United Nation international Conference on Space-Based Technologies for Disaster Risk Reduction- "Building Resilience Through Integrated Applications"

GEO Space Application in Support to the Disaster Management in Lao People's Democratic Republic

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Ministry of Science and Technology
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on 25 October 2017, Grand Gongda Jianguo Hotel, Beijing, China PR

Content

- Global Challenge
- Overview on Major Hazard and Natural Disasters
- Space Synergy Through International Cooperation
- Disaster Risk Management Activities
- Way forward

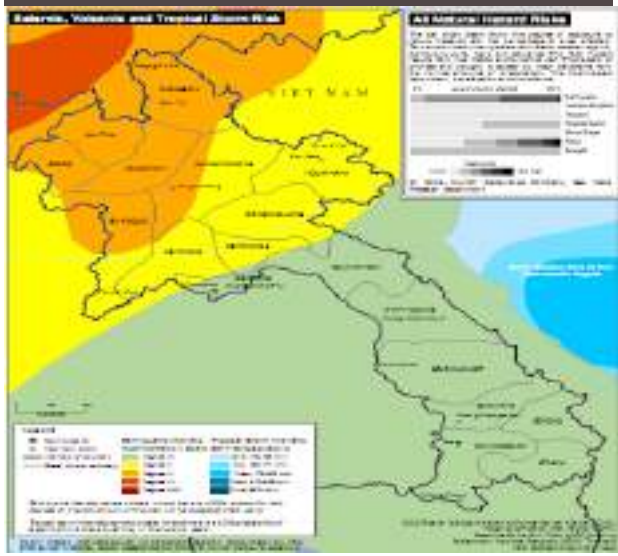
Global Challenge

1. Degradation of ecosystem services;
2. Climate change: likely to aggravate pressure on resources, so add to the vulnerability of people and ecosystems;
3. Implementation of SDGs adopted by United Nations as well as Sendai Framework.
4. Disaster related mortalities are lowered, while economic damages are increasing;
5. The need for improving disaster and risk management in order to restrain this trend of increasing damages and losses;
6. The use of geospatial data and tools is vital in disaster and risk management. It can improve the quality and speed of decision making in Disaster Risk Management

Major Hazard/Disasters in Lao PDR

- Flood
- Drought
- Typhoon
  (20 Typhoon per year visited the country)
- Earthquake
- Landslide

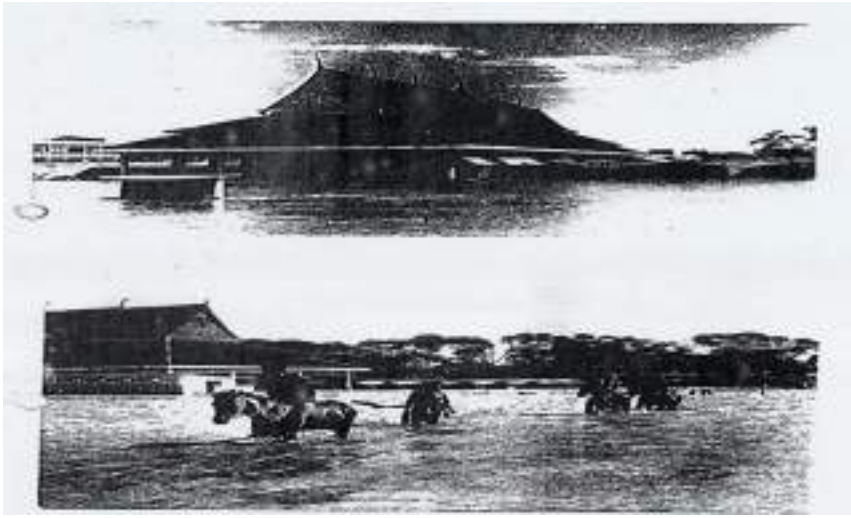

Flooding and landslides damaged bridges and roads.



Disasters Milestone

Flood Data 1966 to 2008

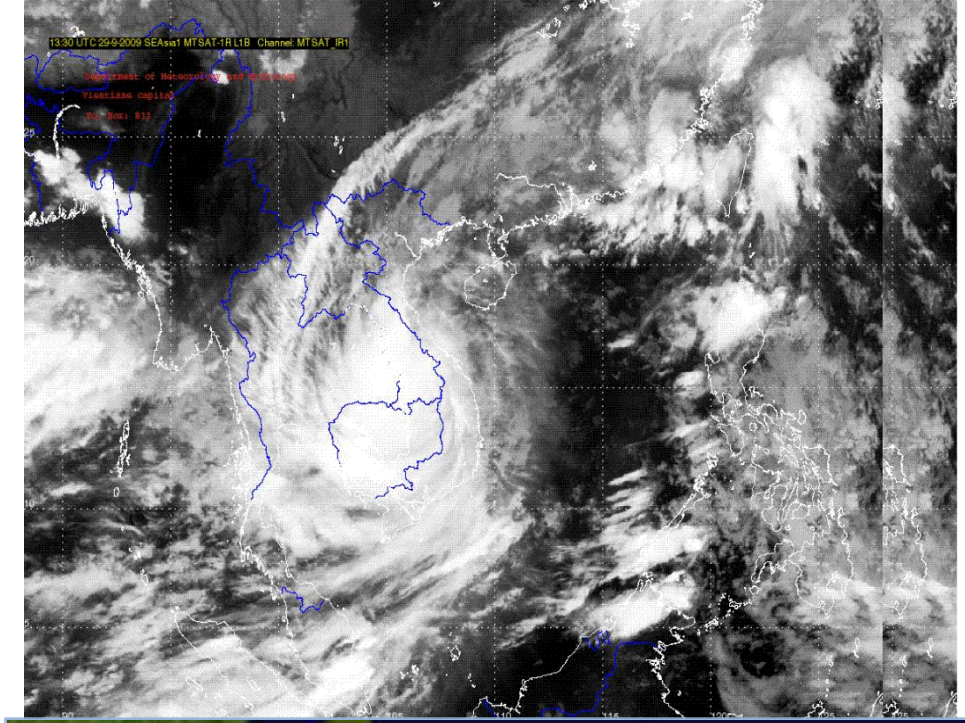
S. No	Year	Type of Damage	Damage cost (USD ,000)	Place of Damage
1	1966	Large Flood	13,800	Central
2	1968	Flood	2,830	Central and Southern
3	1969	Flood	1,020	Southern
4	1970	Flood	30	Central
5	1971	Large Flood	3,573	Central
6	1972	Flood and Drought	40	Central
7	1973	Flood	3.7	Central
8	1974	Flood	180	
9	1976	Flash Flood	9,000	Central
10	1978	Large Flood	5,700	Central and Southern
11	1979	Flood and Drought	3,600	Northern and Southern
12	1980	Flood	3,000	Central
13	1981	Flood	682	Central
14	1984	Flood	3,430	Central and Southern
15	1985	Large Flood	1,000	Northern
16	1986	Flood and Drought	2,000	Central and Southern
17	1990	Flood	100	Central
18	1991	Flood and Drought	3,650	Central
19	1992	Flood, Drought and Fire	302,151.20	Central (F) and Northern (D)
20	1993	Flood and Drought	21,827.93	Central and Southern
21	1994	Flood	21,150	Central and Southern
22	1995	Flood	15,000	Central
23	1996	Large Flood and Drought	10,500	Central
24	1997	Flood and Drought	1,860.30	Southern
25	1999	Flood	7,450	Central
26	2000	Flood	6,684.23	Central and Southern
27	2001	Flash Flood	808.5	Central and Southern
28	2002	Large Flood, Flash Flood and Landslide	14,170	Northern, Central and Southern
29	2004	Flood	750.399	Southern
30	2005	Flash Flood and Landslide	1,316.58	Central and Southern
31	2006	Flood	3,636	Central and Southern
32	2007	Flash Flood	8,056	Northern, Central and Southern
33	2008	Large flood and Flash Flood	4,384.40	Northern and Central

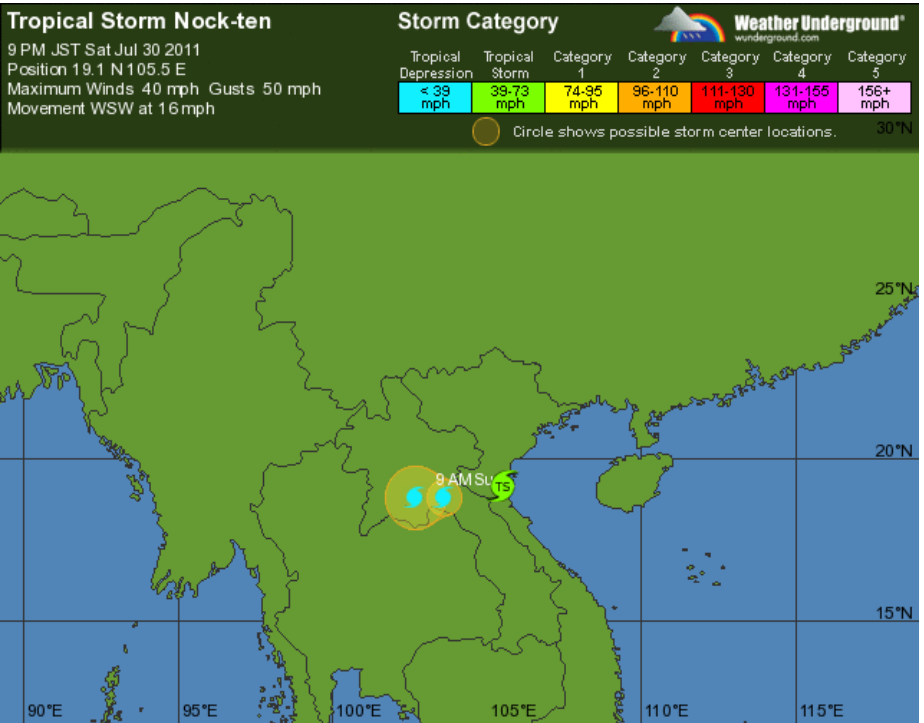


Drought data from 1967 to 2003

S. No	Year	Type of Damage	Damage cost (USD ,000)	Place of Damage
1	1967	Drought	5,120	Central and Southern
2	1975	Drought	N/A	Central
3	1982	Drought	N/A	N/A
4	1983	Drought	N/A	N/A
5	1987	Drought	5,000	Central and Southern
6	1988	Drought	40,000	Southern
7	1989	Drought	20,000	Southern
8	1998	Drought	5,763	Northern and Southern
9	2003	Drought	16,500	Central And Southern

