

# FORUM REPORT

## MEKONG DELTA CLIMATE CHANGE FORUM 2009

prepared by

**ICEM – International Centre for Environmental Management**

for

**Office of Government, MONRE, Australian Embassy, Danish Embassy,  
World Bank and Asian Development Bank**

12-13 November 2009

# FORUM REPORT VOLUME I

## MEKONG DELTA CLIMATE CHANGE FORUM 2009

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Volume I: Main Report  
Volume II: Full Presentations  
Volume III: Posters  
Volume IV: Video Documentation

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- Office of Government: Phan Chi Thanh, Deputy Director General of the Department of International Relations and Nguyen Tien Dung, Deputy Director General of the Department of Organization and Personnel and Nguyen Thi Lieu;
- MONRE: Tran Thi Minh Ha, Director General of the International Cooperation Department (ICD), Pham Van Tan, Deputy Director General and Pham Phu Binh, Deputy Director General of ICD, Nguyen Thi Kim Hao, Nguyen Thi Cam Uyen, Dang Phuong Loan at ICD, Vu Thi Kim Phuong and Ngan Ngoc Vy at ISGE. Nguyen Thi Hien Thuan, Nguyen Thi Thanh Hai and Tran Thi Thu Hang at the Institute for Meteorology, Hydrology and Environment (IMHEN);
- Can Tho PPC: Ky Quang Vinh, Director of the Centre for Monitoring and Environment.

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## SUMMARY OF FORUM FINDINGS AND CONCLUSIONS

### OBJECTIVES

The Mekong Delta Climate Change (MDCC) Forum was organised to identify and discuss climate change impacts and adaptation challenges facing development sectors, provinces and communities in the Mekong Delta. Second, it was to provide a strong basis for future adaptation research, planning, implementation and collaborative partnerships.

### PARTICIPANTS

The Forum was a joint initiative of MONRE and the Office of Government. It was attended by some 270 high level representatives from central and Mekong Delta provincial government agencies, the Central Communist Party Office, national and international research institutions, civil society, donors and other international development agencies working in Vietnam and the Mekong region (see Annex 2: Participants list). The Ministers of MONRE and the Office of Government, the Ambassadors from Australia and Denmark, the Asian Development Bank Country Director and senior staff from World Bank chaired Forum sessions and actively participated in the preparation and implementation of the event. Those six organisations together endorsed the Summary Statement at the close of the Forum. The statement appears as Annex 4 to this report.

This introductory summary sets out the main findings and recommendations arising from the presentations and discussions at the Forum. Thirty presentations were given in plenary and in three parallel, technical sessions. They appear as full power point presentations in Volume II.

### MAIN FINDINGS

#### CLIMATE CHANGE IS REAL

Records for the Delta show that climate change has happened and that the pace of change is increasing. Several presentations by research centres and the Mekong Delta provinces showed data on changes in climate in recent decades including sea level rise, rising temperatures, increased rainfall and saline intrusion further inland. Also more extreme events have been recorded. Some examples:

- **Sea level rise (SLR):** Since 1901, the sea level has risen by 20cm. IMHEN (2)<sup>1</sup> and the City of Can Tho (22) presented data from Vung Tau monitoring station showing an average SLR of 3 mm/year over the last 30 years. ADB (6) presented data for Southeast Asia showing an average increase in SLR of 1-3cm/decade for the period of 1951-2000.
- **Increased temperature:** IMHEN (2) reported that for Vietnam there has been an average temperature rise over the last 50 years (1955-2005) of 0.5°C. ADB's data (6) on Southeast Asia showed a 0.1-0.3°C increase per decade from 1951 to 2000. SIWRP (13) presented global figures of temperature rise of 0.6°C over the last 50 years. The City of Can Tho (22) and the Dragon Institute (27) reported a temperature increase of 0.5°C for Can Tho over last 30 years (Box 1).
- **Increased rainfall:** Contrary to the national average decrease in rainfall during the past 30 years, the Mekong Delta has experienced substantial increases in rainfall, as high as 177% during winter in Soc Trang on the coast and a 30% annual increase. IMHEN (2) confirmed rainfall increases in the rainy season, from September to November. The Dragon Institute in Can Tho (27) also found rainfall at the end of the rainy season has been increasing over the last 10 years; however rainfall has been decreasing in the beginning of the rainy season (May) over the same period.

<sup>1</sup> The numbers given in brackets are references to the relevant presentation – they are listed in Table 2 appearing in the chapter 2 of the Forum report. The full presentations are given in Volume II.

Table 1: Observed climate change in the Mekong Delta – rainfall trends 1976-2000.

| Station     | Summer % | Winter % | Annual % |
|-------------|----------|----------|----------|
| Bac Lleu    | 8.49     | 79.51    | 14.86    |
| Phu Quoc    | 11.09    | 67.91    | 17.96    |
| Rach Gia    | 3.53     | 58.40    | 8.43     |
| Chau Doc    | 7.78     | 47.92    | 13.05    |
| Soc Trang   | 6.60     | 175.88   | 17.79    |
| My Tho      | 20.32    | 176.82   | 30.14    |
| Moc Hoa     | 10.62    | 93.95    | 17.52    |
| Con Dao     | -4.75    | 88.39    | -0.18    |
| Vung Tau    | 19.58    | 19.09    | 19.57    |
| Tan Son Hoa | 4.11     | 104.74   | 13.25    |

- More extreme events:** Since 1901, the number of typhoons and tropical depressions has risen to 7 or 8 a year. The impact of storms and floods has intensified in part due to increasing populations and settlements in vulnerable areas. Though preventive measures have been taken, losses and damages from disasters are severe and increasing. In the last 10 years alone, natural disasters have cost Vietnam around 800 lives and 1.5% of GDP a year. IMHEN (2) found that increasing intensity of rainfall caused more severe floods in Central and Southern Vietnam. The City of Can Tho (22) recorded an increased occurrence of tropical lows pressures and storms from 0.8 to 2.9% between 1999 and 2008. The MARD Steering Committee on Flood Control (26) also found that the number of flash floods increased from 7 in the 1970s to almost 100 nationwide in the current decade.
- Increased saline intrusion:** The presentations by the DARD Soc Trang (16) and SIWRP for Ca Mau showed that saline intrusion is reaching further inland and affecting wider areas. For example, monitoring at Dai Ngai found increases of absolute salinity maximums in 1980-1989 and in 2000-2009 of 8.6% and 13.1% respectively.

#### BOX 1: CLIMATE CHANGE IN CAN THO

*“Can Tho is the biggest city in the Mekong Delta and a leading economic player in the country in rice production and aquaculture. Can Tho will suffer from changing water levels in the Mekong River, not only because of sea level rise, but also because of increased local rainfall and upstream developments. Expected impacts are deep inundation in the rainy season, extreme droughts in the dry season and saline intrusion. Construction works will need to build their foundations 2.5m above mean sea level. Also livelihoods are threatened. Local people may not be able to produce enough fish and rice supplies, resulting in food shortages.*

*“Research should be carried out on the construction of sea and river dykes, the construction of fresh water reservoirs for the dry season and how to recharge groundwater reservoirs. Planned infrastructural measures for adapting to climate change must address the whole of the Mekong Delta, not Can Tho alone. Awareness and understanding of climate change for local people and government officials is essential. Support from the international community is needed to help Can Tho and the Mekong Delta to find optimal and appropriate measures for adaptation.”*

Ky Quang Vinh, Can Tho Steering Committee for Climate Change

## CLIMATE CHANGE IS PROJECTED TO INTENSIFY

Climate and hydrological modelling studies show that the current climate change trends are projected to continue and intensify.

- **Increasing temperature:** By 2100, MONRE has forecast that Vietnam's average temperature will increase to between 1.1°C (low emission scenario) and 3.6°C (high emission scenario) above the average for the 1980-1999 period. The temperature rise will be greatest in the North, around 2.8°C. Overall, winter temperatures will rise more rapidly than summer temperatures. The number of days with temperature higher than 25°C will increase.
- **Increasing rainfall during the wet, reducing rainfall during the dry season:** MONRE forecasts also show greater total rainfall, wetter wet seasons and drier dry seasons, especially in the southern region of the country. Annual rainfall would increase 1.0 to 5.2% in low emission and 1.8 to 10.1% in high emission scenarios. Rainfall begins to intensify over fewer months in the rainy season (an overall increase of 19%), while the dry season will become more prolonged. Rainy season rainfall will increase, while dry season rainfall will decrease. Fresh water availability will decrease.
- **More frequent and intensifying storm surges:** MONRE projects more typhoons, with higher wind velocity and extending over longer periods. The typhoon intensity is forecast to be stronger, especially during El Niño years. What was once a one in 30 year storm is likely to become a one in ten year event.
- **Increasing sea level rise:** MONRE forecasts the average level of Vietnam's seas to rise 28-33 cm by 2050 and 65-100 cm by 2100 compared to the 1980-1999 period.
- **Annual runoff will increase:** The effects of climate change on the Delta's hydrology are projected to be very significant. For the A1B scenario in 2030, total annual runoff from the Mekong Basin is forecast to increase by 21%, mainly during the wet season and in the upper areas of the Mekong floodplains.<sup>2</sup> Mean annual runoff between July and October for that year are especially high with a pronounced increase towards the end of the wet season with the effects of prolonging the flood. Changes in mean annual runoff are particular high in the southern part of the basin. Annual discharge would increase by 22% with increases in all months but mainly the wet season.

Various presentations projected the impact of these climate changes on sectors, areas and communities, for example:

- 25% of Can Tho province and 50% of Ben Tre province being inundated in case the sea level rises one meter during this century (9).
- 90% of the agricultural land in the Mekong Delta affected by flooding and 70% will suffer from saline intrusion (9).
- By 2050 under an A2 extreme event, 30-70% of Ho Chi Minh City's planned (i) major ring road construction, (ii) arterial interprovincial and national roads, and (iii) new ports and rail/metro systems are at risk of flooding, depending on the infrastructure type (21).
- By 2030 under A2, 325,000 households in the coastal province of Ca Mau province (23) would be affected, mainly rural households, when current development strategies do not change. 4500 km of its road systems might be affected by SLR and 13,000km by extreme events.

<sup>2</sup> Eastham J, Mpelasoka F, Mainuddin M, Ticehurst C, Dyce P, Hodgson G, Kirby M. 2008. *Mekong River Basin water resources assessment: Impacts of climate change*. Australian Commonwealth Scientific and Research Organization: Water for a healthy country national research flagship. Canberra, Australia

- By 2050, potential 50% flooding of Kien Giang Province (18), including its national parks and natural landscapes, reducing its biodiversity and its potential for income generation, e.g. from agriculture, aquaculture and tourism.

## THE MEKONG DELTA IS HIGHLY VULNERABLE TO CLIMATE CHANGE

The high population density of the Mekong Delta makes it vulnerable to climate change. Over the last decade the Delta population expanded by 1.7 million people. About 5 million people could be affected by a 1.0m sea level rise; the majority is poor and working in agriculture and fisheries, sectors most at risk (8). Increasing numbers of poor people are concentrating in the coastal areas and are dependent on natural resource-based livelihoods. They will be among the first to be effected by increased extreme events, flooding and saline intrusion.

By 2050, more than 1 million people in the Delta will be directly affected by increased coastal erosion and land loss, primarily caused by decreased sediment delivery by rivers due to upstream dams but also as a result of sea level rise and regular storms. Under sea level rise scenarios of 20 cm and 45 cm, permanent inundation would shift inland up to 25 km and 50 km respectively. At the onset of the flood season (August), the average increment in water levels would be 14.1 cm and 32.2 cm respectively. At the peak of the flood season (October), high discharge from upstream attenuates sea water intrusion. With an overall 21% anticipated increase in basin runoff, the combined effects of upstream discharge and sea level rise would lead to greatly expanded flooding – especially when combined with storm surge and extreme tides.

The Delta is especially sensitive due to its importance as the national agro-economic hub. The Mekong Delta contributes 46% of the total national food production (25). Agro-economic activities will expand over the next decades, as shown in a number of provincial development plans presented during the forum. Soc Trang Province (26) plans to extend its aquaculture activities and in Kien Giang (18) the tourism sector is expected to grow by 10%. Ca Mau (23) presented an expected growth rate of over 18% in many sectors and areas highly vulnerable to climate change.

Rice production in the Delta may be severely impacted, especially summer autumn crop production, where yield may be reduced by over 40%. Food scarcity could increase as supply fails to meet the demands of a growing population. The total area of agricultural activities could be reduced resulting in food scarcity and higher food prices, affecting the whole country given the Delta's importance for national food production. Rice production would be affected through excessive flooding in the tidally inundated areas and longer flooding periods in the central part of the Delta due to storm surge, extreme tides and storms. These adverse impacts would affect all three cropping seasons, Mua (main rain-fed crop), Dong Xuan (Winter-Spring) and He Thu (Summer-Autumn) unless preventive measures are taken.

The situation would be aggravated if sediment levels in rivers were reduced and the Delta began to decrease in area. Significant changes to the Delta are already underway. From 1973 to 2008 the eastern coast of the Mekong Delta was eroded at a rate of 30 to 50 metres a year and along the western coast the shoreline advanced at a rate of 70 to 100 metres a year.<sup>3</sup>

## THERE IS A STRONG FOUNDATION OF PAST ADAPTATION TO BUILD ON

The Delta provinces have had long experience in adapting and coping with natural disasters of increasing frequency and intensity. Those adaptation strategies include responses by government, by communities and by the private sector. Adaptation continues within a wide range of existing government programs and policies – but not labelled as a response to climate change, and not conducted in a coordinated and integrated way.

<sup>3</sup> Planet Action, 2009, *Climate change and the shifting Mekong Delta*, <http://www.planet-action.org/web/139-climate-change-and-the-shifting-mekong-delta.php>



Some are widely applied poverty reduction strategies that increase resilience. Others are innovations to maintain and enhance sector productivity in changing environmental conditions such as soil chemistry, water quality or increased flooding. Still others are practical engineering responses to storms, tides and flooding.

There are cases, for example, where Delta provinces are testing cropping patterns and species suitable to climate change, modifying and upgrading irrigation systems for agriculture, and reserving and storing local crop varieties and establishing a crop-seed bank. Some towns and cities are beginning to account for sea level rise and increasing temperatures while building infrastructure. The national and provincial sea-dyke systems are being upgraded and expanded. Coastal and wetland forests are being rehabilitated. Storm shelter port systems are being planned and constructed along the coast and on islands. There is much to learn from this ad hoc adaptation experience.

Especially important is the long standing arrangements which the Delta provinces have had for combating and responding to natural disasters. While much of the management response is reactive rather than the proactive planning required for adaptation, many plans, actions and structures used in natural disaster response are relevant to climate change.

Some provinces have already begun to put in place climate change coordinating structures – such as Can Tho (22) with its active Climate Change Steering Committee; and action plans, such as Ho Chi Minh City (21) which has conducted a climate change impacts and adaptation study as a basis for a comprehensive action plan.

#### GAPS IN CAPACITIES TO ADAPT REMAIN

The Vietnamese Government has taken climate change seriously and adopted the National Target Program in Response to Climate Change. The NTP sets the framework for climate change inclusive sector and development planning. It is based on a medium scenario (B2, IPCC) for green house gas emissions. Also, the Forum has shown that many climate change adaptation and mitigation activities and studies have been initiated in the Delta. A few examples are the GTZ pilot project on co-management in mangrove restoration and management (28), pilots on the Reduction of Emissions from Deforestation and forest Degradation (REDD) and Payment for Ecosystem Services in Kien Giang (18), a WWF study of climate change in Ca Mau (29) and the ADB study with the Ho Chi Minh People's Committee (21) on climate change impact and adaptation. However gaps in adaptation capacity remain:

- Forum participants called for more precise data and guidance on climate change scenarios and adaptation technologies for implementation at local level. Sector ministries and their district offices expressed the need for data and guidelines appropriate for use in preparing climate change action plans.
- Procedures for integrating climate change into socio-economic, sector and spatial plans at the local, provincial and Mekong Delta level. Guidance on the critical issues for investment when limited resources are available (3).
- Sector design standards, building codes and safeguards which take climate change into account (21).
- Appropriate budgeting to implement climate change action plans at local level and within sectors (21).
- Methods for assessing impacts and vulnerability to help define priorities for action.
- Improved integration and coordination mechanisms for climate change response projects and programs from different government agencies, NGOs, research institutes, and donors.

#### MAIN RECOMMENDATIONS

##### MAKE THE MEKONG DELTA CLIMATE CHANGE FORUM AN ANNUAL EVENT

The usefulness and importance of the Forum as a regular event was stressed by many participants. Climate change is a shared challenge for all Delta provinces. Annual meetings involving all provinces would provide an opportunity to identify the key concerns, set priorities for action, share in methods, skills and information -

and in the lessons of experience to improve performance. Participants called on the senior government partners involved to work with their international partners to convene the next MDCC Forum in November 2010.

#### CONDUCT A COMPREHENSIVE DELTA WIDE BASELINE STUDY

MONRE's Minister Nguyen called for a better understanding of the extent of climate change in the Delta and its impacts on sectors, areas and communities. Also, he observed that: "...current research on potential solutions for the Mekong Delta is not sufficient". While parts of the Delta have been subject to climate change and hydrological modelling, there has been no Delta wide study to bring a consistent approach by all provinces. Impact and vulnerability assessment too has been piecemeal and a concerted effort is required so that overall priorities for action can be identified and limited resources more focussed on the most important adaptation requirements. An integrated and strategic baseline assessment for the Delta is still needed (12).

Some studies and initiatives are in the pipeline which can contribute to a Delta wide assessment. They are:

- The MONRE, ADB and AusAID '*Mekong Delta Climate Change Impact and Adaptation Study*'. The objective is to increase the capacity of sectors and provincial authorities in the Mekong Delta to improve the climate-resilience of future development programs, plans and policies (25).
- The MRC *Climate Change Adaptation Initiative* (5). The CCAI will guide climate change adaptation planning by improved strategies and plans at various levels, with one of the pilots in Kien Giang. It will develop capacity and tools to improve planning and integration in existing development plans. Lessons learned will be replicated in the region.
- The Australia Centre for Agriculture Research (ACIAR), together with Can Tho University and the Cuu Long Rice Research Institute, is proposing research on climate change adaptation in rice-based cropping systems.
- The World Bank intends to take a strategic approach to its climate change support in the Delta, in particular linked to the Bank's and Vietnamese Government's investments.
- GTZ, AusAID and the Danish Government will support pilot provinces in conducting climate change assessments and in preparing adaptation plans.

The various planned initiatives need to be coordinated and to feed into a better supported Delta wide climate change assessment. Initial results of this coordinated effort should be reported back to the 2010 MDCC Forum.

Various presentations identified necessary elements of the baseline study including:

- Assessing a diverse range of change scenarios of the climate and hydrological system;
- Defining impact of climate change in the local context, i.e. identifying which areas and communities might be affected and how;
- A holistic view of impacts, i.e. recognising that adaptation efforts will influence and change the nature and extent of climate change impacts and taking those future actions and developments into account;
- The changes in future socio-economic conditions – climate change is only one of the forces shaping the Delta. Many developments, from dams, roads, ports, to social changes such as migration patterns and population growth will affect impact and vulnerability. The Delta wide baseline study needs to project forward the socio-economic conditions under different development scenarios to future timeframes, so that estimates of impacts and vulnerability are built on the basis of well defined and transparent assumptions.

#### PREPARE A MEKONG DELTA REGION CLIMATE CHANGE ADAPTATION AND MITIGATION PLAN

The National Target Program to Respond to Climate Change sets guidelines for integrating climate change issues at national, provincial level and city level. However, as the 13 provinces in the Mekong Delta have many

characteristics in common and will experience similar impacts from climate change, a concerted approach is required for the Delta region. The Forum Technical Session A concluded: “Climate change adaptation planning for the Delta cannot be confined within a sector or within a province. It needs to be multi-sectoral, and to cross provincial borders”. This is one of the many statements in favour of preparing a Delta wide regional climate change plan to provide the framework of baseline information and priorities against which all Delta provinces can prepare and review their specific action plans

Some of the guiding principles and issues to be addressed for a Delta wide plan were suggested by participants including:

#### **SOME PRINCIPLES:**

- Rehabilitate and maintain natural flexibility and resilience (21);
- Expand and maintain natural systems for greater stability and resilience (21);
- Treat climate change adaptation as a dynamic process in which multiple solutions are both flexible and adaptive (12);
- Integrated coastal area and watershed management taking an ecosystems approach to provide the foundation for climate change adaptation planning and for building resilience (28). In general, good integrated spatial planning for vulnerable areas holds the key to successful adaptation;
- Promising approaches use natural ecosystem defences to buffer livelihoods and development (29);
- Seek “win-win” approaches which deal with adaptation and mitigation together.
- Adaptation measures should have equitable outcomes and support poverty reduction goals.

#### **SOME INGREDIENTS:**

A Delta wide climate change action plan will need to:

- Set priorities for action in terms of areas/locations/communities and sectors;
- Provide short term and long term priorities and suggest a phasing of action;
- Clearly identify uncertainties and underlying assumptions and set ranges of possible outcomes;
- Identify where gaps in research and understanding remain which need to be filled before certain developments proceed – but also identify where actions are required despite the uncertainties.
- Provide an integrated framework for all development sectors and provincial socio-economic plans.

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### **PRIORITIES FOR ACTION**

Participants highlighted some fields in which urgent action is required including:

- Big urban areas are expanding without sufficient climate change inclusive planning. New urban construction in Can Tho and Ho Chi Minh City is foreseen in increasingly flood prone areas. Major road infrastructure, water supply and treatment facilities, industrial zones and other developments are proceeding without climate change considered.
- Population densities and numbers are increasing in vulnerable areas – with a disproportionate number of poor people concentrating in coastal areas subject to sea level rise, saline intrusion and storm surges.
- Many dykes and hydraulic structures exist, are being constructed or are planned in the Mekong Delta. All these new structures need maintenance and substantial continuing investment. At present maintenance is not adequate to keep current infrastructure in good shape. Also, the effects of infrastructure on natural systems and its overall effectiveness in moderating the impact of regular and extreme climate needs to be monitored. The government commitment to the “living with floods” concept needs to be more fully explored and expressed in practice. Engineering responses to climate change should only be one element in an integrated approach involving economic and social policies, spatial planning, safeguards and natural systems management and rehabilitation.

