



Climate Change Value Impact in Thailand



By
Department of Disaster Prevention and Mitigation
Ministry of Interior, Thailand
Website : Disaster.go.th

Outline

- ◎ 1. Background
 - > Natural disaster in Thailand
 - > Natural disaster affected
(Loss & Damage)
- 2. 2011 Thailand's Flood
- 3. Conclusion

Natural Disaster

- Cold Spell
- Drought
- Flood
- Landslide
- Tropical Cyclone
- Earthquake
- Storm surge

Source: National DPM Plan (2010-2014)

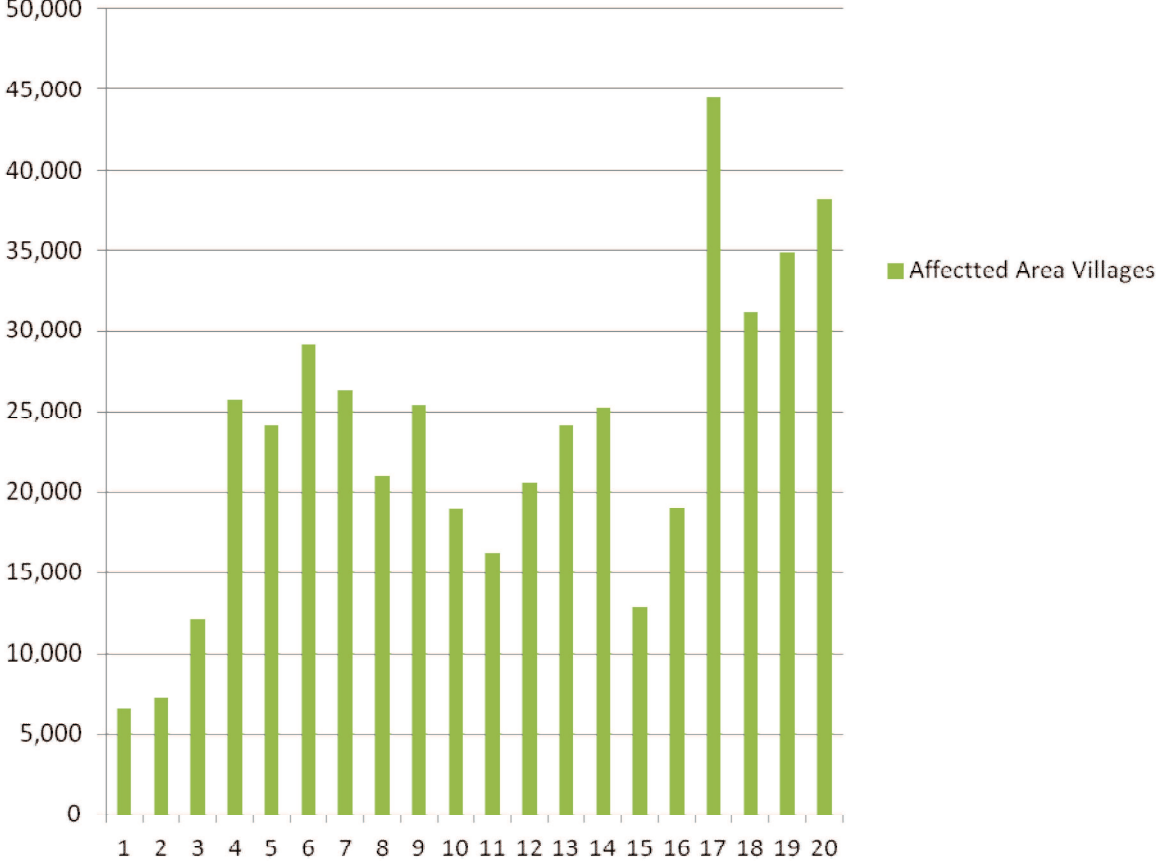
Drought Loss & Damage

DROUGHT



Year	Affected Area			
	Provinces	District	Sub-District	Villages
1989	29	257	1,517	6,628
1990	48	294	1,490	7,234
1991	59	517	2,120	12,192
1992	70	719	2,410	25,766
1993	68	698	1,970	24,176
1994	66	685	2,360	29,191
1995	72	717	5,020	26,354
1996	61	632	4,125	21,067
1997	64	702	4,924	25,426
1998	72	750	4,170	18,902
1999	58	610	3,197	16,170
2000	59	633	3,754	20,593
2001	51	619	4,968	24,176
2002	68	709	4,489	25,299
2003	63	412	2,288	12,904
2004	64	489	2,936	19,027
2005	71	756	5,244	44,519
2006	61	582	3,709	31,115
2007	66	669	4,344	34,874
2008	61	660	4,306	38,170

