. Impact: 7,404 families or (estimated) 15,000 people 17,479 ha agricultural fields damaged 3,000 ha of rice fields damaged
Floods in Thailand	Jun14th 2013	Later, on 12th June, The National Disaster Warning Center (NDWC) issued an urgent warning for residents in 6 southern coastal provinces to brace for flash floods, forest runoffs and mudslides over the next few days.
Southern Thailand	Jul4th 2013	it is also feared that the heavy rain and floods may result in landslides, particularly in those communities near a hilly region. The National Disaster Warning Centre said that in Chanthaburi, the districts most at risk were Muang, Khlung, Makhm, Khao Khitchakut and Soi Da. In Trat, the areas at risk are Bor Rai, Khao Saming and Koh Chang districts
Floods	Aug2nd2013	Chanthaburi Province Flood warnings were issued for the region – in particular Trat and Chanthaburi, where flooding was expected from 17th July to 19th July 2013. A few days later flood waters in streets of areas of Chanthaburi province were said to be between 30cm and 80cm. Nakhon Ratchasima Province The floods then moved northwards. Torrential rain during the night of Monday 22nd July 2013 brought floods to the city of Nakhon Ratchasima (also known as Korat) in north eastern Thailand. Chiang Rai Province In Chiang Rai Province, flash floods struck around 30th July 2013. A young child was swept away in the floods and at the time of writing was still reported as missing. Chiang Rai Disaster Prevention and Mitigation Office said that the flooding also killed 2 people and injured one other. 20 houses were damaged, as well as roads and bridges, and also around 8,000 hectares of crops. Thirteen districts of Chiang Rai Province are expected to be designated disaster zones which will help with getting financial assistance to the region. Over the last few days the flooding has been mainly in northern Thailand, most recently especially around the border area with Myanmar. Kanchanaburi Province In Kanchanaburi province, a flash flood on 29th July damaged a 100 metre long section of the Mon Bridge (Uttamanusorn Bridge) which crosses the Songkalia River. The bridge has something of an iconic status in Thailand. It was built in 1986 and is 850 metres long. It links the Mon community at the Thai-Myanmar border with Sangkhlaburi. The damaged bridge was closed until repairs could be made.
Floods in Thailand	Sep22nd 2013	A disaster zone has been declared for Khok Soong district in Sa Kaeo province, after flooding affected nearly 1000 families there.
Floods in Ratchadapisek, Ranintra and Phahonyothin	Oct4th 2013	Heavy rainfall overnight on Thursday 3rd October 2013, left some minor roads in Bangkok flooded. The main areas affected were Ratchadapisek, Ranintra and Phahonyothin. The flooding wasn't severe and did not affect any major roads. The floods slowed traffic, but the city's drainage system appears to be coping and according to reports, the flood waters soon receded.
Floods in Southern Thailand	Nov26th2013	Four districts in the Surat Thani province have also been declared disaster zones, with 4,070 households affected and 41 roads and 21 bridges left damaged or impassable.
	Dec5th2013	Phatthalung Overflowing rivers, and runoff from mountainous areas after heavy monsoon rainfall brought flooding to the districts of Kong Ra, Srinagarindra, Tamot, Pabon and Muang in Phatthalung province on Thursday 5 December 2013. Homes, farmland, including rubber and fruit plantations, and roads have all been inundated in the area. Authorities are offering assistance and rescue boats, but have warned that the floods are likely to continue as heavy rain is expected over the next 3 days. Narathiwat As many as thirteen districts have been hit by flooding in Narathiwat province, scene of the recent bomb blast. In similar circumstances to Phatthalung, monsoon rain caused swollen rivers and mountain runoff,

		<p>making the floods more severe and widespread. Waeng and Sri Sakhon districts saw the heaviest rain (around 223 mm in 24 hours). Range and Rue So districts have also been affected.</p> <p>The Sungai Kolok and Bang Nara rivers have both broken their banks. Local media reports claim 137 people have been evacuated as a result. Flood waters in the streets around these areas was as high as 1 metre.</p> <p>Songkhla 16,500 households are believed to have been affected by flooding in Songkhla province after heavy rainfall. Mueang district is the worst affected area, where roads have been badly flooded making them impassable for many.</p>
Floods in Northern and central areas of Thailand	Dec16th2013	Thailand's Department of Disaster Prevention and Mitigation (DDPM) announced yesterday that the floods that had affected much of the country's southern region has now receded in 10 provinces, but remain in Phuthalung and Trang. The DDPM said that as many as 6,000 people are still affected by flooding in these two provinces.
Floods in Narathiwat	Jan13th 2014	The rainfall increased levels of the Buketa Canal until it eventually overflowed, flooding around 20 villages and leaving around 1,088 homes under 50cm to 100cm of water.
Floods	Jul24th2014	Thailand's Department of Disaster Prevention and Mitigation reported earlier today that, after several days of steady rain, flooding is affecting the 5 provinces of Sakon Nakhon, Prachin Buri, Si Sa Ket, Ubon Ratchathani and Yasothon. Ubon Ratchathani saw over 80 mm of rain fall 24 hours between 22 and 23 July 2014.
Floods and Landslides in Chiang Rai	Jul29th2014	Sakon Nakhon province was one of the worst hit, where floods have affected around 4,000 families. Elsewhere, flooding has damaged homes and roads in Si Sa Ket and Ubon Ratchathani provinces. Access to several parts of Si Sa Ket has been difficult for the last few days. At one stage flood waters were so high the Provincial Electricity Authority (PEA) had to cut power supply in the Benchalak district as a safety measure.
Floods	Augfirst 2014	Thailand has been seeing heavy rainfall for the last 7 days. On 23 July, the 5 provinces of Sakon Nakhon, Prachin Buri, Si Sa Ket, Ubon Ratchathani and Yasothon were badly affected by flooding.
	Aug21st 2014	The Mekong river in the north eastern Thai province of Amnat Charoen has overflowed and submerged several villages on 31 July 2014, damaging over 1,000 houses. The province was later declared disaster zone amid the possibility of more floods.
		Heavy rain in Nan province in northern Thailand caused local rivers to overflow earlier this week, flooding several districts in the province. Further flood warnings have been issued for 20 provinces, especially in northern and north eastern areas.
Floods	Sep2nd2014	One person is said to be missing in Thung Chang district after being swept away by the flood water. Flooding has particularly affected the districts of Thung Chang, Muang and Song, where around 50 houses and areas of farmland have been damaged.
Floods	Sep2nd2014	Thailand's Department of Disaster Prevention and Mitigation (DDPM) reported on Monday 01 September 2014 that at least 17 provinces have been affected by recent flooding. Six people have been killed and at least 1 person remains missing.
Floods	Octsecond2014	Heavy rainfall has caused deadly floods in northern Thailand over the last few days. Since yesterday, the heavy rain has moved south, to affect central and southern areas of the country.
		Further heavy rain and possible flooding and landslides have been forecast by Thailand's Meteorological Department. The Department of Drainage and Sewerage has installed over 1,000 additional pumps across Bangkok in preparation.
		Chiang Mai and Chainat According to the Thai News Agency NNT, Chiang Mai Province saw continuous heavy rain and flash floods between 28 September and 01 October 2014. Three people tragically drowned in the flooding in Fang District. Fang district chief Manas Khansai said 22-year-old villager Natae Jahae and her two daughters, one aged 12 and the other four months, drowned in the flood on Monday night. More than 50 homes in the district have been damaged by the floods. The situation is now reported as