- Similarly, an assessment of the nature and extent of coastal forest rehabilitation needed to combat natural disasters and climate change is required: deforestation continues at a pace and scale well beyond reforestation effort. The effectiveness of coastal forests in moderating climate needs to be studied.
- The Mekong River flow and overall hydrology is not only influenced by climate change. Many forms of development change and shape the natural patterns, especially the construction of hydropower dams upstream in the main Mekong River and its tributaries. For example, the existing and planned dams in Yunnan Province China and in Vietnam's Central Highlands will take up to 80% of the sediment reaching the Delta with major implications for settlements and economic sectors, especially agriculture and fisheries. The interaction between such development impacts and climate change needs to be studied.
- Natural resources based sectors at local level – such as DONREs and DARDs are well aware of the threats of climate change. They support the idea of studying the consequences and for planning and action. Other sectors (e.g. water supply, energy, transport) are not so aware of the imperatives and not as committed to action.

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### STRENGTHEN COORDINATION, COOPERATION AND COLLABORATION

*“No single province, government institution, national or international organisation can solve the problems arising from the effect of climate change. The huge challenges ahead require close cooperation and collaboration and a joint spirit of all stakeholders” (19).*

Many participants stressed the importance of coordination and cooperation in tackling climate change in the Delta, for example:

- the PPC of Can Tho, in the opening speech, calling for stronger cooperation, and support from foreign partners and international institutions;
- MRC (5) pointing to the importance of the four Lower Mekong Countries working together to address climate change;
- the Dragon Institute, Can Tho University urging stronger collaboration between scientists and research institutes on studies and action to support policy makers and local government (27);
- The World Bank (14) stressing the need for consultation with provincial and local governments and for strengthened partnerships between donors and NGOs, and
- ADB (6), pointing out that trans-boundary cooperation (i.e. between provinces and countries) as well as coordination of sector agencies at national level needs to be strengthened.

#### THREE INITIAL STEPS TO PROMOTE COORDINATION:

- (i) Commitment to annual meetings of the MDCC Forum is a critical first step in setting in place coordinating structures and procedures in the Delta;
- (ii) Another step might be the establishment of a Mekong Delta climate change Technical Working Group to bring research institutes and practitioners together to share methods, information and lessons for climate assessments and planning;
- (iii) A third step is donor collaboration and support to government in conducting the Delta wide baseline study of climate change extent, impacts and vulnerabilities.

In general, ways of implementing the Paris Declaration on Aid Effectiveness in the Delta need to be defined to support ownership by the Vietnamese Government, alignment of donor institutions with the Vietnamese strategies and objectives, and harmonisation between donor programs as basic guiding principles. The World Bank and ADB indicated they will review their regulations to facilitate easier access to technical support and funding for climate change adaptation for provincial and local levels in the Mekong Delta.

## BUDGET FOR CLIMATE CHANGE ADAPTATION

Adaptation and mitigation needs ample financial resources as part of the normal government budgeting process. Sectors and local government agencies – and provincial PPCs need to be consistent and systematic in calling for comprehensive and adequate budgeting for adaptation from central level. Also, they need to adjust their own budget priorities and make climate change a central theme in their activities. Agencies and local government should not wait for or rely on international support in taking adaptation action. They should act by using domestic resources and capacities.

Central Government should take a leading role in labelling budgets for climate change in consultation with line Ministries and local government authorities, as part of the regular consultation and negotiation on annual budgets involving the Ministry of Planning and Investment and the Ministry of Finance. In the medium term this will require reorientation of sector and local government socio-economic plans to give climate change central recognition.

In terms of international financing, MONRE Minister Nguyen expressed the need for clear commitments from the donor's side on funding, where necessary specific funding mechanisms for climate change and indirect funding through technology transfer and research. These contributions should be in line with the national priorities. Contributions of Annex 1 countries of the Kyoto Protocol have not yet lived up to the expectations. The Danish Ambassador underlined that industrialized countries must take the initiative and provide upfront financing for adaptation for the poorest and most vulnerable countries and communities. Bilateral and multilateral donors and development organisations present at the MDCC Forum already contribute to the development and climate change agenda in Vietnam.

## INTEGRATE ADAPTATION AND MITIGATION IN RESPONDING TO CLIMATE CHANGE

Several participants pointed out that adaptation makes economic sense, particularly if integrated with mitigation (8). From a worldwide perspective, Southeast Asia has the largest mitigation potential, especially in the energy, agriculture and forestry sectors. MOIT (11) pointed to the challenges and opportunities of low carbon, clean technologies which are still costly and innovative, requiring significant adjustments in industry and other sectors. Already, CDM initiatives are being taken in Vietnam. For example, ADB (15) invests in more efficient power production and transmission and in clean energy; Ho Chi Minh City is investing in an urban mass rapid transit systems to offset the use of private cars and motorbikes. Mangrove rehabilitation (18, 19, 28) and rice-based cropping systems research (20) are also examples of integrated adaptation and mitigation responses.

Those are first steps, but concerted implementation is required of the Declaration on Climate Change, Energy and Clean Development (Sydney, 2007) and the decisions taken in Bali, later that year. Those agreements set broad targets on reduced energy and increasing forest cover. Sustainable forest management plays an important role in mitigation and adaptation. Addressing mitigation with adaptation together can open the door to substantial international funding available for mitigation strategies.

## JOINT SUMMARY STATEMENT

The first Mekong Delta Climate Change Forum was closed by the Minister of MONRE, who presented the Joint Summary Statement (Annex 4), as endorsed by the six organising parties: the Office of Government, MONRE, the Australian and Danish Ambassadors, ABD and the World Bank. It was concluded that the next Forum, scheduled for November 2010, is a good moment to review progress in adaptation planning and action as indicated in the Summary Statement.

## 1. INTRODUCTION

### 1.1 BACKGROUND

The Government of Vietnam convened a high level meeting to discuss the shared, urgent challenges facing the Mekong Delta provinces as a result of climate change. The *Mekong Delta Climate Change Forum* (MDCC Forum) was held for the first time in Can Tho City over two days, 12 to 13 November 2009. The Forum was part of Vietnam's preparations for the 2009 United Nations Climate Change Conference (COP15) in Copenhagen starting 17th December. COP15 helped shape an international agreement for collaborative action to mitigate and adapt to the many problems the world is facing due to climate change.

The Mekong Delta Climate Change Forum is to be conducted annually and brings together representatives from the Central Government and Mekong Delta provincial governments, sector agencies, research institutions, civil society, donors and other international development agencies in Vietnam.

The MDCC Forum was an initiative of the Office of Government and the Ministry of Natural Resources and Environment (MONRE). Both Ministers, Nguyen Xuan Phuc and Pham Khoi Nguyen, the Ambassadors of Australia and Denmark in Vietnam, Allaster Cox and Peter Lysholt Hansen, the Asian Development Bank Director in Vietnam Ayumi Konishi and World Bank representative Hoonae Kim chaired Forum sessions and actively participated in the preparation and implementation of the event. The Forum was received by the Chairman of the Can Tho People's Committee (PPC) Tran Thanh Mau.

### 1.2 FORUM OBJECTIVES

Co-organized by the Vietnam Office of Government and MONRE, the Forum was to identify and discuss climate change impacts and adaptation challenges facing development sectors, provinces and communities in the Mekong Delta. Experiences were presented by specialists in agriculture, fisheries, water supply and treatment, energy, transportation and urban and land use planning. Based on progress made to date in climate change assessment and adaptation in the Mekong Delta, the Forum was to provide a strong basis for future research, planning, implementation and collaborative partnerships.

### 1.3 AGENDA

The Forum was conducted over one and a half days. The first day consisted of the Opening Session and three Plenary Sessions. On the second day there were three parallel Technical Sessions with outcomes presented to the Plenary, followed by the Closing Ceremony. The Forum agenda appears as Annex 1. The MDCC Forum was convened at Can Tho People's Committee Head Quarters Conference Room.

During the first day, plenary sessions provided an overview of Vietnamese participation in climate change negotiations, the integration of climate change into national sectoral development plans and plans for the Mekong Delta and global experiences. The topics covered during the second day were climate change and its relation to:

- A. Natural Resources, Environment, Agriculture, Fisheries and Water;
- B. Infrastructure and Urban Planning;
- C. Experience in adaptation.

Participants were given 15-20 minutes for their presentations, followed by 10-15 minutes of questions and discussion at the end of each session.

The full power point presentations appear in Volume II to this report. Abstracts of the presentations and bio-data of presenters are to be found in Annex 5. In Volume III the posters presented during the Forum appear.

#### 1.4 PARTICIPANTS

The MDCC Forum was attended by around 270 participants. Amongst the attendees were:

- High-level leaders and representatives from four Central Government offices, i.e. the Office of Government, the Office of the President, the Central Communist Party Office and the Office of the National Assembly.
- More than 50 leaders and representatives from Central and local Ministries such as MONRE, MARD, MOIT, MOT, MOC, MOH, MPI and MOF.
- Leaders and representatives of the Communist Party, including the Chairman and the Secretary of the Can Tho People's Committee, and the 13 Mekong Delta provinces (100 persons).
- Scientists and researchers from central research institutes, such as IMHEN and SIWRP, as well as from the Mekong Delta region, including the Institute of Irrigation Planning, the Sub-IMHEN Southern Region Institute, the Dragon Institute and the Institute of Mekong Delta Development (20 persons).
- The Ambassadors of Australia and Denmark and high-level management and senior officers in environment, development and climate change sectors of international organisations, including the Australian Agency for International Development (AusAID), the Danish International Development Agency (DANIDA), the World Bank, the Asian Development Bank, the Mekong River Commission (MRC), the United Kingdom Department for International Development (DFID) and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).
- Approximately 40 representatives from International Non-Governmental Organizations (INGOs) in environmental protection and community development, including Care International, Worldwide Fund for Nature (WWF) and Oxfam. The INGO's Climate Change Working Group also attended.
- Central media, including VTV1 and VTV2, Communist and Government website representatives, sector newspapers and other media in the Mekong Delta region attended the press conference, held directly after the Forum concluded.

The full participants list appears in Annex 2.

#### 1.5 OPENING SPEECHES

The welcoming speech was given by the Chair of Can Tho PPC Mr Tran Thanh Man, followed by opening speeches by Minister and Chief of Office of Government Nguyen Xuan Phuc, Minister of MONRE Pham Khoi Nguyen, Vice-Chair of the South West Steering Committee Luu Phuoc Luong, the Australian Ambassador to Vietnam, Allaster Cox, Danish Ambassador to Vietnam, Peter Lysholt Hansen, ADB Vietnam Country Director Ayumi Konishi and World Bank's Hoonae Kim. The keynote speech was given by the Danish Ambassador on preparations for the COP15 event in Copenhagen.

The full speeches are presented in Annex 3. Summaries of speeches and discussions are provided in the following sections.

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## CHAIR OF CAN THO PPC

Can Tho City is honoured to host the first Forum on Climate Change in the Mekong Delta and the Chair of the City People's Committee Mr Tran Thanh Man welcomes all to Can Tho. Can Tho and the Delta have played a critical role in the socio-economic development of the country. Climate change is threatening that role as the city, typical for the Delta, is situated in a low-lying area and thus is most vulnerable to climate changes such as sea level rise. Over the past 30 years, Can Tho already experienced the effects of climate change and forecasts suggest that the worst is yet to come. Scientists have recommended that construction works in Can Tho should be built with foundations of 2.5m higher than the national standard - an infeasible task as limited soil is available – so what is the solution? Developing wisely can be difficult when local people have immediate needs including a place to live and sustainable livelihoods. Yet, there is little doubt that fewer people will find employment or safe living conditions under the severe risks depicted in the climate models.

The Chair proposes a Delta wide Approach including: "... stronger cooperation, more efforts, brains and finance from the Central Government, support from foreign friends and international organisations, so that such results of research on climate change adaptation can be mainstreamed into socio-economic development plans and transformation of the local 'brown economy' into a 'green' one in the future can be achieved". Realizing the significance of the problem, in 2008, Can Tho established a Climate Change Steering Committee. The Chair calls on the Forum to discuss, analyse and suggest proactive and highly feasible measures to help the Mekong Delta provinces to deal with this pressing challenge.

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## MINISTER, CHIEF OF OFFICE OF GOVERNMENT

The Minister and Chairman of the Office of Government, Nguyen Xuan Phuc, highlighted that the Government of Vietnam treats climate change as a priority issue and an important responsibility of all arms of government. The Forum objective is to raise awareness among the general public and government offices about the impact of climate change, to gain commitment and obligations from them and to strengthen international collaboration in natural disaster mitigation and adaptation to the threats of climate change.

Appreciating the impact of climate change, the Government of Vietnam has actively participated in international negotiations from the earliest stages and approved the United Nations Framework Convention on Climate Change and Kyoto Protocol. The Prime Minister has issued Decision No 158/QD-TTG to approve the *National Target Program to Respond to Climate Change* (NTP-RCC or NTP). It is one of the most important initiatives to provide a systematic and comprehensive response to climate change and to promote sustainable development in Vietnam, in collaboration with the international community.

One of the key points of the NTP is that climate change is a sustainable development issue - not only an environmental or single sector issue. The community, decision-makers and high-level leaders should all understand its implications for their fields and responsibilities. Responses to climate change should be practices in the principles of sustainable development: integration, inter-sector collaboration, inter-regional working, capacity building, awareness raising and participation of society, Communist Party and community.

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## MINISTER OF MONRE

In his opening statement, MONRE Minister Pham Khoi Nguyen stated: "The consequences of climate change in Vietnam are serious and present significant threats to hunger eradication and poverty reduction, achievements of the Millennium Development Goals, and the country's sustainable development". He noted that there is a need for better understanding of what is driving climate change, as well as for better access to and sharing of information and experiences related to it. The Minister called on all levels of government and the international community to work together in an integrated way so that concerted actions could be taken to mitigate and adapt to the threats.



The Minister also referred to the Government's NTP - a seven-year climate change work program including modelling to analyse impacts on the economy and environment. A key NTP implementation activity has been the first description of the climate change and sea level rise scenarios for Vietnam. The scenarios have been officially published and serve as a foundation for Ministries, sectors and local authorities in assessing the scope and level of climate change impact relating to their respective responsibilities. It is also a guiding document to develop and implement action plans in climate change mitigation and adaptation. The NTP identifies the Mekong Delta as a priority region for planning and implementation of mitigation and adaptation measures.

MONRE calls on the Forum to convey important messages and develop a road map for joint actions. All ideas and comments will be welcomed, listened to, documented and serve as basis for future actions.

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#### VICE-CHAIR SOUTH WEST STEERING COMMITTEE

Vice-Chair of the South West Steering Committee, Luu Phuoc Luong stressed that climate change is a global threat but the Mekong Delta will be among the regions most seriously impacted. Climate change is happening and cannot be avoided. Mekong Delta people have to face this challenge.

Both human and financial resources are needed for the development and implementation of adaptation. This Forum is a very good opportunity for local authorities and scientists to exchange knowledge and information on possible solutions. Can Tho PPC will support the Forum to become an annual event.

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#### AUSTRALIAN AMBASSADOR TO VIETNAM

"Australia believes that climate change defines a moral challenge", said the Australian Ambassador Allastar Cox. "It threatens our communities, our economies and our way of life". Australia, Vietnam and the world stand at critical junctures in the strategies to tackle climate change. It is only one month away from the meeting in Copenhagen and we need to act now. The cost of inaction is greater than the cost of action: long-term costs will be 15 per cent higher than taking actions now. Vietnam, as incoming chair of ASEAN and a member of the UN Security Council, has an important role to play and the opportunity to use its influence to place climate change high on the regional agenda for continuing action. Climate change work will not stop in December 2009.

The Mekong Delta is the food basket of Vietnam and produces 80 per cent of the rice for export. According to Government of Vietnam predictions almost 40 percent of the land will be inundated with 1m of sea level rise by 2100. The Delta is home to 22 per cent of the population of Vietnam and climate change will affect individuals and communities who have the least ability to respond and adapt. As a first step, AusAID will fund a '*Mekong Delta Climate Change Impact and Adaptation Study*'. The objective is to increase the capacity of sectors and provincial authorities in the Mekong Delta to improve the climate-resilience of future development programs, plans and policies. The Australia Centre for Agriculture Research (ACIAR) is providing a fund of US\$3.5 million for research on rice-based systems partnering with Can Tho University and the Cuu Long Rice Research Institute. Outcomes of this Forum can be input in the design and objectives of these projects.

Australia recognizes that finance is important. It contributes to a large number of world-wide initiatives and funds. The Australian Government is intent on promoting response to climate change in the region. It is strongly committed to working with Vietnam in dealing with climate change, with a special focus on the Mekong Delta.

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#### DANISH AMBASSADOR TO VIETNAM

The Danish Ambassador, Mr Peter Lysholt Hansen, pointed out that Vietnam is one of the few developing countries where the Government has taken urgent, quick actions to respond to climate change – “The Government is on the way”. The challenge now is for the World Bank, Asian Development Bank and other donors to ensure that the development undertaken is within the framework of Vietnam’s National Target Program.

It is less than a month from the COP15. Negotiations have been ongoing for two years and progress is painfully slow. The clock is ticking and the world is watching. The challenge is to bring the political will to Copenhagen and address tough questions. For developed countries this relates to mitigation actions and for developing countries transparency and adaptation.

Industrialized countries must provide support to the poor and most affected countries. It is unfair that those who contributed the least to the current situation should face the most hardships. If we take action now, we have the possibility of controlling events. If we don’t, events will control us. The challenge is to manage the unavoidable and avoid the un-manageable. Climate change demands urgent actions; weak institutions and lack of finance makes action difficult.

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#### ADB VIETNAM COUNTRY DIRECTOR

Country Director of the Asian Development Bank, Ayumi Konishi, used a fable to imply that too much discussion and a lack of a shared focus on the most important tasks will delay adaptation action. Vietnam, however, has made tremendous progress by having prepared the National Target Program to Response to Climate Change and ADB is eager to work with Vietnam in its implementation.

ADB, for its part, has adopted a new long term strategic framework towards year 2020, called *Strategy 2020*. It mainstreams ADB’s support to developing Member Countries in their efforts against climate change challenges. In Vietnam, ADB is committed to incorporating climate proofing in all future investments and, through that effort, to work together with other parties. ADB is here to help, as the issue is so important for the future of Mekong Delta and for the future generations not only in this country but on this entire planet.

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#### WORLD BANK SECTOR MANAGER SUSTAINABLE DEVELOPMENT PROGRAM

The World Bank is honoured to be a co-sponsor of this event. One month ago the World Bank issued its latest World Development Report called *Development and Climate Change*. One central message is that climate changes are occurring and if we “Act Now, Act Differently and Act Together”, we can still do something about it. One third of the Bank’s current program in Vietnam of US\$5 billion already supports activities directly or indirectly affected by climate change. The Bank has substantial investment activities in the Mekong Delta, one of the regions most vulnerable to climate change.

The World Bank strives to support the Government of Vietnam in adaptation and mitigation efforts; and working closely with other development partners and communities is critical. The World Bank’s role is to share knowledge and bring to Vietnam best technology and research on climate change action. This Forum is therefore considered important for bringing together all stakeholders to discuss this important agenda. The Bank hopes that regular Mekong Delta Forums will provide a vehicle for continued discussions and collaboration with the Government, provinces, communities and development partners in responding to climate change.

## KEYNOTE ADDRESS “THE ROAD TO COPENHAGEN - PREPARATION FOR COP15”

The aspiration for Copenhagen, according to the Danish Ambassador to Vietnam, is to agree on an ambitious and politically binding agreement that will limit global warming to a maximum of two degrees. Negotiation has been painfully slow, but there is a political will to move forward. It is really unfair that those who have contributed the least to the problem should face the most severe consequences. The industrialized countries must take the lead and provide the upfront financing for adaptation for the poorest and most vulnerable countries. China and India are getting recognition for what they are already doing.

The Danish Government continues to do its utmost to secure such an ambitious and politically binding agreement in Copenhagen. The key issues to be agreed on in Copenhagen are:

- i. Reduced emission targets for the industrialized countries;
- ii. Commitment to actions for the developing countries;
- iii. Finance, including up-front financing;
- iv. Development of adaptation technology and capacity building, and
- v. A system for Measurement, Reporting and Verification (MRV) – ensuring transparency and accountability.

This is an unprecedented momentum on climate change and we need to seize this opportunity.

## 2 PRESENTATIONS AND DISCUSSION

### 2.1 OVERVIEW

Following the opening speeches there were three sessions of plenary presentations during the first day of the Forum. The second day of the Forum had three parallel Technical Sessions. Table 1 lists presentations in order of appearance in the Forum program.

In each session the presentations were followed by a round of questions, comments and discussion. The Technical Sessions on the second day led to an overview of key points and recommendations presented back to the Plenary.