Drought Affected Village

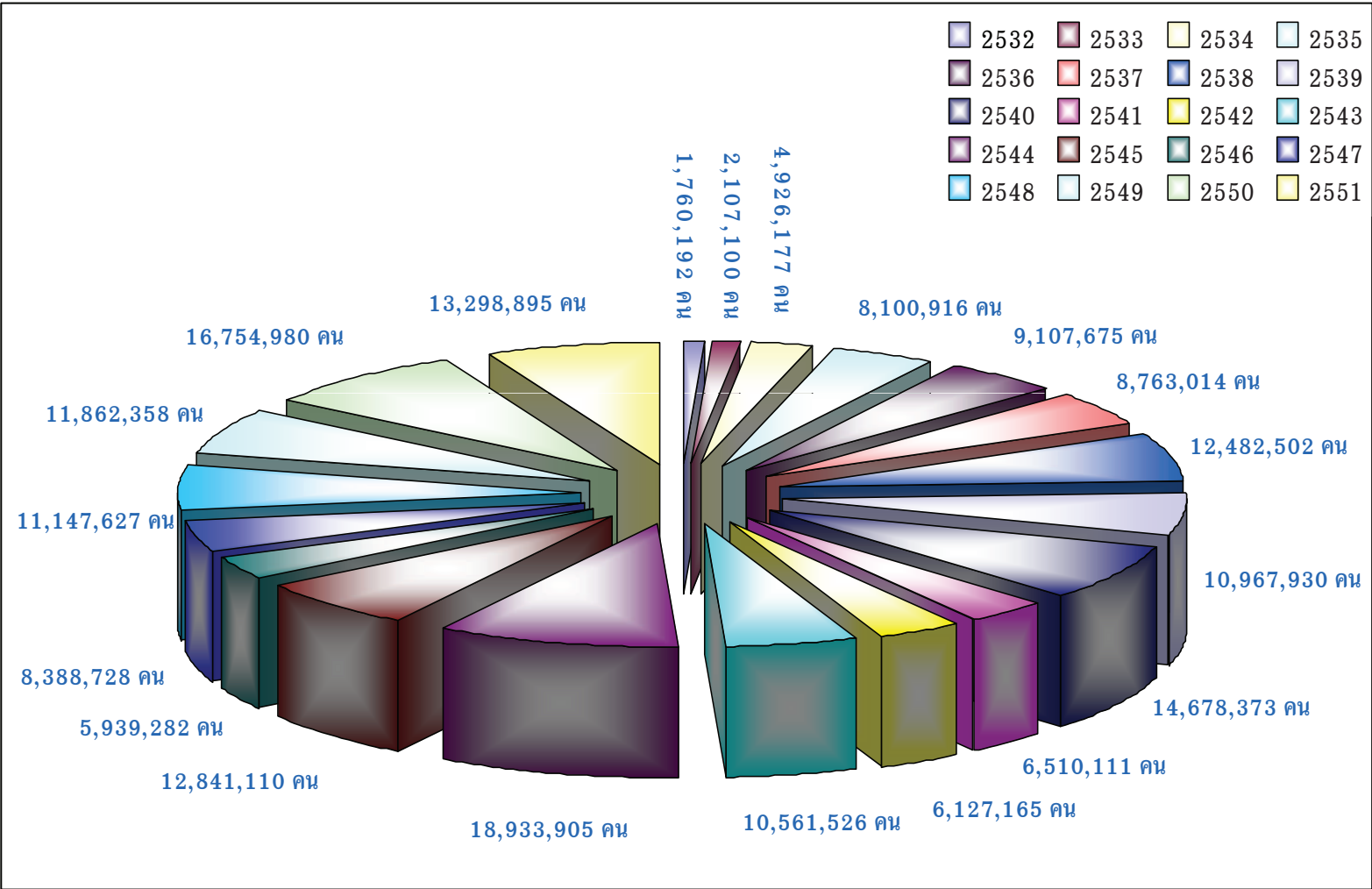


DROUGHT



Year	Damages				
	Affected People	Affected household	Agricultural Area (Rai)	Livestock	Total Damages (BAHT)
1989	1,760,192	496,062	1,294,240	197	121,966,702
1990	2,107,100	536,550	1,970,703	872	92,170,601
1991	4,926,177	1,221,416	1,037,271	290	262,170,159
1992	8,100,916	2,430,663	5,334,471	417	176,180,163
1993	9,107,675	2,533,194	2,040,443	726	198,760,140
1994	8,763,014	2,736,643	17,923,817	510	98,762,160
1995	12,482,502	2,661,678	3,001,437	462	177,620,420
1996	10,967,930	2,277,787	101,900	573	289,164,000
1997	14,678,373	3,094,280	1,431,296	197	249,160,170
1998	6,510,111	1,531,295	1,789,285	1,107	69,170,111
1999	6,127,165	1,546,107	3,144,932	980	1,520,500,651
2000	10,561,526	2,830,297	472,700	2,071	641,712,873
2001	18,933,905	7,334,816	1,712,691	192	71,962,973
2002	12,841,110	2,939,139	2,071,560	0	508,781,944
2003	5,939,282	1,399,936	484,189	0	174,329,410
2004	8,388,728	1,970,516	1,480,209	0	190,668,884
2005	11,147,627	2,768,919	13,736,660	0	7,565,861,139
2006	11,862,358	2,960,824	578,753	0	495,275,738
2007	16,754,980	4,378,225	1,350,118	0	198,304,732
2008	13,298,895	3,531,570	524,999	0	103,900,841
Total	195,259,566	51,179,917	61,481,674	8,594	13,206,423,811

Drought Affected People (1989-2008)



Drought Affected Village Comparison 2007 and 2008

	Region	Total Village	2007		2008		Comparison	
			Drought Affected Village	% of Total Village in Thailand	Drought Affected Village	% of Total Village in Thailand	amount	%
1	North	16,440	7,322	44.54	8,472	51.53	+ 1,150	+ 15.71
2	Northeast	32,830	20,038	61.04	23,958	72.98	+ 3,920	+ 19.56
3	Central	11,703	2,239	19.13	3,001	25.64	+ 762	+ 34.03
4	East	4,836	2,553	52.79	2,301	47.58	- 252	+ 51.78
5	South	8,618	2,722	31.59	438	5.08	- 2,284	- 83.91
	Total	74,427	34,874	46.86	38,170	51.29	+ 3,296	+ 9.45