MTSAT-1R Typhoon KETSANA (0916) 05:30 UTC
(12:30 local time)
29/9/2009



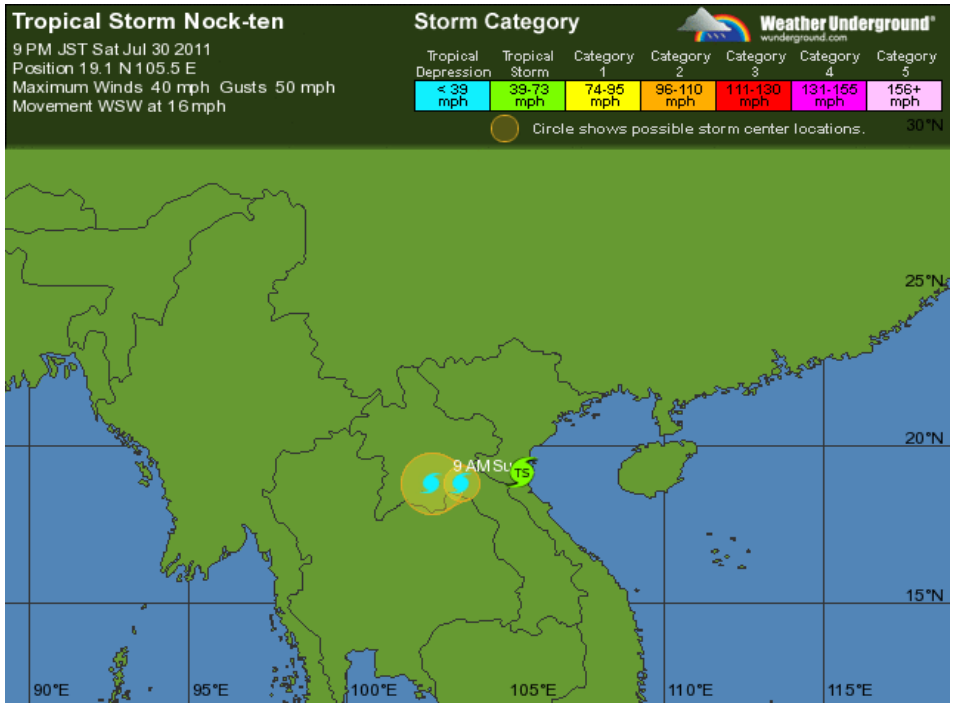


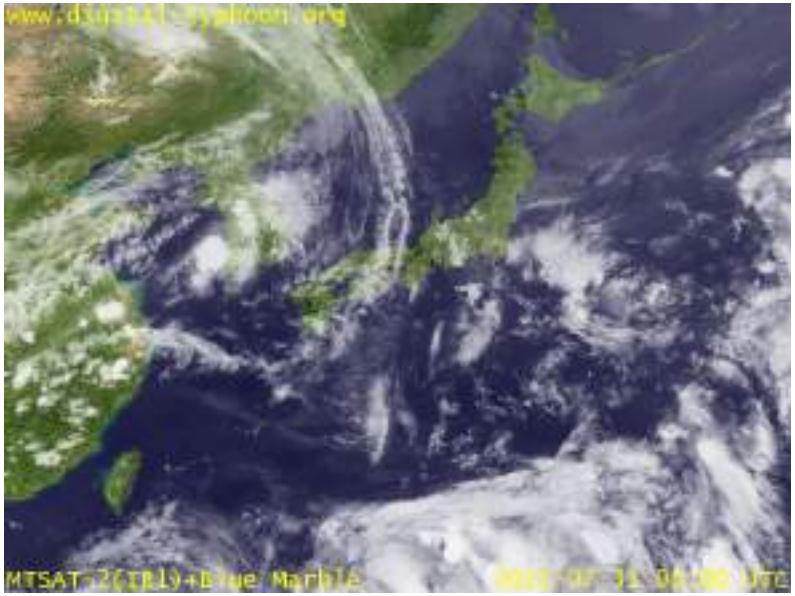
Source: Wikipedia:WikiProject Tropical cyclones/Tracks. The background image is from NASA.

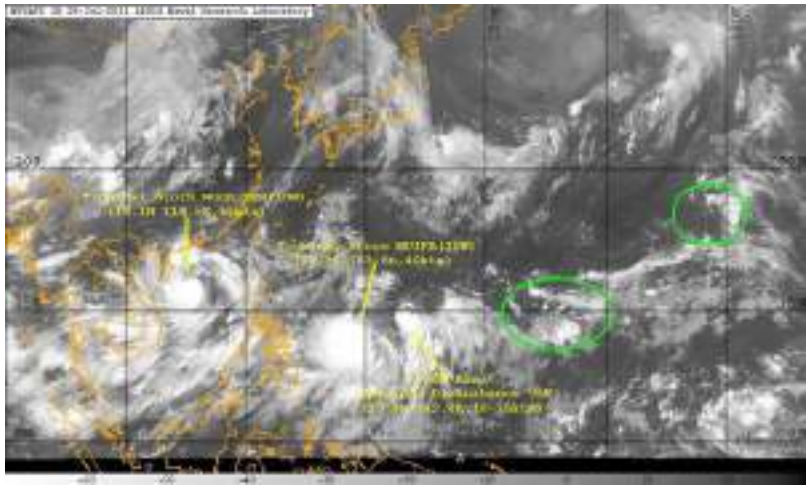
Sector and Sub-sectors caused by Ketsana Typhoon in 2009

Sector and sub-sectors.	Damage and loss as proportion of total
Infrastructure	
Transport	30%
Communications	5%
Water management and irrigation	2%
Energy	6%
Sub-sector total	43%
Social Sectors	
Housing	15%
Health	2%
Education	2%
Sub-sector total	19%
Production sectors	
Agriculture, livestock and Fisheries	31%
Industry and Commerce.	7%
Sub-sector total	38%
TOTAL	**US$ 58 million**

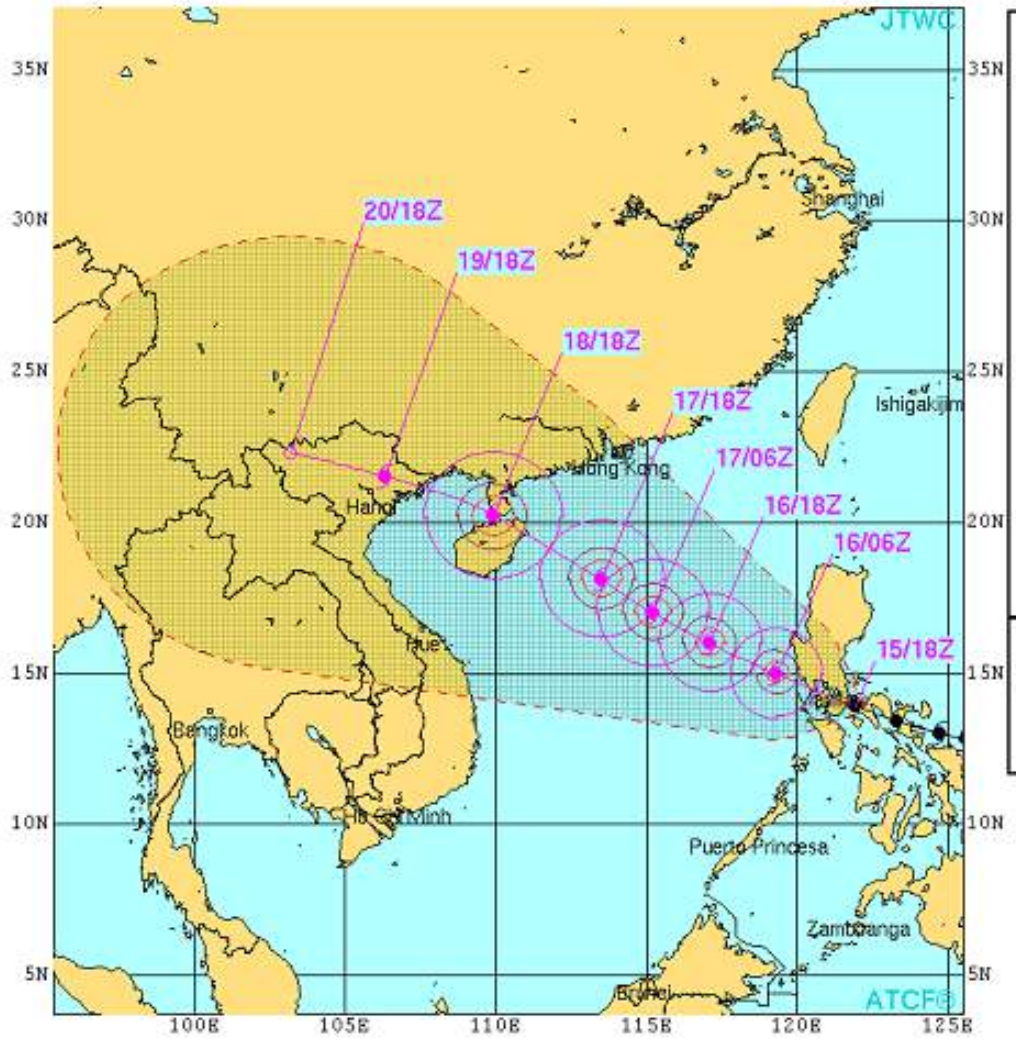
Tropical Storm Typhoon Cyclone Nock Ten, from 30- 31 July 2011







