

**“Coping with Climate Change in Southeast Asia”**  
**Panel for EUROSEAS 2010, Gothenburg, Sweden Aug 26-28, 2010**

**Panel Conveners:** Pamela McElwee, Arizona State University, USA, and Nghiem Phuong Tuyen, Vietnam National University, Vietnam

**Panel Abstract:** Emissions of carbon dioxide and other greenhouse gases are, by all estimations, changing the Earth’s climate. Current climate research shows that the average temperature increase in the 21<sup>st</sup> century is likely to be between 1.8 and 4 °C if current emissions levels continue. The potential consequences of global warming are very serious: weather is likely to become more extreme, with increased hurricanes, heat waves, floods, and droughts; sea levels are expected to continue to rise, costing lives and damaging ecosystems and economic production systems; and ecosystems and species ranges may change, with impact on agriculture as growing seasons and ranges fluctuate, and human health as disease vectors enter new ranges with scaled-up impacts. In sum, climate change has the potential to threaten human welfare and security and consequently quality of life in a manner unprecedented in recent history.

For the countries of Southeast Asia, such scenarios are extremely perilous, as these countries have extended coastlines, heavy reliance on agriculture, and high levels of poverty and inequality. Likely consequences that are forecasted for Southeast Asia include increased floods as monsoons shift; sea level rises and flooding in coastal areas; erratic rainfall and changes in season; extremes of temperatures of hot and cold; spread of aridity and drought; a shift in frequency, strength and location of typhoons and storms; spread of vector diseases; and greater heat dangers in urban areas. Hundreds of millions of people will potentially be affected, and thus there is a need to understand the consequences of these tremendous changes that are forecasted. This panel will address issues relating to the impacts of climate change in Southeast Asia, and the potential of these impacts to affect livelihoods and development outcomes. The papers will also address the ability of communities in the region to adapt to these changes.

**1. Predicting future vulnerabilities to climate change impacts in Vietnam – the challenge of capturing dynamic pathways under conditions of transformation**

*Matthias Garschagen, United Nations University, Institute for Environment and Human Security (UNU-EHS), Bonn, Germany*

**Abstract:** A number of global studies identify Vietnam to be one of the countries most threatened by climate change impacts due to its long coastline and large delta regions, causing high degrees of exposure in particular to floods, typhoons and salinisation. At the same time, Vietnam has been undergoing drastic socio-economic and political transformation processes over the last years and is expected to continue doing so. Yet, when it comes to assessing future risks stemming from climate change related impacts, most studies tend to focus on (expected) changes in the domain of natural hazards while – in terms of the vulnerability of exposed elements – current social, economic, political and cultural characteristics are often extrapolated without assessing likely changes and

vulnerability effects in detail. This is to a great extent due to the fact that socio-economic, political and cultural developments are extremely difficult to predict in terms of quantity, speed and in particular quality. However, transformations in these spheres can have great (positive as well as negative) impact on adaptive and coping capacities of distinct population groups and can additionally trigger new exposures through, for example, changes in land use policy. Based on the analysis of empirical data collected during 10 months of fieldwork in 2009 in Can Tho (Mekong Delta), the paper argues that detailed cross-scale analysis of mechanisms to cope with current and past stresses and hazards (not necessarily linked to climate change) can support the development of scenarios regarding future vulnerabilities and adaptive capacities (with respect to climate change impacts) if being soundly linked to the analysis of possible political, social, economic and cultural development pathways.

## **2. Poverty reduction in the context of climate change: The Mekong River Delta**

*Dennis Eucker, Research Fellow, German Institute of Global and Area Studies (GIGA)/  
Institute of Asian Studies, Hamburg, Germany*

**Abstract:** The Mekong River (Cuu Long) Delta is among the regions which are most vulnerable to the impacts of climate change in Southeast Asia. Increased incidence of floods, salt water intrusion and a change of the rainy season threatens the economic vitality and can potentially reverse the positive development trend in the region. At the same time, climate change puts more stress particularly on poor and vulnerable groups, since they have fewer options to adapt. Dealing with adaptation to climate change has become an imperative for the Vietnamese government. The present paper is concerned with challenges and opportunities of poverty reduction in the Mekong River Delta against the background of climate change. The main focus is on the causation of vulnerability and poverty in general and on identifying paths which may lead to tackle vulnerability by overcoming poverty in particular. To this end, the concept of ‘social vulnerability’ is applied within the broader framework of Amartya Sen’s capability approach. The approach is based on empirical and actor-centred field research in two coastal provinces of the Mekong River Delta. Findings reveal that policy makers should spend more caution on issues such as *a) land tenure and land use, b) management of natural resources, and c) access to markets for the poor*, in order to raise the capabilities of the population to cope with climate change. Addressing these challenges must go in hand with better cooperation between policy sectors involved and demands for more integrated development approaches.