**Table 2: Overview of presentations.**

| No.  | Presenter        | Title   |
|--|------------------|---|
| <b>Plenary: Climate Change Convention Negotiations</b>         |                  |   |
| 1  | Tran Thi Minh Ha | Climate Change and the Participation of Vietnam in the Negotiation Process        |
| 2  | Tran Thuc        | Climate Change in Vietnam and Response  |
| 3  | Claire Ireland   | Integrating Climate Change into Development Sector Plans and Programs             |
| 4  | Douglas Graham   | Climate Change: Global Perspectives and Relevance for the Delta                   |
| 5  | Jeremy Bird      | Mekong Climate Change and Adaptation Initiative and the Mekong River Commission   |
| 6  | Juzhong Zhuang   | The Economics of Climate Change in Southeast Asia: A Regional Review              |
| 7  | Pham Chanh Truc  | Climate Change Issues in the Mekong Delta Region                                  |
| <b>Plenary: National and Mekong Delta Climate Change Plans</b> |                  |   |
| 8  | Le Cong Thanh    | National Target Program of Vietnam to Respond to Climate Change                   |
| 9  | Nguyen Binh Thin | Climate Change Adaptation Actions of the Agriculture and Rural Development Sector |

| No.  | Presenter         | Title  |
|--|-------------------|--|
| 10   | Le Thi Thu Hien   | Climate Change and Health: Challenges and Response Plan  |
| 11   | Nguyen Van Thanh  | Draft of Ministry of Industry and Trade's Action Plan to Respond to Climate Change (AA-CCR) and Challenges                     |
| <b>Plenary: Threats of Climate Change to the Mekong Delta</b>                                |                   |  |
| 12   | Anond Snidvong    | Climate Change Threats in the Mekong Delta: Case Studies and Knowledge Gaps Toward Climate-Resilience Development              |
| 13   | Nguyen Xuan Hien  | Water Resources Planning and Climate Change in the Mekong Delta  |
| 14   | Hoonae Kim        | World Bank Support to Climate Change Resilience of the Mekong Delta  |
| 15   | Ayumi Konishi     | ADB's Climate Change Related Interventions in Vietnam  |
| <b>Technical Session A: Natural Resources, Environment, Agriculture, Fisheries and Water</b> |                   |  |
| 16   | Nguyen Van Khoi   | Trends, Natural Disasters and Potential Impacts of Climate Change on Aquaculture Sector of Soc Trang Province                  |
| 17   | Do Vu Hung        | Trends, Natural Disasters and Potential Impacts of Climate Change, and Experience of An Giang                                  |
| 18   | Thai Thanh Luom   | Climate Change, Coastal Protection, Tourism and Nature Conservation in Kien Giang  |
| 19   | Lazlo Pancel      | Climate Change Relevant Engagement of German Technical Cooperation in the Southern Mekong Delta                                |
| 20   | Geoff Morris      | Research for Climate Change Adaptation in Rice-Based Cropping Systems  |
| <b>Technical Session B: Infrastructure and Urban Planning</b>                                |                   |  |
| 21   | Jeremy Carew-Reid | HCMC Climate Change Impact and Adaptation Study  |
| 22   | Ky Quang Vinh     | Can Tho City Climate Change and Urban Planning   |
| 23   | Nguyen Xuan Hien  | Climate Change and Socio-economic Development in Ca Mau Province   |
| 24   | Nguyen Van The    | Transport on Land and Water: Trends, Natural Disasters and Potential Effects of Climate Change - Dong Thap Province experience |
| 25   | Jeremy Carew-Reid | The Mekong Delta Climate Change Impact and Adaptation Study  |
| <b>Technical Session C: Experience with Adaptation</b>                                       |                   |  |
| 26   | Le Minh Nhat      | Natural Disaster Management in the Context of Climate Change   |
| 27   | Le Anh Tuan       | Agriculture, Rice Production and Climate Change: Methods and Lessons from the Mekong River Delta, Vietnam                      |
| 28   | Klaus Schmitt     | Management of Natural Resources in the Coastal Zone of Soc Trang Province  |
| 29   | Trine Glue Doan   | Community Development Experience in Climate Change Impacts and Adaptation - Methods and Lessons from the Mekong Delta          |
| 30   | Truong Duy Hai    | Climate Change Adaptation Plan of Ben Tre Province   |

## 2.2 CLIMATE CHANGE CONVENTION NEGOTIATIONS: GLOBAL EXPERIENCE AND VIETNAM'S SCENARIOS

The purpose of this session was to outline the international conventions on climate change and the climate change scenarios which have been adopted for Vietnam. The Co-chairs were the Minister and Chairman of the Office of Government, Nguyen Xuan Phuc, the Minister of MONRE, Pham Khoi Nguyen and the Deputy Chairman of the Central Party Office, Nguyen Huu Tu.

### 1. CLIMATE CHANGE AND VIETNAM'S PARTICIPATION IN THE NEGOTIATIONS

**Tran Thi Minh Ha**, *Director General International Cooperation Department of MONRE*

The presentation outlines the UN Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and their implementation in Vietnam, and the position of Vietnam on and its preparation for the COP15 meeting in Copenhagen, December 2009.

Vietnam ratified the UNFCCC in 1994 and the Kyoto Protocol (KP) in 2002. Not being listed in Annex I of the KP, Vietnam is not obliged to reduce GHG emissions but still needs to carry out its "common responsibilities". For implementing UNFCCC and KP, Vietnam has appointed MONRE as the focal point, established a Steering Committee in 2007, and issued a number of legal documents. The key activities undertaken include: (i) completion of the first country report submitted to UNFCCC Secretariat in 2003, (ii) preparation the second country report, expected to be completed in 2010, (iii) signing MOUs on CDM with JBIC, WB, and Austria, and (vi) making country inventories of GHG emissions in 1994, 1998, 2000 in the energy sector, for industrial processes, agriculture, forestry, waste and for changes in land use.

There is a large difference in views among the countries, especially between developed and the developing countries relating to adaptation and mitigation responsibilities. Many countries are concerned about removing institutional and political barriers to achieving commitments under the KP. Developed countries do not seem to be taking the lead in reducing GHG emissions. Developing countries are (i) pointing to this failure of Annex I countries, (ii) negotiating use of climate change adaptation funds from developed countries as non-refundable aid, and (iii) requesting developed countries to transfer new technologies at cheaper prices. Five newly emerging economies, including China and India, now request the developed countries to reduce their emission by 40% in 2040. Developed OECD countries admit their disappointment with the achievements under the KP; but without clearly acknowledging their responsibilities for the current situation.

Vietnam's position at COP 15 will be:

- Protecting national interests and the legitimate and common interest of developing countries (i.e. the right to development);
- Requesting countries to reduce emissions as committed under the KP. Countries with large emissions must commit to reductions;
- Adaptation actions must be carried out by all countries for their own survival. Developed countries must support developing countries to adapt to climate change;
- In developed countries commitment for reduction must be based on a clear financial basis and technology transfer as mentioned in the Bali Action Plan (BAP);
- For developing countries, access to cleaner technologies require technology transfer agreements and financial support;
- Strong regional centres are needed for country capacity building;
- The common position and principles that guide implementation of BAP need to be well reflected in the approved action plan;
- The KP needs to be maintained but amended so that countries with large emissions are committed to reducing GHGs emissions, and
- Vietnam is committed to cooperating with the international community to combat climate change and to develop a sustainable economy with limited carbon emissions.

## 2. CLIMATE CHANGE IN VIETNAM AND RESPONSE

**Tran Thuc, Director General, Institute of Meteorology, Hydrology and Environment of MONRE**

This presentation provides a summary of climate change in Vietnam, the action Vietnam is taking and the possible future scenarios.

Data presented by MONRE show that recent climate change in Vietnam has resulted in a mean annual temperature rise of 0,5°C over the last 50 years, more rain from September to November, heavier rains causing more frequent flooding in the central and southern part of the country, less rain in July-August, more droughts and more typhoons with high intensity. Typhoons pass more southward and come later in the year. There are more drizzly days and extreme off season rainfall occurs more frequently. There are fewer cold fronts in the North and less cold spells. More heat waves occur in the Central-South of the country. The average sea level rise has been estimated at 3 mm/year. The most vulnerable sectors to climate change are water resources, agriculture, food security and public health. The most vulnerable areas in Vietnam are the deltas and coastal areas.

Climate change impacts to Vietnam are serious, and a challenge to hunger eradication and poverty reduction, the Millennium Development Goals, and the country's sustainable development. Therefore the Vietnamese Government is working strongly to implement its NTP-RCC. In 2009 a set of scenarios were defined based on existing studies for sectors, cities and provinces to plan actions to respond to climate change, with a strong focus on sea level rise. In 2010 an update of the scenarios will be prepared for 2010-2050 on a solid scientific and practical base. In 2015 another update will be prepared on the latest available data.

Scenarios for greenhouse gas emissions are based on global development, population growth, per capita income, consumption patterns, technological changes and land use changes. When combined, they result in a large number of future options. For Vietnam climate change and sea level rise scenarios have been developed based on three IPCC emission scenarios: low emissions (B1), medium emissions (B2) and high emissions (A2). The medium scenario - B2 - has been recommended by the Government as the basis for climate change impact assessment and action plan development. B2 means: an expected mean temperature rise of 2.3°C during this century, increasing faster in the northern part of the country and during winter. Both annual rainfall and rainy season rainfall will increase, while dry season rainfall will decrease. Sea level is estimated 30cm to 2050 and 75cm in 2100. This will cause inundation of 23% of Ho Chi Minh and 38% of the Mekong Delta.

## 3. INTEGRATING CLIMATE CHANGE INTO DEVELOPMENT SECTOR PLANS AND PROGRAMS

**Claire Ireland, Environment Advisor of AusAID**

Climate change integration can be defined as “informed inclusion of climate change concerns into the decisions of institutions that drive national, local and sectoral development policy, rules, plans, investments and actions”. Climate change issues should be considered as early as possible in the decision making process. To safeguard investments in any sector, climate change itself should not be made worse. Investments should be climate-proofed. The risks posed by climate change to the success of the project or program need to be analysed from the earliest planning stages. Investments should increase the adaptive capacity and resilience of target populations.

Based on past experience, Australia has developed a new *Environment and Climate Change Strategy* to frame aid investments in building resilience, greening growth, developing sustainable livelihoods and integration. This is an AusAID wide initiative, in supporting partner governments, in sector programs and through engagement in the international policy agenda. Priorities for action include:

- a. Making climate change risk profiles at all levels: local, sectoral and national;
- b. Integrating adaptation in development plans;

- c. Establishing the critical issues for investment with limited resources available. Don't rush into large investments in adaptation until its effects are fully assessed;
- d. Ensuring the focus remains on people's livelihoods;
- e. Understanding the growth and development implications of future carbon constraints.

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#### 4. CLIMATE CHANGE: GLOBAL PERSPECTIVES AND RELEVANCE FOR THE DELTA

**Douglas Graham**, *Environment and Social Sectors Coordinator of World Bank Vietnam*

On adaptation the World Development 2010 Report *Development and Climate Change* says: prepare for extreme events, integrate risk management into development plans, invest in information, share risks and consider alternatives. On the mitigation side it focuses on the reduction of energy intensity, investment in renewable energy, the protection of forests and building climate smart cities. It also estimates the annual costs of adaption in developing countries towards 2030 at US\$75-100 billion. A specific cost study on Vietnam will be presented in a World Bank publication in 2010. Adaptation needs to impact planning at all levels, and adaptation will be expensive! Much depends on the success of mitigation.

As an example, recommendations are shown from a study on actions to respond to climate change in Bangkok, which include:

- a. Incorporate systematically the possible impacts of climate change into city planning;
- b. Control land subsidence more critically;
- c. Dykes need to be raised, capacity of pumps increased and drainage improved;
- d. Coastal erosion measures need to be undertaken urgently;
- e. Enhance early warning and disaster response capacity;
- f. Put in place a flood insurance system.

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#### 5. MEKONG CLIMATE CHANGE AND ADAPTATION INITIATIVE AND THE MEKONG RIVER COMMISSION

**Jeremy Bird**, *Chief Executive Officer of the MRC Secretariat*

This presentation describes major threats and risks of climate change impacts for the Lower Mekong Basin in a trans-boundary context. It provides some results of initial work by the Mekong River Commission (MRC) Secretariat on climate change modelling and its relationship with other development scenarios in the basin.

The Mekong Climate Change Adaptation Initiative (CCAI) is an initiative from MRC. All four countries, Vietnam, Cambodia, Laos and Thailand, are involved and it has a life span of 15 years. It is intended to guide climate change adaptation planning by improved strategies and plans at various levels and priority locations throughout the region. Adaption planning and implementation (e.g. relating to water availability and quality, increased risks of extreme events, loss of local ecosystems and biodiversity, disruption of local economies and societies, climate migration) is piloted at local and sector level and basin wide, and lessons learned will be fed back into the program. Capacity and tools for planning will be improved. Finally, adequate strategies and plans will be in place and integrated with appropriate implementation plans, all through regional (i.e. international) cooperation, exchange and learning. In Vietnam, Kien Giang province was selected by the national partners for piloting, linked to the NTP. Lessons from the adaptation and implementation planning at the CCAI at Kien Giang will be up-scaled and replicated for other deltas and in the region.

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#### 6. THE ECONOMICS OF CLIMATE CHANGE IN SOUTHEAST ASIA: A REGIONAL REVIEW

**Juzhong Zhuang**, *Assistant Chief Economist, Economics and Research Department at ADB*

South-East Asia is one of the most vulnerable regions in the world when it comes to climate change. Without global action, 6,7% of the GDP will be lost by 2100, more than twice the global average loss. The region contributed 12% to the GHG emissions in 2000, but the region's contribution grew twice as fast as the global average from 1990-2000. Agriculture is the largest producer of GHG, but the contribution of the energy sector increases fast. Worldwide, the region has the largest technical mitigation potential in agriculture as well as a vast potential for the energy and forestry sectors.

One important conclusion of this presentation is that adaptation makes economic sense. However, much more should be done to increase adaptive capacity: awareness raising, research, enhanced policy and planning coordination and mainstreaming adaptation in planning. Pro-active adaptation should be scaled up. While adaptation remains a priority, South-East Asia should also make greater mitigation efforts. Both adaptation and mitigation require a comprehensive policy framework, incentives for private sector action, elimination of market distortion and ample financial resources. International funding and technology transfer are critical. Trans-boundary cooperation as well as coordination at national level need to be strengthened.

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## 7. CLIMATE CHANGE ISSUES IN THE MEKONG DELTA REGION

**Pham Chanh Truc**, *former Deputy Head of the Central Economics Committee*

The Mekong Delta provides food security for the country and is of critical importance. Agriculture and freshwater and sea fishery products are essential and irreplaceable. All plans need to take climate change into account otherwise Vietnam's food security will be threatened. Urgent adaptation action in the Delta is needed including:

- planning safe and resilient living spaces for communities;
- restructuring production processes to adjust to CC;
- industrializing and modernising production to mitigate and adapt;
- raising awareness;
- closely monitoring all environmental impacts of development to guard against aggravating vulnerability;
- promoting the use of renewable and clean energy, and
- protecting water sources to ensure water supply in the light of increasing saline intrusion and flooding.

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## KEY POINTS FROM THIS SESSION

- Various data sets on trends in climate change have been presented for Vietnam, the region and worldwide (see individual presentations of MONRE, MRC and ADB). The data from MONRE form the basis for the National Target Program to Respond to Climate Change.
- Climate change is real. Action should be undertaken at all levels of government, from awareness raising to climate change inclusive planning and strategies, and from thinking and talking to doing.
- The World Bank and ADB have shown costs of adaptation and mitigation. However, AusAID warns not to "over-react": make risk profiles, establish the priorities for investments.
- Funding and technology transfer are critical for appropriate adaptation and mitigation.
- There is great potential for adaptation; it makes economic sense! But Vietnam also has opportunities for mitigation in the agriculture, forestry and energy sectors. These opportunities should be taken in parallel as integrated "win-win" responses.



## 2.3 NATIONAL AND MEKONG DELTA CLIMATE CHANGE PLANS

The purpose of this session was to outline national and Mekong Delta-specific plans on climate change. Co-chairs of this session were the Australian Ambassador Allaster Cox, the Danish Ambassador Peter Lysholt Hansen and Hoonae Kim of the World Bank.

### 8. NATIONAL TARGET PROGRAM OF VIETNAM TO RESPOND TO CLIMATE CHANGE

**Le Cong Thanh**, *Director General, Department of Meteorology, Hydrology and Climate Change of MONRE*

In 2007 the Vietnamese Government decided to develop the *National Target Plan to Respond to Climate Change* (NTP-RCC). The NTP-RCC has been prepared by MONRE and approved in December 2008. Departing principles are:

- Sustainable development encompassing sectors and inter-sector links, regions and inter-regional links, and ensuring gender equality and poverty alleviation;
- Respond to immediate impacts as well as potential long-term impacts; investments in response to climate change is a question of economic effectiveness;
- Response to climate change as a responsibility of the whole political system and society at local, national, regional and global level;
- Integrated into development strategies, programs and projects in all sectors and at all levels;
- “Common and differentiated responsibility”. Vietnam needs assistance in investment, technology transfer from developed countries and other international funding sources.

The objectives of the NTP are:

- (i) Assess the extent of impacts of climate change to sectors, areas and localities in each phase;
- (ii) Develop action plans to respond effectively to climate change in each phase to ensure sustainable development of the country;
- (iii) Maximize the use of opportunities to develop the economy toward low carbon production;
- (iv) Join the international community in the efforts to mitigate climate change to protect the global climate system.

The National Climate Change Steering Committee is chaired by the Prime Minister. At this level contact with the international donors takes place. Under the National Steering Committee there is the Executive Board, supported by an international consulting team and the MONRE standing office, assisting the Government in steering the implementation of the NTP. Action planning is done at the level of Ministerial and Sector Steering Committees, City and Provincial Steering Committees and Organizations and Enterprises Steering Committees. Implementation from 2009-2015 requires VND 1.965 billion.

MONRE has the overall coordination and the responsibility to develop the management mechanisms and policy, to do the budget calculation, and to guide the development of action plans. MPI has set up the standard framework for the integration of climate change. Sectors, ministries, cities and provinces all have to develop and implement their action plans and projects, and where necessary mobilise extra resources. Supervising and evaluation have to be done at all levels. Social organizations, unions, NGOs and enterprises are encouraged to take part in activities to respond to climate change, wherever possible.

The Mekong Delta is priority region in the NTP.

### 9. CLIMATE CHANGE ADAPTATION ACTIONS OF THE AGRICULTURE AND RURAL DEVELOPMENT SECTOR

**Nguyen Binh Thin**, *Steering Committee for Climate Change Mitigation and Adaptation of MARD*

Climate change is increasing natural disasters in Vietnam, with a greater intensity and level of impact (9). The consequences for agriculture, forestry and aquaculture can be summarized as: more inundation, more

droughts at other times, and more extensive saline intrusion. This results in loss of land, loss of yields, more diseases and pests, loss of biodiversity and changes in the patterns and distribution of fauna and flora. Production activities are affected - but also sustainable development efforts overall and human health and well being.

MARD is the first Ministry with a Steering Committee and an Action Plan to respond to climate change and to implement the NTP. The MARD Action Plan for the period 2008-2020 focuses on:

- increased capacity for mitigation and adaptation to climate change to reduce damage and ensure sustainable development;
- stable and safe residences;
- stable agricultural production and food security, and
- safe dyke and other infrastructural structures.

MARD's major tasks are awareness raising and communication, capacity building and research, integrating climate change in the policies and international cooperation. Ongoing activities at different levels are e.g. monitoring and upgrading the Climate Change Action Plan, research on new rice varieties and new infrastructure for saline fields, and participation in CO<sub>2</sub> markets and the United Nations REDD program. The agricultural sector response to climate change has started, but stumbled due to a lack of resources. MARD has submitted a proposal for government budgetary assistance for food security.

MARD is also involved in the Master Planning for the Red River and Mekong Deltas and the Central Region, prevention of inundation of Can Tho City, programs for upgrading sea and river dykes and contributing to community based awareness and disaster management programs. The Master Plan has been approved, but not yet the Action Plan.

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## 10. CLIMATE CHANGE AND HEALTH: CHALLENGES AND RESPONSE PLAN

**Le Thi Thu Hien**, *General Department of Preventive Medicine and Environment of MOH*

Changes in natural systems can directly and indirectly influence human health. Examples of direct influence are increased flooding with contaminated water, damaged water supply systems by flooding and winds and extreme weather events. All those are effects of present climate change. Indirect influences include reduced agricultural production and food security, and loss of employment. The Ministry of Health raised concerns about a number of diseases that might increase under the influence of climate change. In this context, MOH is developing a response plan to climate change, with three priority areas to:

- a. conduct an assessment of climate change impacts on human health and to propose responses to them;
- b. strengthen the organizational capacity and policies of the health sector in response to climate change, and
- c. improve information and communication for awareness raising in health staff and communities.

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## 11. DRAFT MOIT ACTION PLAN TO RESPOND TO CLIMATE CHANGE AND CHALLENGES

**Nguyen Van Thanh**, *Deputy General Industrial Safety Techniques and Environment Agency of MOIT*

The Ministry of Industry and Trade follows the MONRE guidelines for making its Action Plan to Respond to Climate Change, by first identifying and defining the impact of climate change on industrial and trade activities. It also defines policies to encourage GHG emission reduction. There is great potential for mitigation, i.e. in the electricity sector, the exploitation of oil and gas, the production of chemicals and pesticides, the production of steel, the textile, garment and paper industry, and the production of alcoholic and non-alcoholic drinks. Challenges specific to MOIT are the high costs for low carbon emissions and clean technology and the necessary investments in cutting-edge technology for new, renewable energy sources. MOIT certainly will need to call for technical assistance and technologies from other individuals and organizations.

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## QUESTIONS, COMMENTS AND DISCUSSION

- MOIT's focus has been mainly on industry and electricity production, but little mention has been made of trade; how is trade captured in the Action Plan? MOIT has developed 3 programs: Green Trade (renewable power sources and supporting infrastructure), a big export project with EU and on the integration of environmental concerns in trade and industry. MOIT currently works on the MOSAC project funded by DFID and on other industry programs all of which have mitigation and adaptation themes.
- As development sectors are developing action plans, how will they be integrated into the next Socio-Economic Development Plans? MARD has guidelines based on a system of targets (social, economic, environmental) to guide and inform the SEDP – climate change needs to be reflected in those guidelines. Minister Nguyen said MONRE has responsibility for providing guidance to sectors in their action plan. The sector CC committees and the NTP committee should work to ensure that CC plans are integrated into sector SEDPs. The MONRE International Support Group on Environment (ISGE) can help promote collaboration between donors and sectors in integration efforts.
- Are the natural disaster management plan and climate change action plan linked? MARD with MONRE have been selected for mitigation planning in response to climate change. People generally live along the banks of the river channels and also industrial zones are located there. What will be the future strategy to minimize impacts and encourage climate proofing?
- MARD's response concerned its responsibility for natural disaster management. The Central Flood and Storms Control (CFSC), chaired by MARD has its system of operations from national to local levels. The strategy on disaster risk reduction focuses on coastal and riverside landslide problems, including the Mekong Delta. Actions so far from MARD include:
  - approval for the dyke system for coastal provinces from Quang Ngai to Kien Giang;
  - development of irrigation planning for the Mekong Delta and in particular, the coastal zone. (the issue of sea level rise has not yet been included in the planning), and
  - focus on the reduction of the effects of natural disasters, saline intrusion into agriculture land as its first priority. This requires the protection and plantation of mangrove forests.
- The Australian Ambassador discussed using the An Giang Flood Control Project as a model for safety for people in Mekong Delta and for the development of rice crops. The Australian-funded Soc Trang project also has several models to cope with the issue of saline intrusion in agriculture land.
- MONRE Minister Nguyen also expressed the need for further research and study. Current research on potential solutions for the Mekong Delta is not sufficient as the issues are very complicated. For example, the proposed solution of building dykes may not always be appropriate; there are other proposals in industry and trade sectors as well.
- Export of sand from the Mekong Delta should be stopped, as this is an unsustainable practice which can reduce resilience in coastal communities.