RAMMASUN-14 from 14/07/2014 00:00 UTC to 15/07/2014 06:00 UTC



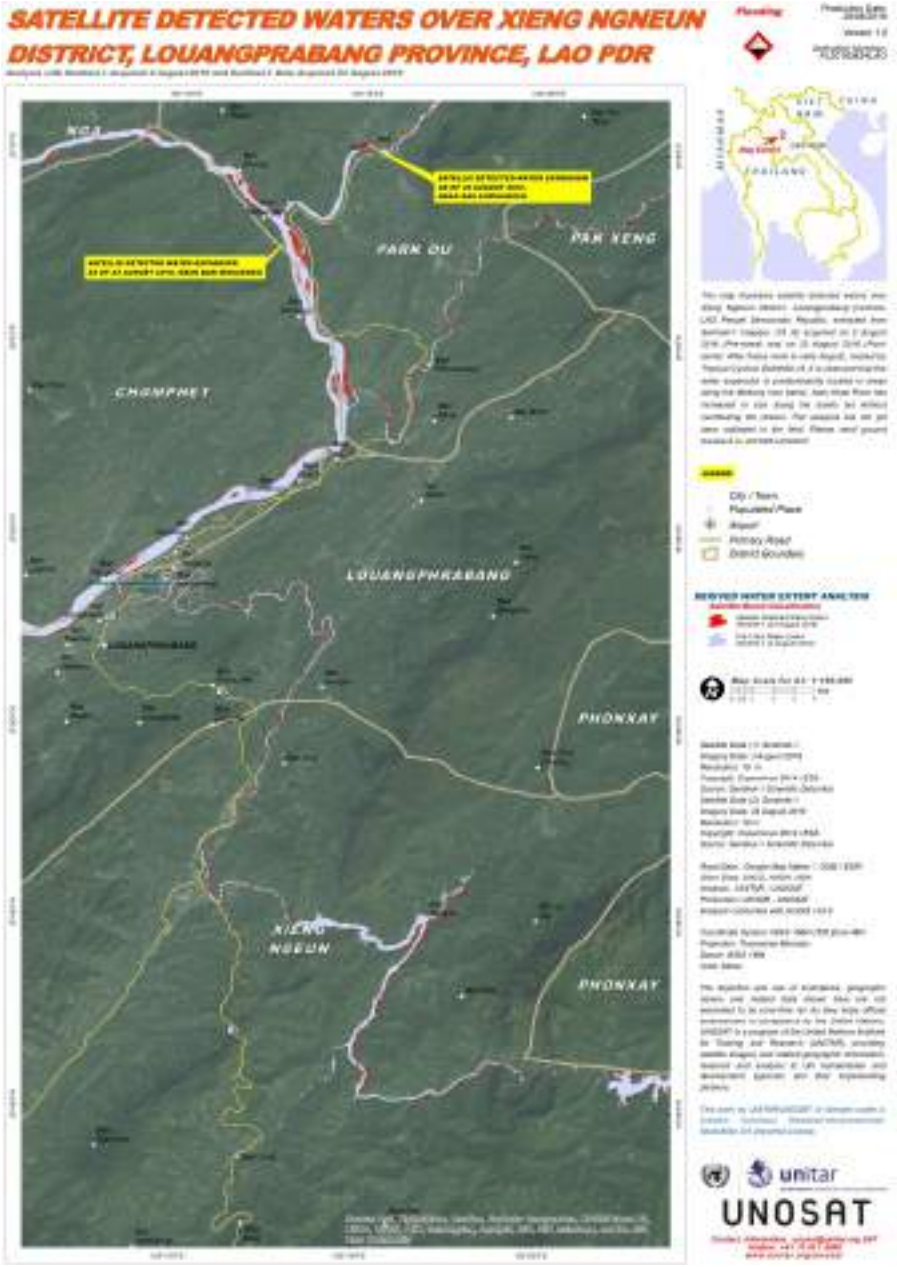
TYPHOON 09W (RAMMASUN) WARNING #22
WTPN32 PGTW 152100
151800Z POSIT: NEAR 13.9N 121.9E
MOVING 290 DEGREES TRUE AT 14 KNOTS
15/18Z, WINDS 110 KTS, GUSTS TO 135 K
16/06Z, WINDS 095 KTS, GUSTS TO 115 K
16/18Z, WINDS 095 KTS, GUSTS TO 115 K
17/06Z, WINDS 100 KTS, GUSTS TO 125 K
17/18Z, WINDS 105 KTS, GUSTS TO 130 K
18/18Z, WINDS 110 KTS, GUSTS TO 135 K
19/18Z, WINDS 070 KTS, GUSTS TO 085 K
20/18Z, WINDS 030 KTS, GUSTS TO 040 K

CPA TO:	NM	DTG
MANILA	15	15/23Z
PUERTO_PRINCESA	308	16/00Z
CLARK_AB	39	16/01Z
SUBIC_BAY	8	16/02Z
HONG_KONG	231	18/05Z
DA_NANG	265	18/14Z
HANOI	35	19/19Z

BEARING AND DISTANCE	DIR	DIST (NM)
CLARK_AB	284	208
MANILA	291	241
SUBIC_BAY	292	193
PUERTO_PRINCESA	346	389

○ LESS THAN 34 KNOTS
◔ 34-63 KNOTS
● MORE THAN 63 KNOTS
PAST 6 HOURLY CYCLONE POSITS IN BLACK
FORECAST CYCLONE POSITS IN COLOR

Satellite Detected Waters over Xieng Ngneun district, Louangprabang province. Lao P.D.R. during the Tropical Storm Dianmu formed in the South China Sea on 17 August 2016 and passed through Lao PDR around 2 days later, causing additional heavy rain. Analysis with Sentinel-1.

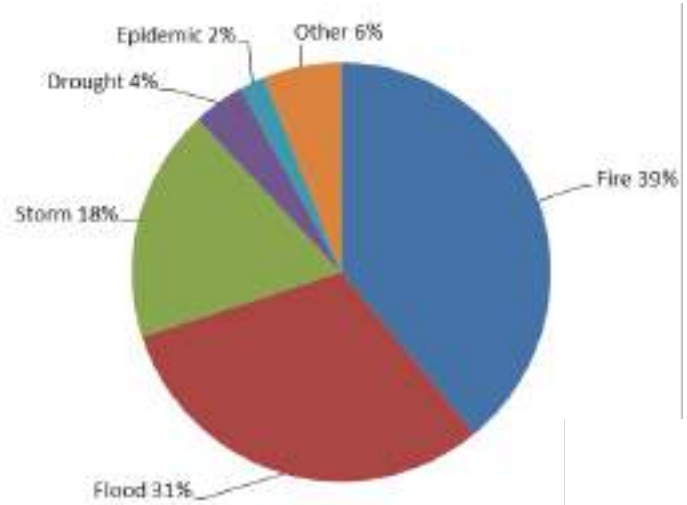


Note: This work by UNITAR/UNOSAT

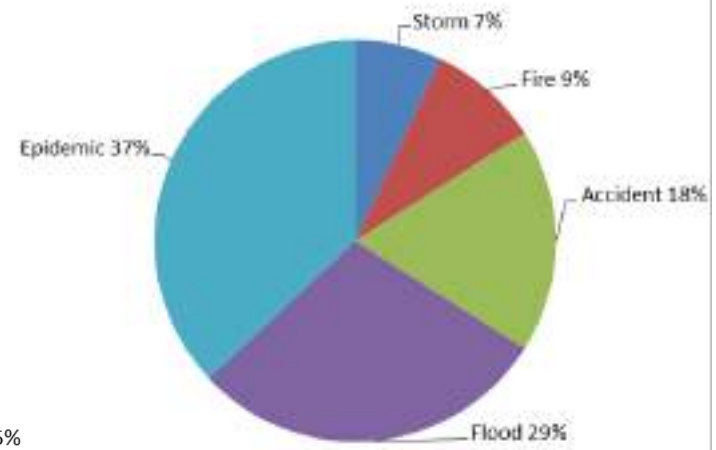
Significant Disasters and its Impacts

Disaster Type	No. of People affected	No. of People killed	Economic Lost, USD
Flood 2009 by Ketsana Typhoon	Over 200,000	28	58 Million
Flood 2011	429,954	42	200 Million
Flood 2016	41,589	4	ongoing

