

Global Forum

Meteorological and Hydrological Modernization in Lao PDR



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Outline

I. Introduction

II. The role of hydro-meteorological services

III. The Project proposal to strengthen the DMH

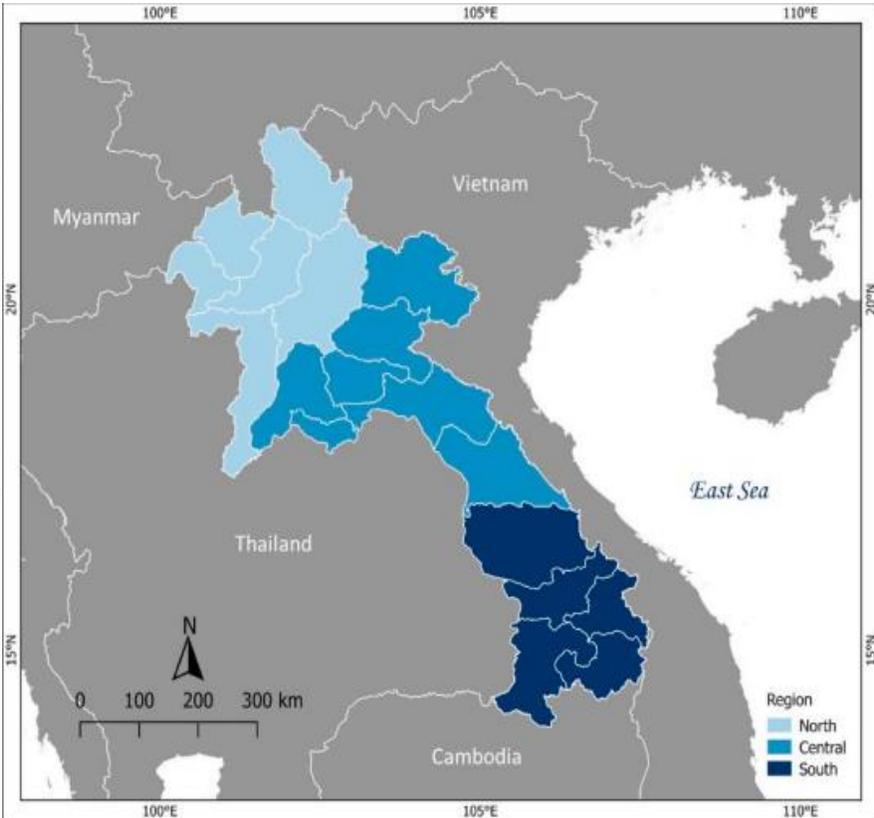
IV. Lesson learnt and recommendation to be improved





I. Introduction

- Lao PDR is the only landlocked country in Southeast Asia, the country's thickly forested landscape is generally comprised of rugged mountains, plains and plateaus.
- The country's principal waterway is the Mekong River. The Mekong and many small rivers or tributaries are critical natural resources for socio-economic development, particularly for agriculture and hydroelectric sectors





- Floods, droughts, and extreme weather are the dominant hazards in Lao PDR and cause loss of life, damage agricultural production, and threaten livelihoods.
- The number of significant flood events has been increasing over the years.
- Furthermore, climatic variability is expected to exacerbate food insecurity and result in an increase in food prices.
- Following the severe flooding and devastation in 2008, Typhoon Ketsana in 2009, and Typhoons Haima and NokTeng in 2011, the **Government of Lao PDR has increased its effort to improve natural disaster preparedness.**



II. The role of hydro-meteorological services

- Weather and climate affect all kinds of human activities.
- Due to the serious impacts of recent weather and climate events in the region which affected economic and business operations, the various sectors in the country are beginning to demand for the improvement of increasing hydro-meteorological products and services.
- The frequent occurrence and increasing severity of extreme weather and climate events in the country are seen as indications of a changing climate
- As the impacts of climate change continue to accelerate due to global anthropogenic climate change, the National Meteorological and Hydrological Services (NMHSs) will be faced with the increasing challenges and demands of providing more accurate, timely and useful forecasts, products and information.
- It is therefore critical to prioritize the upgrading of the capabilities of the Department of Meteorology and Hydrology of Lao PDR in providing improved hydrometeorological products and better delivery of services to minimize the ill effects of climate change in the country