		<p>returning to normal with the rain ceasing and flood waters quickly receding.</p> <p>In Chai Nat Province, flooding was so severe that authorities had to make emergency rescues in Hunkha District. Nearly 100 homes have been damaged on the province and help is being provided by local authorities for those affected.</p> <p>Phuket and Songkhla</p> <p>Flooding has also affected parts of southern Thailand, including the popular tourist area of Phuket earlier today. However the flood water soon subsided and no flood warnings have been issued by Department of Disaster Prevention and Mitigation (DDPM).</p> <p>Also in southern Thailand, Hat Yai City of Songkhla Province, saw several roads flooded in the downtown after the downpours overwhelmed the capacity of the city's storm drains. Traffic was congested into the evening. Local authorities had to deploy water pumps to clear the roads.</p> <p>Bangkok</p> <p>In similar circumstances to the flash floods seen yesterday in Kuala Lumpur, heavy rainfall and ensuing flash floods brought Bangkok traffic to a standstill on 30 September 2014. The city's drainage system was unable to cope, with some reports claiming parts of the sewerage network was blocked with trash.</p>
Floods in 5 villages in Lampang Province	Oct22nd 2014	<p>Around 200 families in 5 different villages in the area have been severely affected, although no injuries have been reported. Homes of the families are said to have been completely inundated and officials from Thailand's Disaster Prevention and Mitigation Department (DDPM) are coordinating distribution of food, water and other supplies. DDPM officials were hopeful that the flood water could soon recede should there be no further heavy rain.</p>
Floods	Nov14th2014	<p>Trang Province</p> <p>Trang province in southern Thailand has been one of the worst affected areas after persistent heavy rain over the last 4 days caused flash floods across several southern provinces.</p> <p>Around 1,000 villagers in Trang have been evacuated since the flooding began. Houses and farmland have been damaged. The flood water level was almost two meters high, according to NNT.</p> <p>Nakhon Si Thammarat</p> <p>At least 5 districts – Chawang, Chang Klang, Pipoon, Lan Ska, and Phra Phrom in Nakhon Si Thammarat also experienced severe floods that first began around 07 November 2014. More than 4,400 households and 12,000 people have been affected in the province.</p>
Floods in Southern Thailand	Dec15th2014	<p>Floods in the southern Thai provinces of Nakhon Si Thammarat and Phatthalung have forced evacuations in as many as 50 villages, some of which are under more than 1 metre of water. One person is reported as missing after being swept away by the floods in Phrom Khiri district, Nakhon Si Thammarat.</p>
Floods	Dec17th2014	<p>Narathiwat</p> <p>National News Bureau Thailand (NNT) say that floods in Narathiwat have been caused by heavy rain over the last 4 days and run-off from the Sankalakhiri mountain range flowing down to the Su-ngai Kolok River. Houses along the river have been inundated. Flooding has also affected over 300 families in the districts of Sukhirin, Waeng and Su-ngai Kolok.</p> <p>Yala</p> <p>Over 100 mm of rain fell in 24 hours in Yala, Yala Province, yesterday. Many low lying areas of the province are already seeing some flooding, and more is expected after Yala Provincial Disaster Prevention and Mitigation (DPM) Office said that the water levels in the Saiburi River and the Pattani River is on the rise due to the heavy rain over the past 3 to 4 days. There is also a high risk of landslides in the the foothill areas of the Betong, Than To, and Bannang Sata districts.</p> <p>Nakhon Si Thammarat and Phatthalung</p> <p>Earlier this week floods struck in the provinces of Nakhon Si Thammarat and Phatthalung, also in southern Thailand. Two people have been reported as missing after being swept away in the floods – one in Nakhon Si Thammarat, the other in Phatthalung.</p>

Floods	Dec19th2014	Across the region a total of four people have been reported as killed in the floods and 14,000 people evacuated (12,000 in Malaysia). Two people remain missing in the floods in Thailand.
Bangkok Floods	Jun8th2015	The top of the flood wall stands three meters above mean sea level. City Hall officials believe the height of the flood wall is adequate for keeping out floodwater, they were concerned with the low water level in the Chao Phraya River at present. To prevent a weakening of the flood wall due to the low water level, officials were reinforcing the bases of the flood wall with large stones.
Thailand Floods	Aug6th2015	In Nakhon Phanom, more than 3,000 homes and 30,000 rai of rice paddies have been inundated in Sri Songkram district after the Songkram River overflowed the embankment and flooded surrounding areas. Residents were forced out of their homes, and had to take refuge on the street.

Source: JICA Project Team based on Information of ADRC, Floodlist and AHA Centre

Table A8.1.9 Record of Flood (Viet Nam)

Place	Date	Damage
Viet Nam		
Flood	Oct. 1998	Heavy rains and floods in the coastal provinces of central Vietnam in mid-October caused significant damage.
Typhoon	Nov. 1998	A low-pressure front in the south of the South China Sea developed into typhoon Dawn on 19 November 1998. The wind velocity reached 8 to 9 of the Beaufort scale.
Flood	Nov-Dec. 1998	Floods by heavy rains in mid October caused severe damage in coastal central Vietnam. On 16 Dec.typhoon Gil struck coastal central Vietnam. Typhoon Faith exercised an overwhelming in the Philippines caused more damage in Vietnam.
Flood	Aug. 1999	The rapid rise of the water level of several rivers in the north, the centre and the south of Viet Nam, has caused serious flooding in the four Provinces of Binh Thuan, Lam Dong, Dac Lac and Dong Nai. The DMU reports that 40 people were killed.
Flood	Nov. 1999	On 01 - 03 November 1999, due to the effect of strong cold air front in combination with the activities of a tropical conversion, there were heavy-to-very heavy rains in the Central Provinces from Quang Binh to Binh Dinh. Heavy rain, concentrating in a short period of time, caused flash flood in some places in mountainous areas of Quang Nam Province and Thua Thien-Hue Province, and caused large flooding on river banks from Quang Nam to Binh Dinh Provinces. The floods killed nearly 600 people and caused damage of around \$250 million.
Flood	Dec. 1999	One month after the central coastal provinces of Vietnam were inundated by the worst floods the country has experienced this century, the same region has suffered heavy rains and new, extensive flooding. These new floods occurred just as rehabilitation measures were being undertaken in order to help stabilize the lives of the people in the central provinces. The new floods caused by heavy rainfall from 1 to 6 December once again attained historical water levels in some rivers in the central provinces from Thua Thien Hue to Khanh Hoa
Flood	Sep. 2000	The water levels in the Mekong river system have been rising rapidly, causing a deterioration in the flood situation in Viet Nam. The average amount of rainfall in the centre and downstream of the Mekong river delta during the last two months has been much higher than during the same period last year. As of 12 September, the floods have caused damage in the provinces of Long An, Kien Giang, An Giang, Can Tho and Dong Thap.Total estimated economic loss is USD 182 million.There have been 211 children among the 280 people killed by the floods
Flood	6 th Jul. 2001	Heavy rains (for the first time in 40years) caused flooding in north Vietnam at killing 30 people and displacing a few persons.
Storm	10 th Aug. 2001	Far South of Viet Nam, the Kamau Peninsula was hit by the heavy storm and was killed at least 7 people.
Flood	29 th Aug. 2001	Floods kill 24 people in Vietnam

Flood	14 th Sep. 2001	Floods in Vietnam's Mekong Delta have killed 256 people, 203 victims were children. Dead: 326 persons (Children: 243 persons)
Typhoon	12 th Nov. 2001	The strongest typhoon to hit Vietnam in 15 years has killed at least two people, destroyed houses and uprooted trees on Monday after killing hundreds in the neighboring Philippines, local officials said. Dead: 20 persons Injured: 83 people Evacuated: 562 families Destroyed: 2,636 houses Damaged: 12,000 houses Close to 30,000 ha of rice paddy and other crops have been ruined. Some 145 boats have reportedly been washed away. Approximately 650 schools have been destroyed or damaged.
Flood	10 th Dec. 2001	In central Vietnam on Monday they had located 14 fishermen sheltering from heavy weather caused by tropical storm Kajiki, but were still awaiting news of 149 others aboard 12 missing fishing vessels.
Flash Flood	1 st Aug. 2002	Flash flooding in northern Vietnam has left at least ten people dead.
Flood	17 th Aug. 2002	Floods and landslides in Vietnam have killed at least four people.
Flood	11 th Sep. 2002	Nine people, including five children, have drowned in Vietnam's Mekong Delta region in the last three days and more flooding is forecast.
Flash Flood, Land Slide	21 st Sep. 2002	Flash floods and landslides killed at least 21 people in central Vietnam this week while another 13, mostly children, drowned in Mekong Delta floods that have left thousands short of food.
Flood	9 th Oct. 2002	Floods have killed 116 people, including 104 children, in Vietnam's Mekong Delta provinces. Floods also caused damages estimated at more than 115.4 billion Vietnamese dong (VND) (US\$7.69 million).
Flood	18 th Oct. 2003	Floods and torrential rains have killed at least 38 people and marooned thousands of families in central Vietnam, officials said on Saturday.
Flood	14 th Nov. 2003	Floods sweeping much of Vietnam in the past two days have killed at least 33 people, blocked traffic on the north-south highway and halted coffee harvesting in the Central Highlands.
Typhoon	13 th Jun. 2004	The Prime Minister has decided to provide 36 billion VND in aid for localities devastated by Typhoon Chanthu claiming 11 lives and injuring nine others.
Flash Flood, Land Slide	21 st Jul. 2004	Death toll rises to 20 after a flash flood in the northern mountainous province of Ha Giang. The flooding injured 10 people, swept away 16 houses, and damaged many road sections as well as residents' property and crops.
Flood	5 th Oct. 2004	The death toll from flooding in Vietnam's southern Mekong Delta has claimed 27 lives, while another nine people were killed when heavy storms lashed the region, a disaster relief official said today. In the three provinces of Dong Thap, An Giang and Can Tho, 4,361 houses were inundated, forcing local people to evacuate urgently. Seventy-eight schools with 625 classrooms have had to close, affecting more than 17,400 pupils.
Flash Flood	27 th Nov. 2004	Flash floods triggered by Typhoon Muifa have killed at least 25 people in central Vietnam, officials said on Saturday. Floods and landslides have killed at least 40 people in Vietnam and 42 are missing, officials said on Monday, and elderly wooden houses inundated at a world heritage site are in danger of collapsing.
Flood	10 th Sep. 2005	At least eight people were killed and about 30,000 people have been displaced after seasonal flooding has stricken Vietnam's southern Mekong Delta. Floods have killed at least nine people in Vietnam's Mekong Delta, seven of them children, and officials said on Monday more danger loomed with the waters not expected to peak until late this month. More than 32,000 people were evacuated from inundated villages and areas at risk from landslides in three Mekong Delta provinces, An Giang, Long An and Dong Thap, disaster management officials said.
Typhoon	28 th Sep. 2005	The death toll from Typhoon Damrey has risen sharply to more than 30 as flash floods and landslides caused by the storm hit the Vietnam's northern mountainous areas. Most of the deaths are in the province of Yen Bai, 180 km (110 miles) northwest of Hanoi.
Flood	28 th Oct. 2005	Heavy rains have caused widespread flooding in central Vietnam, killing at least 67 people and damaging 3,200 houses in the most severely hit Binh Dinh province (1,050 kilometers south of Hanoi). Rising water levels have also submerged over 3,560 houses in Long An province.
Typhoon	2 nd Nov. 2005	A powerful typhoon Kai-Tak has hit central Vietnam, killing at least 18