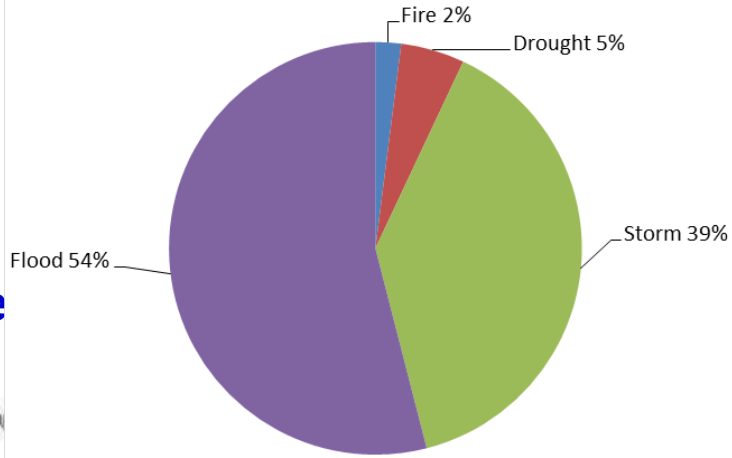
Disaster Frequency



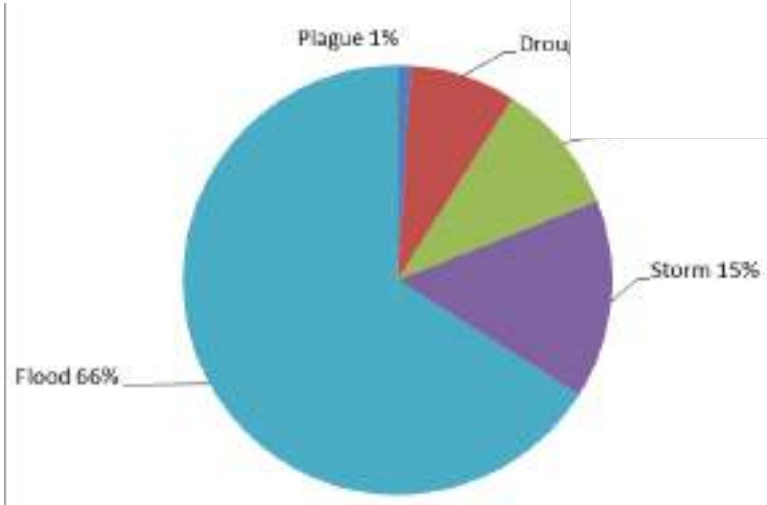
Mortality



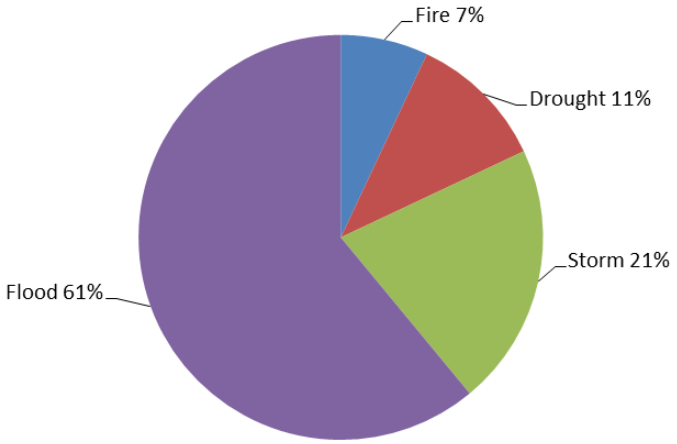
Impact on Housing



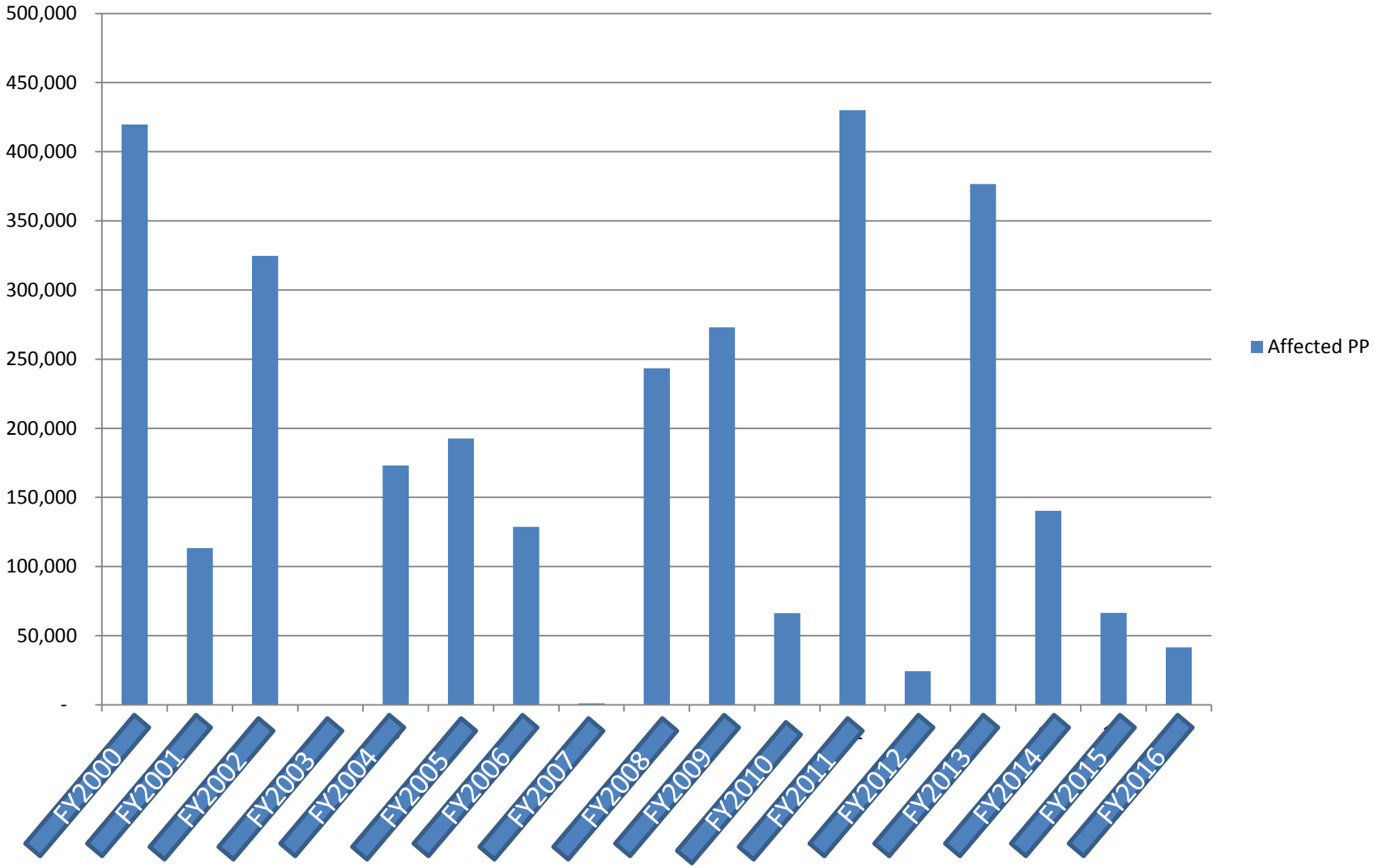
Impact on Agriculture



Economic losses