FLOOD

Loss & Damage

FLOOD



Year	Severity	Affected Area			
		Provinces	District	Sub-District	Villages
1989	9	52	395	1,450	9,871
1990	12	58	576	1,865	10,162
1991	14	66	528	2,061	10,654
1992	10	66	571	2,217	12,101
1993	9	42	465	1,664	8,960
1994	11	74	665	2,119	9,170
1995	8	73	698	2,160	11,175
1996	10	74	635	2,411	12,615
1997	7	64	518	1,860	10,610
1998	12	65	550	2,215	12,117
1999	9	69	502	1,450	6,219
2000	12	62	695	2,325	13,029
2001	14	60	689	2,760	10,996
2002	5	72	706	3,820	18,510
2003	17	66	373	1,331	5,281
2004	12	59	368	1,856	9,964
2005	12	63	565	2,342	10,326
2006	6	58	564	3,432	22,771
2007	13	54	394	2,130	12,848
2008	6	65	719	4,813	38,448
Total	208				

FLOOD

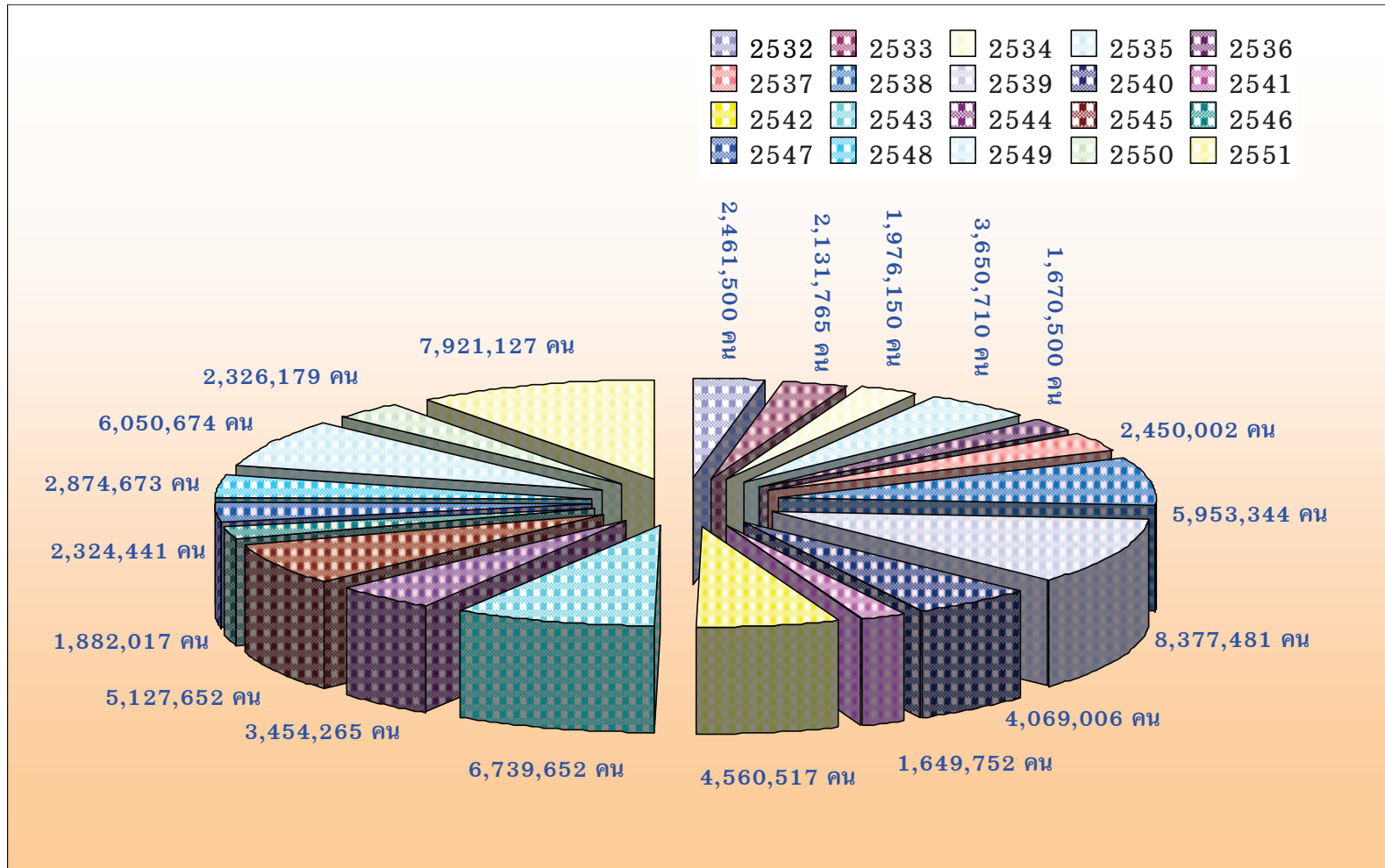


Year	Frequency	Live Losses			
		Affected People	Affected household	Fatalities (person)	Injured (person)
1989	9	2,461,500	461,001	602	5,495
1990	12	2,131,765	489,236	50	19
1991	14	1,976,150	412,398	43	26
1992	10	3,650,710	699,123	16	0
1993	9	1,670 ,500	411,201	47	254
1994	11	2,450,002	572,017	46	12
1995	8	5,953,344	1,569,537	442	11
1996	10	8,377,481	1,859,275	158	21
1997	7	4,069,006	787,839	98	427
1998	12	1,649,752	343,717	8	3
1999	9	4,560,517	1,016,500	53	30
2000	12	6,739,652	2,002,979	120	0
2001	14	3,454,265	919,699	244	68
2002	5	5,127,652	1,373,942	216	0
2003	17	1,882,017	485,436	44	10
2004	12	2,324,441	619,797	28	3
2005	12	2,874,673	763,847	75	0
2006	6	6,050,674	1,673,822	446	1,462
2007	13	2,326,179	571,566	36	17
2008	6	7,921,127	2,031,943	113	16
Total	208		75,980,907	2,885	7,776