		people in provinces on the coast.
Flash Flood	14 th Dec. 2005	Flash floods triggered by prolonged rains have killed at least 11 people in central Vietnam and delayed the coffee harvest in the Central Highlands, state media and officials said on 14 December.
Typhoon	19 th May. 2006	The Asia-wide death toll from Tropical Storm Chanchu stands at nearly 90, with almost 200 Vietnamese fisherman still missing at sea, as the storm weakened Saturday off southern Japan.
Floods and landslides	20 th Aug. 2006	Flooding, landslides and lightning have killed 15 people and left one missing since Friday night in Vietnam, bringing the country's toll in a week of torrential rain to 42, reports said on Sunday.
Typhoon	1 st Oct. 2006	At least 15 people in Vietnam are now known to have died as a result of Typhoon Xangsane, which buffeted central provinces over the weekend (by Oct.1,2006).
Typhoon	5 th Dec. 2006	At least 37 people have died as Tropical Storm Durian lashed Vietnam, sweeping away fishing boats, destroying houses and downing power lines. The national flood and storm control center said 67 people were confirmed dead and 31 were missing in the aftermath of Typhoon Durian.
Heavy Rain	6 th Aug. 2007	Vietnamese rescuers are moving thousands of people to higher ground on Tuesday after a storm dumped heavy rain in the central region, killing 14 people, officials said. Another 15 people were missing.
Typhoon	5 th March. 2007	On 5 October, 2007, Ten people died and six were missing after a typhoon blew strong winds and heavy rains into central Vietnam, triggering floods, blocking traffic and threatening the lives of thousands, officials said. More than 80,000 people had been evacuated before typhoon Lekima hit on the night of 3 Oct.
Flash Flood, Flood	28 th Oct. 2007	Flash floods killed at least 13 people and injured 31 in central Vietnam this week and more heavy rain over the next few days could add to the damage, the government said on 1 November 2007. Flooding triggered by torrential rains in Vietnam's central region killed 35 local people, left six missing, and injured 28 between Nov. 10 and 14, according to the country's Central Steering Committee for Flood and Storm Prevention on Thursday. The floods also inundated some 376,000 houses, damaged over 2, 500 hectares of paddy rice, and isolated some areas in the region.
Flash Flood	9 th Aug. 2008	Heavy rain and flash floods brought by tropical storm Kammuri killed at least 61 people and left dozens missing in northern Vietnam, officials said on Saturday. Dead: 130 Missing: 32 Injured: 90 Collapsed and drifted away houses: 982 Flooded and damaged houses: 10,526
Flood	26 th Aug. 2008	Continuous heavy rain from 26 to 28 August 2008 in Ha Giang and Phu Tho provinces, Vietnam triggered partial flooding and landslides, causing eleven people killed and four injured.
Typhoon	28 th Sep. 2008	In Vietnam, the death toll from flash floods and landslides triggered by typhoon Hagupit has jumped to 32 with another five people missing, official reports said on 28 September 2008.
Typhoon	29 th Sep. 2008	According to the official report, 12 people were found dead and five were missing in Vietnam by Typhoon Mekkhala as of 3 October 2008. Dead: 12 Missing: 5 Injured: 13 Collapsed and washed away houses: 25 Flooded and damaged houses: 6,462
Flash Flood	18 th Oct. 2008	Flash floods from heavy rains in central Vietnam in October have killed at least seven people, the government said.
Floods	1 st Nov. 2008	Floods in Vietnam have killed at least 65 people, including several in the capital, Hanoi, which has suffered its heaviest rains for two decades.
Tropical Storm	21 st Nov. 2008	Tropical storm Noul and subsequent torrential rains have killed 15 people and left two others missing and eight injured in central provinces of Vietnam, said Central Committee for Flood and Storm Control (CCFSC) on 22 November 2008.
Floods	3 rd Jan. 2009	Unseasonal floods brought by rains this week have killed at least five people in central Vietnam while 10 others remained missing, the government and state-run media said on Saturday.
Flood	5 th Jul. 2009	Heavy rains triggering floods and landslides in mountainous northern regions of Vietnam have killed at least 15 people, destroyed houses and damaged roads, the government and state-run radio said on 5 July 2009. Dead: 22 Missing: 13 Injured: 2 Collapsed houses: 19 Flooded houses: 509
Flood	25 th Sep. 2009	As of Saturday (26 September 2009) 18 people in the north-central

		provinces of Vietnam have been killed in floods and heavy rains caused by a tropical low hitting the region on Friday (25 September 2009). Seven people are missing.
Typhoon	29 th Sep. 2009	A powerful typhoon slammed into central Vietnam on Tuesday (29 September 2009), killing 32 people and flooding towns and villages along the country's long coastline.
Flood	2 nd Nov. 2009	Wide-scale floods in central Vietnam have killed at least 13 people after tropical storm Mirinae wreaked havoc in the region. Dead: 122 Missing: 2 Injured: 145
Floods	13 th May. 2010	Disaster officials say floods triggered by heavy rains killed 16 people in central Vietnam this week, including five children.
Typhoon	18 th Jul. 2010	Vietnamese troops evacuated thousands of people from their homes in the north of the country on Sunday due to threats of flash flooding and landslides, as the death toll from Typhoon Conson rose to more than 70.
Storm	24 th Aug. 2010	Storm Mindulle, which battered north-central provinces in Vietnam on August 24, has killed 10 people and injured 64 others.
Flood	3 rd Oct. 2010	Floods caused by heavy weekend rain killed six people in central Vietnam, the government said on 3 October 2010. Floods North-Central Vietnam From CCFSC comprehensive report, as of October 14; deaths: 66, missing: 19, injured: 114 and houses flooded: 148,711
Floods	18 th Oct. 2010	At least 46 people have died and 21 missing in severe flooding in Vietnam. From CCFSC flash report, as of 7pm October 22; death: 77 people, missing: 5 people, injured: 42 people and houses flooded: 276,481.
Flood	5 th Nov. 2010	Floods caused by heavy rainfall and a low pressure zone have caused 18 deaths, 6 injured and 6 missing in south-central Vietnam. Floods in South-Central Vietnam have cost the lives of 29 people and more than 39,212 flooded or damaged houses.
Flood	14 th Nov. 2010	Over the last 48h, a tropical depression caused heavy rainfall and consequent flooding in provinces in Central Vietnam and the Central Highlands. Due to heavy rainfall and floods, 19 people were killed with 6 missing. 31 people were injured. 29,651 ouses were flooded or damaged.
Flood	29 th Nov. 2010	Over the last 48h, provinces in South-Central Vietnam have been affected by heavy rainfall and consequent flooding.
Heavy rain	26 th Jun. 2011	Vietnamese authorities say four days of heavy rain in northern Vietnam has left at least 16 people dead and submerged more than 10,000 hectares of rice and other food crops.
Typhoon, Flood	30 th Sep. 2011	Typhoon Nesat is forecast to hit Viet Nam in the afternoon of 30 September 2011 and cause heavy seas and rainfall in central coastal provinces.
Flood	6 th Nov. 2011	Heavy rain in central areas of Vietnam for days caused 7 death. In some provinces, traffic system was blocked and many house holds were isolated. Continual heavy rains in the recent few days causing large-scale floods in Vietnam's central provinces killed at least 22 and made another two missing as of Wednesday, according to updated report by the local Storm and Flood Control Center (SFCC).
Typhoon	1 st Apr. 2012	After slamming into the southern coast of Vietnam on 1 April 2012, tropical storm Pakhar weakened quickly and caused great property damage to the south-eastern region. The storm destroyed 418 houses, damaged 4,477 others sank 36 boats and flooded more than 6,700ha of rice.
Typhoon	18 th Aug. 2012	Typhoon Kai-Tak made landfall in Vietnam on 18 August 2012, bringing intense rain and strong winds. At least 27 people have been killed.
Heavy Rain, Flood	3 rd Sep. 2012	Torrential rains since Monday in coastal areas of Veitnam have killed at least six people and left three others missing, the Central Steering Committee for Flood and Storm Control reported on the morning of 7 September 2012.
Typhoon	28 th Oct. 2012	On the night of 28 October 2012, the North and Nothern central parts of Viet Nam were affected by heavy rainfall and strong winds caused by Typhoon Son-Tinh. At least two were killed and two went missing.
Flood, Landslide	6 th Sep. 2013	At least 21 people have been killed as flash floods and landslides ravaged mountainous areas in northern Vietnam.
Typhoon, Flood	24 th Sep. 2013	Heavy monsoon rains exacerbated by Typhoon Usagi have pounded parts of Vietnam and Cambodia killing at least 36 people.
Typhoon	30 th Sep. 2013	In the afternoon of 30 September, Typhoon Wutip made landfall on the