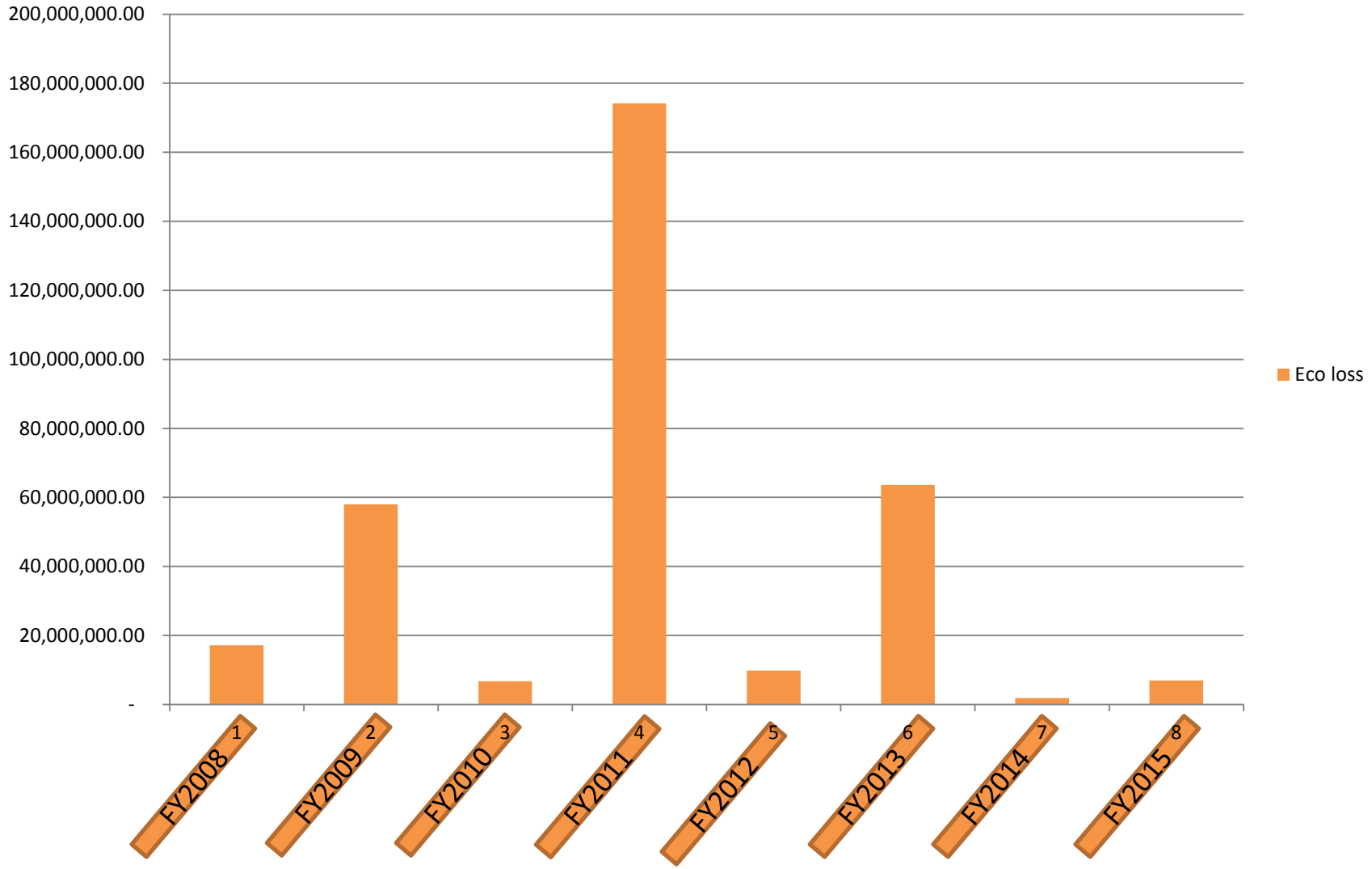


Affected Population FY2000-2016



Source: Social Welfare Department

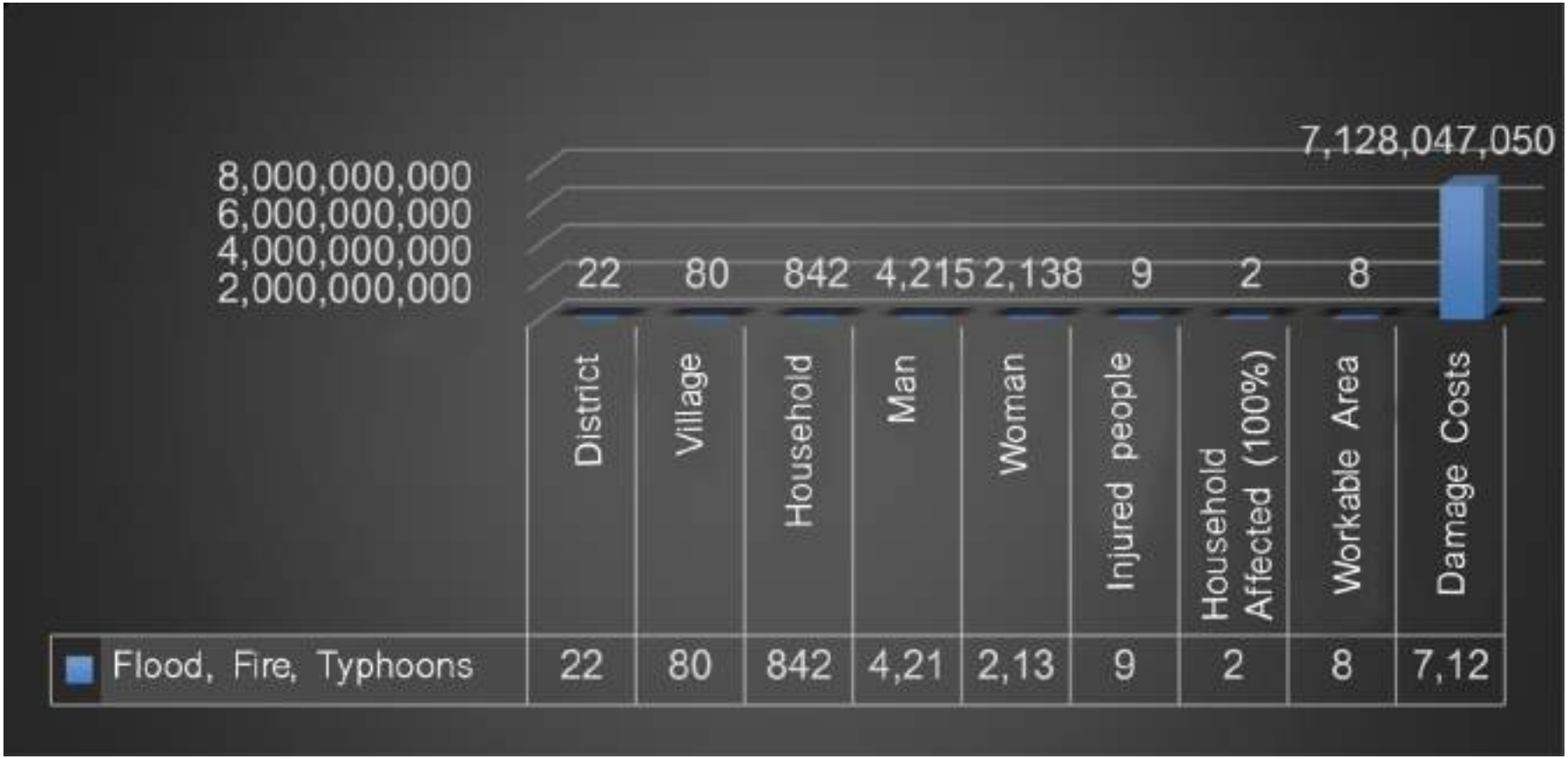
Economic Loss FY2008-2015/$US



Source: Social Welfare Department

Disaster Impact Summary

(From January to June 2017)