## **3. From everyday environmental change to climate change: examining adaptive capacity of reef fishery communities in Spermonde archipelago, Indonesia**

*Irendra Radjawali, Leibniz Center for Tropical Marine Ecology, Bremen, Germany*

**Abstract:** The fisher communities in the Spermonde-Archipelago Indonesia have sustained their livelihoods under the dynamic changes of a monsoon climate. To some

extent, the communities have differently built adaptive capacity to climate change, ranging from spatio-temporal adaptation (e.g. foraging to the new fishing ground) to social adaptation (e.g. maintaining livelihoods through patron-client relations known as “*punggawa-sawi*”). Findings from observation as well as ethnographic research in the area suggest that the potential impact of climate change will increase the community’s vulnerability. The case of a live reef food (LRF) fishery shows that the depletion of fish stocks as a cause of overfishing and the destructive fishing practices pushes fisher communities to change their catch or move further. The communities are able to cope with slow changes as there are knowledge exchanges and adaptive emergence in the area. However, this paper argues that the community will have difficulties in dealing with abrupt, uncertain and catastrophic environmental changes as are predicted in the climate change forecasts. This paper will examine to what extent the existing adaptive capacity of the island communities in Spermonde Archipelago will be able to cope with the challenges of the forecasted climate change. This paper argues that there is a need to strongly address this issue at the community level.

#### **4. Adaptive strategies for resilience to climate change in the Huong river basin of Vietnam**

*Pham Thi Dieu My and Lam Thi Thu Suu, Centre for Social Research & Development, Hue, Vietnam*

**Abstract:** Vietnam is one of the main countries potentially and significantly affected by climate change and climate variability. Adaptation is currently a key component in climate change dialogues and negotiation regarding opportunities to minimize the losses caused by the climate change. This paper reports on the findings of a research project aiming to investigate the adaptation measures that have been already implemented by local communities and to assess the main adaptation options and priorities of local communities related to water management. Participatory Rural Appraisal (PRA) were conducted with three communes representing three parts along the Huong river basin in Thua Thien Hue province with an aim to investigate and analyze the local perception and experience on climate change and water resources, as well as the measures people take to adapt to climate change. A set of questionnaires sought to quantify and verify the data gained from PRA. It is found that although people have limited access to information on CC, they have experienced a lot of CC impacts in their life. Climate change effects vary differently from area to area and amongst livelihood activities. Resilience capacity is very limited because of a lack of social security mechanisms, including micro insurance. However, local people have accumulated autonomous experience to respond to the risks and develop strategies to adapt to climate change, which helps to mitigate the impacts. The findings provide some relevant input for the local authorities, as these actors are in need of adaptation information at a local level in order to develop action in the framework of National Target Program on Climate Change now being adopted nationwide.

## **5. Climate adaptation among households and institutions in the vulnerable landscapes of the Red River Delta, Vietnam**

*Pam McElwee, Arizona State University and Nghiem Phuong Tuyen, Le Thi Van Hue and Vu Thi Dieu Huong, Center for Environmental Studies, Vietnam National University*

The country of Vietnam is highly vulnerable to the projected effects of climate change, often cited as one of the countries most likely to be hit hard by sea level rise and increased typhoon activity, as it has a 2000 km coastline and most major cities are near coasts or inland rivers. Millions of people will likely be affected. Yet Vietnam does have a long history of natural disasters and climate variability, and study of past adaptation practices can illuminate what future climate adaptation may need to look like. For example, from 1976 to 2003 floods in the Red River Delta (RRD), the most densely populated region of the country, killed 15,835 people and caused 4 billion USD in economic damage. Given the fact that storms and floods are likely to increase in both intensity and frequency, it is crucial to understand how past adaptation of individuals and communities has occurred. This paper presents results from a project that has been ongoing for the past two years in the RRD to assess adaptation practices that have been adopted historically as well as studying in-depth adaptation after devastating floods in 2003 and 2008 that inundated much of the delta. Based on a survey of 300 households in two provinces, as well as interviews with policy makers at national, regional and local levels, we will present our main finding. The study has so far noted that vulnerability is not limited to poorer households, as richer households are more likely to make risky investments in areas that are vulnerable to climate (such as aquaculture), and that adaptation practices vary widely even in similar riverine landscapes with similar local policies. Local informal and formal institutions also have played different roles in coastal and inland areas of the delta, and the paper highlight explanations for the divergent outcomes.