		north-central provinces of Viet Nam with a Category 1 level, leaving 3 dead and 35 injured.
Typhoon	15 th Oct. 2013	Typhoon Nari damaged hundreds of houses in central Vietnam early on 15 October 2013, forcing the evacuation of tens of thousands of people.
Typhoon	10 th Nov. 2013	More than 600,000 people were evacuated as super typhoon Haiyan veered towards Vietnam, authorities said on 10 November 2013. Killed:13 Injured:81 People evacuated:756,022
Flood	14 th Nov. 2013	Devastating floods have killed at least 34 people and left 11 others missing in central Vietnam, local authorities said Sunday 17 November 2013, describing the deluge as the worst for over a decade.
Typhoon	19 th Jul. 2014	Typhoon Rammasun made its landfall in Quang Ninh province of Viet Nam in the noon of 19 July 2014, causing whirlwind and heavy rain in a number of the northern localities. Nearly 200,000 residents had been evacuated from high-risk areas in coastal localities in the north. Extreme weather caused by Typhoon Rammasun has killed 27 people in Vietnam.
Flood	26 th Jul. 2015	At least 14 people have been killed in the worst flooding for 40 years in Vietnam's northern Quang Ninh province. Damaged Houses: Approx. 8,000 houses
Storm Vamco	Sep15th 2015	Tropical Storm VAMCO (Typhoon No.3 in Viet Nam), which developed 13 September 2015, has weakened and eventually dissipated on 15 September 2015. The Government of Viet Nam, in their initial assessment report, mentioned damages to the properties and agricultures in Danang City and Provinces of Ha Tinh, Quang Ngai, Quang Nam, Quang Binh, Binh Dinh, Hoa Binh, Phu Tho, Thanh Hoa and Nghe An as a result of the heavy rains. The impact of Storm Vamco is as follows Impact: 12 death 1 missing 4 injured 4,231 houses were damaged and inundated at least 15,000 ha of agricultural lands were affected (as reported by the affected provinces) fisheries were also affected.
Flood and Landslides	Jul29th 2015	On 29 July 2015, the Viet Nam Central Steering Committee for Natural Disaster Prevention and Control reported flooding in the Quang Ninh Province. On early August, the flooding has expanded to the northern provinces including Ha Giang, Dien Bien, Tuyen Quang, Thai Nguyen, Bac Giang, Lang Son, Lai Chau, Cao Bang, Yen Bai, Lao Cai, Bac Kan, Son La, Thanh Hoa and Thai Binh. Impact: 32 death, 6 injured and 24 missing (including 17 death in Quang Ninh) About 4,556 families or 18,224 people were affected 7,735 houses were damaged at least 20,000 ha of crops were submerged
Storm Kujira	Jun25th 2015	Storm Kujira has affected Thuan Chau and Yean Chau District in Son La Province. Kujira is the first storm to hit this year. Impact: 7 death and 4 missing 1 injured in Hai Phong City 23 houses and 80 ha of crops were damaged
Tropical Storm Sinlaku	Nov30th 2014	Due to the effect of Tropical Storm Sinlaku that passed the Coastal province of Southern Viet Nam caused impact to several provinces as follow: Bin Dinh and Phu Yen Impact: initial impact as of 30 Nov 2014 based on CCFSC, 155 houses damaged (100 collapsed and 55 unroofed) 3,983 ha rice field inundated 340 tons harvested rice soaked and damaged Electrical outage experienced by several districts in Phu Yen
Flooding	Oct30th 2014	Heavy rain has damaged Ha Dong dam in Quang Ninh Province. The dam cannot sustain for massive volume of water. This incident has caused flooding in Dam Ha District. Impact: 88 families or 200 people were evacuated. Over 100 ha of paddy field and 25 ha of fish pond were affected. Roads were inundated.
Flooding in Southern Provinces	Oct9th 2014	Intense rain triggered flooding in several areas in Binh Thuan, Binh Duong, Soc Trang, Can Tho, Long An Province. Impact: 1 death and 41 houses were damaged in Long An 135 houses 705 ha of crops were affected in Soc Trang Over 1,112 ha of agriculture area were inundated in Binh Thuan and Can Tho
Flood affected Phu Tho	Sep20th 2014	Heavy rain that poured in Phu Tho for the last 2 days has created flashflood and landslide. Impact: 1 missing 212 houses were damaged 1,417 ha of agriculture area were affected
Typhoon	Sep16th 2014	Typhoon Kalmaegi that crossing northern provinces of Viet Nam on 16

Kalmaegi		September has caused casualties and property damages. Based on the Central Committee for Flood and Storm Control (CCFSC) report, the affected 12 provinces are Lang Son, Lao Cai, Hai Phong, Quang Ninh, Ha Giang, Bac Giang, Bac Kan, Thai Nguyen, Phu Tho, Cao Bang, Tuyen Quang and Thai Binh. Impact: 14 death, including 8 people in Lang Son 1 missing 10 injured 2,194 houses were severely damaged, mostly in Ha Giang 1,083 houses were submerged, mostly in Ha Giang about 78,484 ha of agriculture area were affected 329 families were evacuated
Flood Submerged Houses in Tan Chau	Sep10th 2014	Flood affecting Tan Chau, Tay Ninh Province and submerging hundreds of houses. Impact: 1 injured 2 collapsed houses 430 houses were submerged 222 ha of crop and 4 ha of fish pond were inundated
Floods	Augfirst 2013	In Vietnam 5 people have been killed in the recent flooding. The deaths were in in the province of Son La, where two people die trying to cross a river. There were also deaths in the provinces of Lao Cai, Yen Bai and Dien Bien.
Floods	Sep5th 2013	The Central Committee for Flood and Storm Control in Vietnam have reported that floods and landslides in northern Vietnam over the last 2 days have resulted in 8 deaths. 10 other people are still missing, and 14 people have been injured. The flooding and landslides occurred in Ha Giang province , Lai Chau and Lao Cai, where 4 of the victims died. Several houses – some reports claim around 12 – have been damaged and crops decimated. The Committee reported that almost 120 hectares of crops and fish ponds have been affected, although other reports claim it is now as much as 1,700 hectares.
Floods	Sep13th 2013	Further flooding and landslides have been predicted for Quang Ninh, Lang Son, Cao Bang, Bac Can , Thai Nguyen and Phu Tho. As many as 25 people have been reported as killed in the floods and landslides. A total of 38 houses have been destroyed and nearly 7,000 hectares of rice and farmland devastated. Vinh Phuc province suffered the worst crop destruction.
Flash Floods	Sep24th 2013	At least 20 people have been killed in flash floods in central Vietnam on Tuesday 24th September. A further 6 people are reported as missing, with more fatalities a possibility. A tropical depression in the region brought torrential rain and strong winds across the central parts of the country, including Dak Lak, Ha Tinh, Nghe An, Quang Nam, Quang Ngai, Ha Tinh, Quang Binh and Quang Tri Provinces . The tropical depression has also caused severe flooding in Laos over the last few days.
Tropical Cyclone Haiyan	Nov16th 2013	Earlier today, official reports from Vietnam's state media claim that at least 5 people have been killed, and that 64,500 people had to be evacuated from their homes in Quang Ngai province, and a further 4,000 in Quang Nam province. More recent media reports say that as of today, Saturday 16 November 2013, as many as 18 people have now been killed in the floods, with a further 7 people missing.
Ho Chi Minh High Tide	Nov30th 2013	Residents of Ho Chi Minh City are facing severe flooding as a result of an unusually high tide of the Saigon River.
Typhoon Rammasun	Jul21th 2014	One local media report claims that as many as 6,000 homes have been flooded in the city of Lang Son. Flooding has also caused widespread damage to rice fields.
flash floods province of Lai Chau	Aug13th 2014	At least 6 people have been killed in the floods. A family of five – 2 parents and their 3 children – were killed in their home when it was washed away by raging flood water. The worst affected area is the village of Thac Can and surrounding area of Tam Duong district. Several other people are still missing.
High Tide Floods	Nov11th 2014	Some areas of Ca Mau Province in southern Vietnam are under 50cm (20 inches) of water after unusually high tides over the past few days.
Floods in Quang Ngai	Mar30th 2015	Floods in 3 provinces of central Vietnam have left 3 people dead. Two victims died in floods in Quang Ngai and one in neighbouring Quang Nam province. Thua Thien-Hue province has also been affected, although no deaths have been reported. Damage to crops, in particular rice, has been

		reported in all three provinces.
Tropical Cyclone Kujira	Jun26th 2015	Officials say that at least 7 people have died as a result, with a further 4 people still missing. Around 23 houses have been washed away in the flooding. Around 80 hectares of crops and farms in the province have also been damaged.
Flooding in Son La province	Jul29th 2015	At least 15 people have died after 3 days of torrential rain, landslides and floods in Quang Ninh Province, northern Vietnam. Flooding has also been reported in Son La province, where at least 30 houses have been damaged.
Floods	Aug4th 2015	Flooding has continued in Vietnam over the last few days, resulting in the deaths of three people, bringing the total number of recent flood-related deaths in Vietnam to at least 20 people. Earlier, heavy rain between 25 and 28 July, 2015, had caused severe flooding in the province of Quang Ninh. At least 15 people were killed in the floods. Later local media reports said the death toll had increased to 17, with as many as 8 people injured.
Floods	Sep11th 2015	VNS, the Vietnamese news agency, say that 3 people are missing after floods hit the mountainous province of Ha Giang in northern Vietnam. The floods occurred in Minh Tien village in Vi Xuyen District on Monday 07 September, 2015.