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## KEY POINTS FROM THIS SESSION

- MONRE has a large responsibility for guiding and helping prepare climate change action plans, for sectors as well as in their integration with government development plans at all levels.
- The NTP and MONRE's guidelines are applied by the sector ministries in order to make their sector Action Plans consistent with the NTP. MOIT and MARD are well on their way in preparing the Action Plans to respond to climate change.
- The need for reliable data and climate change scenarios in developing sector and local government action plans was emphasised. The proposed study on Climate Change Impact and Adaptation in the Mekong Delta by ADB and AusAID will contribute to developing this data and to providing analysis in impacts and vulnerability as well as sets of sector and area specific adaptation responses.

## 2.4 THREATS OF CLIMATE CHANGE TO THE MEKONG DELTA

The purpose of this session was to outline the threats of climate change to the Mekong Delta, presented by national and international institutions. Co-chairs of this session were MONRE Minister Pham Khoi Nguyen, the Australian Ambassador Allaster Cox and the Danish Ambassador Peter Lysholt Hansen.

### 12. CLIMATE CHANGE THREATS IN THE MEKONG DELTA: CASE STUDIES AND KNOWLEDGE GAPS TOWARD CLIMATE-RESILIENCE DEVELOPMENT

**Anond Snidvongs**, *Director of Southeast Asia START Regional Centre*

SEA START RC with international partners, such as the Southern Institute of Hydrology, Meteorology and Environment, Can Tho University, An Giang University and the Technical University of Helsinki, carried out a water and climate change study in the Lower Mekong Delta Basin. It focused on the changing flood regime in the delta floodplain system on livelihoods of the rural people. Climate change, precipitation and run-off and hydrodynamic models were applied. Risk, vulnerability and adaptation assessments were carried out. Outcomes were: With climate change the flood area will extend, the flood season will shift and change, the summertime becomes warmer and longer and there is an increased drought risk in the early summer-autumn rice crop.

But climate change is not the only change taking place in the Delta – it should not be treated as an isolated agenda. There is a need for integrated, strategic assessment and improved understanding of the time scales involved. Future studies in the Delta should include:

- A diverse range of change scenarios for the physical system;
- Impact of climate change in the local context;
- A holistic view of impacts;
- The changes in future socio-economic conditions, and
- A holistic view of risk and vulnerability.

### 13. WATER RESOURCES PLANNING AND CLIMATE CHANGE IN THE MEKONG DELTA

**Nguyen Xuan Hien**, *Deputy Director, Southern Institute of Water Resources Planning of MARD*

Flooding and saline intrusion are the major consequences of climate change in the Mekong Delta. Flooding can have positive and negative impacts. However, population centres, infrastructure works and roads should have full protection. Sea level rise and salt intrusion trends in the region during the recent years were examined and show steady increases.

Adaptation to climate change includes the following actions:

- Integration of climate change in water resource planning and water management;
- A combination of construction measures (i.e. physical infrastructure) with non-construction measures (e.g. mangrove plantation) - a good combination of the two will increase benefits and decrease costs;
- Protection of current protective forest along the coast lines and forestation of new areas;
- Selection of suitable plant varieties and adaptation of the cropping calendar;
- Construction of new and upgrading of existing sea/river dyke systems;
- Investment in resettlement areas and infrastructure protected from sea level rise.

Don't stay with planning; all stakeholders should act in areas in which good practice is already known!

#### 14. WORLD BANK SUPPORT TO CLIMATE CHANGE RESILIENCE IN THE MEKONG DELTA

**Hoonae Kim**, Sector Manager Sustainable development at World Bank Vietnam

The *Strategic Framework on Climate Change* was approved by the World Bank's management board in 2008. There are several World Bank investments in Southeast Asia for climate change mitigation and adaptation, in concrete projects and programs (14) as well as in research. Research focuses on economics, disaster mitigation, rural development, urban adaptation and social issues (adaptation) and carbon finance, energy efficiency, REDD, clean technology and fiscal policy (mitigation). Much is known already by MARD, MONRE, various southern Vietnamese institutions and ODA institutions like ADB, Danida and AusAID. Where appropriate the World Bank can fill gaps to the Government's and Bank's investments

Regarding the Mekong Delta, the Bank's focus is on mangrove protection and restoration, water resources management, enhancing resilience in the cities and enhancing resilience in agriculture. The East Asia climate change study on agriculture and water is focused on the Mekong Delta and is a social vulnerability study. The World Bank stated that consultation with provincial and local governments is key. It is important to strengthen partnerships with official donor assistance (ODA) partners and NGOs.

#### 15. ADB'S CLIMATE CHANGE RELATED INTERVENTIONS IN VIETNAM

**Ayumi Konishi**, Country Director at Asian Development Bank Vietnam

An overview of all ADB's activities in climate change response was presented (15) with the frameworks for implementation being the *ADB Strategy 2020* and *Vietnam Country Strategy and Program 2007-2010*. Both have environment, including climate change, as a core area. The pillars in responding to climate change are:

- (i) *Knowledge development*, including a water sector review, a wind power potential study and more general climate change studies;
- (ii) *Technical assistance* for the legislative framework, e.g. the Renewable Energy Law and the Water Resources Law;
- (iii) *Capacity building* for Forest Livelihood Improvement, Energy Efficiency in the Industrial Sector, Renewable Energy Development etc.;
- (iv) *Regional (i.e. international) cooperation* in the Greater Mekong Sub-region (GMS) Core Environment Program (CEP) Biodiversity Corridor Initiative, and GMS Flood and Drought Risk Management and Mitigation project, and
- (v) *Investments*. Main sectors that profit are the water, energy, infrastructure and transport sector. The focus in the energy sector is on improvements and efficiency in the production and transmission system, increased capacity and the development of clean energy. Transport focuses on energy efficiency and low carbon forms, with projects in public transport in Ho Chi Minh City and Hanoi.

#### QUESTIONS, COMMENTS AND DISCUSSION

- Minister Nguyen of MONRE requested WB and ADB to consider an easier mechanism to support provinces access to WB and ADB's resources. WB shared their difficulties in the implementation of provincial projects, as they are only able to support provincial strategic plans or regional strategic plans. For ADB, the greatest difficulty concerns the capacity, not the mechanism, when partnering with provinces. Therefore, ADB focuses its support on capacity building. The ADB also uses the provincial Social and Economic Development Plan as guidance for support.
- Minister Nguyen discussed the debate between developing and developed countries on climate change. There is a discord between both parties due largely to:
  - unclear support commitment;

- developing countries' requirements for technology transfers at a reasonable price; and
- their requirements for specific mechanisms and funding sources for climate change.
- In answer to Minister Nguyen's question, ADB said they will not be participating at the COP15 Summit, but provide resources to country members from a trust fund. ADB is also keen on technology transfer at reasonable prices. ADB recommends infrastructure projects and investments consider impacts of climate change in their planning.

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#### KEY POINTS FROM THIS SESSION

- Climate change is not the only change process influencing the natural resources of the Delta. Climate change should be seen in a wider context of dramatic changes taking place due to development activities.
- Response of a specific sector or region to climate change will influence the magnitude of climate change impacts on other sectors, communities and areas. Therefore we need an integrated and strategic assessment in wider scale with context and area-specific responses.
- All stakeholders should act immediately in fields which are known adaptation responses with beneficial outcomes.
- The World Bank and ABD already have large capacity building and research programs and investments in climate change adaptation and mitigation. Both find working directly with regional, provincial or local levels can be difficult.
- MONRE's Minister underlines the need for technology transfer at reasonable prices and for specific mechanisms and funding sources for climate change.
- The World Bank stressed the importance of strengthening partnerships and coordination between official donor assistance (ODA) organisations and NGOs.

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#### CLOSING REMARKS OF PLENARY

In his closing remarks Section Chairman Lysholt Hansen said developed countries wish to support developing countries and funds are available. Developed countries including the European Union are discussing the feasibility of establishing a specific fund for climate change. Results of this discussion may be heard after the COP15 Summit. Regarding provincial planning, besides the NTP, provinces will need to develop their own plans. It is expected that the WB and ADB can review their mechanisms in "cooperation with provinces" in order to provide support.

The need to coordinate between the sectors and to take an integrated approach has been stressed. There is also a need to shift from donor-driven activities to government-driven activities for long-term sustainability.

The plenary was closed by MONRE Minister Nguyen.

### 2.5 SESSION A: NATURAL RESOURCES AND ENVIRONMENT, AGRICULTURE, FISHERIES AND WATER

The purpose of this technical session was to outline the trends, the natural disasters and potential effects of climate change in fisheries, agriculture and irrigation, and coastal protection, tourism and nature conservation in three provinces. The presentations on natural resources management and rice based cropping systems provided a broader perspective.

Chair of the session was To Trung Nghia, Director General of the MARD Institute of Water Resources Planning. Panel experts were Andreas Zurbrugg, First Secretary of AusAID and Sharon Brown, Chief Technical Advisor at GTZ in Kien Giang Province.

## 16. TRENDS, NATURAL DISASTERS AND POTENTIAL IMPACTS OF CLIMATE CHANGE ON AQUACULTURE SECTOR OF SOC TRANG

**Nguyen Van Khoi**, *DARD Soc Trang province*

Representing a coastal province, the focus of the Soc Trang's presentation was on aquaculture. It analysed the trend of saline intrusion in Soc Trang over the past 30 years. Sea level rise and increased saline intrusion impacts on aquaculture are already felt. Storms, shortage of fresh water and increased water temperature are noted as other important potential impacts of climate change.

At the same time a major increase in the area under aquaculture is planned (up to 90.000 ha) and in the production per ha (up to 5 tons/ha) in 2020. There is a need for clearly planned production zones; spontaneous, unprompted production should be limited. Additional problems encountered in the sector are:

- Increased epidemics;
- Unreliable weather;
- Unreliable market prices;
- Limited skills of farmers, and
- High prices of inputs.

The recommendations include: i) technology transfer to farmers, ii) capital support, iii) quality control of aquaculture seeds, and iv) governmental management to stabilise market prices of inputs and outputs. Other technical guidance is required on location and management responses to saline intrusion and other climate changes.

## 17. TRENDS, NATURAL DISASTERS AND POTENTIAL IMPACTS OF CLIMATE CHANGE - EXPERIENCE OF AN GIANG

**Do Vu Hung**, *Vice-Director of DARD An Giang*

A clear overview of socio-economic statistics in An Giang province was presented (17). As an inland province, agriculture is key. 72% of the population is involved and An Giang is called the rice belt of Vietnam. Although there is a slow shift from agriculture to aquaculture, both sectors will grow in the coming years. The province also strives for clean water supply for 60% of the population and an increased forest cover (18.8 -> 22.4%). The agricultural sector is affected by:

- Natural disasters: flooding is the most serious one, followed by cyclones, drought and forest fires;
- Physical conditions: erosion, acid sulphate soils and salinity;
- Poor infrastructure;
- Slow shift in production structure;
- Unreliable market prices;
- Epidemics.

Potential impacts of climate change in An Giang are summarized as an increase in intensity and fluctuation of natural disasters, drought as well as flooding, forest fires, flooding and erosion of land/water infrastructure, flooding and water shortage in urban and industrial areas. This will result in fewer options for waste water treatment, poorer human health and increased poverty because of adverse socio-economic developments.

Next steps to be taken include the establishment of a Climate Change Steering Committee and implementation of existing plans to respond to climate change, e.g. the development of infrastructure to protect the production systems. Other, suggested steps are: i) national government to organize training on climate change to equip local officials with relevant knowledge, ii) allocate national and foreign climate change projects to the province, iii) international cooperation to address issues of sustainable use of the

water of the Mekong River, and iv) financial investment for the An Giang projects/programs within the Action Program of the province.

## 18. CLIMATE CHANGE, COASTAL PROTECTION, TOURISM AND NATURE CONSERVATION IN KIEN GIANG

**Thai Thanh Luom**, *Director of DONRE Kien Giang*

In Kien Giang popular tourist sites are protected areas or important biodiversity conservation areas. Examples are Phu Quoc, U Minh Thuong, Ha Tien and Hon Chong. The latter has 700 ha of coral (87 species, 24% of the area has hard coral) and 12,000 ha of sea grass (10 species), Phu Quoc with 650 forest species, and U Minh Thuong with 250 forest species and also 189 bird species. Those areas and the ecosystems they contain are under increasing stress due to climate change and other development activities.

Coastal erosion increased since the canals were built in 1997. Mangrove, agricultural land and dykes were lost. Climate change is expected to result in inundation of a large part of the province, changes in flow in the Mekong River, and will affect all main revenue resources and biodiversity.

In Kien Giang a feasibility study for a REDD pilot project, Reduced Emissions from Deforestation and forest Degradation has been carried out. Payment for Environmental Services is key to success. Proposed solutions to deal with climate change include:

- Investment in meteorological and hydrological stations in Rach Gia, Ha Tien, Phu Quoc for early warning;
- Establishment of new meteorological and hydrological stations at the U Minh Thuong National Park;
- Staff capacity building;
- Strengthen and upgrade the sea dyke system to 2m above m.s.l. compared with standard 1m;
- Building sluice gates for all the canals to prevent saltwater intrusion;
- Increasing the mangrove belt so that it is from 20 to 500m wide;
- Building model homes to cope with sea level rise.

## 19. CLIMATE CHANGE RELEVANT ENGAGEMENT OF GERMAN TECHNICAL COOPERATION IN THE SOUTHERN MEKONG DELTA

**Lazlo Pancel**, *Forestry Program Coordinator of GTZ Vietnam*

No single province, government institution, national or international organisation can solve all the problems arising from the effects of climate change in the Mekong Delta. The huge challenges ahead require close cooperation, coordination and joint actions by all stakeholders. Therefore the German Technical Cooperation (GTZ) has a programmatic approach in the Mekong Delta in cooperation with relevant government institutions, local people, NGOs, research institutions and international organizations like the Australian Government. The tentative total budget for the Mekong program to 2014 is approximately US\$28 million.

The program focuses on management of coastal zone ecosystems relevant to mitigate and adapt to climate change related effects in the five southern provinces in the delta: Soc Trang, Kien Giang, Bac Lieu, An Giang and Ca Mau. A core problem is the economic pressure on the area, poverty and lack of knowledge on how to use of natural resources sustainably. Therefore major issues covered by the program include:

- i. support to a conducive legal and institutional framework to achieve integrated coastal zone management;
- ii. protection, management and rehabilitation of coastal ecosystems;
- iii. piloting of dyke protection and rehabilitation;



- iv. improvement of biodiversity, particularly in protected areas, and
- v. promotion of income opportunities for local communities.

This program is in strong alignment with the Vietnamese Government forestry program, the NTP-RCC, the law on biodiversity and the National Dyke Rehabilitation Program.

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## 20. RESEARCH FOR CLIMATE CHANGE ADAPTATION IN RICE-BASED CROPPING SYSTEMS

**Geoff Morris**, *Country Manager Vietnam of the Australian Centre for International Agricultural Research ACIAR.*

The Australian Centre for International Agricultural Research (ACIAR) is an independent statutory authority under the Australian Governments Foreign Affairs Portfolio. As part of Australia's overseas aid program, ACIAR funds collaborative research partnerships in agriculture, forestry and fisheries in developing countries with a strong emphasis on capacity building, linkages between research institutions and training.

ACIAR has in principle agreed to fund a four-year research project (2010-2014) on rice-based cropping systems in the Mekong Delta. The project size is likely to be US\$ 3.5M and will be led by the International Rice Research Institute. Main Vietnamese partners will be Can Tho University, Cuu Long Delta Rice Research Institute, Southern Institute for Water Resources and Planning and the Institute for Agricultural Sciences. Australian partners will include the Australian National University and the Yanco Rice Research Station. The project will have four main research components on:

- (i) capacity building for greenhouse gas mitigation (including emission measurement and reduction);
- (ii) cultivar selection (e.g. for salinity, flooding, heat stress);
- (iii) agricultural practices (e.g. more resilient farming systems to cope with climate change, more effective and efficient cropping methods, specific cropping systems on acid-sulphate soils) and
- (iv) socio-economic aspects (e.g. incentives for farmers to apply new technologies for adaptation and mitigation).

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## QUESTIONS, COMMENTS AND DISCUSSION

### COMMENTS:

- To buffer the impact of climate change, the Government should protect *Melaleuca* ecosystems.
- The way dykes are constructed in Vietnam can contribute to coastal erosion. Thus GTZ is undertaking studies on the relationship between coastal hydrology and erosion.
- Restoration of mangrove needs careful planning. Repeating past failures should be avoided. Focus should be on planting techniques and improvement of biodiversity.
- Maintaining water flows is very important to control acidity and saline intrusion, flooding, and diseases in people and aquatic species.
- Water from flushing of aquaculture ponds can kill shrimps and fish in the natural river system.
- Climate change needs to be taken into account in provincial development planning.
- Climate change adaptation planning cannot be confined within a sector or within a province. It needs to be multi-sectoral, cross provincial border approach.
- At present the Government does not provide enough money for appropriate dyke construction or for climate change adaptation in general. For appropriate dyke construction VND 25 billion per km is needed.

### QUESTIONS:

- What is the coordination and collaboration between GTZ and ACIAR? Both organizations know about each other's fields of work and expertise. There is a difference in geographic and thematic focus.

- When planning for the Mekong Delta, the Mekong River Commission recommends looking at upstream development projects. The Mekong River Commission Secretariat can provide info on impacts from upstream. GTZ confirms that upstream dams will affect quantity and quality of flows, an important issue that has not been sufficiently underlined in the presentations.

#### KEY POINTS FROM THIS SESSION

- The southern provinces in the Mekong Delta are important for their aquaculture and agricultural production and their potential for tourism. All sectors will extend their production in the years to come. Careful planning on how to extend and including climate change impacts is a prerequisite to further development.
- Next to climate change, the production systems are influenced by factors like unreliable market prices, high input prices, poor infrastructure and insufficient farmers' skills.
- Moreover: activities in the Mekong River upstream from Vietnam (and in the Central Highlands of Vietnam flowing into the Mekong River) will influence the Delta. This should also be taken in account when planning for the Vietnam Mekong Delta provinces – actions in one part of Vietnam – i.e. Central Highlands tributaries are affecting conditions in the Delta.
- Both the natural resources management project (GTZ) and the rice research project (ACIAR) have a more integrated (not sector specific) approach.
- Climate change needs to be taken into account in provincial planning. Planning should be multi-sectoral, and cross provincial borders.
- Provinces expressed the need for support in climate change integration, planning and implementation from the Government as well as from international donors.

## 2.6 SESSION B: INFRASTRUCTURE AND URBAN PLANNING

The purpose of this session was to outline the effects of climate change on infrastructure and urban planning and to define effective responses. The session was chaired by was Koos Neefjes, Senior Advisor on Climate Change to UNDP Vietnam. Panel experts were Claire Ireland, Environment Advisor of AusAID and Director General, MONRE Department of Meteorology, Hydrology and Climate Change, Le Cong Thanh.

### 21. HO CHI MINH CITY CLIMATE CHANGE IMPACT AND ADAPTATION STUDY

**Jeremy Carew-Reid**, *Director of ICEM and ADB Team Leader of the HCMC study*

The *HCMC Adaptation to Climate Change Study* was carried out by the ICEM - International Centre for Environmental Management for the ADB in partnership with the HCMC PPC and DONRE. It presents two climate change scenarios – IPCC A2 and B2 – towards 2050 for regular and extreme weather conditions, and with and without a planned comprehensive dyke system. The consequences of climate change are assessed for strategic sectors in the City's development: transport, energy, water supply and sanitation, health, industry and overall urban planning. The study also explores the effects on natural systems and demographics. It found that climate change would have extensive and far reaching effects on the city's infrastructure and economy.

The study also identifies a wide range of adaptation options, emphasising the need for a balanced and integrated approach involving engineering options, traditional local strategies, social policy responses, land use planning, economic instruments, natural systems management and sector specific adaptation strategies. The process of adaptation needs to involve a number of key mechanisms including:

- Adaptation auditing and retrofitting in existing and approved developments beginning with those in vulnerable areas;
- Integration of adaptation into future development planning for areas and sectors. This requires guidance on adaptation options and hotspot profiling and assessments;

- Assessing development plans and project proposals as they come through the planning pipeline against adaptation screening tools (e.g. as part of Strategic Environmental Assessment and EIAs);
- Monitoring and evaluation of the implementation of adaptation measures and the opportunity and authority to require remedial and additional actions.

Broad guiding principles identified by the study for integrating adaptation within sector development plans include: (i) rehabilitate and maintain natural flexibility and resilience in the city design, (ii) build adaptability into infrastructure and buildings, (iii) locate strategic infrastructure and sensitive industrial and commercial functions away from vulnerable areas, (iv) expand and maintain natural systems for greater stability and resilience, and (v) keep rivers and canals free flowing and clean.

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## 22. CAN THO CITY CLIMATE CHANGE AND URBAN PLANNING

**Ky Quang Vinh**, *Can Tho Steering Committee for Climate Change*

Can Tho is the biggest city in the Mekong Delta and a leading economic player in the country in rice production and aquaculture. Can Tho will suffer from changing water levels in the Mekong River because of sea level rise and more intense local rainfall, and because of upstream developments. Expected impacts are deep inundation in the rainy season, extreme droughts in the dry season and saline intrusion. Construction works will need to build their foundations 2.5m above m.s.l. Livelihoods are threatened with the City's growing population unable to produce enough fish and rice supplies to feed itself.

Research is needed on (i) the effects of constructing sea and river dykes, (ii) the construction of fresh water reservoirs for the dry season and (iii) on how to recharge groundwater reservoirs. Planned infrastructure measures for adapting to climate change must address the whole of the Mekong Delta, not Can Tho alone. Awareness and understanding of climate change for local people and government officials is essential. Support from the international community is needed to help Can Tho and the Mekong Delta to find optimal and appropriate measures for adaptation.