II. The role of hydro-meteorological services

- To be able to address these demands, it is necessary and urgent to put in place or to enhance the very basic requirements for an NMHS to function effectively as follows:
 - 1) adequate networks to monitor hydro-meteorological parameters;
 - 2) a robust communication system for data transmission, dissemination of forecasts and sharing of information;
 - 3) high speed computing system for data assimilation and numerical weather prediction;
 - 4) human resource equipped with appropriate trainings; and
 - 5) more interaction with users of weather and climate information.





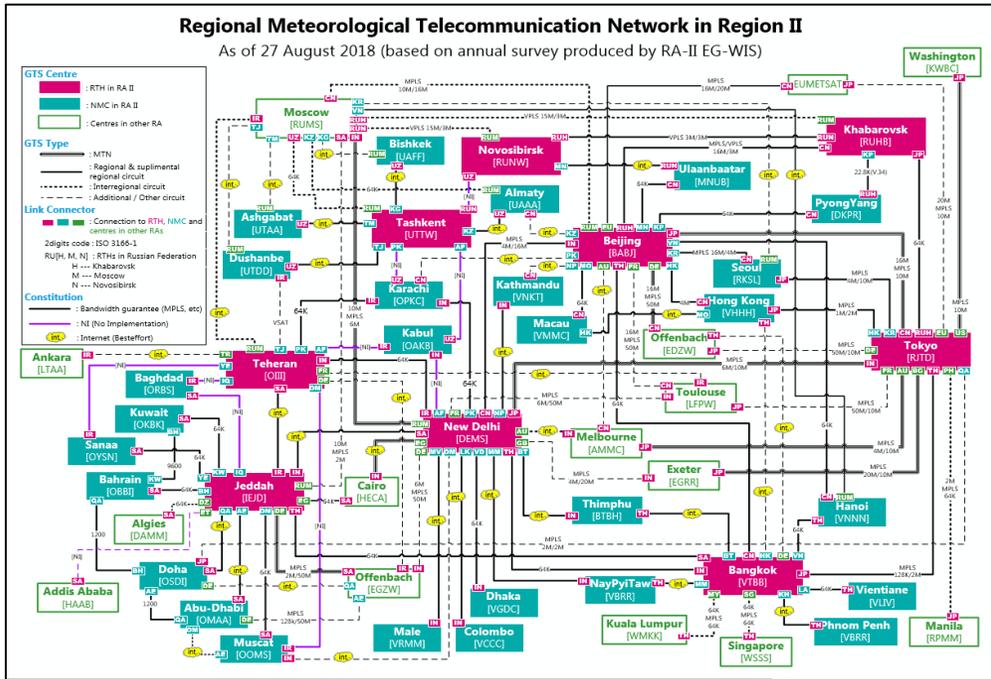
III. The Project proposal to strengthen the DMH

- To improve the capabilities of the DMH as the warning agency for hydro-meteorological hazards in order to meet the needs of key economic sectors in Lao PDR, a proposal is developed for upgrading its physical resources and enhancing the capacities of its human resources.
- On its physical resources, manual or analogue meteorological instruments should be replaced with automatic weather observation system to enable DMH to establish additional observation sites even with its limited personnel complement.
- Additional upper-air observation stations and new lightning detection system should also be established to come up with a better representation of the vertical structure of the atmosphere especially during occurrence of tropical cyclones and deep mesoscale convective systems such as thunderstorms.
- The funds for the implementation of the proposed project can not be supported out of the existing budget allocation provided by the Government of Lao PDR to the department, hence, outsourcing is necessary. Foreign donors such as **Korea, Japan, China, WMO, USAID, AusAID, the World Bank, ADB and FAO** could be tapped to provide funding support for the project.