Source: JICA Project Team based on Information of ADRC, Floodlist and AHA Centre

A8.2 Earthquake

Table A8.2.1 Record of Earthquake (Indonesia)

Place	Date	Damage
Indonesia		
Earthquake	29 th Nov. 1998	Earthquake of magnitude 7.6 struck on 29 November 1998 at 14:10 GMT. Some had been dead, and many houses were damaged. Tsunami warning were issued at every place.
Earthquake	May. 2000	A strong earthquake hit the eastern part of Sulawesi island and neighbouring small islands in Indonesia on 4 May 2000. According to the United States Geological Survey, the earthquake measured 7.3 on the Richter scale with the epicentre situated at latitude 0.9 degrees south and longitude 123.4 degrees east. It occurred at 04.21 hrs GMT, or 12.21 hrs local time. Several aftershocks and a tidal wave reportedly followed the quake. The death toll rose to 46. More than 14,000 houses and 237 government buildings were damaged, with at least 500 totally destroyed.
Earthquake	June. 2000	A powerful earthquake rocked the Indonesian island of Sumatra. The quake was recorded at 7.9 on the Richter scale by the United States Geological Survey (USGS) According to the provincial government's report, 90 people were killed and 352 houses were completely destroyed.
Earthquake	14 th Feb. 2001	On Feb. 14, an earthquake is occurred again in the Province of Bengkulu, Indonesia. The epicenter is in the Indian Ocean, 21 km from Manna City. According to the Meteorology and Geophysics Agency of Indonesia, the earthquake is at M.5, but the Australian Geological Survey predicted for M7.3.
Earthquake	10 th Oct. 2002	A powerful quake that caused widespread damage in Indonesia's easternmost Papua province has left one policeman dead.
Earthquake	2 nd Nov. 2002	Emergency crews in Indonesia are treating at least 35 people injured after a massive earthquake struck the island of Sumatra.
Earthquake	20 th Jan. 2003	An earthquake measuring 5.0 on the Richter scale made 2,000 people homeless, and damaged 500 homes and small buildings in eastern Indonesia.
Earthquake	25 th March. 2003	A strong earthquake shook parts of central Indonesia on Tuesday, injuring at least 20 people and damaging several houses.
Earthquake	27 th May. 2003	At 2.23 a.m. on Tuesday, May 27, 2003, a strong earthquake, estimated magnitude 6.4, hit Indonesia. 1 person were killed.
Earthquake	2 nd Jan. 2004	At least one person was killed and nine injured when an earthquake and aftershocks shook tourists and residents from their beds early on Friday on the Indonesian resort islands of Bali and neighbouring Lombok.
Earthquake	6 th Feb. 2004	A powerful earthquake hit in Nabire, Papua province, Indonesia, Saturday,

		Feb. 7, 2004. Authorities said, leaving more than 30 people dead and hundreds injured.
Earthquake	16 th Feb. 2004	At least five people have been killed on the Indonesian island of Sumatra after it was hit by an earthquake. The magnitude 5.6 quake struck near the town of Padangpanjang, about 1,000 km (625 miles) north-west of Jakarta.
Earthquake	11 th Nov. 2004	A major earthquake occurred on Thursday, November 11, 2004. The magnitude 7.3 event has been located in KEPULAUAN ALOR, INDONESIA. The earthquake killed at least 17 people. Dead: 23; seriously injured: 116; slightly injured: 118. Destroyed houses: 781; badly damaged houses: 3,733; fairly damaged houses: 3,883.
Earthquake	26 th Nov. 2004	A strong earthquake rocked Indonesia's West Papua province Friday, killing at least 11 people and causing dozens of buildings and homes to collapse, officials said.
Earthquake, Tsunami	26 th Dec. 2004	At least 94,081 people dead, 7,191 people missing, in the aftermath of a tsunami triggered by the most powerful earthquake (9.0-magnitude) since 1964. Dead: 126,732 Missing: 93,652 Displaced: 533,770
Earthquake	24 th Jan. 2005	A strong earthquake has hit the Indonesian island of Sulawesi, causing panic among thousands of people who fled their homes fearing a tsunami. The earthquake, measuring 6.2, damaged several buildings in the town of Palu. One person died after the tremor struck.
Earthquake	28 th March. 2005	A magnitude 8.7 earthquake struck the West coast of Sumatra in Indonesia centered near the island of Nias. More than 290 people were feared killed on the island.
Earthquake	14 th March. 2006	A strong earthquake of Magnitude 6.7 on the Richter scale has struck eastern Indonesia on 14 March. The quake triggered 5 meter tidal wave which killed two persons and injured one.
Earthquake	27 th May. 2006	On 27 May 2006 at 5:54 AM Local time (5/26/2006 10:54:00 PM UTC) an M6.3 earthquake has struck the very highly populated region of Yogyakarta, 275 miles east of Jakarta, Indonesia. The death toll continues to climb and is currently estimated between 5,775 and 6,234 and the number of injured is between 46,000 and 53,000.
Earthquake, Tsunami	17 th Jul. 2006	A strong undersea earthquake, which had a magnitude of 7.7, struck off the southern coast of Indonesia's Java island on Monday, triggering a tsunami that swept away wooden buildings and killed at least 500 people.
Earthquake	18 th Dec. 2006	An earthquake has struck Indonesia's Sumatra island, killing at least seven people and wounding around 100 others. Three moderate earthquakes struck Indonesia's Sumatra island on Monday, killing four people in one area including a child and triggering landslides, officials said.
Earthquake	6 th March. 2007	A strong earthquake followed by an almost equally strong aftershock rocked Sumatra in western Indonesia on Tuesday, 6 March 2007, killing at least 30 people.
Earthquake	12 th Sep. 2007	Some powerful earthquake had struck off the western Indonesian island of Sumatra. The tremor had a magnitude of 7.9, according to the Indonesian Meteorological Institute. Dead of 9 people had reported.
Earthquake	25 th Oct. 2007	On 25 October, 2007, the quake had a preliminary magnitude of 7.1 and struck 135 kilometers (85 miles) west of Bengkulu, a coastal town off Sumatra island, the U.S. Geological Survey said. It hit 30 kilometers (18 miles) beneath the ocean floor.
Earthquake	25 th Nov. 2007	On 25 November, 2007, at least three people were killed when powerful earthquakes (M6.4) struck off the coast of Sumbawa island in central Indonesia. 1800 injured were reported on 27 November.
Earthquake	20 th Feb. 2008	A8.5 magnitude quake whose epicentre was near the island of Simeulue, 319km (198 miles) off the coast of Sumatra, struck off Indonesia's Aceh province on 20 February 2008. At least three people have been killed and 25 seriously injured by the quake.
Earthquake	17 th Nov. 2008	A 7.5-magnitude earthquake jolted Indonesia early Monday, leaving two people dead and 37 injured.
Earthquake	4 th Jan. 2009	A series of quakes including the quake of Magnitude 7.6 off the northern coast of the Indonesian island of Papua early on Sunday, 4 January 2009, killed four people and injured several others, officials and local television said.
Earthquake	12 th Feb. 2009	February 12, 2009, a series of earthquakes shook far northeastern Indonesia Thursday, injuring at least 42 people and damaging about 500

