

**“SCIENTIFIC INNOVATIONS AND PRIVATE SECTOR FOR CLIMATE
RESILIENCE”**

**SPEECH DELIVERED BY DR. PICHET DURONGKAVEROJ,
AT THE ASIAN BUSINESS FORUM ON RISK REDUCTION AND RESILIENCE
BUILDING**

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<<VDO Part 1 here>>

Your Excellency, Minister of

Permanent Secretary of....

Director General of

Dr. Jingjai Hanchanlash, Executive Director of Asian Disaster
Preparedness Center

Distinguished guests

Ladies and Gentlemen

It gives me great pleasure to join you this morning, at this Asian business forum on Risk Reduction and Resilience Building, here in Bangkok. It also gives me pleasure, today, to hear that this international forum has attracted scientists, officials, and researchers from various countries around the world. In a special way, I would like to welcome you all, particularly those who have traveled long distances from other countries. I am delighted that various key partners, including the Office of Small and Medium Enterprises, the Department of Disaster Prevention and Mitigation, and the Ministry of Interior, are keen supporters of this important forum.

Asia-Pacific is the most disaster prone region in the world. Over the past decade, disasters caused economic damages worth more than half a trillion dollars. Every year, disasters cause massive destruction to life and property and affect the poor and vulnerable the most. For example, while Thailand experienced the costliest flood in 2011, last year, farmers in many provinces were severely affected by drought. Building resilience to disaster is a must to protect the hard-earned development gains made in the region.

United Nations Framework Convention on Climate Change (UNFCCC) forecasted that climate change will have wide-ranging effects on the environment, and on socio-economic and related sectors, including water resources, agriculture and food security, human health, terrestrial ecosystems and biodiversity and coastal zones. Changes in rainfall pattern are likely to lead to severe water shortages and/or flooding. Melting of glaciers can cause flooding and soil erosion. Rising temperatures will cause shifts in crop growing seasons which affects food security and changes in the distribution of disease vectors putting more people at risk from diseases such as malaria and dengue fever. Temperature increases will potentially severely increase rates of extinction for many habitats and species.

Besides mitigation of the greenhouse gases, adaptation is a process through which societies make themselves better able to cope with an uncertain future. Adapting to climate change entails taking the right measures to reduce the negative effects of climate change by making the appropriate adjustments and changes. There are many options and opportunities to adapt. These range from technological options such as increased sea defenses or flood-proof houses on stilts, to behaviour change at the individual level, such as reducing water use in times of drought and using insecticide-sprayed mosquito nets. Other strategies include early warning systems for extreme events, better

water management, improved risk management, various insurance options and biodiversity conservation.

Excellencies, Ladies and Gentlemen,

Ministry of Science and Technology has been and will always involve in implementing science, technology, and innovation in building resilience to climate change. The top 3 experience agencies of the ministry include the Geo-Informatics and Space Technology Development Agency (GISTDA), the Hydro and Agro Informatics Institute (HAI), and the National Science and Technology Development Agency (NSTDA).

GISTDA has been using satellite images to monitor the country's disaster-related situations for over 30 years. This includes changes in spatial distribution of natural resources, and flood and drought data from both passive and active sensors for analysis, forecast, and warning in risky areas.

GISTDA's Coastal Radar System is used to predict storm for early warning, as well as to monitor coastal erosion and impact from ocean currents. It can also predict oil movement and impact area upon oil-leaked incidences.

GISTDA's Web map service for Thailand Monitoring System (TMS) uses GIS/remote sensing technology with two major sub-systems. One is to monitor flood and drought for early warning as well as capability to analyze pre-flood risk assessment, post-flood assessment, damage and loss assessment, and estimation of future disaster losses. Another subsystem is to monitor forest-fire incidences by accurately detect hot-spots up to 4 periods per day, helping the planning of haze/forest fire prevention and mitigation center at the community and provincial levels.

To plan for financial resilience, GISTDA's Flood Risk Assessment Mapping system (FRAM) determines flood zones and floodplain boundaries to create flood insurance rate map, enabling the business sector to obtain insurance fair prices, thus, reducing the risk caused by flood.

High-amplitude earthquakes in Asia have been frequently observed. The ground shaking could lead to damages or collapse of engineering structures such as dams, resulting in large scale disasters at downstream communities. NSTDA's Seismic detection technology for dam safety is essential as a monitoring tool of earthquakes to mitigate damages and losses.

The Electricity Generating Authority of Thailand (EGAT), a dam operator, is now collaborating with NSTDA on an "ICT-based Real Time Monitoring and Management System for Dam Safety" project in installing a new automatic seismic monitoring system in 14 dams and surrounding areas. The system contains a seismometer that can detect the epicenter of the earthquake, and contains an accelerograph that can record the earth shaking rate within 200 kilometers. This system will assess if a dam can withstand the seismic activity and allow us to determine necessary actions for earthquake protection in time. The system is promisingly effective and building up resilience among communities around the dam areas.

Bangkok metropolitan and its vicinity largely rely on Chao Phraya River in supplying fresh water. The salinity in Chao Phraya River is controlled by ocean tides and river discharge, therefore, the interplay between these two factors is crucial in determining the availability of fresh water. The saltwater intrusion is intensified in the dry season when the demand of fresh water is excessively high,

affecting various sectors including agriculture, industry, and waterworks. The situation further deteriorates in the face of climate change and sea-level rise.

NSTDA's Salinity intrusion forecasting and scenarios-based systems for the lower Chao Phraya River has been developed to help relieve the issue, a decision support system which includes the salinity intrusion forecasting and scenario-based planning capabilities is being developed to provide decision makers the timing of the availability of fresh water in lower Chao Phraya River.

HAI is among the agencies who always play a major role during water-related natural disaster.

HAI's Telemetry system has been continually developed since 2004 to systematically monitor weather and water levels from remote stations and automatically display in the form of geographic information.

Its station consists of several sensors measuring water levels, precipitations, temperature, humidity, atmospheric pressure, and solar radiation which automatically link all data through the transmission system (3G or GPRS) of local network-providers and satellite communication system. The station has a compact design but can still deliver accurate measurements and is powered by a solar panel. The data is displayed at www.thaiwater.net. This measured data is being used to support the necessary water situation analysis for effective water management, disaster management, and flood warning system.

To ensure that the information collected can reach those both during normal time for agriculture planning purposes and during water-related disasters, HAI has developed an automated weather and water monitoring system for locals called the Media Box, using RSS news feed technology, which allows the local administration and local

people to conveniently access weather data and weather forecast through the internet. Currently, HAI has distributed the media box to local communities with the total of 695 areas nationwide.

<<VDO Part 2 here>>

Excellencies, Ladies and Gentlemen,

The importance of science and technology has been highlighted as tools for building climate resilience for both developed and developing countries. The latter, in particular, has become more pressing to develop and acquire key technologies to cope with climate change and especially disasters in various forms and severity. The globalization of environmental protection, in some senses, has increased enormous pressure on developing countries, who are trying to continue their economic development, making it necessary to identify their own technological priorities.

With these few remarks, distinguished guests and participants, ladies and gentlemen, let me wish this Asian Business Forum on Risk Reduction and Resilience Building all success. I wish also that you have a pleasant stay in Bangkok.

Thank you.