## **6. Vulnerability and resilience against disasters in a megacity: Kampung dwellers in Jakarta**

*Mario Wilhelm, Faculty of Southeast Asian Studies, University of Passau*

**Abstract:** The perceived increase of major disasters over the last years combined with the expected negative impact of climate change has put disasters in the focus of topical interest. Low-income households are portrayed as being particularly vulnerable to disaster risks, as they are apparently forced to settle in hazardous locations and they often lack economic resources to cope with disaster impacts adequately. Against this background, various actors such as national governments, international organizations and local NGOs discuss strategies in order to sustainably manage disaster risks and to cushion the potential impact of climate change. Hereby it is often forgotten/ignored that local resilience is a major factor that influences vulnerability in a positive way. Empirical data collected as part of a PhD research on squatter areas in Jakarta will present the vulnerability context of low-income households. Kampung dwellers had been adversely

affected by modernization and rapid urbanization. Kampung in the inner-city area had been widely destroyed and kampung dwellers were forced to relocate to hazardous locations, such as along railway tracks and water ways or in coastal zones. However, people have also developed the capacity to cope with risks and adapt to a changing environment. The core of local resilience is mainly reflected in collective strategies that allow communities to compensate the lack of financial resources. Local resilience is manifested in, for example, informal early warning systems, institutionalized disaster management and the ability to get access to support from other actors, such as the local government or political parties. Since climate change and problems related to rapid urbanization will continue to increase the vulnerability context of city dwellers in Jakarta, the basic understanding of local resilience will become increasingly important. Finally, it will be shown how local resilience can be supported and what kind of dynamics put pressure on local resilience.

## **7. Climate Change in Thailand: Sea Level Rise: Built Form & Livelihood Impacts** *Douglas Webster & Chuthatip Maneepong, Arizona State University, USA*

**Abstract:** Thailand is the second most vulnerable nation in Southeast Asia in terms of climate change vulnerability, after Vietnam. Existing climate impact assessments often tend to be biophysically or built environment focused. This paper's orientation is vulnerability to loss of livelihood: income and employment. Two geographic areas are particularly at risk, (i) the coastal areas around the northern shore of the Gulf of Thailand, particularly Bangkok's southern and western suburbs and peri-urban areas (e.g., Samut Prakharn, Samut Sakorn), and (ii) the beach resorts along the Gulf of Thailand, e.g., Cha-Am and Hua Hin, and Andaman Sea, e.g., Greater Phuket. The areas at risk in the Greater Bangkok area include existing and planned settlements and suburban housing estates, but also a considerable portion of Thailand's manufacturing capability, particularly domestically-owned SMEs. According to World Bank estimates (2006), 23% of Thailand's GDP is at direct risk of severe flooding from climate change, most of this economic impact would be in the Greater Bangkok area. Impacts on beach resorts have not been analyzed in any detail, although the risk is officially recognized by the Ministry of Environment. Because tourism accounts for approximately 13% of Thailand's GDP and is the country's largest source of foreign currency, it is a potential impact of considerable national, as well as local, concern. In beach resorts, although there are direct risks to coastal buildings, most of the economic /livelihood damage would be indirect through massive beach erosion, which would substantially reduce the attractiveness of resort communities not only to tourists, but to second home purchasers / part-time residents, etc.

The paper examines what is known about livelihood risk from potential sea level rise in Thailand, based on current science-based scenarios. Additional information will be procured from a variety of local, national, and international sources to adjust current estimates. Based on that evidence, the authors will examine the likely distributional impacts of the impacts (among income groups, locals/migrants, spatially), and their likely severity (often a function of the nature of the damage). The authors will examine

possible adaptation strategies, and attempt to identify feasible, cost-effective measures that can be taken to minimize damage, especially from a livelihood perspective, with particular attention being paid to the most vulnerable groups. Thailand benefits from a rapidly maturing information sharing network among communities at risk from sea level rise (wetland communities network), in the northern Gulf of Thailand. This network constitutes a useful source of information, and a potential significant source of action in the Greater Bangkok region. In terms of resort communities and firms (e.g., major hotels), there appears to be less networking, and adaptation (real and contingent) in regard to the threat of beach erosion. We will examine and document what is known in this regard, and make recommendations in regard to information sharing among beach resort communities and firms.

## **8. Coping with Climate Change in Ho Chi Minh City, Vietnam: The New Urban Middle Classes and the Role of Energy-Efficient Urban Housing**

*Dr. Michael Waibel, Department of Economic Geography, University of Hamburg*

**Abstract:** This paper discusses the challenges of promoting energy-efficient housing among a social group which is often overlooked in the debate about climate change and sustainable urban development in emerging countries: the urban middle-class population. Some scientists consider the new urban middle classes in Asia simply as post-modern consumers, while others regards them as important drivers of democratization of civil society. The argumentation line of this paper is that the urban middle-class can indeed be an essential target group for mitigation as well as adaptation measures before the background of climate change. In the case of Ho Chi Minh City this is urgently needed because the metropolis is very much vulnerable to the effects of climate change on the one hand, and has become the single-most important emitter of green house gases in Vietnam on the other hand. The rise of the new middle classes has gone along with a sharp increase of their ecological footprint by taking over more and more resource-intensive lifestyles e.g. by being drivers of highly socially-selective suburbanization processes thus contributing to so-called lifestyle sprawl. In the further course of this paper the author will present recent results from a representative survey among the new urban middle classes in Ho Chi Minh City with a special focus on energy-consumption related to housing. The paper concludes with a discussion how to promote behavioural change especially related to energy-efficient and climate-adapted housing given the institutional and administrative constraints in Vietnam.