National Disaster Prevention and Control Committee

Chair by Deputy Prime Minister

Minister of MoNRE, Deputy

Minister of MAF Deputy

Minister of MPWT Deputy

Minister of MoLSW Deputy

MOST

Deputy Minister of MoPS Member

Deputy of Lao Youth Union Member

Deputy Minister of MoH Member

Deputy Director General of General Department, MoD Member

Head of Cabinet Office of MPI Member

President of LRC Member

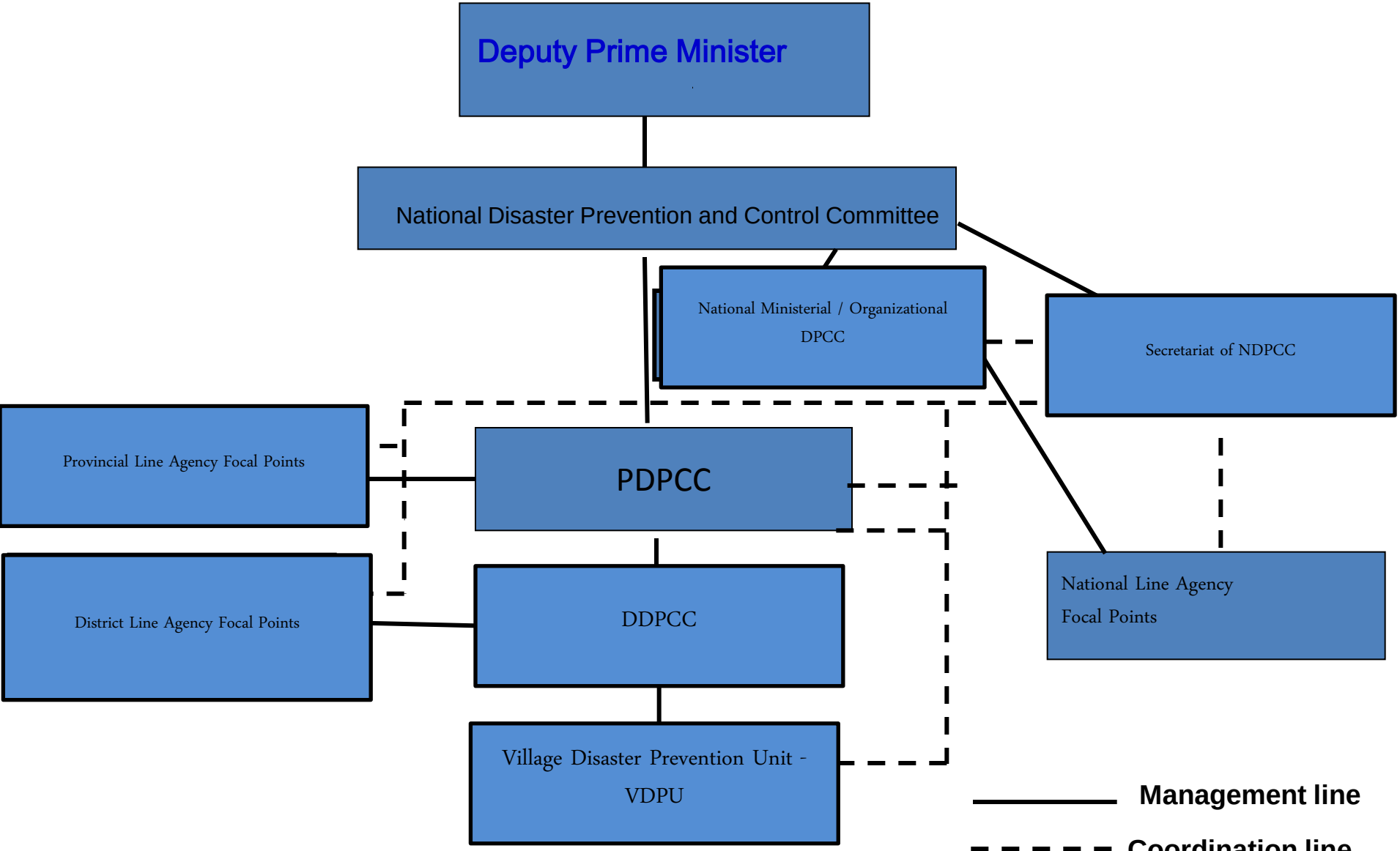
Head of Cabinet Office of MoES Member

Head of Cabinet Office of MoF Member

Head of Cabinet Office of MOFA Member

Department of Media of MoIT Member

Disaster Management Organization in the Lao PDR



Disaster Response Policies

National Disaster — NDPCC — Support (severe disaster)

Provincial disaster — PDPCC — Provide support

District disaster — 

— DDPCC and CSOs — Response

- Utilization of military resources
- Rapidly action

Disaster Risk Management Policy in Lao PDR

- National Disaster Risk Strategic Plan 2003-2020
- Vision 2030 and National Strategy for Social Economic Development 10 years (2016-2025)
- 7th NSEDP 2011-2015 and 8th National Social Economic Development Plan 2016-2020

Source: National Disaster Management Office and UNDP (2010), Developing a National Risk Profile of Lao P.D.R.

National Disaster Risk Strategic plan 2003 up to 2020

1. Safeguard sustainable development and reduce the damage of natural or manmade disasters to community, society and country economy.
1. Shift strategy from relief and mitigation after disaster impact to community, society and economy of government organizations to preparedness before disaster strike emphasizing on flood, drought, landslide and fire parallel with continuing mitigate in post disaster period.
1. Turn from responsibility of only government agency to people centered in dealing with disaster by building capability for community
1. Promote forever protection of the environment and country rich such as: forest, land and water.

Source: National Disaster Management Committee (2003), National Disaster Risk Strategic Plan 2003 up to 2020.

Space Synergy through International Organization

UN-SPIDER Technical Advisory Mission in 2015

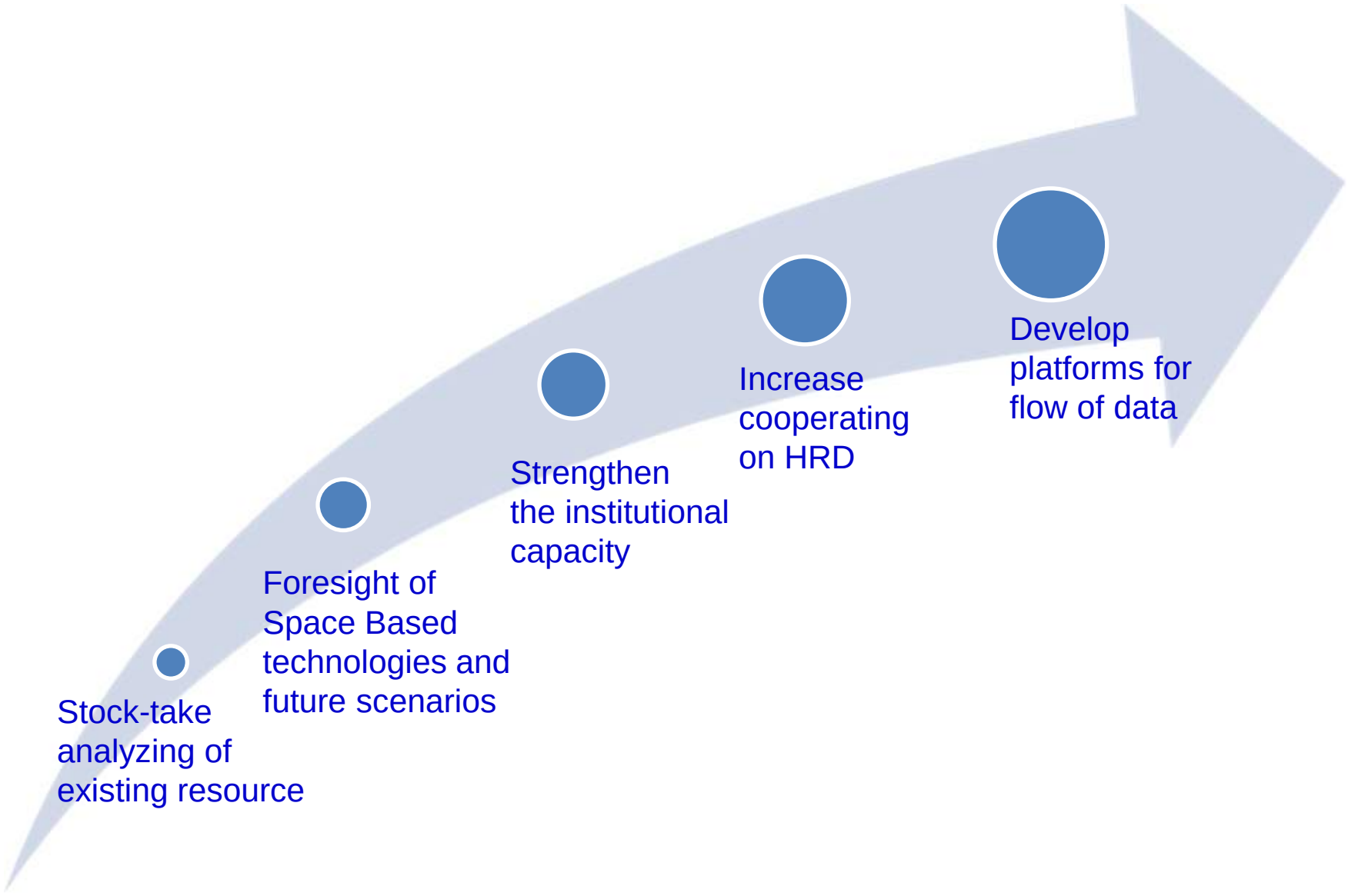
UN-SPIDER Technical Advisory Mission in 2015

- 8 Ministries visited (3 Ministers and 4 Vice Ministers), 1 Center, 1 Department and UN Office
- Organize a Workshop on “Improving Disaster Management and Emergency Response Using Space Based Information
- Generate Awareness among a large group of stakeholders
- Debriefing Session with Senior Official of MOST and DDMCC.
- Recommendation of TAM Report
- Translation of TAM Report in Lao Language
- Dissemination of Tam Report among Stakeholders

UN-SPIDER Technical Advisory Mission in 2015 (Cont'd)

- Provide training opportunities within CSSTEAP that offer medium to short term capacity building course
- Offer short-term training to National University of Lao at Master level on RS/GIS/Satellite Communication

Strengthen Collaboration



UN-SPIDER Technical Advisory Mission Follow up in 2016

UN-SPIDER Technical Advisory Mission Follow up in 2016

1. High Level and Advocacy and Donors Meeting
2. Technical Workshop on Use of SpaceTechnology in Implementing Sendai Framework for Disaster Risk Reduction 2015-2030
3. National Training Workshop on ‘Exploring the use of Earth Observation Data and Modelling Tools in Flood Risk Mapping and Flood Early Warning
4. Signing Ceremony of Memorandum of Understanding on Space-Based Information and Technology and Technological Cooperation
5. Establishing a Laognum Platform among the Participants through Facebook and WhatApp
6. Engage MOST in the New Structure of NDPCC

UN-SPIDER Technical Advisory Mission Follow up in 2016 (Cont'd)

- Establishment of the National Data Center
- Activity involve in the International Forum/Meeting/Conference on Disaster Risk Management
- Issue the Laognum Bulletin