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## 23. CLIMATE CHANGE AND SOCIO-ECONOMIC DEVELOPMENT IN CA MAU PROVINCE

**Nguyen Xuan Hien**, *Vice-Director of SIWRP*

The frequency and level of damage on socio-economics in Ca Mau province is increasing due to both natural disasters (storms, high tides, floods) and human-induced problems such as pollution and overexploitation of resources. Rural areas are expected to be more affected than urban areas. Almost all industrial zones, except for the southern part, will be affected under the A2 scenario. Other sectors that will be affected are: the local road system (90%), agriculture (some 45.000km of irrigation canals), shrimp farming (water level increase of 30-50cm), forestry (108.000 ha of which 60% bears productive forests) and tourism.

Recommendations call for a review of the appropriateness of land use and sector plans and making proper projections for environmental trends, degradation of biodiversity and ecosystems services. Mitigation measures for agriculture, food processing plants and industry should be developed. Adaptation in rural areas should focus on future relocation of households, a good mix of agriculture and aquaculture, rehabilitation of forests and strengthening the buffer capacity of natural systems – particularly rehabilitation of mangroves. In infrastructure, the focus should be on upgrading and strengthening of secondary works, research on the causes of inefficiency and failure of canal performance and complementary works like re-vegetation of river banks.

## 24. TRANSPORT ON LAND AND WATER: TRENDS, NATURAL DISASTERS AND POTENTIAL EFFECTS OF CLIMATE CHANGE IN DONG THAP PROVINCE

**Nguyen Van The**, *Deputy Director of DOT Dong Thap*

Dong Thap Province reports ten recorded impacts of climate change: more frequent storms, abnormal floods, severe cyclones and lightning, abnormal rainfall, increasing temperatures, increasing erosion of river banks, drought and forest fire, increasing acidity, epidemics, and crop diseases. Solutions already planned by the province to deal with these impacts include: awareness raising, protection of wetland ecosystems, shifting structures of cropping systems and animal husbandry, poverty reduction and resettlement, strengthening houses, and replicating the “living with flood” model.

Further proposals and recommendations are:

- build elevated roads, concretize road slopes, complete the road system, and modernize the rural transport system
- construction of coastal dykes by the national government;
- capacity building of research institutions, and
- the establishment of institutions specialised in climate change adaptation, mitigation and emergency response.

## 25. THE MEKONG DELTA CLIMATE CHANGE IMPACT AND ADAPTATION PROJECT

**Jeremy Carew-Reid**, *Director of ICEM*

The *Mekong Delta Climate Change Impact and Adaptation Project*, to be carried out in 2010 by AusAID, ADB and the MONRE Department of Meteorology, Hydrology and Climate Change, aims at better understanding the economic, social and environmental impacts of climate change, and defining appropriate adaptation strategies for vulnerable urban and rural communities, especially the poor.

The study will involve all 13 provinces, with two target provinces: Kien Giang and Ca Mau to receive more detailed attention. It will cover all major sectors, but with a special focus on agriculture, transport and energy. Expected outputs include: (i) the identification of future climatic conditions and the effects on natural, social and economic systems in the Delta, (ii) identification of appropriate adaptation measures for targeted provinces and sector programs, plans, projects and/or policies, (iii) institutional strengthening to enable authorities to fulfil their adaptation responsibilities, and (iv) establishment of collaborative mechanisms for information sharing and coordinated action on climate change in the Mekong Delta region.

## QUESTIONS, COMMENTS AND DISCUSSION

42 participants attended the session. Four presentations were made followed by comments from the expert panel and general discussion:

### **PANEL EXPERT LE CONG THANH:**

- Impacts of climate change are different in each province and adaptation strategies need to be tailored to local conditions;
- At the same time, a comprehensive Delta wide study is needed and leading to a Mekong Delta region climate change action plan as the umbrella for local action. MONRE – with AusAID and ADB – plans to conduct a study on the impacts for the Mekong Delta region. The Forum is a good start to a more comprehensive Delta-wide study;
- Adaptation needs to be placed in the context of socio-economic planning. Because of its pervasive influence on all aspects of development, climate change analysis and forecasting needs to become a fundamental input to SED plans.

- We should also look at the economic impact and costs of climate change – ie of not acting or of delays in taking action.

**PANEL EXPERT CLAIRE IRELAND:**

- It is apparent from the presentations to this Forum and technical session, that a great depth of knowledge and analysis exists on the effects of climate change – that needs to be brought together in a Delta wide synthesis.
- It is important to define a consistent set of scenarios for the country – but ensure it represents a range with a preferred target.
- The full range of adaptation options and their costs need to be considered in integrated mixes – some actions may appear too costly to conduct – but the cost of not implementing them may be more in the long term.
- A spatial basis for adaption planning and implementation encourages integration between sectors so long as an area-wide adaptation plans is respected by all arms of government.
- It is important to build capacity in research and studies on climate change as the foundation of good planning. Australia supports the idea raised by participants on the needs for building capacity in southern researchers and research institutions on climate change.

**FURTHER COMMENTS AND SUGGESTIONS FROM PARTICIPANTS:**

- Vinh Long DPI: the use of rice fields to hold floodwater and protect urban areas during the flood season may be an alternative solution for building dykes – and consistent with the “living with floods” concept.
- Southern VUSTA (Vietnamese Union of Science and Technology Associations): the current surveys in Soc Trang, Ca Mau and Ben Tre provinces found that (i) there are about 200 km of buffer zones which have high potential in adaptation and for sustainable development in the context of climate change; (ii) there is a need to re-organise economic activities, e.g. to protect mangrove forests or encourage planting mangroves to avoid the influence of high tides and waves; and (iii) there is a need to develop sea tide models.
- Ky Quang Vinh, Can Tho Steering Committee for Climate Change: the population growth issue should be taken into account in climate change context. Currently 17 million people depend on agriculture. In 2050 the Mekong Delta will still need to be an important area for agriculture to ensure food security. The maintenance of adequate supplies of freshwater is an especially important factor to consider.

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**KEY POINTS FROM THIS SESSION**

The chair presented the following key points:

- The technical session called for a Delta wide assessment of threats and risks from climate change and for the formulation of a Delta CC master plan.
- The capacity of research institutions to conduct CC assessments needs to be strengthened. A mechanism for coordination and pooling of research results in this field on a regular basis and feeding into planning and action is also a priority. The creation of a special CC research institution or network of centres for the Delta needs to be considered, building on existing institutions.
- Goals and ambitions for adaptation need to be defined emphasising future safety standards for sectors and areas.
- Formulate options and alternatives: not only dykes but a mix of specific solutions to specific areas and populations.
- Full integration and excellent coordination are needed. Integration of climate change in (long term) social economic development plans. Importance of poverty focus, including development of support models for coastal populations.

**2.7 SESSION C: EXPERIENCE IN CLIMATE CHANGE ADAPTATION**

The purpose of this session was to assess experiences in climate change adaptation, in Vietnam and internationally. Chair of the session was Tran Thuc, Director General of IMHEN (MONRE). Panel Experts were Lasse Melgaard, Counsellor of the Embassy of Denmark and Tran Thi Thanh Phuong, Senior Environmental Specialist of the World Bank in Vietnam.

## 26. NATURAL DISASTER MANAGEMENT IN THE CONTEXT OF CLIMATE CHANGE

**Le Minh Nhat**, *Deputy Director General of the Central Committee for Flood and Storm Control*

Vietnam has a long time of experience in dealing with natural disasters, like flash floods, landslides and storms. There are indications that the oldest dykes are from the Tran, Ly and Le dynasties, over 1000 years old. Alternative interventions include watershed rehabilitation, forest plantations, construction of water reservoirs upstream and dredging to clear the flows. Since the 1900s special entities for dyke management and flood control were set up, like the Central Committee on Dike Management in 1946.

Currently, MARD is actively implementing the National Strategy on Flood and Storm Prevention and Natural Disaster Mitigation to 2020, a program to upgrade sea dike systems in relation to sea level rise, and a program on awareness raising for communities in community-based natural disaster management, and is developing a programme on upgrading the river dike system.

Future key activities include:

- Continuing research and updating information for climate change scenarios in order to introduce appropriate adaptation measures;
- Attracting more investment capital for implementing the National Strategy on Storm and Flood Control and Natural Disaster Mitigation and other programs/projects;
- Reviewing and modification of flood planning for river basin and dyke system planning based on climate change scenarios;
- Integration of disaster prevention and mitigation into socio-economic development plans of sector and regions;
- Application of standards for work and house construction which guarantee natural disaster safety for each region;
- Awareness raising for communities
- Operational procedures for reservoirs, and
- Development of a Law on Natural Disaster Prevention and Mitigation.

## 27. AGRICULTURE, RICE PRODUCTION AND CLIMATE CHANGE: METHODS AND LESSONS FROM THE MEKONG DELTA

**Le Anh Tuan**, *Dragon Institute, Can Tho University*

The Mekong Delta is the largest agriculture and aquaculture production region of the country: 50% of the rice, 65% of the fish and 70% of tropical fruits according to Can Tho University (CTU) estimates. Threats to that production threaten national food security. With climate change, the summer-autumn rice crop is likely to suffer from insufficient rainfall during land preparation and in the middle of the season and from too much water towards the end of the season. Comparisons between the 1980-figures and estimations for 2030 show that the rainy season will start two weeks later, total rainfall will be 20% less and farmers have to pay more for pumping water. Adjusting and adapting the cropping calendar and pattern will be necessary.

The people and local governments of the Delta should be made aware of the economic implications of climate change. Building a strategy to cope with climate change and adaptation, will require close cooperation between scientists, policy makers, governmental and non-governmental institutions and local people.

## 28. MANAGEMENT OF NATURAL RESOURCES IN THE COASTAL ZONE OF SOC TRANG PROVINCE

**Klaus Schmitt**, Chief Technical Advisor of GTZ Vietnam

The unsustainable use of natural resources in the coastal zone and the economic interest in shrimp farming is threatening the protection function of the mangrove forest belt and reducing the income for local communities. The project *Management of Natural Resources in the Coastal Zone of Soc Trang Province*, in which the PPC and GTZ are partners, aims to protect and sustainably use the coastal wetlands for the benefit of the local population. The Forestry sub-department of Soc Trang and GTZ have been implementing this project since 2007.

The challenge is how management of natural resources can contribute to the protection of the coastal zone from negative impacts of climate change and how optimal use can be made of the ecosystem services provided by mangroves. GTZ estimates that an investment of US\$1.1M in mangrove rehabilitation saves US\$7.3M in dyke maintenance annually. And each ha of mangrove destroyed results in the loss of 1.08 ton of fish production.

To respond effectively to climate change, integrated coastal zone management is required. Parts of the coastal zone cannot be managed in isolation. Planning should not proceed on a sectoral basis – an ecosystems approach is needed with institutionalised coordination and cooperation from provincial to local level. New approaches are being tested – one is the co-management of mangrove areas by the government agency and the community. Co-management agreements are being negotiated and authority and responsibility are shared in a formal way. Benefits are:

- a more effective protection of the mangrove forest and livelihood improvement through secure sustainable resource use;
- local ownership as resource users are involved in resource use decision making, and
- authorities have a reduced workload.

Increasing the protection function of the mangrove will enhance adaptation and resilience of the whole province.

## 29. COMMUNITY DEVELOPMENT EXPERIENCE IN CLIMATE CHANGE IMPACTS AND ADAPTATION: METHODS AND LESSONS FROM THE MEKONG DELTA

**Trine Glue Doan**, NGO Centre Climate Change Working Group

The NGO Climate Change Working Group (CCWG) seeks to contribute to reducing the vulnerability of poor people in Vietnam to the impacts of climate change through NGO coordination, advocacy and capacity building for environmentally, economically sustainable and socially just responses to climate change. A climate change impacts assessment study in Ca Mau Province confirmed that all sectors will be affected by climate change and that integration of adaptation measures in planning is essential. The most promising approach is the use of natural ecosystem defences to buffer livelihoods and development.

Key recommendation from the study is that community and ecosystem based adaptation should start now. For the Mekong delta in particular, it says

- Disaster Risk Reduction plans and actions should respond to climate change impacts at all levels;
- Climate change adaptation should be integrated into development planning and action, including SEDP, DRR and environmental protection. Parallel but overlapping activities by different actors have to be avoided;
- Reduce non-climate stresses;
- Develop and share user-friendly climate change impact data, informed by science and local knowledge.

Regarding the NGOs' role in coordinated climate change response, it is recommended NGOs participate in local climate change response planning and facilitate integration of climate change adaptation: make relevant tools available, support pilot integrated planning processes, demonstrate the value of participatory approaches and multi-stakeholder coordination, and implement ecosystem restoration initiatives. NGOs, together with other stakeholders, support the integration of existing planning tools into local planning and mainstream this for the Mekong Delta. Finally it is recommended NGOs focus on sharing and learning of methods and training opportunities for climate change adaptation.

### 30. CLIMATE CHANGE ADAPTATION PLAN OF BEN TRE PROVINCE

**Truong Duy Hai**, *Director General of DONRE Ben Tre*

Ben Tre is the coastal province through which 4 of the 7 Mekong Delta rivers flow. When the sea level rises 1m this century, Ben Tre will be the most affected province with 50% of its surface area flooded. In general the impacts of climate change are similar to those for other provinces: sea level, temperature and saline intrusion are increasing. The presentation (30) outlines the potential impacts of climate change on coastal area and development sectors including water resources, land resources, industry, agriculture and forestry sectors. Necessary actions in general terms and actors involved in coping with climate change are outlined for the marine and coastal area, and the water resources, agriculture, forestry, fishery, land use planning, energy, transportation, healthcare, culture and information sectors.

### QUESTIONS, COMMENTS AND DISCUSSION

- Have there been initiatives to share knowledge at the Mekong Delta level? Can Tho University confirms it has undertaken knowledge sharing activities, like conferences at regional level.
- Does the Mekong Delta need dykes? Vietnam has a long history in constructing dams. There are three main options:
  - Dykes that prevent against all flooding;
  - No dykes;
  - Temporary dykes to control high water levels in August.

All options have their positive and negative impacts. In the current situation, dealing with uncertainty, there is not one solution to solve all problems. It requires a change of mindset toward 'living with floods'. It is observed that already there are systems of sea dykes and river dykes, with different roles and limitations. The risks of having no dykes should be made very clear. A balance is required between different adaptation methods and approaches.

- Winrock International observed that in this session two different community-based experiences were presented by GTZ and the NGO CCWG. Such co-managed and community-led efforts, while relatively small in scale, have great potential in providing climate change adaptation and mitigation measures at the district and community level.
- In line with this discussion is the potential for the Payment for Ecosystem Services (PES) approach to natural resource management in the Mekong Delta. Indeed there is great potential for PES in the region, particularly in providing a well-needed sustainable finance mechanism to support mangrove protection and rehabilitation for climate change adaptation and mitigation. Associated with PES is the potential for Reducing Emissions from Deforestation and forest Degradation (REDD) projects to be developed, again providing an added revenue stream for the poor coastal and riverine communities.
- The awareness in the provinces of the Payment for Forest Environmental Services (PFES) Decree, developed by the MARD, is relatively low. The southern provinces should be aware of the potential for PES in their respective areas, and be kept abreast of developments on the PFES decree. The pilot PFES policy being implemented in Lam Dong Province with support from Winrock International will be rolled out into 15 provinces in Vietnam after the PFES decree is passed in mid-2010. Whether it will be in exactly 15 provinces, is still to be decided but the more aware and knowledgeable the Mekong provinces are of PES and the PFES decree, the better off they will be when it comes to the decision of which provinces will be included. Climate change adaptation is not just about sea level rise and disaster risk reduction as some participants have cautioned. The impacts are many but the



opportunities to adapt to climate variability now and mitigate for climate change in the future are also plentiful. PES and REDD projects hold such promise.

## KEY POINTS FROM THIS SESSION

- Vietnam has a long history of managing natural disasters, in particular flooding, dating back 1000 years to the Dai Han dyke. Since the 1970 floods, there is a changing awareness, from prevention and control to adaptation and a greater emphasis on “living with floods” through more flexible responses that do not close off options.
- Climate change is a new challenge but there is a lot of experience in disaster management to draw upon, when well studied and analysed.
- Planning for adaptation means risk management and flexible solutions. Focus should be on:
  - Protection and restoration of key ecosystems to build resilience and reduce impact;
  - Protection of environmental services, as livelihoods in the Delta depend strongly on natural resources;
  - Building on indigenous knowledge and existing adaptive initiatives;
  - Cooperation with the GMS countries to address the climate change impacts.
- Planning for stakeholder participation in adaption should focus on:
  - Participatory processes so that those impacted know the problems and will work towards benefitting from adaptation solutions. Climate adaption measures must be tailored to the local context;
  - The options of co-management; it seems an effective mechanism for integrating livelihoods, ecosystem restoration and planning structures;
  - Diversifying resources and tools: NGOs help in sharing and learning, and capacity building in CVCA (community-based climate change vulnerability and capacity assessment).
- Further recommendations
  - Develop a Delta wide plan for sharing knowledge, experiences and information throughout the Mekong region with a supporting regional institutional framework;
  - Ministries need to provide more information to the local level;
  - Institutionalise coordination and cooperation of local authorities;
  - Adaptation must be integrated amongst sectors and there should be integrated spatial planning for each area of the Delta;
  - Develop a better warning and forecasting network.

## 3 CLOSING PLENARY

The Final Plenary of the Mekong Delta Climate Change Forum was spent on the summary presentations from the three Technical Sessions and final discussion, the presentation of the Chair’s Summary Statement, the closing ceremony, then a press conference.

The Plenary was co-chaired the Minister of the Government Office, Nguyen Xuan Phuc, MONRE Minister Pham Khoi Nguyen, Secretary of the Can Tho People’s Committee Nguyen Tan Quyen, the Australian Ambassador to Vietnam Allaster Cox, Danish Ambassador Peter Lysholt Hansen, ADB Vietnam Country Director, Ayumi Konishi, and World Bank Sector Manager Sustainable Development, Hoonae Kim.

### 3.1 FINAL DISCUSSION

- As the Mekong Delta is a complex system, the need for good baseline data has been expressed and emphasized. World Bank and ADB considered this as a condition for possible investments. Can Tho University is undertaking a baseline study of the coastal provinces and communities living in the buffer zones. A Delta wide study and action plan needs to build on this and other baseline studies.

- Party Representatives observed that only negative aspects of climate change have been discussed in the Forum. Which positive effects can be expected? One positive aspect is that adaptation and mitigation brings stakeholders together. Current climate proof planning may create new economic opportunities and restructuring of present day systems.
- New climate change partnerships are proposed like the Forestry Protection Partnership and the Natural Disaster Protection Partnership.
- The Mekong Delta has specific characteristics. In view of the potential climate change impacts, the Mekong Delta needs its own specific infrastructure design and land use planning, and construction criteria.
- According to the South Western Steering Committee, the decision approving the infrastructure construction scheme to 2020 has not taken climate change into account. This needs to be re-thought. Climate change is happening but when and how it is happening is not clear yet. Thus scientific research is required; if we rush to actions, we might create more harm than benefits. We need to be calm and take appropriate actions supported by good science. The Steering Committee agrees with MRC that we need to take into account the impacts from the upstream hydropower dams. The Mekong Delta needs a long-term plan taking climate change into account. To build dykes or to plant mangroves here and there is only addressing the issues in an ad hoc manner, not tackling them in a systematic way. Planning must take into account all factors. In such an approach, we will be able to avoid two things: i) rushing to action and creating more harms than good and ii) a piecemeal approach and localism in using resources. We need to take a regional approach.
- MRC supports that adaptation or mitigation of climate change in the Mekong Delta needs to take a regional approach. The Mekong Delta is situated partly in Vietnam and partly in Cambodia too. The transboundary issues and other developments taking place in the Mekong countries such as the 11 dams in the mainstream of the Mekong and 85 dams in the tributaries need to be taken into account. Adaptation must always be based on the community. Local demonstration models are needed for learning. The MRC has projects in all countries in the Lower Mekong Basin and mainly in Vietnam we can learn about sea level rise. To make research efforts sufficient, we need to conduct it at the regional level. MRC plans to establish the Mekong Panel for Climate Change (MPCC) with the participation of scientists in Vietnam. Within three years, this group will synthesise all related research on the Mekong region into a “state of climate change” report and provide recommendations.
- The Netherlands Embassy mentioned that the Dutch Government has shifted thinking from curative to preventive after the big 1953 flood. This flood killed over 1800 people. The Netherlands developed a spatial planning system to prevent human and capital loss. In Vietnam, there is a window of opportunity: the SEDP 2011-2015. It is recommended to the Forum to make use of the existing legal framework and carry out a Strategic Environmental Assessment to integrate climate change into the SEDP.

Closing the last plenary discussion, Minister of the Office of Government, Nguyen Xuan Phuc supports the view that we need to understand through research before we can take appropriate actions. Adverse effects of climate change are expected to be larger than the benefits. Planning for the Mekong Delta needs to take into account the impacts from the upstream dams and other developments – including those in the Central Highlands of Vietnam which influence Delta conditions. Current construction codes are not climate proof. International sharing and exchange is very important. There are good experiences in other countries, e.g. the model in the Netherlands that Vietnam can learn from.

### 3.2 SUMMARY STATEMENT FROM THE CHAIR

The Chair’s Summary Statement on shared findings of the Forum and the steps which need to be taken as follow up was prepared by the Office of Government, MONRE, the Embassies of Australia and Denmark, the Asian Development Bank and the World Bank. The statement appears in full in Annex 4.

MONRE Minister Pham Khoi Nguyen pointed out that it is difficult to make closing remarks for the first Mekong Delta Climate Change Forum, because the issues are hot, critical and complex. The large, active and consistent participation during the two days reflects the importance of this Forum and is a reason to

continue with it as an annual event. It is not possible to present conclusive solutions – there is so much still to learn and trial. There is agreement on that the Mekong Delta is one of the regions in the world most vulnerable to climate change. And within the Delta the poor communities will be the most affected.

Impacts of climate change are already felt: storms like Linda and Durian were once 1 in 30 year storms, but their frequency is increasing. The Mekong Delta is vital not only to Vietnam but to the world. Exports from this region are substantial. Climate change will affect economic development in the Delta with national repercussions. Past thinking and planning has not considered climate change and performance of existing and planned infrastructure may be affected.

Considerations from this Forum will be included in the Prime Minister's speech to COP15. However, it is important to prevent the two extremes of panic (exaggeration and misinformation) on the one hand and complacency and business as usual on the other.

