Book Review: Climate Change Challenges in the Mekong Region

Kobkun Rayanakorn. *Climate Change Challenges in the Mekong Region.* Chiang Mai: Public Policy Studies Institute, Chiang Mai University, 2011. 324 p. (CMU Mekong series; no.5) ISBN 978-974-672-596-5

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INTRODUCTION

Climate change is one of the most challenging issues of the twenty-first century. The International Panel on Climate Change (IPCC)'s Fourth Assessment Report confirmed that "warming of the climate system is unequivocal", based on decades of evidence, and changes in climate will affect natural and human systems. However, our capacity to cope and plan for it is uncertain, with the poor and developing countries most vulnerable to its risks. This book focuses on the impact of climate change in the Greater Mekong Subregion (GMS) – Yunnan Province of China, Myanmar, Laos, Thailand, Cambodia, and Vietnam.

CONTEXT

Both at the regional and country-specific level, this book covers climate change impacts, adaptation strategies and mitigation measures, in areas of agriculture, water resources management, and the energy sector, with a particular focus on public policy implications.

POINT OF DISCUSSIONS

Discussion 1: Impact of Climate Change in the Mekong Region

The Greater Mekong Subregion – 2.6 million square kilometers with around 326 million people – encompasses a diverse geography, from the top of the Himalayan Mountains to the Mekong Delta, with the climate change impact varying by region.

The most widely reported effect in the Himalayas is the rapid reduction of glaciers, with concomitant implications for downstream water supplies. It is very likely that changes in the flow regimes will have significant impacts on downstream ecosystems and societies. Records showing increasing temperature over the past 100 years provide statistical evidence of global warming. The maximum flow of the Mekong River will increase by 35-41% in the basin and by 16-19% in the delta, while the minimum

monthly flow is estimated to decline by 17-24% in the basin and 26-29% in the delta. This indicates a high risk of flooding during the wet season and drought during the dry season.

In China, the annual surface mean temperature has risen significantly, by about 1.1 degree Celsius, over the past 50 years; the warming rate over this same period was faster than the rest of the world. From 1956 to 2000, the precipitation increased by 60-130 millimeters/year along the middle and lower reaches of the Yangtze River, while it decreased by 50-120 millimeters/year along the Yellow River. In recent years, these changes have resulted in more frequent and severe droughts and floods. The loss caused by natural disasters has increased greatly in recent years, accounting for 3% of China's national GDP.

Vietnam, one of the most affected countries by climate change, would lose more than 12% of its land, home to 23% of its people, if sea level rose 1 meter. Climate change could also increase the frequency and severity of typhoons, and rising temperatures and changing rainfall patterns would affect Vietnam's agriculture and water resources.

For Thailand, a climate change prediction model was developed. Based on the model, the average annual temperature will continue to increase, rising approximately one degree Celsius in all regions of the country from 2010 to 2030, a cumulative two degrees by the 2050s, and a cumulative four degrees by the 2080s. The number of days with a maximum temperature over 35 degrees Celsius will increase in all regions, while the number of days with a minimum temperature under 15 degrees Celsius will decrease. The annual number of rain days will decrease, while the average rainfall will increase. This trend will lead to heavier rain, but fewer rainy days.

For the Mekong Subregion, climate change will increase the average annual temperature, reduce the number of days below a minimum temperature, and increase the number of days above a maximum temperature, significantly affecting precipitation amounts, intensity, and distribution over time and space. This will directly affect total and peak river runoff, and lead to an increasing likelihood that water availability will correspond less with critical agricultural and dry season demands.

Discussion 2: Challenges in the Mekong Region

The main climate change challenges in the GMS are most likely to be in agriculture and water resources management, due to changes in the average annual temperature and precipitation patterns in the region.

To ensure that water resources are shared fairly between the GMS countries in the face of climate change, addressing governance and justice issues will be crucial.

The impact of climate variability, especially the fluctuation in the reliability of precipitation and, consequently, water supply, on crop pro-

duction contributes to the coefficient of variation in crop yield over the years. Several major epidemics and pest outbreaks in crop production have been linked to climate anomalies in the 20th century, with increasing incidences likely with a warming climate. The robustness of the GMS's agriculture systems and innovations to cope with new difficulties and changes can be seen from archeological and historical evidence, as well as from events of recent years. For most of the GMS, the impact of global warming on crop yield will directly affect the income and food security of farmers, with the majority likely to be much more vulnerable.

Discussion 3: Climate Change Adaptation in the Mekong Region

Several countries in the Mekong Region have made efforts to adapt to climate change. The foundations have been laid in terms of research on the science of climate change, its potential impact, and finding new ways to adapt to the impending changes.

The key challenge in climate change adaptation in the Mekong Region is dealing with prediction uncertainty. While studies and research have been conducted on potential adaptation options, such as flood resistant crops and water resources management, formulating informed and appropriate responses faces difficulty, and policy options are debatable. Hence, additional research and studies are required to provide a credible basis for formulating climate change policy.

Good governance of international water resources management, to ensure water availability in the Mekong Region, is the key challenge. Upstream water utilization and construction of tributary and mainstream dams are some of the major factors affecting the river hydrology. The transboundary impacts of water resources management makes it mandatory to develop stronger and more active regional collaboration for the management of the Mekong River.

Discussion 4: Climate Change Mitigation – China's experience

China, the world's second largest greenhouse gas emitter, has actively engaged in the Clean Development Mechanism (CDM) under the Kyoto Protocol to reduce its greenhouse gas emissions. While China's main objective in engaging in CDM is to attract foreign investment and advanced technology transfer, it is also in response to China's national policy on energy and climate change. Policies, laws and regulations have been announced at all levels – national, state, and ministerial – to address energy saving, emission reduction, and promotion of renewable energy. The plan also includes targets to improve energy efficiency in key sectors, and is coupled with economic instruments to encourage stakeholders to take actions to meet the target. The economic instruments include: financial subsidies, tax relief, soft loans, government procurement, fines, emission allowances, and tax adjustments.

SUMMARY

"Climate Change Challenges in the Mekong Region" is a valuable and important book that makes a genuine contribution to the climate change discussion in the Mekong Region. It will reward the careful attention of specialists and nonspecialists alike.