		homes and other buildings, officials said.
Earthquake	2 nd Sep	A magnitude 7.0 earthquake occurred in Java, Indonesia at 2:55 pm local time on 2 September 2009.
Earthquake	19 th Sep. 2009	On September 2009, an earthquake registering magnitude 5.8 struck the Indonesian island resort of Bali, injuerd seven people.
Earthquake	30 th Sep. 2009	A powerful earthquake (Magnitude 7.6) off the coast of Sumatra island of Indonesia has killed more than 529 people on 30 September 2009.
Earthquake	9 th Nov. 2009	At least one person has been killed and several others injured after a strong undersea earthquake, magnitude 6.7, hit the remote Indonesian island of Sumbawa.
Earthquake	7 th Apr. 2010	The 7.2 magnitude earthquake in Simelue regency, Aceh, had injured 20 people as of 3 p.m., a statement from the Health Ministry said.
Earthquake	16 th Jun. 2010	The earthquake occurred in Indonesia on 16 June, killed at least 17 people and displaced 10,000 people in Yapen, Papua.
Earthquake, Tsunami	25 th Oct. 2010	On 25 October, the islands were struck by a 3m-high tsunami triggered by a 7.7 magnitude earthquake off the coast of western Sumatra, which left 509 people dead, 21 missing, destroyed 550 houses and damaged another 200, the country's National Disaster Management Agency reported.
Earthquake, Tsunami	11 th Apr. 2012	Centre for Health Crisis MOH reported the death of 8 persons, hospitalization of 6 patients with major injuries; 101 persons were treated at the outpatient clinics from minor injuries. The damage of health facilities were 39.
Earthquake	2 nd Jul. 2013	Government reports number of IDPs has risen to 53,339. The death toll has risen to 42, six persons are still missing. The number of damaged houses and public buildings has climbed to 20,401.
Earthquake	25 th Sep. 2015	More than 60 people were injured and 200 houses damaged Friday when a powerful earthquake rocked remote eastern Indonesia, a disaster agency official said, and warned the number of victims could rise.
Earthquake	2 nd March. 2016	Local authorities initially issued a tsunami warning but lifted it several hours later, and there were no immediate reports of casualties or damage. The 7.8 magnitude undersea quake struck at a depth of 24 kilometres (15 miles) at about 6:50 pm (1250 GMT), the US Geological Survey said.
Earthquake	2 nd Jun. 2016	Subsequent assessment showed that 856 houses were damaged in Pesisir Selatan District, and 56 in Mukomuko District. 16 people were injured in West Sumatra Province. The same number of people were injured in Bengkulu Province.
Great Banda Sea Earthquake	Nov4th 1963	The Banda Sea earthquake of November 4, 1963 is one of the largest (Mw = 8.3) intraplate events. It involved oblique thrusting at an intermediate depth within the subducted lithosphere near the abrupt bend in the southeastern Banda arc (6.86[deg] S, 129.58[deg] E). To better understand the tectonic significance of this earthquake, the detailed source process of the Banda Sea event was determined by body wave analysis. The rupture history was established by deconvolving source time functions from long-period P wave seismograms, using both individual station and multi-station time-domain deconvolution methods. The seismic moment release occurred within the first 50 s of rupture, initiating at a depth near 120 km and expanding laterally and downdip over a vertical extent of about 50 km. Slip and moment release were concentrated in one main region near the hypocenter, at depths between 110 and 130 km. The along-strike rupture length was only about 100 km, so it is difficult to resolve any horizontal directivity. The compressional stress orientation inferred from the focal mechanism parallels the strike of the slab, and reflects the importance of contortion of the lithosphere in this region. The Banda Sea event may be part of a major detachment at the leading edge of the subducted Australian continental shelf.
Papua	Jun25th 1976	M7.1, Fatalities 5,000 Directly after the earthquake the casualty count was assessed as 350 dead. However, landslides soon occurred in the affected area, leading to 72 more casualties. 5,000–9,000 were missing after the landslides, and were assumed dead. A total six villages were demolished in the area. The west sector of Irian and eastern New Guinea also reported that the earthquake was felt significantly in their region.
Sumba	Aug19th 1977	The 1977 Sumba earthquake (also called the Sumbawa earthquake)

Earthquake		<p>occurred approximately 290 kilometres (180 mi) south of Bima, Sumbawa, and beneath the Indian Ocean, at 14:08 local time on 19 August. With a moment magnitude of 8.3, the earthquake is notable for having an unusually great magnitude for a shock with a normal faulting focal mechanism. The shock occurred near the southern section of the Sunda Trench where several other tsunami-generating earthquakes have occurred. The earthquake was at the time the largest outer-rise earthquake ever recorded in Indonesia, and aftershocks along the trench extended about 130 kilometres (81 mi) eastward and 110 kilometres (68 mi) westward from the epicenter.</p> <p>Although damage from the earthquake was limited to Indonesia, ground movement was reportedly felt as far afield as Albany in Australia, and the power supply was briefly cut in Port Hedland.[5] A tsunami was generated with observed run-up heights of up to 5.8 meters (19 ft) and inundation distances of up to 1,200 metres (3,900 ft) at several locations on Sumba and Sumbawa. The combined number of victims from both the earthquake and tsunami in Indonesia was at least 107 confirmed dead and several dozen others missing, presumed dead; several sources combine the two for a total casualty figure of approximately 180 deaths and 1,100 injuries.</p>
Irian Jaya Earthquake	Jan19th 1981	<p>On January 19, 1981, eastern Indonesia was struck by an earthquake known as the 1981 Irian Jaya earthquake. Registering a magnitude of 6.8 on the Richter scale, it killed more than 300 people, damaging structures and buildings across the Irian Jaya province.</p> <p>Spawning enormous landslides, the earthquake left at least 305 people dead and more than 1,000 missing. Entire villages were covered by debris. It was described as "strong" by The New York Times.</p> <p>The earthquake caused huge landslides, which cascaded into the villages below the mountains, destroying more than 150 homes. The debris from these flows blocked transportation by road, "cutting off more than 2,000 area residents". Relief efforts took several days.</p>
Flores Earthquake and Tsunami	Nov12th 1992	<p>The 1992 Flores earthquake occurred on December 12 on the island of Flores in Indonesia. With a magnitude of 7.8, it was the largest and also the deadliest earthquake in 1992.</p> <p>The quake hit at 05.29 UTC and was followed by several serious aftershocks. At least 2,500 people were killed or missing near Flores, including 1,490 at Maumere and 700 on Babi. More than 500 people were injured and 90,000 were left homeless. Nineteen people were killed and 130 houses were destroyed on Kalaotoa. Damage was assessed at exceeding US\$100 million.</p>
Liwa Earthquake	Feb15th 1994	<p>The 1994 Liwa earthquake occurred on February 16 at 00:07 local time. It was located in southern Sumatra, Indonesia. The magnitude of the earthquake was put at Mw 6.9, Mw 7.0, or Ms 7.2, according to different sources.</p> <p>The earthquake caused 207 deaths and 2000 injuries. There was damage from landslides, mudslides, and fires in Lampung Province. Power outage occurred in western Lampung. Six-thousand buildings were damaged or destroyed by landslides in the Liwa area. In addition to southern Sumatra, the earthquake could be felt in western Java and Singapore. Intense smoke and gas activity was observed in the Suwoh volcanic area.[</p>
Java Earthquake and Tsunami	Jun third 1994	<p>This earthquake occurred with a moment magnitude of 7.8 in a region which is characterized as having a weak seismic coupling. Earthquakes with slow rupture velocities are the most efficient tsunami generators, and this earthquake was classified as a tsunami earthquake.</p> <p>Tsunami</p> <p>The tsunami reached Java and Bali, with runups up to 14 m (46 ft) on the east Java coast and up to 5 m (16 ft) on the southwestern Bali coast. More than 200 people were killed in the tsunami. The shock could be felt strongly across Bali, central and eastern Java, Lombok, and Sumbawa.</p>
Biak Earthquake and Tsunami	Feb17th 1996	<p>The 1996 Biak earthquake, or the 1996 Irian Jaya earthquake, occurred on February 17 at 14:59:30 local time near Biak Island, Indonesia. The earthquake had a moment magnitude of 8.2 and a maximum Mercalli intensity of VIII (Severe). The run-up height of the generated tsunami reached 7 meters (23 ft). One-hundred and sixty-six people were reported</p>