Year	Frequency	Property Losses							
		Total Damage (House)	Partly Damage (House)	Building	Hotel/ Apartment	Factory/ Mills	Fish Pond	Livestock	Agricultural Area (Rai)
1989	9	867	16,018	462	42	32	112,650	65,890	10,145,658
1990	12	765	11,233	210	38	11	26,580	41,250	2,256,000
1991	14	6,224	18,562	215	52	18	24,500	22,035	9,875,023
1992	10	2,011	14,033	228	28	20	35,620	16,850	14,298,000
1993	9	1,698	9,982	189	16	19	42,560	72,564	16,024,259
1994	11	2,037	14,001	256	28	24	33,250	32,659	14,000,259
1995	8	987	18,327	685	86	67	124,560	365,240	3,792,364
1996	10	264	20,278	365	23	21	45,678	65,890	21,014,456
1997	7	991	14,445	224	27	18	32,560	36,520	12,269,013
1998	12	1,022	11,201	220	22	20	20,154	22,036	466,074
1999	9	967	10,272	236	27	17	32,658	20,356	3,038,167
2000	12	12,650	33,724	478	38	36	91,520	76,258	10,340,584
2001	14	315	13,239	226	17	10	36,589	102,365	29,133,765
2002	5	1,135	130,136	120	12	8	103,533	2,955,577	10,435,115
2003	17	18	10,311	246	11	2	22,339	301,343	1,595,557
2004	12	297	5,536	114	11	17	12,884	71,889	3,298,733
2005	12	275	5,697	68	15	46	13,664	222,600	1,701,450
2006	6	1,583	69,887	793	63	113	122,123	245,375	6,560,541
2007	13	26	3,860	84	2	8	13,866	19,146	1,617,284
2008	6	170	18,694	0	11	4	87,413	263,509	6,590,655
Total	208	7,776	34,302	449,436	5,419	569	511	5,019,352	178,452,957

Year	Frequency	Road	Bridge	Dyke/Dam	Temple/School/ Gov. Building	Drainage pipe/system	Damage Values
1989	9	10,475	698	2,236	2,043	1,123	11,739,595,265
1990	12	9,258	546	1,126	1,023	1,182	6,652,227,121
1991	14	8,124	1,023	1,452	1,365	1,240	4,562,305,420
1992	10	12,017	989	1,025	1,285	1,475	5,240,583,940
1993	9	9,865	1,236	1,136	1,463	1,365	2,181,606,542
1994	11	10,236	875	1,452	1,758	1,450	5,058,883,356
1995	8	8,875	698	3,265	3,025	3,745	6,123,517,926
1996	10	6,598	1,254	2,245	2,013	2,236	7,160,677,015
1997	7	12,147	865	2,034	1,986	2,013	3,824,223,866
1998	12	10,257	1,024	1,856	1,754	2,014	1,706,035,444
1999	9	11,374	937	1,745	1,635	1,742	1,381,638,279
2000	12	17,952	1,441	2,785	2,245	2,041	10,032,935,112
2001	14	7,901	1,231	1,653	1,853	1,985	3,666,285,247
2002	5	13,294	730	1,613	2,465	707	13,385,316,549
2003	17	5,071	393	183	174	282	2,050,262,243
2004	12	4,173	379	638	827	594	850,659,584
2005	12	5,697	667	2,462	2,123	1,482	5,982,283,276
2006	6	12,969	1,129	2,492	2,485	1,978	9,627,418,620
2007	13	7,202	388	1,643	895	3,020	1,687,865,982
2008	6	18,389	908	1,407	1,062	1,833	7,601,796,302
Total	208	201,874	17,411	34,448	33,479	33,507	110,516,117,089

Flood Affected People (1989-2008)