### **NTP IMPLEMENTATION**

The Government of Vietnam, through its National Target Program to Respond to Climate Change, has set up a framework for adaptation and mitigation planning. In the implementation of the NTP it is important that:

- Scientists get their minds together and see what has been done, do a gap analysis, and work to fill missing information;
- A comprehensive and integrated approach needs to be used in the planning process;
- Regarding adaptation and mitigation action planning at local level:
  - DONRE directors must study the MONRE guidelines;
  - MONRE and international organisations need to provide technical support when DONREs request it;
  - The provincial capacity needs to be improved, including training for institutional strengthening;
  - Donors need to reduce the complexity of their procedures at regional, provincial and local level so that local agencies can access resources for adaptation more readily.
- Awareness of the people needs to be raised. The south of Vietnam is not as used to storms as the Central and Northern regions. The south is less prepared and for that reason the impacts can turn out to be more disastrous.
- Vietnam needs a large amount of money to resolve the climate change issues. The Ministry of Finance has allocated VND 6-7 billion to assist provinces. For the whole NTP phase 1 (-2011, 2011-2015, 2015-) US\$ 3.9 billion is needed.

### **REGARDING IMMEDIATE NEXT STEPS:**

- The Mekong Delta Climate Change Forum itself is not intended for making solutions – it is a regular forum for exchange, learning, coordination and commitment. The next step is to develop an action plan for the Mekong Delta region. That action plan needs to be based on a comprehensive impact and vulnerability study which draws together existing research and fills the gaps in knowledge.
- Agreements made at COP15 will be discussed at the next Mekong Delta Forum to be conducted in November 2010. The Forum partners need to begin preparing for that event early.
- Vietnam is committed to use cleaner energy, even though there is no obligation. Denmark will help to develop wind power and other technologies which improve Vietnam's GMG performance.
- The South Western Steering Committee has to nominate a representative to work with MONRE on the Mekong Delta regional study and action plan.
- The Forum report will be included in the Vietnam COP15 report to be presented by the Prime Minister.

## ANNEX 1: AGENDA

11 November 2009: 17:00 – 18:00

## PRESS CONFERENCE

Press Release, Introduction about Objectives and Message of the Forum

12 November 2009: 08:00 - 17:30

## FORUM DAY 1

| Time  | Contents   | Responsibility   |
|---|--|--|
| 08.00   | Registration   | Forum Organising Committee   |
| <b>OPENING SESSION</b>  |  |  |
| 08.30   | Introduction to the participants, agenda and objectives                          | Facilitator/Government Office  |
|   | Welcome  | Can Tho PPC Chairman<br>Tran Thanh Man   |
|   | Opening remarks  | Government Office Minister<br>Nguyen Xuan Phuc   |
|   | Opening remarks  | MONRE Minister<br>Pham Khoi Nguyen   |
|   | Welcome  | Vice-Chair Mekong Delta South West Steering<br>Committee Luu Phuoc Luong                             |
|   | Opening remarks  | Australian Ambassador<br>Allaster Cox  |
|   | Opening remarks  | Danish Ambassador<br>Peter Lysholt Hansen  |
|   | Opening remarks  | ADB Country Director for Vietnam<br>Ayumi Konishi  |
|   | Opening remarks  | World Bank representative<br>Hoona Kim   |
|   | Keynote speech: Road to Copenhagen -<br>Preparation for COP 15                   | Danish Ambassador<br>Peter Lysholt Hansen  |
| <b>MORNING SESSION: PLENARY MEETING<br/>CLIMATE CHANGE CONVENTION NEGOTIATION:<br/>GLOBAL EXPERIENCE AND VIETNAM'S SCENARIOS</b><br>Co-chairs: Government Office, MONRE, Central Party Office |  |  |
| 9:50  | 1. Climate Change and the Participation of<br>Vietnam in the Negotiation Process | <b>MONRE</b> - Tran Thi Minh Ha<br>Director General of ICD   |
| 10.10   | 2. Vietnam Climate Change Scenarios  | <b>MONRE</b> - Tran Thuc<br>Director General, Institute of Meteorology, Hydrology<br>and Environment |
| 10:30   | 3. Integrating Climate Change into Development<br>Sector Plans and Programs      | <b>AUSTRALIA</b> - Claire Ireland Environment Advisor,<br>Australian aid program                     |
| 10:45   | 4. Climate Change: Global Perspectives and<br>Relevance for the Delta            | <b>World Bank</b> - Douglas Graham<br>Environment & Social Sectors Coordinator Vietnam               |
| 11:00   | 5. The Mekong Region Climate Change  | <b>MRCS</b> - Jeremy Bird  |

|  |   |   |
|--|---|---|
|  | Adaptation Initiative   | Chief Executive Officer, Mekong River Commission Secretariat  |
| 11:15  | 6. The Economics of Climate Change in Southeast Asia: A Regional Review     | <b>ADB</b> - Juzhong Zhuang<br>Assistant Chief Economist, Economics and Research Department               |
| 11:30  | 7. Climate Change Issues in the Mekong Delta Region                         | Pham Chanh Truc<br>Former Deputy Head Central Economics Committee   |
| 11:40  | Plenary questions, comments and discussion                                  | All participants  |
| 12:00  | <i>Lunch</i>  |   |
| <b>AFTERNOON SESSION: PLENARY MEETINGS</b><br><b>NATIONAL AND MEKONG DELTA CLIMATE CHANGE PLANS</b><br>Co-Chairs: World Bank, Australian Embassy, Danish Embassy |   |   |
| 13:30  | 8. Introduction to the National Target Program to Respond to Climate Change | <b>MONRE</b> - Le Cong Thanh<br>Director General, Department of Meteorology, Hydrology and Climate Change |
| 13:50  | 9. MARD Action Plan to Respond to Climate Change                            | <b>MARD</b> - Nguyen Binh Thin<br>Steering Committee for Climate Change Mitigation and Adaptation         |
| 14:10  | 10. MOH Challenges in Response to Climate Change                            | <b>MOH</b> - Le Thi Thu Hien<br>General Department of Preventive Medicine and Environment                 |
| 14:30  | 11. MOIT Challenges in Response to Climate Change                           | <b>MOIT</b> - Nguyen Van Thanh<br>Industrial Safety Techniques and Environment                            |
| 14:50  | Plenary questions, comments and discussion                                  | All participants  |
| 15:10  | <i>Coffee break</i>   |   |
| <b>THREATS OF CLIMATE CHANGE TO THE MEKONG DELTA</b><br>Co-Chairs: MONRE, Danish Embassy, Australian Embassy, World Bank   |   |   |
| 15:25  | 12. The Climate Change threats in the Mekong Delta                          | <b>SEA START</b> - Anond Snidvong<br>Director   |
| 15:45  | 13. Sea Level Rise and Flooding with Climate Change in the Mekong Delta     | <b>MARD</b> - Nguyen Xuan Hien<br>Deputy Director, Southern Institute of Water Resources Planning         |
| 16:05  | 14. World Bank Support to Climate Change Resilience of the Mekong Delta     | <b>World Bank</b> - Hoonae Kim<br>Sector Manager Sustainable Development Department                       |
| 16:25  | 15. ADB's Climate Change Related Interventions                              | <b>ADB</b> - Ayumi Konishi<br>ADB Country Director, Vietnam   |
| 16:45  | Plenary questions, comments and discussion. Closing of the first day.       | <b>MONRE</b> - Pham Khoi Nguyen<br>Minister   |
| 18:00  | <i>Gala dinner</i>  | All participants  |

**13 November: 08:00 – 17:00****FORUM DAY 2**

08:00 - 10:15: Three parallel Technical Sessions

10:15 - 12:30: Plenary meeting

**SESSION A: Natural resources and environment, Agriculture, Fisheries, Water**

Chair: MARD IWRP Director General. Panel experts: AusAID and GTZ

|  |  |   |
|--|--|---|
| 8:00   | 16. Fisheries - Trends, Natural Disasters and Potential Effects of Climate Change - Soc Trang Province experience  | <b>DARD Soc Trang</b> - Nguyen Van Khoi<br>Vice-Director  |
| 8:20   | 17. Agriculture and irrigation - Trends, Natural Disasters and Potential Effects of Climate Change - An Giang Province experience                            | <b>DARD An Giang</b> - Do Vu Hung<br>Vice-Director  |
| 8:40   | 18. Coastal Protection, Tourism and Nature Conservation - Trends, Natural Disasters and Potential Effects of Climate Change - Kien Giang Province experience | <b>DONRE Kien Giang</b> - Thai Thanh Luom<br>Director General   |
| 9:00   | 19. A Programmatic Approach to Natural Resource Management in the South West Mekong Delta  | <b>GTZ</b> - Lazlo Pancel<br>Programme Coordinator  |
| 9:20   | 20. Future Research Plans for Adaptation in Rice-Based Cropping Systems  | <b>ACIAR</b> - Geoff Morris<br>Country Manager Australian Centre for International Agricultural Research, Vietnam |
| 9:40   | Questions, comments and discussion   | All participants of section A   |
| 9:50   | <i>Coffee Break</i>  | <i>All participants of three sections</i>   |
| <b>SESSION B: Infrastructure and urban planning</b><br>Chair: UNDP Vietnam. Panel experts: AusAID and Dept. of Meteorology, Hydrology and CC |  |   |
| 8:00   | 21. HCMC Climate Change Impact and Adaptation Study - Lessons for the Delta Mekong   | <b>ADB</b> - Jeremy Carew-Reid<br>ADB Consultant – Study Team Leader  |
| 8:20   | 22. Urban Planning - Trends, Natural Disasters and Potential Effects of Climate Change - Can Tho Province experience   | <b>DOC Can Tho</b> - Ky Quang Vinh<br>Steering Committee for Climate Change                                       |
| 8:40   | 23. Infrastructure - Trends, Proposed Developments and Expected Impacts of Climate Change - Ca Mau Province Experience                                       | <b>SIWRP</b> - Nguyen Xuan Hien<br>Vice-Director  |
| 9:00   | 24. Transport - Land and Water - Trends, Natural Disasters and Potential Effects of Climate Change - Dong Thap Province Experience                           | <b>DOT Dong Thap</b> - Nguyen Van The<br>Deputy Director General  |
| 9:20   | 25. The Mekong Delta Climate Change Impact and Adaptation Project  | <b>ICEM</b> - Jeremy Carew-Reid<br>Director, International Centre for Environmental Management                    |
| 9:40   | Questions, comments and discussion   | All participants of section B   |
| 9:50   | <i>Coffee Break</i>  | <i>All participants of three sections</i>   |
| <b>SESSION C: Experience in Climate Change Adaptation</b><br>Chair: IMHEN MONRE. Panel Experts: Danish Embassy and World Bank                |  |   |
| 8:00   | 26. Vietnam's Experience in Natural Disaster Prevention and Responding to Climate Change   | <b>MARD</b> - Le Minh Nhat<br>Deputy Director General, Central Institute for Flood and Storm Control              |
| 8:20   | 27. Agriculture, Rice Production and Climate Change: Methods and Lessons from the Mekong Delta   | <b>Can Tho University</b> - Le Anh Tuan<br>Dragon Institute   |
| 8:40   | 28. Co-management Experience in Mangrove Sustainable Management and Effective Protection of Soc Trang Province   | <b>GTZ</b> - Klaus Schmitt<br>CTA, Management of Natural Resources in Coastal Soc Trang Province                  |
| 9:00   | 29. Community Development Experience in  | <b>NGO centre</b> - Trine Glue Doan   |

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|   | Climate Change Impacts and Adaptation - Methods and Lessons from the Mekong Delta | Climate Change Working Group                              |
| 9:20  | 30. Climate Change Adaptation and Mitigation in Ben Tre Province                  | <b>DONRE Ben Tre</b> - Truong Duy Hai<br>Director General |
| 9:40  | Questions, comments and discussion  | All participants of section C                             |
| 9:50  | <i>Coffee Break</i>   | <i>All participants of three sections</i>                 |
| <b>10:05 - 12:30: PLENARY MEETING</b><br>Co-chairs: MONRE, Line Ministry Senior Officers, Representative from INGOs         |   |   |
| 10:05   | Feedback to plenary from Session A  | Session A Chair and Panel Experts                         |
| 10:35   | Feedback to plenary from Session B  | Session B Chair and Panel Experts                         |
| 11:05   | Feedback to plenary from Session C  | Session C Chair and Panel Experts                         |
| 11:35   | Plenary discussion  | All participants  |
| <b>CLOSING STATEMENTS FROM THE CHAIRS</b><br>Co-chairs: MONRE, Line Ministries' Senior Officers, Representatives from INGOs |   |   |
| 11:55   | Joint Summary Statement from the Chair  | <b>MONRE</b> - Pham Khoi Nguyen<br>Minister               |
| 12:15   | Forum Closing   | <b>Office of Government</b> - Ngyuen Xuan Phuc, Minister  |
| 12:25   | <i>Lunch</i>  | <i>All participants</i>                                   |

## ANNEX 2: PARTICIPANT LIST

|     | NAME OF PARTICIPANTS                  | POSITIONS               | ORGANIZATION                             | CONTACT INFORMATION    |
|-----|---------------------------------------|-------------------------|--|------------------------|
| I   | Office of Government                  |                         |  |                        |
| 1.  | Nguyen Xuan Phuc                      | Minister                | Office of Government                     |                        |
| 2.  | Nguyen Chi Thanh                      | Deputy Director         | Dept. Of International Relations         |                        |
| 3.  | Nguyen Thi Lieu                       | Officer                 | Dept. of International Relations         |                        |
| 4.  | Nguyen Tien Dung                      | Deputy Director         | Human Resources Department.              |                        |
| 5.  | Đo Tuan Dung                          | Officer                 | Human Resources Department               |                        |
| 6.  | Pham Khac Hue                         | Deputy                  |  |                        |
| 7.  | Huynh Vu Quoc Phuong                  |                         | Economic Department                      |                        |
| 8.  | Do Thi Thu Huong                      | Officer                 |  |                        |
| 9.  | Nguyen Thi Hoa Ly                     | Officer                 |  |                        |
| 10. | Chu Duc Thuan                         | Deputy Director         |  |                        |
| 11. | Nguyen Xuan Thanh                     | Director                | Administrative Department                |                        |
| 12. | Pham Chanh Truc                       | Former Deputy Manager   | Central Economic Department              |                        |
| 13. | Thai Hien Luong                       | Director                | Administrative Management Office II      |                        |
| 14. | Vo Duc Tung                           | Officer                 | Local Department                         |                        |
| 15. | Nguyen Van Hiep                       | Senior officer          | Local Department                         |                        |
| 16. | Trinh Thi Hong Nhung                  | Administrator           |  |                        |
| 17. | Đo Xuan Hung                          |                         |  |                        |
| 18. | Nguyen Duc Minh                       |                         |  |                        |
| 19. | Ngo Xuan Lich                         |                         |  |                        |
| 20. | Nguyen Ba Duyen                       |                         |  |                        |
| II  | Office of the President               |                         |  |                        |
| 21. | Bui Thi Keng                          | Director                | Law Department                           | 0438439435 0914511848  |
| 22. | Pham Thi Thanh Huyen                  | Head of the Division    | Dept. of Organization and Administration | 0913571138             |
| 23. | Nguyen Nam                            | Officer                 | Dept. of Foreign Affairs                 | 0438233959 0912292090  |
| 24. | Pham Ngoc Long                        | Officer                 | Dept. of Emulation & Commendation        | 0977899492             |
| 25. | Nguyen Thi Van Quy                    | Officer                 | Accounting Department                    | 0438233958 01697914860 |
| 26. | Nguyen Thanh Tung                     | Officer                 |  | 0916056699             |
| III | Office of the Central Communist Party |                         |  |                        |
| 27. | Nguyen Huu Tu                         | Deputy Director         |  |                        |
| 28. | Lam Van Hiep                          | Deputy Director General | Local Dept. II                           |                        |
| 29. | Nguyen Van Dua                        | Deputy                  | Local Dept. II                           |                        |
| 30. | Nguyen Quang Huan                     | Deputy                  | Local Dept. II                           |                        |



|     |   |                             |   |                                  |
|-----|---|-----------------------------|---|----------------------------------|
| 31. | Nguyen Thi Hoan                                       | Officer                     | Administrative Department                                       | 0948011688                       |
| 32. | Nguyen Quoc Ngu                                       | Deputy Director General     | Economic Institute  | 0936903529                       |
| IV  | Office of the National Assembly                       |                             |   |                                  |
| 33. | Luong Minh Tuan                                       | Deputy Director General     | Law Research Institute  | 0912154457                       |
| 34. | Nguyen Thiem Ngoc                                     | Deputy Head                 | Administrative Dept.  | 01668651384                      |
| 35. | Do Quong  | Officer                     | Human Resources Dept.   |                                  |
| 36. | Nguyen Thi Thuy                                       | Officer                     | Communication Centre  | 0905562389                       |
| 37. | Pham Thi Phuong Lien                                  | Officer                     | Information Centre  |                                  |
| V   | Ministry of Natural Resources and Environment (MONRE) |                             |   |                                  |
| 38. | Pham Khoi Nguyen                                      | Minister                    | MONRE   | 0438359540                       |
| 39. | Tran Thi Minh Ha                                      | Director General            | International Cooperation Dept.                                 | 0904069907 minhhatran@fpt.vn     |
| 40. | Pham Phu Binh   | Deputy Director General     | International Cooperation Dept.                                 | 0983125125 PPBinh@monre.gov.vn   |
| 41. | Tran Thuc   | Director General            | Institute of Meteorology, Hydrology and Environment             | 0903282894 tranthuc@vkttv.edu.vn |
| 42. | Le Cong Thanh   | Director General            | Dept. of Meteorology, Hydrology & CC                            | 0437759384 vnccoffice@fpt.vn     |
| 43. | Hoang Manh Hoa  | Director                    | Dept. of Meteorology, Hydrology & CC                            |                                  |
| 44. | Nguyen Thi Binh Mi                                    | Head of the Division        | Dept. of Meteorology, Hydrology & CC                            |                                  |
| 45. | Pham Thi My   | Chief Editor                | Natural Resources & Environment Newspaper                       |                                  |
| 46. | Lê Thi Tuyet  | Chief Editor                | Natural Resources & Environment Magazine                        |                                  |
| 47. | Le Duc Trung  | Secretary General           | Vietnam National Mekong Committee                               |                                  |
| 48. | Tang The Cuong  | Deputy Director             | Administration Department                                       |                                  |
| 49. | Nguyen Thi Kim Hao                                    | Officer                     | International Cooperation Dept.                                 | 0983841976                       |
| 50. | Dang Phuong Loan                                      | Officer                     | International Cooperation Dept.                                 |                                  |
| 51. | Nguyen Thi Cam Uyen                                   | Officer                     | International Relations Dept.                                   | 0912212060                       |
| 52. | Vu Thi Kim Phuong                                     | Secretary                   | International Support Group Environment                         | 0437735510                       |
| 53. | Ngan Ngoc Vy  | Coordinator                 | International Support Group Environment                         | 0437735510                       |
| 54. | Nguyen Thi Hien Thuan                                 | Director                    | Dept. of Science, Training and International Cooperation, IMHEN | hienthuan@vkttv.edu.vn           |
| 55. | Nguyen Thi Thanh Hai                                  | Director                    | Dept. of Finance and Planning, IMHEN                            | thanhhai@vkttv.edu.vn            |
| 56. | Tran Thi Thu Hang                                     | Officer                     | Department of Finance and Planning, IMHEN                       |                                  |
| 57. | Le Thi Tuyet  | Chief Editor                | MONRE Magazine  |                                  |
| 58. | Le Van Hop  | Director General            | Dept. of Emulation & Commendation                               |                                  |
| 59. | Pham Van Do   | Deputy Chief Representative | MONRE in HCMC   |                                  |
| 60. | Giap Van Vinh   | Director General            | Centre of Hydrology, Mekong Delta                               | 0913998640 giapvanvinh@yahoo.com |
| 61. | Tran Van Ngo  | Director General            | Institute of Science & Meteorology and Environment              |                                  |
| 62. | Truong Duc Tri  |                             | Dept. of Climate Change   |                                  |

|        |                        |                         |   |                                     |
|--------|------------------------|-------------------------|---|-------------------------------------|
| 63.    | Nguyen Thi Lan         |                         | Dept. of Climate Change   |                                     |
| VI     | Other Ministries       |                         |   |                                     |
| 64.    | Nguyen Binh Thin       | Head / Deputy Director  | MARD Standing Office / Steering Committee CC Mitigation and Adaptation                | 0913095561 thinnb.khcn@mard.gov.vn  |
| 65.    | Le Minh Nhat           |                         | MARD  | 0905757159                          |
| 66.    | To Trung Nghia         | Director General        | MARD Institute for Water Resource Planning  | 0438254081 0913234327               |
| 67.    | Cao Kim Phung          | Deputy Director General | MOT   | 0439421889 0903840095               |
| 68.    | Chu Manh Hung          | Director General        | MOT Environment Department  | 0903418326 hungchu@mt.gov.vn        |
| 69.    | Nguyen Tuan Anh        | Deputy Director General | MOIT Education Dept. of Natural Resources and Environment                             | 0983987600                          |
| 70.    | Nguyen Van Thanh       | Deputy Director General | MOIT Industrial Safety Techniques and Environment Dept.                               | 0422218316 ThanhNV@moit.gov.vn      |
| 71.    | Le Thi Thu Hien        | Deputy Head             | MOH Division of Health and Environment, Preventive Health and Environment Dept.       | 01669267217                         |
| 72.    | Sau Nghe               |                         | Tien Phong Newspaper  |                                     |
| 73.    | Nguyen Trung Dung      | Deputy Manager          | Technical Science Management Dept., Institute of Architecture, Urban & Rural Planning | 0902019968                          |
| VII    | Ho Chi Minh City       |                         |   |                                     |
| 74.    | Dao Anh Kiet           | Director                | DONRE HCMC  | 038293661                           |
| 75.    | Ha Minh Chau           | Officer                 | DONRE HCMC, Solid Waste Management Dept.  | 0918556578                          |
| 76.    | Nguyen Xuan Hoang      | Deputy Director         | DARD HCMC, Agency for Flood and Storm Control and Prevention                          | 0838297652 0903130360               |
| 77.    | Duong Hong Thanh       | Deputy Director         | Department of Transport   | 0838224376 0903702786               |
| 78.    | Bao Thanh              | Director General        | Southern Sub-Institute of Meteorology, Hydrology & Environment                        |                                     |
| 79.    | Nguyen Van Thanh       |                         | DARD  |                                     |
| VIII   | Mekong Delta Provinces |                         |   |                                     |
| VIII.1 | An Giang Province      |                         |   |                                     |
| 80.    | Pham Thanh Thai        | Director General        | An Giang DPI  | 0763852913                          |
| 81.    | Tran Quang Trung       | Officer                 | An Giang DPI  |                                     |
| 82.    | Cao Can Be             | Director General        | An Giang DONRE  | 0763853709 stnmtag@gmail.com        |
| 83.    | Doan Ngoc Pha          | Deputy Director General | An Giang DARD   | 0763852164 sonongnghiep@gmail.com   |
| 84.    | Huynh Cong Tuan        | Deputy Director General | An Giang Dept. of Traffic & Transport   | 0763831250 0918059234               |
| VIII.2 | Bac Lieu Province      |                         |   |                                     |
| 85.    | Nguyen Thanh Be        | Vice Chairman           | Provincial People's Committee   | 07813824031                         |
| 86.    | Quan Trong Ninh        | Chairman                | Provincial Fatherland Front   |                                     |
| 87.    | Hoang Nhat             | Deputy Director General | Dept. of Planning & Investment  | 07813956 537 tonghopbl@yahoo.com.vn |