International Event and Platform

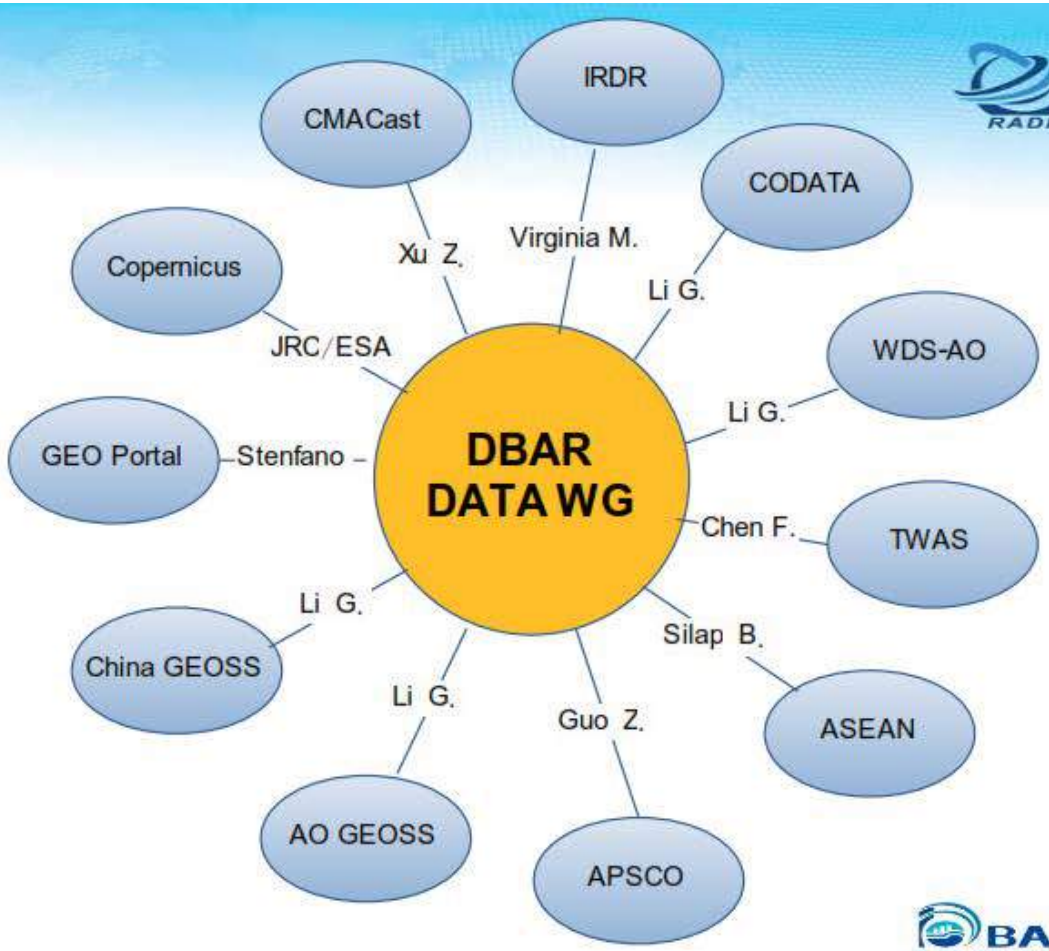
- 10th GEOSS AP Symposium in September 2017 in Hanoi, Vietnam.
- 21st Session of the Intergovernmental Consultative Committee (ICC) on the Regional Space Applications Programme for Sustainable Development (RESAP) and the Fifth Session of the Committee on Disaster Risk Reduction (CDRR-5) in October 2017 in Bangkok, Thailand.
- ASEAN Sub-Committee on Space Application

International Event and Platform (Cont'd)

- UN International Conference on Space Based technologies for Disaster Risk reduction – "Building Resilient Through Integrated Application", in October 2017 Beijing, China
- 2nd Conference of Digital Belt and Road (DBAR 2017) will be held on December 2017 in Hong Kong, China
- 24th Asia-Pacific Regional Space Agency Platform in November 2017 in India
- UN-SPIDER Regional Workshop and Training Programme on Drought Monitoring in December 2017 in Chunburi, Thailand

The Big Data Earth Platform

Resources
&
Ecosystem

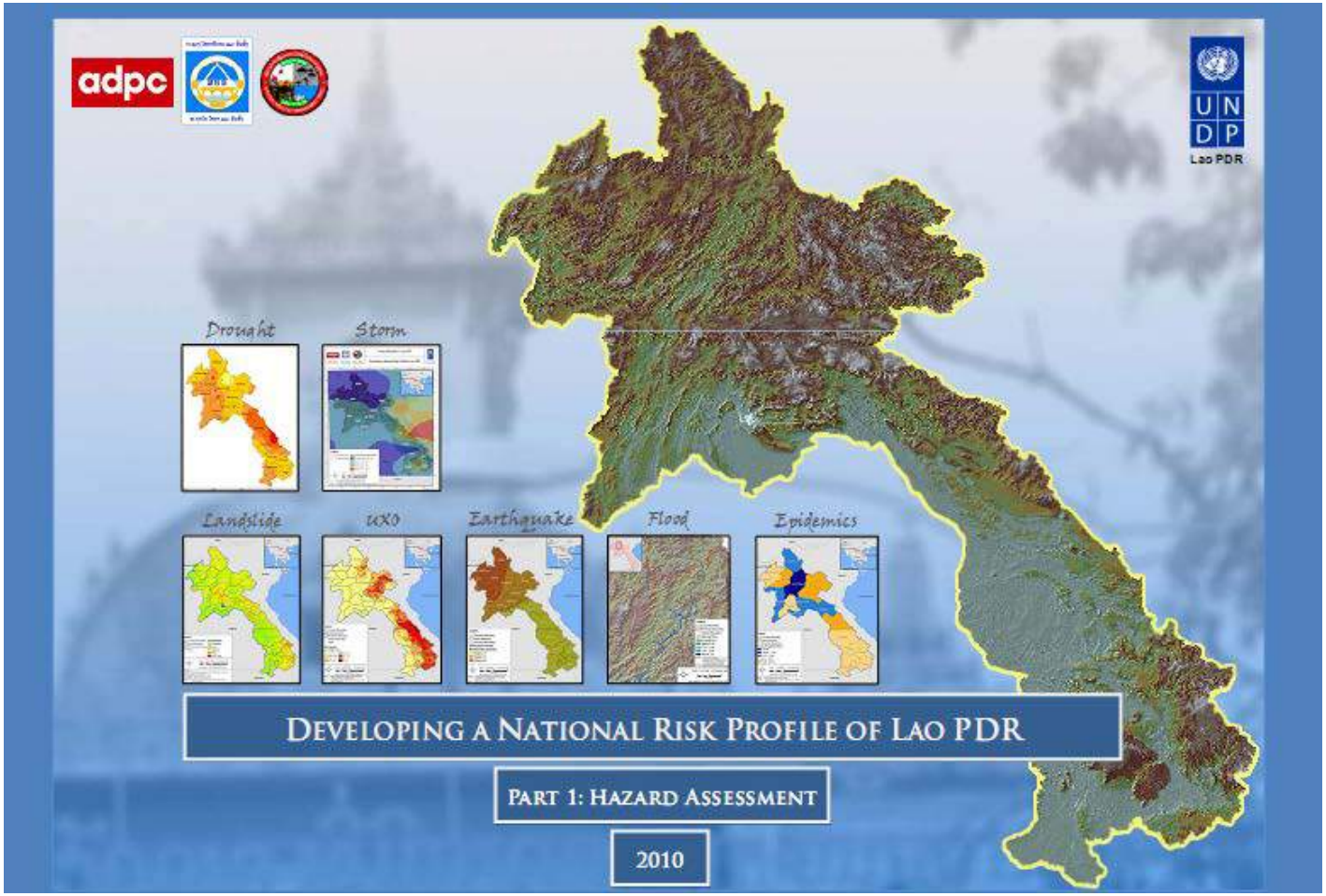


Disaster Risk Management Activities

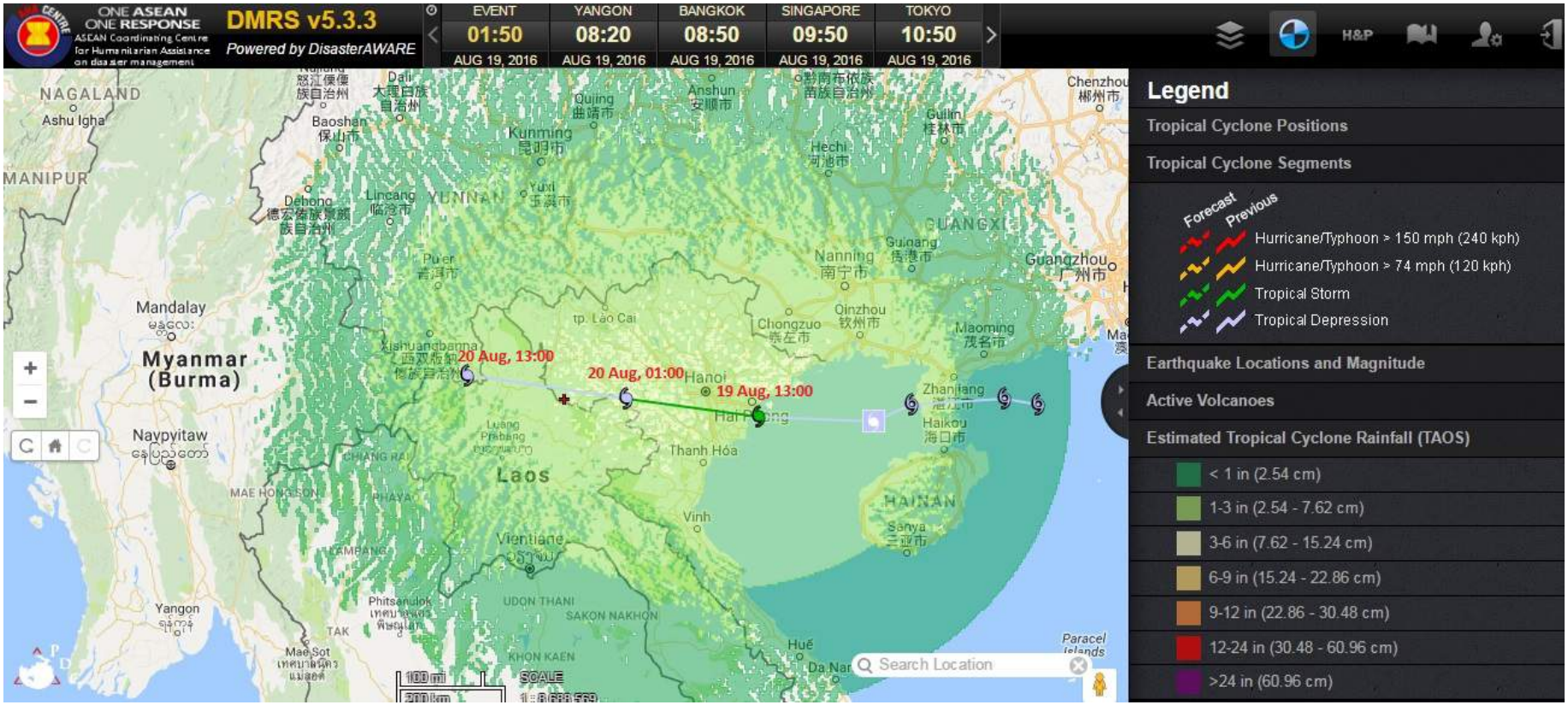
Offering Capacity Building for Stakeholders