STORM

Loss & Damage

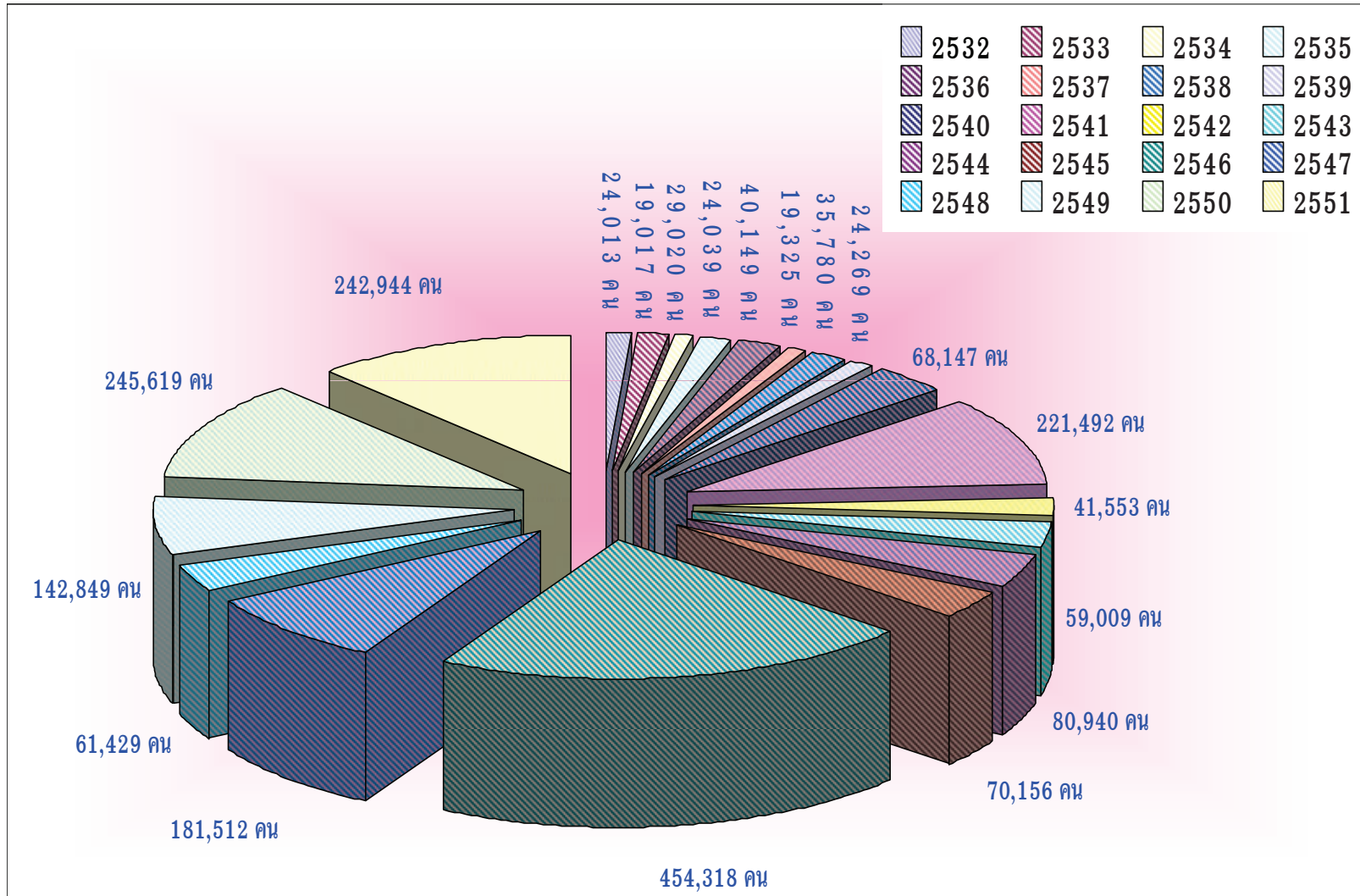
STORM



Year	Frequency	Affected Area			
		Provinces	District	Sub-District	Villages
1989	507	63	532	503	610
1990	907	57	761	899	964
1991	705	58	694	658	732
1992	3,125	62	746	2,665	3,265
1993	836	70	635	813	911
1994	1,073	68	665	957	1,298
1995	616	63	597	547	645
1996	3,026	68	679	2,997	3,258
1997	2,993	70	660	2,470	2,999
1998	2,816	66	685	2,530	2,986
1999	986	65	597	910	1,019
2000	960	62	624	945	1,102
2001	1,061	70	642	1,089	1,089
2002	594	67	704	1,514	2,579
2003	3,213	76	767	2,941	7,617
2004	3,834	76	812	2,876	6,895
2005	1,313	57	394	1,610	2,017
2006	1,883	65	567	2,381	4,096
2007	2,233	67	524	2,112	6,097
2008	1995	65	570	2603	7926

Year	Storm Loss & Damage												
	Affected People	Affected household	Fatality (person)	Injured (person)	Total Damage (House)	Partly Damage (House)	Building	Hotel	Factory/ Mills	Temple/ School	Boat/ Fishery	Agricultural Area (Rai)	Damage Values
1989	24,013	4,590	22	9	1,013	12,269	28	12	0	0	0	5,457	14,056,053
1990	29,020	8,123	126	118	6,147	24,156	79	0	0	0	0	10,146	172,023,839
1991	19,017	6,930	43	55	987	17,039	120	14	0	0	0	8,146	75,850,000
1992	24,039	5,459	90	50	1,297	17,123	37	0	0	0	0	9,001	193,060,000
1993	40,149	11,039	19	31	3,001	24,017	74	0	0	0	0	10,134	204,434,000
1994	19,325	3,269	8	46	1,456	34,012	69	0	0	0	0	6,502	120,275,946
1995	35,780	9,017	14	51	893	19,127	85	0	0	0	0	7,032	100,414,000
1996	24,269	6,598	73	42	2,037	30,741	49	0	0	0	0	4,123	335,905,253
1997	68,147	14,039	48	66	1,490	19,998	58	0	0	0	0	3,256	518,639,692
1998	221,492	61,568	90	70	2,707	55,358	96	0	0	0	0	7,788	371,437,070
1999	41,553	10,729	38	55	223	9,938	47	0	0	0	0	19,329	192,215,567
2000	59,009	18,058	9	81	251	22,553	32	0	0	0	0	1,022	271,476,754
2001	80,940	32,100	6	19	12,172	10,745	0	0	0	0	0	8,581	501,018,658
2002	70,156	23,070	18	11	1,132	20,599	577	0	0	90	0	9,306	213,337,876
2003	454,318	146,024	74	434	309	97,637	0	0	14	0	0	50,834	457,429,782
2004	181,512	70,818	73	63	53,133	736	0	0	16	0	0	32,158	398,416,887
2005	61,429	32,449	13	0	36	19,258	0	0	1	93	20	33,048	148,871,750
2006	142,849	30,296	29	39	283	30,044	0	0	0	159	20	68,286	92,244,108
2007	245,619	72,783	10	71	158	47,639	0	0	0	431	18	18,163	234,547,154
2008	242944	78606	15	30	124	58319	0	0	0	153	0	98619	227549741
Total	2,085,580	645,565	818	1,341	88,849	571,308	1,351	26	31	926	58	410,931	4,843,204,130

Storm Affected People (1989-2008)