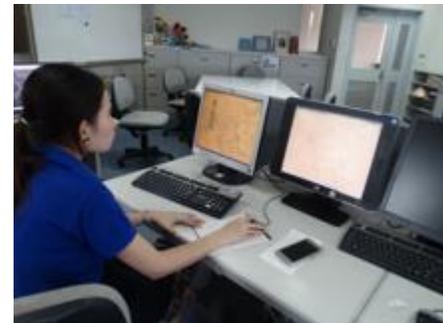




WMO VCP project



- DMH Lao PDR has been connected as one GTS terminal to RTH Bangkok with dedicated leased line of 64 kbps speed.
- Since its establishment in 1988 through the support of WMO VCP, the stand alone message switching runs on Linux OS.
- Only synoptic and climatological data are collected manually from domestic stations, then input into the GTS message switching PC in TAC, then transmitted manually.





JICA project



- C-band Doppler Radar: 1
- Ground Receiving Satellite (Himawari-8): 1
- Upgrading GTS
- Automatic Weather Stations: 18
- Automatic Water Level Station: 8





Korean projects

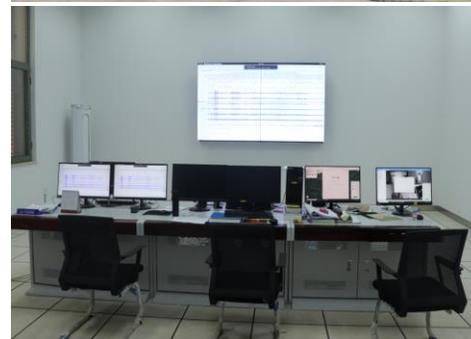
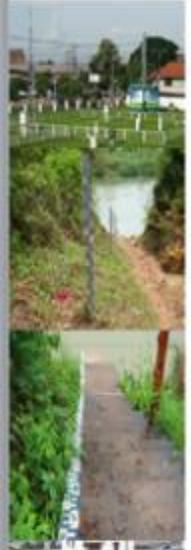
- KOICA-KMA: Ground Receiving Satellite (COMS-1), TOS
- NDMI: Establishment of Flood Early Warning System in Lao PDR: 4 districts of 3 provinces
- KICT-KEITI: Master Plan on Flood Forecasting and Early Warning in Lao PDR
- Weather Pia: Master Plan on Hydro-met Modernization in Lao PDR





Chinese projects

- CMA: FY Satellite, CMACast, Weather Studio
- Changjiang Water Resources Commission, Ministry of Water Resources: Establishment of National Water Resources Data Information Center:
 - Automatic Water Level station: 17 stations
 - Automatic rainfall station: 34 stations
 - National Water Resources Data Information Center: 1
- China Earthquake Administration: Establishment of National Earthquake Information Center





ADB, World Bank, MRC and FAO projects

- To modernize the hydro-met system in Lao PDR by rehabilitating, upgrading and new installation of hydro-met stations, as well as construct national early warning center;
- System Integration (SI).

	ADB Project	World Bank Project	FAO Project	MRC
Automatic Weather Station	8 stations	66 stations	15 stations	0
Automatic Water Level Station	18 stations	59 stations	0	17 stations
Automatic rainfall Station	0	47 stations	0	0





IV. Lesson learnt and recommendation



1. The selection of stations is based on the main socio-economic development plan, there is no master plan on meteorological and hydrological development. Therefore, it is difficult to determine the location of the station in accordance with the technical principles
2. Each project has its own unique system which makes it difficult to implement
3. Each system requires an upgrade or renew license, which consumes a budget
4. Increase training for technical staff, such as short-term, medium-term and long-term to ensure the sustainable management of the system
5. Each project must be fully allocated budget to the management and maintenance of equipment within 2 years after the project is handed over.

Thank you very much!