- The PG Diploma course in "Remote Sensing & GIS" being organized by CSSTEAP at Dehradun (India) under the ASEAN-India Space Cooperation Programme in 2017.
- Building Efficiency of UAV Image Processing for ASEAN Countries in August 2017, Chunburi, Thailand.
- LiDar Application on Disaster Risk and natural Resource management for the ASEAN Region in June 2017, Manila, Philippines

National Risk Profile 2010



Disaster Monitoring and Dissemination from AHA Centre



Source: www.dmrs.ahacentre.org

Information sharing and response coordination with AHA Centre through National EOC

Contents:

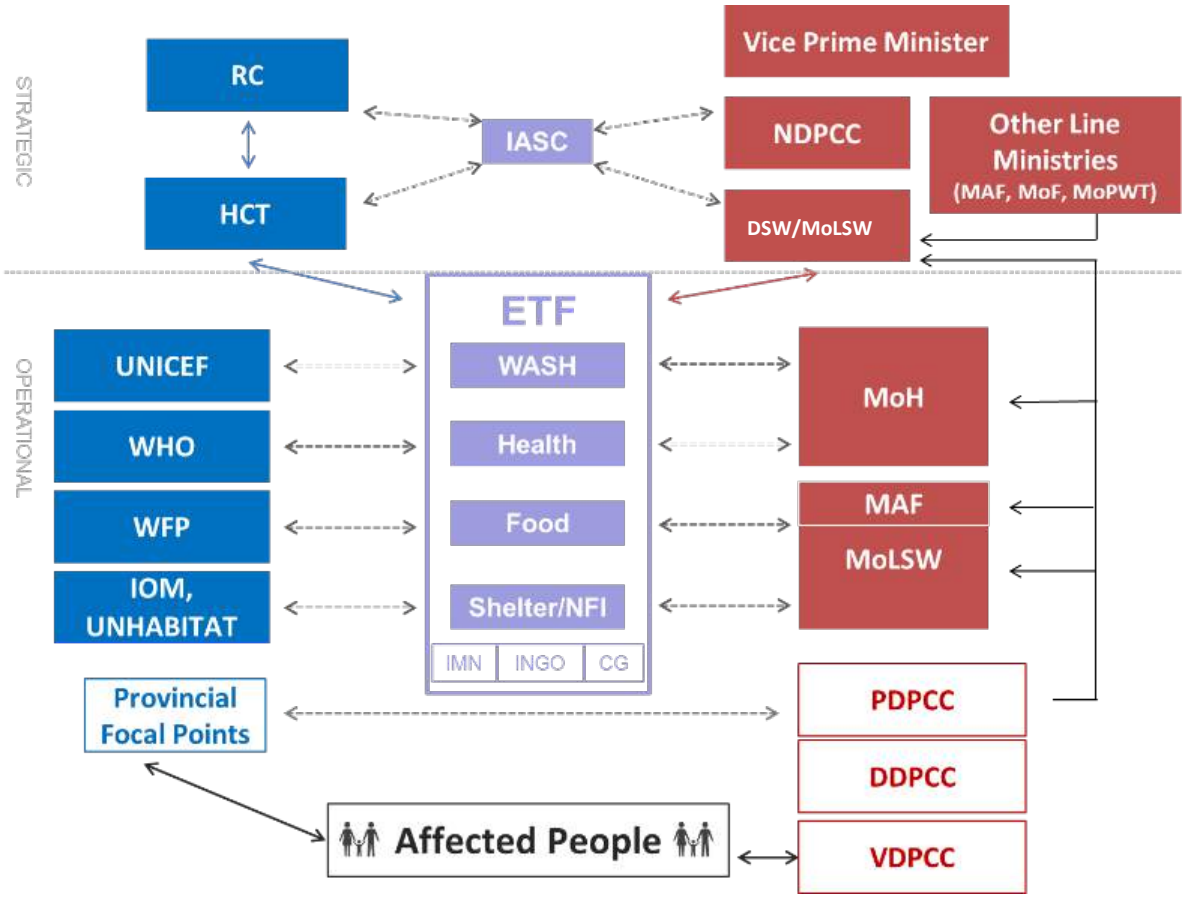
- Typhoon information
- Situation update
- Skype conference
- SASOP

Early Warning and Response Action

- Deliver early warning message to local DM agencies and communities.
- Local and community Response First.
- NDMO emergency call and create response plan as already set in the SOP and National Preparedness Response Plan
- National ERAT deployed to affected areas
- Emergency response team deployed (SAR, Medical, Relief …)
- Post Damage and Need Assessment
- Recovery plan

Inter-Agency Contingency Plan

Institutional Arrangements



DISASTER IMPACT MODEL

NUMBER OF PEOPLE IN NEED AND LOCATION

X

NEEDS ANALYSIS

COMMUNITY ENGAGEMENT KEY IMMEDIATE NEEDS

=

TOTAL REQUIREMENT

TOTAL ASSISTANCE TARGETED TO AFFECTED POPULATION

RESPONSE CAPACITY ANALYSIS

CAPACITY ASSESSMENT MODALITIES COORDINATION STRUCTURE

PLANNING AND ADVOCACY

RESPONSE PLAN MONITORING & REPORTING FRAMEWORKS

Geo Space Application for SDGs

Enhancement of Early Warning System

CBEWS

National EW Strategy

MONRE

Operationalizing Strategic Plan for Disaster Management in Lao PDR (2010-2012)

Component 3: Strengthening the Early Warning System (EWS)

Early Warning Strategy Paper for Lao PDR

Final Version

adpc

Prepared by the Asian Disaster Preparedness Center (ADPC

Global Facility for Disaster Reduction and Recovery Grant Number: TF093258 Procurement Contract Number: GFDRR-OSPDM-SS-001

SOP on Flood EW

MONRE

Operationalizing Strategic Plan for Disaster Management in Lao PDR, (2010-2012)

Component 3: Strengthening the Early Warning System (EWS)

Standard Operating Procedures (SOPs) for Flood Early Warning System (EWS) development in Lao PDR

adpc

Prepared by the Asian Disaster Preparedness Center (ADPC

Global Facility for Disaster Reduction and Recovery Grant Number: TF093258 Procurement Contract Number: GFDRR-OSPDM-SS-001

Curriculum for Secondary School

ແບບຮຽນ

ໄພພິບັດສຶກສາໃນຊັ້ນມັດທະຍົມຕອນຕົ້ນ

ສອດແຊກໃນວິຊາວິທະຍາສາດ
ທຳມະຊາດ ແລະ ວິທະຍາສາດສັງຄົມ

ກະຊວງສຶກສາທິການ
ສະຖາບັນຄົ້ນຄວ້າ ວິທະຍາສາດ ການສຶກສາ
ອຸປະຖຳໂດຍ: DIPECHO
ຜູ້ຮ່ວມງານ: RIES, ADPC, NDMO
2007

ຄູ່ມືຄູ

ໄພພິບັດສຶກສາໃນຊັ້ນມັດທະຍົມຕອນຕົ້ນ

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ອຸປະຖຳໂດຍ: DIPECHO
ຜູ້ຮ່ວມງານ: RIES, ADPC, NDMO
2007

Way Forward

- To update the legal document such as Disaster Risk Management;
- To continue to strengthen the capacity building on preparedness and Institutionalization as needed;
- To strengthen Early Warning System;
- To actively involve in the international and regional activities and Forum on Disaster Risk Management.
- To continue to implement the TAM Report with the support of UN-SPIDER

Thank you for your kind attention!