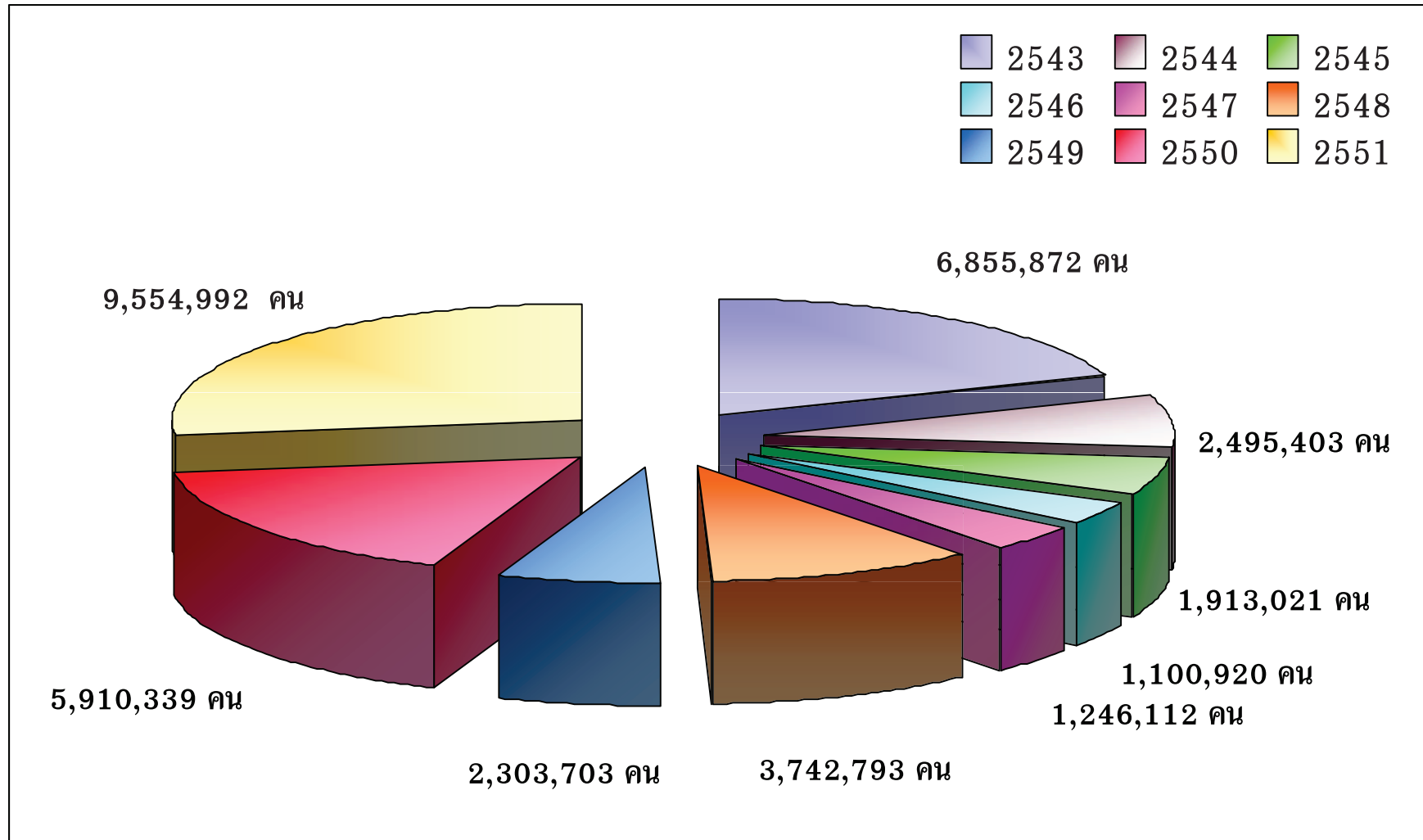


COLD SPELL
Loss & Damage

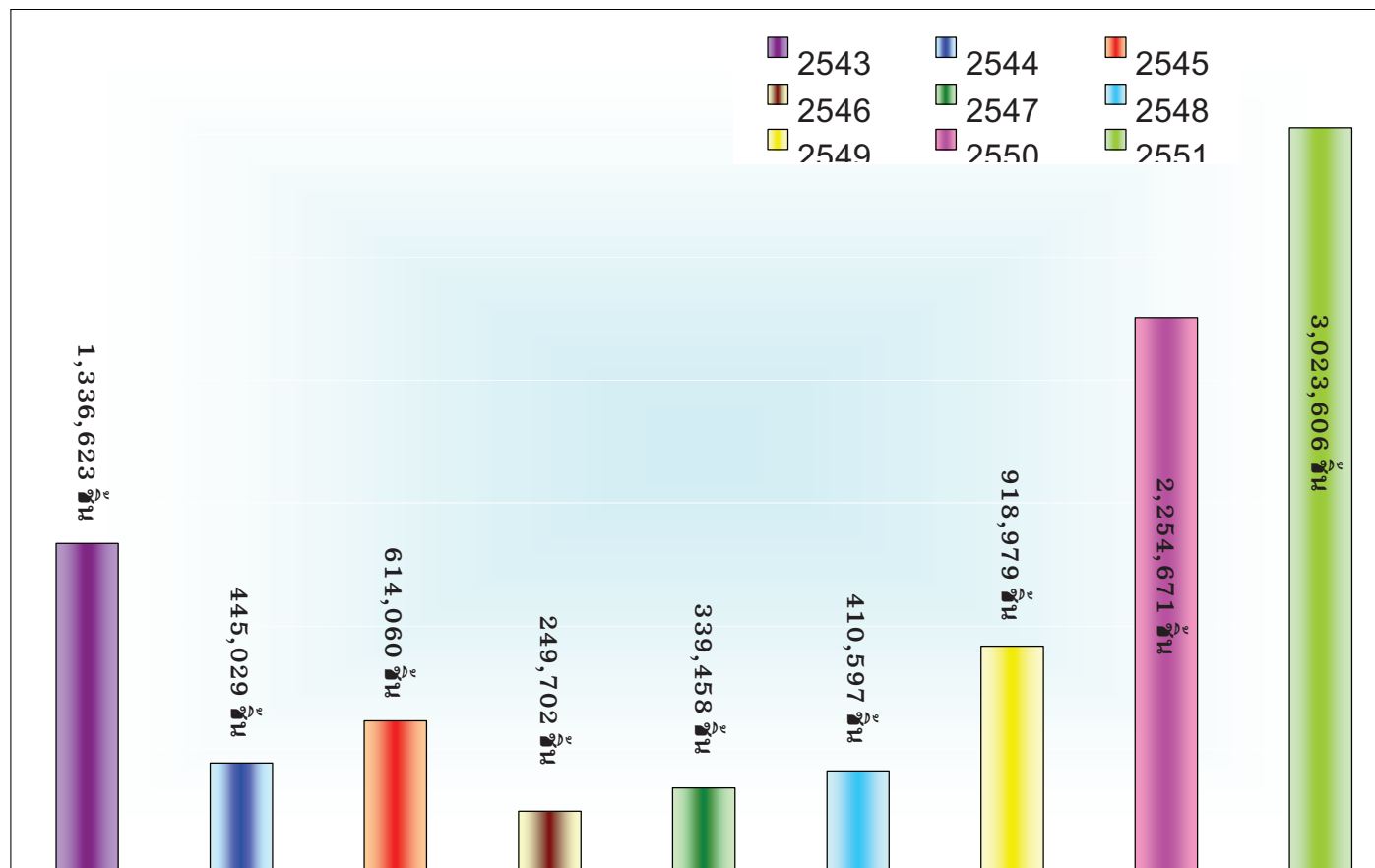
Cold Spells

Year	Affected Area				Loss & Damage					Assistant				
	Provinces	District	Sub-District	Villages	Affected People	Affected household	Fatality (person)	Livestock	Damage Values	Blanket	Knitting Blanket	Clothes	Others	Total
2000	43	358	2,105	25,106	6,855,872	1,344,064	0	34,804	308,458,160	794,314	0	542,309		1,336,623
2001	39	423	2,208	23,495	2,495,403	440,888	1	24,168	17,168,200	368,807	38,057	38,165		445,029
2002	42	518	2,922	31,125	1,913,021	871,229	1	0	No report	465,117	66,513	82,430		614,060
2003	22	217	1,338	14,075	1,100,920	316,973	0	0	No report	194,495	14,040	41,167		249,702