		<p>dead, 423 were injured, and 5,090 were made homeless.</p> <p>This earthquake was a thrust in a very oblique subduction zone. It ruptured at least 270 km (170 mi) along the New Guinea trench. The slip distribution is very nonuniform. The largest slip was ~12 m near the hypocentral depth, and the mean slip over a 230 km by 100 km fault area was 4 m.</p> <p>Tsunami 7m(23ft), Casualties 166 dead, 423 injured, 5,090 displaced</p>
Enggano Earthquake	Jun4th 2000	<p>The 2000 Enggano earthquake struck at 23:28 local time on June 4 with a moment magnitude of 7.9 and a maximum Mercalli intensity of VI (Strong). The strike-slip event occurred off the coast of southern Sumatra, Indonesia near Enggano Island. There were more than 100 fatalities and up to 2,585 injuries. Over 730 aftershocks shocked the area afterwards, one just eleven minutes after the mainshock.</p> <p>Extensive damage and landslides populated the Bengkulu area, with minor injuries and damage on Enggano Island. In the village worst struck, several hundred structures were reported in ruins. Peter Walker of the International Federation of Red Cross and Red Crescent Societies in Geneva denied the earthquake as the major cause of death, instead blaming disease. "...the actual damage from the earthquake isn't that great; the houses are wooden structures so they don't collapse much. But what he found was an endemic problem of rampant malaria, rampant communicable diseases and levels of mortality and morbidity that are totally unacceptable. That is the disaster, not the earthquake." An aftershock measuring 6.2 struck on June 7.</p> <p>Casualties 103 dead 2,174-2,585 injured</p>
Nabire Earthquake	Feb7th 2004	<p>The 2004 Nabire earthquake occurred on November 26 in Papua, Indonesia. The strike-slip event had a moment magnitude of 7.1 and a maximum Mercalli intensity of VIII (Severe). Total deaths for the event amounted to 32, and the total number of injured (as reported by various agencies) was 130–213.</p> <p>Dozens of buildings collapsed and nearly two hundred homes, businesses, and a church were lost. Some infrastructure was damaged, including three bridges and a government telecommunications building.</p> <p>Casualties 32 dead 130-213 injured</p>
Indian Ocean Earthquake	Dec26th 2004	<p>According to the country's National Disaster Relief Coordination Agency, 250,000 people are dead and 37,063 are missing. In addition, the UN estimates that 655,000 people are homeless and sheltering in scattered refugee camps across the province.</p> <p>As of January 23, 2005 the Health Ministry reported 173,981 dead while the Social Affairs Ministry registered 114,978 killed. On 25 January Health Minister Fadilah Supari updated the estimated death total to 220,000. The death toll is now (2011) estimated at 230,000 that died in the tsunami.</p>
Nias–Simeulue Earthquake	Mar28th 2005	<p>On the Indonesian island of Nias, off the coast of Sumatra, hundreds of buildings were destroyed. The death toll on Nias was at least one thousand, with 220 dying in Gunungsitoli, the island's largest town. Nearly half of Gunungsitoli's population (27,000) fled.</p> <p>Portions of Thailand's southern coast were evacuated as a precaution, and NOAA advised an evacuation of 965 kilometres (600 mi) of coastline in Sumatra. Evacuations occurred in the northern Malaysian states of Penang and Kedah, as well as the eastern coast of Sri Lanka, where ten people were killed in the confusion of the evacuation. Many of the southern states of India were put on high alert; all of these areas had seen significant damage from December's tsunami. After the detection of a minor tsunami south of the epicenter, including a 30 cm tsunami on Australia's Cocos Islands, the island states of Mauritius, Madagascar, and the Seychelles in the Indian Ocean issued warnings to their populations. Although tsunami warning systems for the region had been actively discussed before the December 2004 earthquake, none had yet been implemented in the Indian Ocean.</p>
Yogyakarta Earthquake	May27th 2006	<p>The 2006 Yogyakarta earthquake (also known as the Bantul earthquake) occurred at 05:54 local time on 27 May with a moment magnitude of 6.4 and a maximum intensity of IX (Destructive) on the Medvedev–Sponheuer–Karnik scale. The shock occurred on the southern coast of Java near the Indonesian city of Yogyakarta, and caused a</p>

		disproportionate number of casualties, with more than 5,700 deaths and 37,000 injuries, and financial losses of (Rp 29.1 Trillion (\$3.1B)). The eruption of Mount Merapi, a stratovolcano that was entering a period of unrest, was originally thought to have a connection with the earthquake. With a lack of instruments in the area, the shock was initially attributed with the Opak Fault that lies to the east of the affected areas, but later InSAR analysis revealed that another previously unknown fracture was responsible for the sequence of shocks.
Pangandaran Earthquake and Tsunami	Jul17th 2006	An abnormally slow rupture at the Sunda Trench and a tsunami that was unusually strong relative to the size of the earthquake were both factors that led to it being categorized as a tsunami earthquake. Several thousand kilometers to the southeast, surges of several meters were observed in northwestern Australia, but in Java the tsunami runups (height above normal sea level) were typically 5–7 meters (16–23 ft) and resulted in the deaths of more than 600 people. Other factors may have contributed to exceptionally high peak runups of 10–21 m (33–69 ft) on the small and mostly uninhabited island of Nusa Kambangan, just to the east of the resort town of Pangandaran, where damage was heavy and a large loss of life occurred.
Sumatra Earthquakes	Sep12th 2007	The tremors of the 8.5 Mw earthquake lasted for several minutes. It caused buildings to sway in Jakarta, and some buildings were reported to have collapsed in the city of Bengkulu, Bengkulu Province, about 100 km from the epicenter. Tremors felt in Jakarta were described as being "violent". It was reported that several high-rise buildings were evacuated. The earthquake also led to a power outage in Bengkulu, which crippled communications. The death toll of the earthquakes is 21 with 88 people injured. Tremors were felt in neighbouring countries as far away as Southern Thailand. In Singapore, which is about 670 km from the epicenter, the tremor was felt at around 11:10 UTC (19:10 local time). Most of the Central and Eastern part of Singapore has felt the tremor. In Peninsular Malaysia, tremors were reported after 19:15 local time, including Kuala Lumpur, Putrajaya, Johor Bahru, Malacca and Penang. Like Singapore, the tremors were most severe on high-rises, resulting in minor panic and evacuations. No casualties were reported in the country, as of 13 September.
West Java Earthquake	Sepsecond 2009	The 2009 West Java earthquake occurred on September 2 at 14:55 local time in West Java, Indonesia. The magnitude 7.0 earthquake killed at least 79 people, injured over 1,250, and displaced over 210,000 (including more than 140,000 in Tasikmalaya regency). The quake was felt in the capital Jakarta, although damage there was minimal, and it was Indonesia's deadliest earthquake since the 2006 Pangandaran earthquake and tsunami. Buildings in Bandung and Tasikmalaya, the town closest to the epicenter, were damaged, and hundreds of people were injured. An estimated 18,300 homes and offices were earlier thought to have been damaged. This figure later rose to 87,000. The quake was felt in Jakarta, Indonesia's capital; causing evacuation in many office buildings and hotels. Several office buildings along major thoroughfares in Central Jakarta suffered damage. At least 11 houses were covered by a landslide in Cianjur.
Sumatra Earthquake	Apr6th 2010	The April 2010 Sumatra earthquake occurred on April 7 at 5:15 AM local time with a moment magnitude of 7.8 and a maximum Mercalli intensity of VIII (Severe). The shock occurred near Banyak Islands, off the island of Sumatra in Indonesia. A tsunami watch was issued according to the Pacific Tsunami Warning Center in Honolulu which was later canceled. A 40 cm surge was reported in the Banyak Islands an hour after the quake, along with 62 injuries. Power outages were reported throughout the province of North Sumatra as well as in Aceh. This quake is one of the sequence of large earthquakes along the Sunda megathrust in 2000s.
Sumatra Earthquake and Tsunami	Oct25th 2010	The earthquake's worst effects were felt on the remote Mentawai Islands. On the island of South Pagai, the tsunami that followed the earthquake reached a height of 3 m (9 ft) and swept as far as 600 m (1800 ft) inland. According to Indonesian officials, more than 20 villages were hit by the

		<p>tsunami, displacing more than 20,000 people and affecting about 4,000 households. The coastal village of Betu Monga on South Pagai was reported to have been destroyed with many residents still missing. Many residents of the villages of Peurogat and Beleerakso were also reported to be missing. Eighty percent of the houses in the North Pagai village of Muntei Baru were reported damaged or destroyed.</p> <p>Tsunami</p> <p>Many villages on the islands were affected by the tsunami, which reached a height of 3 m (9 ft) and swept as far as 600 m (1800 ft) inland. The tsunami caused widespread destruction that displaced more than 20,000 people and affected about 4,000 households. 435 people were reported to have been killed, with over 100 more still missing. The subsequent relief effort was hampered by bad weather and the remoteness of the islands, which led to delays in the reporting of casualties.</p>
Indian Ocean Earthquakes	Apr 11th 2012	<p>Four people in their 60s and 70s in Banda Aceh, and a 39-year-old man in Lhokseumawe died from heart attacks or shock. Injuries were reported in Aceh Singkil, including a child who was critically injured by a falling tree. The quake prompted people in Indonesia, Thailand and India to leave their homes and offices in fear of tsunamis. People headed for higher ground in parts of Indonesia and Malaysia. In Aceh, where 31,000 people were killed in the 2004 Indian Ocean earthquake and tsunami, people were reported weeping. Some people used cars and motorcycles to reach higher ground. Patients were reportedly wheeled out of hospitals, some with drips attached to their arms. One hotel guest was slightly injured when he jumped out of his window.</p> <p>The earthquake was felt over a large area, including Indonesia, the Maldives, Sri Lanka, India, Nepal, Bhutan, China, Bangladesh, Burma, Thailand, Malaysia, Laos, Cambodia, Singapore, and Vietnam. The quake was felt across the eastern coast of India including Chennai, Bangalore, Kochi, Bhubaneswar, Vizag and Kolkata. The Metro Rail services were suspended in Kolkata, and passengers were asked to leave stations. In peninsular Malaysia, shaking was felt in Penang and Kuala Lumpur. The tremor was felt in Colombo, Sri Lanka, where people in some high-rise buildings were evacuated. In China, the earthquake was felt in Tibet. However, it was not reported to be felt in places closer to the epicenter such as Yunnan and Guangxi.</p>

Source: JICA Project Team based on Information of ADRC and AHA Centre

Table A8.2.2 Record of Earthquake (Malaysia)

Place	Date	Damage
Myanmar		
Tsunami	26 th Dec. 2004	At least 68 people were killed, 6 people are missing with hundreds injured in the aftermath of a tsunami triggered by the most powerful earthquake (9.0-magnitude) since 1964. Dead: 68 Missing: 6 Displaced: 8,000
Earthquake, Landslide	5 th Jun. 2015	Magnitude 6.0 earthquake occurred in Sabah State, Malaysia in the morning on 4 June 2015. The earthquake triggered a series of landslides in Mount Kinabalu, killing at least 11 people.