|        |                     |                         |  |                                       |
|--------|---------------------|-------------------------|--|---------------------------------------|
| 88.    | Lam Quyet Thang     | Director General        | DONRE  | 07813 823860 stnmt@baclieu.gov.com    |
| 89.    | Phan Truong Giang   | Director General        | Bac Lieu DARD                                | 07813823826 snnbl@vnn.vn              |
| 90.    | Phan Hung Viet      | Director General        | Bac Lieu DOIT                                | 07813824538 0913892198                |
| VIII.3 | Ben Tre Province    |                         |  |                                       |
| 91.    | Nguyen Van Hieu     | Vice Chairman           | Provincial People's Committee                | 0913886060                            |
| 92.    | Nguyen Kim Long     | Officer                 | Provincial People's Committee                | 0986764367                            |
| 93.    | Huynh Van Be        | Party Secretary         | Provincial People's Committee                | 0913965156                            |
| 94.    | Nguyen Ngoc Thu     | Vice Chairman           | Ben Tre Provincial Fatherland Front          | 0918469018                            |
| 95.    | Do Minh Duc         | Director General        | Ben Tre DPI                                  | 0753822 148 0918036886                |
| 96.    | Truong Duy Hai      | Director General        | Ben Tre DONRE                                | 0753822210 sotnmt_bt@yahoo.com        |
| 97.    | Huynh Thanh Truc    | Manager                 | Ben Tre DARD, disaster mitigation project    | 0753822101 0909363555                 |
| 98.    | Nguyen Van Tam      | Deputy Director General | Dept. of Construction                        | 0753822155                            |
| VIII.4 | Ca Mau Province     |                         |  |                                       |
| 99.    | Trinh Minh Thanh    | Chairman                | Ca Mau DONRE                                 | 07803815329 0913893078                |
| 100.   | Mai Huu Chinh       | Director General        | Ca Mau DPI                                   | 07803831332 0913893055                |
| 101.   | Nguyen Thanh Vinh   | Deputy Director General | Ca Mau DONRE                                 | 07803833025 sotnmt@camau.gov.vn       |
| 102.   | Quach Minh Luan     | Deputy Director General | Dept. of Industry & Trade                    | 07803831042 socongthuong@camau.gov.vn |
| 103.   | To Quoc Nam         | Deputy Director General | Ca Mau DARD                                  | 07803831500 snnvptntcm@hcm.vnn.vn     |
| VIII.5 | Đông Thập Province  |                         |  |                                       |
| 104.   | Nguyen Hai Quan     | Chairman                | Dong Thap DONRE                              |                                       |
| 105.   | Chau Hong Phuc      | Deputy Director General | Dong Thap DPI                                |                                       |
| 106.   | Vo Minh Tam         | Deputy Director General | Dong Thap DONRE                              | 0673852097 0903934153                 |
| 107.   | Vu Thi Nhung        | Deputy Head             | Dong Thap Environment Protection Sub-Dept.   | 0913088199 nhungmtdt@yahoo.com        |
| 108.   | Dang Ngoc Loi       | Deputy Director General | Dong Thap DARD                               | 0673851427 0913967970                 |
| 109.   | Nguyen Van The      | Deputy Director General | Dept. of Traffic & Transport                 | 0918341244                            |
| VIII.6 | Hau Giang Province  |                         |  |                                       |
| 110.   | Tran Thanh Lap      | Vice Chairman           | Provincial People's Committee                |                                       |
| 111.   | Nguyen Van Ben      | Director                | Hau Giang DPI, Economic Division             | 07113870211 0913686702                |
| 112.   | Nguyen Van Huyen    | Director General        | Hau Giang DONRE                              | 07113870440 sotnmt@haugiang.gov.vn    |
| 113.   | Nguyen Van Tuan     | Deputy Director General | Hau Giang Dept. Traffic & Transport          | 07113878908 sogtvt@haugiang.gov.vn    |
| 114.   | Huynh Thanh Hoang   | Deputy Director General | Hau Giang Dept. of Industry & Trade          | 07113878891 0913870754                |
| 115.   | Huynh Van Hung      | Vice Chairman           | Provincial Fatherland Front                  |                                       |
| 116.   | Đinh Van Thao       |                         | Department of Transport                      |                                       |
| 117.   | Pham Quoc An        | Deputy Director         | Hau Giang DOIT, Business Management Division |                                       |
| VIII.7 | Kien Giang Province |                         |  |                                       |
| 118.   | Trinh Van Sut       | Standing Vice Chairman  | Provincial Fatherland Front                  | 0939292524 0913993490                 |
| 119.   | Thai Thanh Luom     | Director General        | Kien Giang DONRE                             | 0939208998 haithanhlum@yahoo.com.vn   |

|         |                     |                           |   |                                     |
|---------|---------------------|---------------------------|---|-------------------------------------|
| 120     | Mai Anh Nhin        | Deputy Director General   | Kien Giang DARD   | 0773812445 snnptnt@kiengiang.gov.vn |
| 121     | Cao Van Nam         |                           | Kien Giang DARD   |                                     |
| 122     | Luong Thanh Hai     | Director General          | Kien Giang Provincial Dept. of Science & Technology             | 0773862003 0913993348               |
| 123     | Nguyen Van Duoc     | Vice Chairman             | Union Association   |                                     |
| VIII.8  | Long An Province    |                           |   |                                     |
| 124     | Mai Van Chinh       | Standing Member           | Long An Provincial Party  |                                     |
| 125     | Vo Le Tuan          | Chairman                  | Long An Provincial Fatherland Front                             | 0913876037                          |
| 126     | Dang Van Sang       | Deputy Director General   | Long An DPI   | 0723826380 0913876139               |
| 127     | Huynh Thi Phep      | Deputy Director General   | Long An DONRE   | 0723829810 thiepnvntmt@yahoo.com    |
| 128     | Le Phat Quoi        | Manager                   | Long An Dept. of Science & Technology, Science Management Dept. | 090-613977 quoilp@hcm.vnn.vn        |
| 129     | Luu Dinh Khan       | Director General          | Long An Dept. of Traffic & Transport                            | 0723826106 0913876041               |
| VIII.9  | Soc Trang Province  |                           |   |                                     |
| 130     | Tran Thanh Nghiep   | Vice Chairman             | Provincial People's Committee                                   | 0913890034                          |
| 131     | Ly Binh Cang        | Standing Vice Chairman    | Soc Trang DONRE   | 0919305321                          |
| 132     | Le Thanh Tri        | Director General          | Soc Trang DPI   | 0793822569 0913983562               |
| 133     | Nguyen Van Khoi     | Deputy Director General   | Soc Trang DONRE   | 0793821913 daoduysu@yahoo.com       |
| 134     | Quach Van Nam       | Director General          | Soc Trang DONRE   | 0793820514 0913890196               |
| 135     | Do Van Phu          | Deputy Director General   | Soc Trang Dept. of Science & Technology                         | 0793822450 0913890290               |
| 136     | Duong Quoc Viet     |                           | Soc Trang Dept. of Science & Technology                         |                                     |
| VIII.10 | Tien Giang Province |                           |   |                                     |
| 137     | Nguyen Van Phong    | Vice Chairman             | Provincial People's Committee                                   | 0733873153 0913879177               |
| 138     | Nguyen Thanh Minh   | Deputy Director General   | Tien Giang DPI  | 0733873576 0913962715               |
| 139     | Phan Thanh Hien     | Director General          | Tien Giang DONRE  | 0733872475 stnmt@tiengiang.gov.vn   |
| 140     | Nguyen Van Khang    | Director General          | Tien Giang DARD   | 0733855686 snn@tiengiang.gov.vn     |
| VIII.11 | Tra Vinh Province   |                           |   |                                     |
| 141     | Le Huu Nghi         | Deputy Director           | PPC Provincial office   | 0743855892 0917911818               |
| 142     | Thach Hel           | Standing Deputy Secretary | Provincial People's Committee                                   | 0743852679 0743853836               |
| 143     | Nguyen Thanh Liem   | Chief of the Office       | Tra Vinh DONRE  | 0743840280 stnmt@travinh.gov.vn     |
| 144     | Duong Tam           | Director General          | Tra Vinh Dept. of Construction                                  | 0743862544 0913739679               |
| 145     | Nguyen Hoang Nghia  | Vice Chairman             | Provincial Fatherland Front                                     |                                     |
| VIII.12 | Vinh Long Province  |                           |   |                                     |
| 146     | Truong Van Sau      | Vice Chairman             | Provincial People's Committee                                   | 0703822151                          |
| 147     | Tran Van Ron        | Director General          | Vinh Long DPI   | 0703823319 0913712753               |
| 148     | Nguyen Thanh Liem   | Director General          | Vinh Long DONRE   | 0703822242 0913125490               |
| 149     | Huynh Tan Loi       | Deputy Director General   | Vinh Long DARD  | 0703822223 phanthitron@gmail.com    |

|     |                        |                                |  |                                    |
|-----|------------------------|--------------------------------|--|------------------------------------|
| 150 | Dang Hoc Triet         | Deputy Director General        | Dept. of Construction                                  |                                    |
| 151 | Vo Thi Anh Dao         | Head                           | Environment Protection Sub-Dept.                       |                                    |
| IX  | Can Tho Province       |                                |  |                                    |
| 152 | Nguyen Thanh Son       | Vice Chairman                  | Can Tho City People's Committee                        |                                    |
| 153 | Duong Ba Dien          | Director General               | DONRE  |                                    |
| 154 | Ky Quang Vinh          | Director                       | Center for Resources & Environment Monitoring          | 0963619065 quangvinh@cantho.gov.vn |
| 155 | Pham Nam Huan          | Deputy Head                    | DONRE, Environmental Protection Dept.                  | 0909204545 phamnamhuan@gmail.com   |
| 156 | Pham Van Quynh         | Director General               | DARD   | 0913974873 vanquynh@cantho.gov.vn  |
| 157 | Vuong Thi Lap          | Head                           | DARD, Irrigation Dept.                                 | 0913126010                         |
| 158 | Bui Thi Nga            | Manager                        | DOIT, Industry & Environment Management Dept.          | 0918 398787                        |
| 159 | Dinh Van Thao          | Deputy Director General        | Can Tho Dept. of Traffic & Transport                   | 0913870386                         |
| 160 | Tran Thanh Man         | Chairman                       | Can Tho City People's Committee                        |                                    |
| 161 | Tran Thanh Tuan        |                                | People's Committee                                     |                                    |
| 162 | Manh Ha                | Chief of the Provincial Office | Can Tho City People's Committee                        |                                    |
| 163 | Tran Ngoc Nguyên       | Director General               | Dept. Science & Technology, Can Tho                    | 0913817981 trungnhan@cantho.gov.vn |
| 164 | Luu Phuoc Luong        | Deputy Head                    | South West Steering Committee                          | phuocluong@cantho.gov.vn           |
| 165 | Huynh Thanh Phuong     |                                | People's Committee, Codo district                      |                                    |
| 166 | Ho Hung                | Journalist                     | Saigon Economic Times                                  |                                    |
| 167 | Le Nhu Giang           | Journalist                     | Laodong Newspaper                                      |                                    |
| 168 | Nguyen Van Sang        |                                | Can Tho University                                     |                                    |
| 169 | Le Vu Tuan             | Journalist                     | Laodong Newspaper                                      |                                    |
| 170 | Nguyen Minh The        | Deputy Director                | DONRE  |                                    |
| 171 | Nguyen Thi Huynh Dung  |                                | Management Unit Industrial & Processing Zones, Can Tho |                                    |
| 172 | Nguyen Kim Ngoc        |                                | Dept. of Information & Communication                   |                                    |
| 173 | Nguyen Thi Kieu        |                                | DARD Plant Protection Sub-Dept.                        |                                    |
| 174 | Phan Ho Hai Uyen       |                                | Provincial DONRE                                       |                                    |
| 175 | Ho Minh Ha             |                                | Provincial DONRE                                       |                                    |
| 176 | Nguyen Thi H.Thuy      | Police officer                 | City Police Office                                     |                                    |
| 177 | Duong Dung Hiep        |                                | People's Committee, Ô Môn District                     |                                    |
| 178 | Phan Hien Dat          |                                | People's Committee, Ninh Kieu District                 |                                    |
| 179 | Pham Viet Trung        | Chairman                       | People's Committee, Chi Lang District                  |                                    |
| 180 | Le Van Be Tam          | Deputy Manager                 | Dept. of Science and Investment, Economics Dept.       |                                    |
| 181 | Truong Thi Huong Giang | Police officer                 | City Police Office                                     |                                    |
| 182 | Tran Van Tu            |                                | Union of Science & Technology Association              |                                    |
| 183 | Nguyen Minh Thong      | Director                       | Dept. of Information & Communication                   |                                    |
| 184 | Nguyen Huu Duc         | Journalist                     | Vietnam Agriculture Newspaper                          |                                    |

|      |                                      |  |  |   |
|------|--------------------------------------|--|--|---|
| 185  | Nguyen Van Ngo                       |  | DONRE, Binh Thuy district  |   |
| 186  | Pham Huu Dung                        | Police officer                           | City Police Office   |   |
| 187  | Tran Hong Tuyen                      | Journalist                               | Saigon Newspaper   |   |
| 188  | Le Thanh Tai                         |  | University of Medicine & Pharmacy                                    |   |
| X    | Southern Institutes                  |  |  |   |
| 189  | Bao Thanh                            | Director General                         | Southern Institute of Meteorology & Hydrology                        | 0838290057 sihymete@hcm.fpt.vn          |
| 190  | Nguyen Xuan Hien                     | Deputy Director General                  | Southern Institute of Water Resources Research                       | 0838350850 nxhien@hcm.vnn.vn            |
| XI   | Mekong Delta Universities            |  |  |   |
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| 241 | Hans Jouck                              |                                | GTZ - CIM  |  |
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|      |                                   |                         |                                     |            |
|------|-----------------------------------|-------------------------|-------------------------------------|------------|
| 243  | Mr Homma                          |                         | JICA                                |            |
| 244  | Tran Van Huynh                    |                         | JICA                                |            |
| 245  | Ha Thuy Anh                       |                         | JICA                                |            |
| 246  | Nguyen Van Minh                   |                         | KFW                                 |            |
| 247  | Sharon Brown                      | Chief Technical Advisor | GTZ                                 |            |
| 248  | Luong Thanh Hai                   | Director                | GTZ KG/ DOST                        |            |
| 249  | Tham Ngoc Diep                    | WAP Officer             | WWF                                 |            |
| 250  | Matthics Ceardragon               | Research Associate      | United Nations University           |            |
| 251  | Phuong Nguyen                     | Technical officer       | GTZ                                 |            |
| 252  | Kriengrai Bhuvanis                | Executive               | IBM                                 |            |
| XVII | National and local TV/Journalists |                         |                                     |            |
| 253  | Nguyen Duc Tuan                   | Editor                  | Government Web Portal               | 0904907414 |
| 254  | Yamada Mari                       | Journalist              | NHK Japan Television                |            |
| 255  | Tran Duc Vinh                     |                         | NHK Japan Television                |            |
| 256  | Nguyen Mai Anh                    |                         | NHK Japan Television                | 0913224210 |
| 257  | Le Gia Hieu                       |                         | Vietnam Television                  |            |
| 258  | Đang Thi Mai                      |                         | Vietnam Television                  |            |
| 259  | Hong Cam                          |                         | Agriculture Today                   |            |
| 260  | Nguyen Huong                      |                         | Can Tho Television                  |            |
| 261  | Huy Hieu                          |                         | Can Tho Television                  |            |
| 262  | Van Truong                        |                         | Tuoitre                             |            |
| 263  | Huynh Quoc Huy                    |                         | Agriculture Today                   |            |
| 264  | Huynh Van Khoi                    |                         | Investment Newspaper                |            |
| 265  | Nguyen Tien Trien                 | Journalist              | Vietnam Television center - Can Tho |            |
| 266  | Nguyen Quoc Tuan                  | Journalist              | Vietnam Television center - Can Tho |            |
| 267  | Nguyen Ngoc                       | Journalist              | Vietnam Television center - Can Tho |            |
| 268  | Pham The Hung                     | Journalist              | Vinh Long Television                |            |
| 269  | Nguyen Chi Nhan                   | Journalist              | ThanhNien                           |            |
| 270  | Nguyen Loi                        | Journalist              | Saigon Liberation                   |            |
| 271  | Thanh Truc                        | Journalist              | Can Tho                             |            |
| 272  | Huynh Hai                         | Journalist              | Dantri                              |            |
| 273  | Le Hoang Vu                       | Journalist              | Vietnam Agriculture Newspaper       |            |
| 274  | Phan Thanh Vu                     | Journalist              | Vietnam News Agency                 |            |
| 275  | Quach Chi Dung                    | Journalist              | Law Newspaper of HCM city           |            |



### ANNEX 3: OPENING SPEECHES

The full texts of four out of seven opening speeches and the keynote speech at the Mekong Delta Climate Change Forum have been provided and are presented below.

#### OPENING SPEECH BY TRAN THANH MAN - CHAIR OF CAN THO CITY PEOPLE'S COMMITTEE<sup>4</sup>

Your Excellency Deputy Prime Minister  
Your Excellency Mr. Allaster Cox, Australian Ambassador to Vietnam  
Your Excellency Mr. Peter Lysholt Hansen, Danish Ambassador to Vietnam  
Your Excellency Madame Victoria Kwakwa, Country Director of the World Bank in Vietnam,  
Your Excellency Mr. Ayumi Konishi, Country Director of the Asian Development Bank in Vietnam,

Dear Representatives from diplomatic agencies and international organizations,  
Dear Leaders of ministries, central agencies and provinces in the Mekong Delta,  
Distinguished guests,  
Ladies and Gentlemen,

Climate change and its impacts have affected not only one single country, but have become a global threat experienced today as a common concern of all countries in the world. Vietnam in general and the Mekong Delta in particular has been identified as one of the most vulnerable places to the severe impacts of CC and SLR. Today, the City of Can Tho and Mekong Delta provinces are highly honoured for having been chosen by the Office of the Government, Ministry of Natural Resources and Environment, Australian Embassy, Danish Embassy, the World Bank and the Asian Development Bank as the host to this "First International Forum on Climate Change in the Mekong Delta". On behalf of the Party Committee, government and people of the City of Can Tho, I would like to extend our warmest welcome to all of you at the First International Forum on Climate Change in the Mekong Delta" on the two days of 12th and 13th of November 2009 in our City.

Excellencies, Ladies and Gentlemen,  
Climate change due to greenhouse effects and polluting human activities to the earth's atmosphere has been an inevitable phenomenon in the world today. The focal areas of the Mekong Delta in general and in Can Tho City in particular have played a critical role as a foundation for the country's socio-economic development, but they have faced and will be facing huge challenges to their sustainable development due to CC. With low lying and flat topography, the City of Can Tho is typical in the Mekong Delta, and is also typical in its vulnerabilities to CC impact. During the last 30 years, local meteo-hydrological statistics indicate that Can Tho has been subject to increasingly adverse impacts of CC, for instance, increased average ambient temperature, total annual precipitation decline, increased frequencies of storms and tropical low pressures, all of which are further worsened by extreme flow regimes of the Hau River, causing deeper inundation in the rainy season yet water shortage and saline intrusion in the dry season.

Such climatic and hydrological extremes have driven the local people's unheard concerns for self-adaptation and efforts for disaster relief beyond their tolerance. Predictions show future increasing adverse impacts of climate change. In the dry season, water in the Hau River will be insufficient for domestic use and production and fail to prevent sea water intrusion. In the rainy season, however, deeper flooding will disrupt almost all activities in the city when SLR 50cm is combined with impacts from Mekong upstream. Scientists have proposed that construction works have foundation of 2.5m above national standards, which is infeasible for there is not enough soil to do so. Meanwhile, the locals do not only need a place to live but also sustainable livelihoods, and fewer people will find employment in the

<sup>4</sup> Mr Tran Thanh Man is also Alternate Member of the Party Central Committee and Deputy Secretary of Can Tho City Party Committee.

severe conditions like those predicted in the climate models. Therefore, owing to the failure to produce sufficient food during both rainy and dry seasons, the locals will face serious shortage of food, which contributes to the complexity of the world's food security. On the other hand, Can Tho, like other Mekong Delta provinces, is focusing on infrastructure and urban development, so responses to CC and SLR are extremely difficult challenges to urban planners. The prime concern is: CC adaptation cannot be exercised as separate measures for Can Tho or any other locality alone, but must be concerted for the whole Delta, and that requires urgent, intelligent and informed actions as well as our common essential collaborative efforts.

Excellencies, Ladies and Gentlemen,

To adapt better to climate change, awareness and attention must be raised and encouraged among everyone in the society, particularly government officials, with regards to CC, its adverse effects and appropriate measures for autonomous adaptation. Furthermore, though this region is not the root of CC, it has to suffer from CC negative impacts; Can Tho and the whole Delta, therefore, require international human resource and financial support to studies and application of optimal adaptation solutions for the localities.