2004	32	221	1,142	9,728	1,246,112	521,225	0	0	No report	320,833	1,332	17,293		339,458
2005	25	337	2,402	22,542	3,742,793	1,131,313	0	0	No report	358,013	3,367	36,016	13,201	410,597
2006	47	516	3,375	35,898	2,303,703	821,999	0	0	No report	724,525	59,713	99,352	35,389	918,979
2007	48	522	3,312	34,460	5,910,339	1,992,912	0	0	No report	1,877,580	85,621	259,248	32,222	2,254,671
2008	49	568	4,417	48,470	9,554,992	3,780,051	0	0	No report	2,853,151	15,544	142,343	12,568	3023606
Total					35,123,155	11,220,654	2	58,972	325,626,360	7,956,835	284,187	1,258,323	93,380	9,592,725

Cold Spells Affected People (2000-2008)



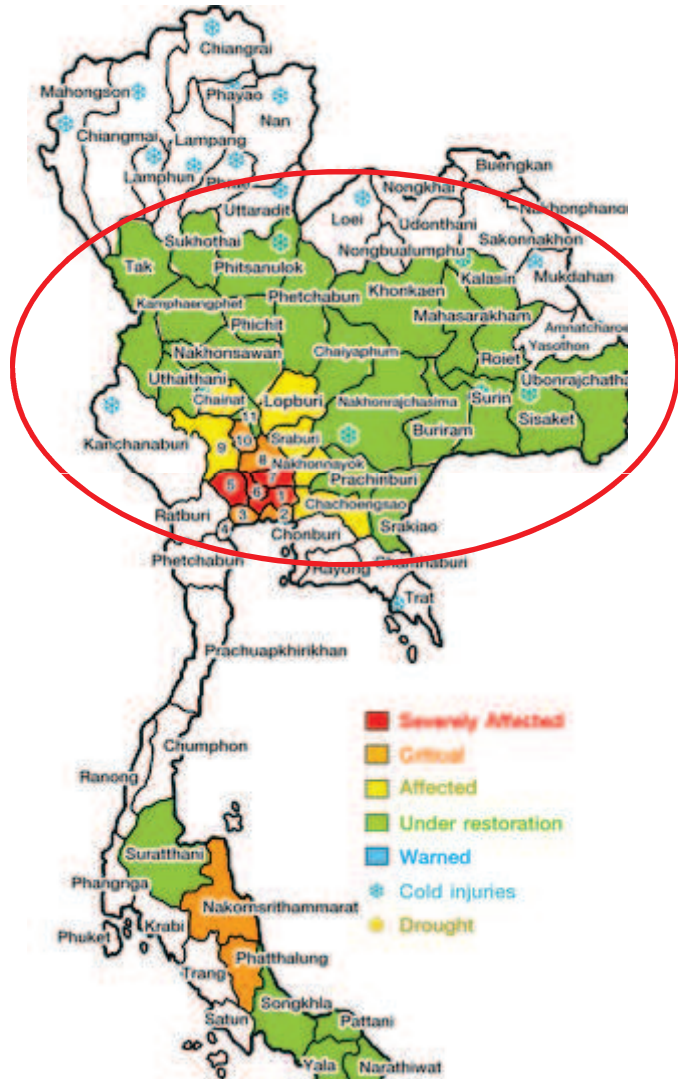
Cold Spells Victim Assistance (2000-2008)