Source: JICA Project Team based on Information of ADRC

Table A8.2.4 Record of Earthquake (Myanmar)

Place	Date	Damage
Myanmar		
Tsunami	26 th Dec. 2004	At least 90 people were killed in Myanmar by a tsunami that wreaked death and destruction along the coasts of the Indian Ocean.
Earthquake	24 th March. 2011	A large 6.8 magnitude earthquake struck Myanmar near the border with northern Thailand on 24 March 2011. Initial findings of a rapid assessment indicate that at least 18,000 people residing in 90 villages are affected by the earthquake. The local authorities in Tarlay have reported that a total of 836 houses were damaged in the affected areas.
Earthquake	11 th Nov. 2012	On 11 November 2012, an earthquake registering 6.8 on the Richter scale was recorded 50 kilometers north of Shwebo Township in Sagaing Region, 115 kilometers north of Mandalay. The Government indicates at least 16

		people were killed and 52 other injured in the earthquake. The Government reports that over 400 houses, 65 schools and 100 religious buildings were damaged.
Myanmar earthquake	Mar24th 2011	Temporary evacuations of tall buildings took place in Chiang Rai of Thailand, Menghai County in Yunnan, Nanning in Guangxi Zhuang Autonomous Region of China, and in Hanoi of Vietnam. At least one bridge is reported collapsed in Myanmar. In total, 390 residential homes, 14 monasteries and 9 government buildings were destroyed. In Monglin, at least 128 homes were reduced to rubble. According to the United States Geological Survey's population exposure data, the final damages from the earthquake are most likely to be slightly under USD \$100 million.

Source: JICA Project Team based on Information of ADRC and AHA Centre

Table A8.2.5 Record of Earthquake (Philippines)

Place	Date	Damage
Philippines		
Earthquake	12 th Dec. 1999	A strong earthquake hit Luzon 12 December 1999, at 02:03 hrs local time. The earthquake measured 6.8 on the Richter scale.. The main quake lasted for more than 20 seconds and was followed by a series of strong aftershocks. Six people were reportedly killed and at least 40 people were injured, mostly by debris falling from damaged walls and roofs in their homes. Initial estimates for damage caused by the quake were not yet available although at least 30 houses were partially destroyed in Zambales. Several bridges, water pumping stations and public buildings in Manila and Pangasinan suffered "minor damage" .
Earthquake	6 th March. 2002	A strong earthquake has shaken philippines, killing at least 4 people and injuring some people.
Earthquake	16 th Feb 2003	Two strong earthquakes struck the central Philippines just hours apart, damaging houses and knocking out power.
Earthquake	19 th Nov.2003	A strong earthquake with a preliminary magnitude of 6.6 struck the central Philippines early Wednesday, killing a child and collapsing several small buildings
Earthquake	6 th Feb 2012	A M6.9 earthquake occurred offshore Negros Oriental (Tayasan) in the Philippines at 11:49 am, 6 February 2012. 15 people were killed. Killed: 51 Missing: 62 Injured: 112 Affected: 320,165 Totally damaged houses: 6,352 Partially damaged houses: 9,435
Earthquake	15 th Oct. 2013	An earthquake measuring 7.2 hit the central Philippines on 15 October 2013, killing at least six people. Killed: 222 Injured: 796 Missing: 8 Affected: 3,221,248
Moro Gulf Earthquake and Tsunami	Aug16th 1976	The initial earthquake was widespread and was felt as far as the central Philippine islands of the Visayas. A massive tsunami devastated 700 kilometers of coastline bordering the Moro Gulf in the North Celebes Sea, resulting in destruction and death in the coastal communities of the Sulu Archipelago and southern Mindanao, including Zamboanga City and Pagadian City. At least 5,000 people died during the earthquake and tsunami, with thousands more remaining missing. Some reports say that as many as 8,000 people lost their lives in total, with ninety percent of all deaths the result of the following tsunami. Initially over 8,000 people were officially counted as killed or missing, 10,000 injured, and 90,000 homeless, making it one of the most devastating disasters in the history of the Philippine Islands. After the initial earthquake the people were unaware of the need to move to higher ground; when the tsunami hit it sucked most of the victims out to sea. Based on the investigation on the affected region it was confirmed that the waves reached up to 4 to 5 metres (13 to 16 ft) when they hit the areas. There were reports of weak tsunami activity as far as Japan.
Baguio City Earthquake	Jul16th 1990	Looking back, it was exactly 4:26 p.m. on Monday, 16 July 1990, that a killer earthquake unexpectedly hit and extensively devastated the City of Baguio. As reported, the powerful temblor measured 7.7 in the open-ended Richter scale and lasted for 45 seconds. It was said to be the most destructive earthquake on record within the Cordillera Region. There were numerous aftershocks that followed and the strongest, which occurred at 3:15 a.m. of July 18, lasted for eight seconds ... and measured 5.3 on the

		<p>Richer scale.</p> <p>Fearing for their lives, many of Baguio's 120,000 people slept outdoors on Monday night. The city suffered the most in terms of destruction to properties and numerous deaths. Many commercial and government buildings, hotels, inns, and residences were heavily damaged. The death toll continued to rise as rescuers pulled more bodies from the rubbles. It was estimated that as many as 1,000 people were trapped and killed in damaged buildings.</p> <p>The five-star Hyatt Terraces Plaza sustained the worst damage when its terraced front collapsed onto the lobby area, killing about 50 people. The Baguio Park Hotel along Harrison Road was a total wreck. The luxurious Nevada Hotel which is located right across from the main gate of Camp John Hay was ripped in half by the quake, leaving a huge gash in the middle of the structure. The Saint Vincent Catholic Church along Naguilian Road was spared by the strong quake, however a portion of its retaining wall and parking area was damaged and collapsed to the road below. The church, which has withstood typhoons, bombings during the 2nd World War, and other disasters, suffered only minor damage.</p>
Mindoro Earthquake	Nov15th 1994	<p>The epicenter of this earthquake was located in the Verde Island Passage, a strait separating Luzon and Mindoro. The focal mechanism showed predominantly right-lateral strike-slip faulting. The released seismic moment was about 5.12×10^{19} Nm.</p> <p>Tsunami</p> <p>The earthquake generated a tsunami, which affected Mindoro, the Verde Island, the Baco Islands, and Luzon. Some concrete structures also suffered moderate damage in the tsunami. In Baco Islands, the vertical run-up reached 8.5 meters (28 ft). The tsunami was also recorded in Lobo. The tsunami was larger than expected considering the strike-slip movement of the earthquake.</p> <p>Casualties 78 killed</p>
Mindanao Earthquakes	Jul23th 2010	<p>The 2010 Mindanao earthquakes occurred in the Southern Philippines in the Moro Gulf. The sequence of events took place over several days in late July, and consisted of three primary shocks that were all over M7, but there were no reports of damage or casualties as they occurred far too deep (over 500 kilometres (310 mi)) to pose any serious threat.</p>
Visayas Earthquake	Fb6th 2012	<p>The 2012 Visayas earthquake occurred on February 6 at 11:49 PST with a moment magnitude of 6.7 and a maximum intensity of VII (Destructive) off the coast of Negros Oriental, Philippines. The epicenter of the undersea blind thrust earthquake was approximately 72 kilometres (45 mi) north of Dumaguete, Negros Oriental.</p> <p>Tsunami</p> <p>The Philippine Institute of Volcanology and Seismology (PHIVOLCS) gave a level two tsunami alert, indicating that the public should be on watch for "unusual waves", but did not call for any evacuation. Despite this, in Cebu City, panic erupts and many residents fled towards higher ground due to rumors that a tsunami had hit the coastal villages of Ermita, Mambaling and Pasil. Residents of Dumaguete also scrambled to the mountain town of Valencia because of the scare. These rumors were later confirmed to be false. PHIVOLCS announced the tsunami alert at 14:30 PST.</p> <p>Casualties 51 dead, 112 injured, 62 missing</p>
Bohol Earthquake	Oct15th2013	<p>The earthquake struck as the Philippines was observing the Muslim holiday of Eid-al-Adha. The public holiday had closed schools, some businesses, and offices which helped reduce the number of casualties.</p> <p>A total of ₱2.25 billion worth of damage to public buildings, roads, bridges, and flood controls was reported in Bohol and Cebu. A total of 671,103 families or more than 3.2 million people were affected by the quake. Out of the total number of affected, 71,822 families or more than 348,000 people were displaced.</p>

Source: JICA Project Team based on Information of ADRC and AHA Centre