2011 Thailand's Flood Situation

- **Since July this year, Thailand has been affected by a monsoon and three tropical storms – Hai Ma, Nok Ten, Hai Tang, and Nalgae. As a result, most of big reservoirs were almost full from rainwater. At the same time, a huge volume of run off causes flood in all region of the country.**

Impact of Flood



• 65 Provinces

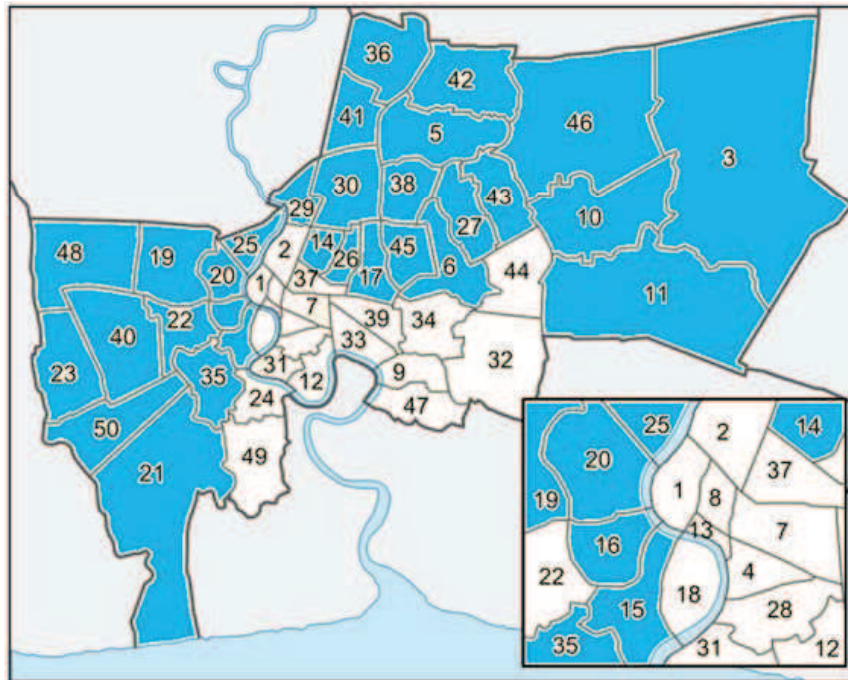
- North 16 Provinces
- Northeast 19 Provinces
- Central 14 Provinces, incl. BKK
- East 8 Provinces
- South 8 Provinces

*picture as of DEC 5, 2011

(www.thaiflood.com)

Flood Affected area in BMA

- 31 Districts



***As of NOV 15, 2011**
(http://www.jetro.go.jp/world/asia/th/flood/inundated_khet.html)

FLOOD EFFECTS (JULY 25, 2011-JAN, 2012)

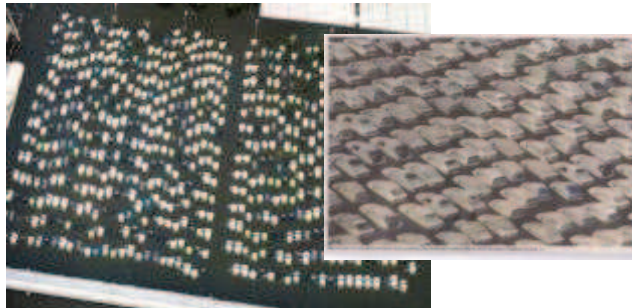
- **Effected People** 13.6 million in 4 regions
 - **Loss of Life** 813 (as JAN. 8, 2012)
 - **Loss of Job** 400,000 people
 - **Economic Damage** 43,253.60 million USD
- (Source: Thai Chamber of Commerce)

FLOOD EFFECTS (Cont'd)

(JULY 25 – DEC. 1, 2011)

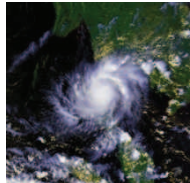
- **Damage cost (by NESDB)**

- Industry	11,920	Million USD
- Agriculture	1,486	Million USD
- Tourism	793	Million USD
- Trade/Retails	2,198	Million USD
- Infrastructures	95	Million USD
	16,462	Million USD





TIMELINE OF THAILAND'S FLOOD MANAGEMENT



JULY 25, 2011

- The arrival of Nock-Ten



OCT 8, 2011

- Establishment of Flood Relief Operation Center (FROC) (at Don Muang Airport)



NOV 4, 2011

- Establishment of Flood Recovery Management Structure



AUG 25, 2011

- Preliminary Emergency Operation Center for Flood (at Ministry of Interior)



OCT 29, 2011

- FROC moved from Don Muang Airport to Energy Complex



CONCLUSION

- Disaster's trend is increasing and makes more people affected, loss and damage
- Disaster in one country is no longer one state's problem but a global problem. A large-scale disaster can be successfully managed by means of bold integrated efforts among stakeholders; private, public, academia, and civil society, along with the cooperation from international community.



Proactive Prevention, Adversity Mitigation, Rehabilitation and Rescue, Are the Spirit of DDPM

Department of Disaster Prevention and Mitigation

Ministry of Interior

Thailand

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