Realizing multifaceted adverse consequences of climate change on local life and livelihood as well as the world's food security, in 2009, the City People's Committee established the Steering Committee for CC-related Work, abbreviated as Decision 158 SC, worked with representatives from various international organizations, institutes, universities and local institutions to conduct joint research on CC impacts in the City of Can Tho. To date, agencies in Can Tho, local and international institutions have completed a number of tasks and arrived at initial conclusions on the degrees of harm and vulnerabilities due to CC in different localities and social groups, and proposed CC Adaptation Plan for Can Tho in the time to come. These results are truly promising, reflecting the proactiveness and efficiency of international and national cooperation with the City of Can Tho. Nevertheless, it is honestly admitted that those are just preliminary results. Can Tho in particular and the whole Mekong Delta in general need stronger cooperation, more efforts, brains and finance from the Central Government, support from foreign friends and international organizations so that such results of research on CC adaptation can be mainstreamed into socio-economic development plans and the transformation of the local "brown economy" into a "green" one in the future.

We strongly hope that this International Forum on CC in the Mekong Delta will provide an opportunity for scientists, local people and relevant stakeholders to understand more about the extents and damages caused by CC to the Delta. Also, we would like the forum to discuss, analyze and suggest proactive and highly feasible measures to help Mekong Delta provinces to overcome this huge global challenge. On the part of Can Tho, we are committed to doing the utmost we can to ensure the success of the Forum and bring all of us to common efforts for responses and adaptation to CC challenges already being experienced around the globe.

To conclude, on behalf of the Party Committee, Government and People of the City of Can Tho, we would like to extend our sincerest thanks to the Central Government, national and international organizations for your hearty support to Can Tho agencies in CC-related work so far. Thank you for supporting us to host this International Forum on CC in the MD in Can Tho this time, and the MD provinces, including Can Tho, are looking forward to your continued technical, technological and financial assistance to our performance of CC adaptation activities in the coming time.

Best success to the Forum and highest regards to all of you. Thank you very much for your attention.

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OPENING REMARKS BY ALLASTER COX - AUSTRALIAN AMBASSADOR TO VIETNAM

His Excellency Deputy Prime Minister Hai (TBC)  
Chairman of the Can Tho People's Committee, Mr Tran Thanh Man  
His Excellency Minister for Natural Resources and the Environment, Mr Pham Khoi Nguyen  
His Excellency Chairman of the Office of Government, Nguyen Xuan Phuc  
His Excellency Ambassador Peter Hansen  
World Bank Country Director, Victoria Kwakwa  
ADB Country Director Ayumi Konishi

Ladies and Gentlemen,

It is a pleasure to attend the Mekong Delta Climate Change Forum here in Can Tho City today.

Australia believes that climate change is a defining moral challenge of our generation. It threatens our communities, our economies and our way of life.

Recognising the urgent task of forging a global consensus on tackling climate change, I am here with a sizeable Australian delegation which includes officials from Australia's Agency for International Development (AusAID), scientists from the Australian Commonwealth Scientific and Research Organisation and the Australian Centre for International Agricultural Research.

#### **The challenge of climate change**

Australia, Vietnam and the world today stand at critical junctures in our national and global strategies to tackle climate change. We are now less than one month from the United Nations climate change conference of Parties 15 in Copenhagen. At Copenhagen, the world has a historic opportunity to put a global price on carbon. For this to happen, we need to understand why it's so important to act now, and why the world cannot wait. This means understanding at the local level the cost of not acting.

#### **Implications for Australia**

As one of the hottest and driest continents on earth, Australia's environment and economy will be among the hardest and fastest hit by climate change if we do not act now. The scientific evidence from the CSIRO and other expert bodies have outlined the implications for Australia, in the absence of national and global action on climate change. Temperatures in Australia rising by around five degrees by the end of the century

- By 2070, up to 40% more drought months are projected in eastern Australia and up to 80% more in south-western Australia
- A fall in irrigated agricultural production in the Murray Darling Basin of over 90% by 2100.
- Storm surges and rising sea levels
- Our gross national product dropping by nearly two and a half percent through this century.

The consequences for Australia of failing to act domestically and internationally on climate change are severe. We know from formal global and national economic modelling that the costs of inaction are greater than the costs of acting. Australian Treasury modelling shows that economies that defer action on climate change face long-term costs around 15 % higher than those that take action now.

#### **Challenge for Vietnam**

The Government of Vietnam has shown its commitment to addressing this challenge, not least through organising this conference. As the incoming chair of ASEAN and the East Asia Summit, a member of the Security Council and an important voice among developing countries which enjoys good relations with many countries from the developed and developing world, Vietnam has an opportunity to use its influence to persuade doubters of the need for a successful conference at Copenhagen. And the work won't stop in December. As incoming ASEAN and EAS Chairman, Vietnam has a strong voice in shaping an effective regional consensus on climate change action. What better place to come to grips with the detail

of what climate change means at the local level than in Can Tho, in the heart of the Mekong Delta, where the impact of climate change has such serious implications.

### **Impact on the Mekong Delta**

The Mekong Delta contains nine of the ten most likely affected provinces in Vietnam. The region is home to 22 per cent of the national population, and contributes 27 per cent of the GDP. It accounts for 50 per cent of the national rice production, 80 per cent of the fruit production and 60 per cent of the fish production. As well as being the “food basket” of Vietnam, the Mekong Delta region also provides more than 80 per cent of total rice exports – an important contribution to the food security across the region. According to Government of Vietnam predictions, a one meter rise in the average sea level will inundate 15,116 square kilometres, or around 38 per cent of the Mekong Delta’s current land area. However, long before the land is inundated, effects will be felt through increased and more intense natural disasters, loss of biodiversity, reduced agricultural productivity (90% of the Delta could be soaked in salt water), and worsening health indicators. Of greatest concern is that these impacts are expected to be more severe on those individuals and communities with the least capacity and means to adapt and respond. Climate change has the potential to undermine the great success achieved in Vietnam in eradicating poverty, sustaining high GDP growth, and helping to ensure the food security of millions of people across the region. Clearly climate change needs to be seen as the most significant long-term development challenge and constraint faced by the Mekong Delta.

### **Australian support for the climate change study**

To better help understand what are appropriate responses to these and other issues, the Australian aid program, together with the ADB and MONRE, is funding (\$1.14 million) a climate change impact and adaptation study in the Mekong Delta. The study will assess the impact of climate change on various sectors in the Mekong Delta and recommend options for integrating responses into development plans and priority adaptation projects. The objective is to increase the capacity of sectors and provincial authorities in the Mekong Delta to improve the climate-resilience of future development programs, plans and policies. The study will identify future climate conditions in the Mekong Delta region and assess their effects on natural, social and economic systems. It will identify appropriate climate change adaptation measures for target provinces and targeted regional sectors and develop pilot projects for potential upscaling and replication. Additionally, ACIAR, the Australian Centre for International Agricultural Research, will be providing funding of up to \$3.5 million for research in the Mekong Delta on Rice-Based Cropping Systems. This project, led by the International Rice Research Institute and partnering with Can Tho University and the Cuu Long Rice Research Institute among others, will review and suggest new cropping practices based on rice, but including non-rice crops in the farming system, that are productive under saline and flood conditions. While mostly focussed on practical adaptation measures to maintain household and domestic food security, emissions measurements to understand the impact on green house gas emissions from different cropping systems will also be conducted. Further detail of these studies will be discussed during the course of this workshop, which is itself an important input to the design and objectives of these projects.

### **East Asia Summit and the lead-up to Copenhagen**

Turning again to the international stage, APEC leaders will meet later this week in Singapore – a critical pre-Copenhagen meeting. Earlier, the challenge of climate change was a key issue for discussion among East Asia Summit leaders in Hua Hin on 24 October and ASEAN leaders issued a separate statement on climate change. The Asia Pacific region is playing a key role in leading the world into economic recovery. Similarly, our region must play a central role if we are to forge a global consensus on tackling climate change. The Australian Government is committed to intensively engaging to support an ambitious agreement in Copenhagen. This means an ambitious agreement on mitigation, adaptation, finance and technology.

Denmark’s Prime Minister Rasmussen is engaging a growing number of leaders – in the Copenhagen commitment circle – to accelerate engagement by leaders. Australia is committed to playing a leadership role and has joined Mexico and the UN Secretary General in the initial group of ‘friends of the Chair’ to help build consensus and draw out concrete commitments from across the world. In July this year at the G8 meetings in L’Aquila, Australia helped form a 2 degree celcius 450 ppm ambition for global action on

climate change, and it was at this meeting that Australia launched the Global Carbon Capture and Storage Institute, a concrete initiative to make Carbon Capture and Storage technology a reality. In September, Australia at the request of the UN Secretary-General co-chaired a roundtable at the UN Special Session on Climate Change – with a view to driving a sense of political urgency with other leaders, and representing the views of the Pacific (given our role as chair of the Pacific Island Forum). Australia's \$200 million International Forest Carbon Initiative is a core part of Australia's leadership on reducing emissions from deforestation and forest degradation in developing countries. And Australia has established a \$150 million Climate Change Adaptation Fund – supporting vulnerable nations dealing with the real impact of climate change in our region. The Prime Minister of Australia, Mr Kevin Rudd, said at the East Asia Summit in Hua Hin that more progress is needed before we can reach a substantive agreement to tackle global climate change. The road to Copenhagen is steep and there is a long way to go. It is important to use all meetings of leaders to build momentum towards Copenhagen.

### **Australia's Strategies**

Australia is playing its full and fair part in helping to shape a global climate change solution, including on the legal infrastructure of the new climate treaty, and on deforestation. Australia's proposal for national schedules has attracted significant international interest and has been characterised as a possible "circuit breaker" for the international negotiations. Australia has put forward comprehensive proposals on the development of a forest carbon market mechanism to support developing countries to reduce emissions from this sector.

### **Financing**

For Australia, a successful post-2012 outcome is an agreement capable of avoiding the worst impacts of climate change. This means support to help the most vulnerable and least able to adapt. Significantly increased financial support and technology cooperation will be vital to enable developing countries to respond to climate change. It is clear that without a robust package on financing, we won't get the deal we need.

### **Australia's goals**

Australia has committed to reduce its emissions to 25 per cent below 2000 levels by 2020 in the context of a strong global deal. This is a credible and ambitious commitment, equivalent to almost halving the average emissions of every Australian over the period 1990 to 2020.

### **Conclusion**

In the critical days ahead, Australia will continue to work with Vietnam and other countries to deliver a strong post-2012 outcome. We will be doing everything we can to reach a climate deal that is concrete and ambitious on mitigation, adaptation, financing and technology; and that commits the world to immediate action. Unquestionably, developed countries need to lead. But the world needs a comprehensive global effort, and its needs to be ramped up now. An effective response to climate change is critical to Australia's future. It is critical to Vietnam's future and that of the Mekong Delta with its vulnerability to climate change. I applaud the Government of Vietnam's initiative in convening this Forum which is a critical part of Vietnam's preparations for the Copenhagen Summit. Australia is heavily invested in the future of the Mekong Delta and in working in partnership with you to tackle this critical global challenge, at the local, national and international levels.

I wish you all the best for your discussions over the next two days. Thank you.

OPENING REMARKS BY AYUMI KONISHI - COUNTRY DIRECTOR FOR VIETNAM ASIAN  
DEVELOPMENT BANK

Your Excellency Mr. Nguyen Xuan Phuc, Minister and Chairman of the Office of the Government,  
Your Excellency Mr. Pham Khoi Nguyen, Minister for Natural Resources and Environment,  
Your Excellency Mr. Tran Thanh Man, Chairman of the Peoples Committee of Can Tho,

Distinguished guests, colleagues, friends, ladies and gentlemen,  
Good morning to you all,

I first would like to join others in thanking Mr. Tran Thanh Man for kindly hosting this important Forum in this lovely and lively city of Can Tho. I also would like to congratulate the Government of Viet Nam, particularly the Office of the Government and the Ministry of Natural Resources and Environment for organizing a very timely forum.

Since I am already the 5th person to deliver opening remarks, and am afraid that you have already heard all the important messages from the organizers including both the Government and the development partners on our expectations for this important forum, let me just share with you a small fairy tale, rather than repeating what you have already heard.

Once upon a time, in a country of rabbits, there was fire on a 10-story building. The fire started on the ground floor and there were many rabbits on the top floor. Some rabbit called the fire station – “Help! Help! Help! There is a fire!” The operator misconnected the call to an accounting department and the accountant rabbit said “Wait, let us first determine who caused the fire so that we can bill that rabbit for the cost of our rescue operation.” Another call has gone to a research unit: “Thanks for the call – let us study carefully how fast the fire is coming up so that we can estimate exactly how long it will take for the fire to reach the 10th floor.” Another call did actually go to the right section – where fire fighting rabbits are: but two fire fighting rabbits got the call at the same time – one with the fire engine with a huge ladder which can reach up to the 10th floor and the other one with the fire engine with a strong water pump to shoot water as high as to the 10th floor. But they started arguing who should go first – even though either one could actually do the rescue job effectively, or if they went together, they could have done even better job. And with all these things happening, the fire has already reached the 8th floor.....

We congratulate the Government of Viet Nam for having prepared the National Targeted Program for Climate Change. Since the issue of Climate Change was discussed for the first time between the Government of Viet Nam and the community of Development Partners at the Consultative Group Meeting held in December 2007, we believe Viet Nam has made a tremendous progress in formulating its strategy through the formulation of NTP, and we are particularly pleased that the National Targeted Program provides a solid foundation for the concerned line ministries, agencies and the provinces to develop further the detailed action plans to be implemented by all the concerned ministries, provincial peoples committees as well as the society as a whole.

As we will be discussing in detail over the next two days, the threat of Climate Change unfortunately is real. And unlike the time bomb, actually, the changing climate conditions have already started affecting us through draughts and floods and much larger numbers of huge storms and resulting floods and landslides. It is no longer a matter of sporadic calamities time to time and the provision of emergency reliefs and rehabilitation works. But we can, if we work together, be better prepared, through a number of adaptation initiatives. And we also possibly reverse the trend through aggressive and intensified mitigation efforts.

Ladies and gentlemen, on our part, the Asian Development Bank has adopted a new long term strategic framework towards year 2020, called Strategy 2020 last year, and mainstreamed our support to our Developing Member Countries in their efforts against the Climate Change Challenges. In Viet Nam, we are also committed to incorporate the consideration of climate proofing in all our future investments in this country. And we are aware, all of our development partners, including all the colleagues present here

today, as well as those who could not join this forum, are all prepared and eager to work together to help Viet Nam's efforts in addressing the Climate Change.

We find it significant that this Forum is being held in Cal Tho, in its Peoples Committee since Mekong Delta is one of the areas to be most severely affected by the Climate Change and resulting sea level rise. I do sincerely hope that the Forum will be another significant milestone in Viet Nam in its efforts to step up its efforts against Climate Change in collaboration with all possible partners.

We are here to help, as the issue is so important for the future of Mekong Delta, and for our future generations not only in this country, but on this entire planet we all share.

Let me stop here with the Asian Development Bank's best wishes for the success of this Forum and everyone's good health. Thank you very much.

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#### OPENING REMARKS BY HOONAE KIM – WORLD BANK SECTOR MANAGER, SUSTAINABLE DEVELOPMENT VIETNAM

Good morning, Ministers Phuc and Nguyen, Ambassadors, development partners, and ladies and gentlemen. On behalf of the World Bank, we are very honoured and pleased to be participating in the Mekong Delta Climate Change Forum. We are particularly pleased to co-sponsor this important event. I would also like to thank Can Tho PC Chairman, Mr. Man, for hosting the event in Can Tho.

The World Bank is a development institution and climate change (CC) is a development issue, and we see our roles as sharing global knowledge for the benefit of our client countries; and mobilizing long-term financing and technical assistance for climate adaptation, build resilience and help mitigate future impact. Our program is defined in the Country Partnership Strategy (CPS) which itself is aligned with the Government's SEDP. We expect next versions of both CPS and the National Development Strategy to significantly address the CC agenda, and CC will thus be increasingly addressed in the Bank's work in Vietnam.

The World Bank recently published its flagship research report, World Development Report, under the title *Development and Climate Change*. One of our colleagues, Douglas J. Graham, will present key findings of that report later at this forum. One central message is that climate changes are occurring and if we Act Now, Act Differently and Act Together, we can still do something about it.

In East Asia alone, the World Bank is providing about \$500 million annually for climate change related activities. In Vietnam and also in the Mekong Delta Region, the World Bank has been supporting various adaptation and mitigation activities for several years. About one third of our current program of \$5 billion already supports activities which are directly or indirectly affected by climate change. Vietnam, particularly the Mekong Delta, is recognized as one of the most vulnerable regions to climate change. Vietnam is ranked high for risks of floods, rising seas, droughts, and natural disasters which are occurring more frequently and with greater intensity. In the Mekong River Basin, the rainy season will see more intense precipitation, while the dry season could lengthen by 2 months.

As awareness of climate change and its implications are increasing, the future World Bank program in Vietnam will also be shaped by climate change considerations and desire to climate- proof investment. A good example is the proposed Mekong Delta Integrated Rural Development Project which aims to mitigate and reduce impacts of climate change in the Mekong Delta area while maintaining its role as the major agricultural basket in Vietnam, through an integrated package of solutions. This will enable the region to be a vibrant source of income for about 20 million people, many of whom are poor.

As we strive to support the Government of Vietnam in adaptation and mitigation efforts, working closely with other development partners and communities is critical. There are many activities already supported by several donors and as the Government moves ahead with the National Target Program for Climate

Change, coordination of various activities will be very important. The World Bank is at an advanced stage of discussion with DFID to jointly work on the Climate Change agenda, and we are also working very closely with AusAid, Danida, UNDP and others. This Forum is therefore quite important for bringing all stake-holders to discuss this important agenda, and we hope it will continue to be a vehicle for continued discussions with the Government, provinces, communities, and development partners.

Thank you very much and I wish you a successful forum.



## ANNEX 4: MEKONG DELTA CLIMATE CHANGE FORUM - SUMMARY STATEMENT

The Ministers of MONRE and the Office of Government, the Ambassadors from Australia and Denmark, the Asian Development Bank and the World Bank together endorsed the Summary Statement at the close of the Forum.

In the past two days, at the first Mekong Delta Climate Change Forum, we have had many presentations as well as intensive and useful discussions on climate change, its impacts, experiences with adaptation initiatives and future plans for adaptation in Mekong Delta provinces. A detailed record of the Forum proceedings is being prepared by the Forum partners and will be distributed to all participants. This additional statement from the Chair distills the key findings of the Forum and points of agreement arising from discussions.

### **The climate change threat**

The Mekong Delta is one of the world's hot spot regions for climate change effects. These are not changes for some distant future time - already, impacts are being felt in all 13 Delta provinces and are expected to intensify with projected increases in sea level and frequency of severe storms, heightened storm surge and flooding, as well as saline intrusion and complex changes to sediment dynamics. Climate change is the greatest social, economic and environmental challenge facing the Mekong Delta, now and for the foreseeable future.

Development sectors of strategic importance to the Delta and the nation are being affected. Agriculture and fisheries are the most vulnerable to increased flooding, saline intrusion and degradation of natural systems resulting from climate change. Also, billions of VN Dong in existing and planned investments in power generation and supply, transport, industry, water supply and treatment, and education and health facilities are at risk. Rapidly expanding settlements including housing stock and the infrastructure that makes up healthy and efficient towns and cities in the Delta are also at risk. In general, provincial and sectoral development planning has not considered climate change. The design of major investment projects and aid programs, for example, relating to water supply, water treatment plants, roads, bridges, aquaculture, industrial zones, irrigation, power plants and transmission lines, has not considered climate change.

Poor communities are most vulnerable. The Delta continues to experience population growth – expanding by 1.7 million people over the last decade. Poor households and communities are forced to rely on increasingly marginal land in areas most affected by climate change, and are employed in the fisheries and agriculture sectors which are most at risk. The poor will be the first who must move to less affected areas – potentially millions will need to migrate from the Delta causing socio-economic upheaval.

### **Progress in adaptation**

The Delta provinces have had long experience in adapting and coping with natural disasters of increasing frequency and intensity. Those adaptation strategies include responses by government, by communities and by the private sector. Adaptation continues within a wide range of existing government programs and policies – but not labeled as a response to climate change, and not conducted in a coordinated and integrated way. Some are widely applied poverty reduction strategies which increase resilience. Others are innovations to maintain and enhance sector productivity in changing environmental conditions such as soil chemistry, water quality or increased flooding. Still others are practical engineering responses to storms, tides and flooding.

There are cases, for example, where Delta provinces are testing cropping patterns and species suitable to climate change, modifying and upgrading irrigation systems for agriculture, and reserving and storing local crop varieties and establishing a crop-seed bank. Some towns and cities are beginning to account for sea-level rise and increasing temperatures while building infrastructure. The national and provincial sea-dyke systems are being upgraded and expanded. Coastal and wetland forests are being rehabilitated. Storm

shelter port systems are being planned and constructed along the coast and on islands. There is much to learn from this ad hoc adaptation experience.

### **The challenges**

The main challenges identified during the Forum which require urgent attention are:

- (i) Government budgeting must provide adequate flows of funding through sector and local government budgets to plan for and combat climate change. Financial resources for mitigation and adaptation will need to be scaled up urgently and substantially.
- (ii) Development planning systems in sectors and at local level should include guidance on integrating climate change.
- (iii) Sector design standards, building codes and safeguards should take climate change into account.
- (iv) Development planning and project review processes should include systematic consideration of climate change.
- (v) All sectors, local government areas and major regions such as the Mekong Delta need adaptation and mitigation plans as a backdrop and guide to the integration of climate change into development planning.
- (vi) The institutional capacities and skills needed for innovation in adaptation need strengthening.
- (vii) Awareness of general public and leaders needs to be “enlightened” by the fact that the advantageous climatic conditions of the Delta region has already changed and will continue to change severely with unpredicted consequences.

### **Guidance on next steps**

There are many opportunities for addressing those challenges.

- (i) We need to commit to the Mekong Delta Climate Change Forum as an annual event to chart out our shared and agreed road map for working together, and to review progress in adaptation and mitigation planning and action. We gather at the Forum to make sure that our actions are supplementary one to another for a shared goal and to avoid overlap.
- (ii) We should work towards preparing a Mekong Delta Climate Change Adaptation and Mitigation Plan, as called for under the Government’s National Target Program, for consideration and adoption at the next Forum in 2010.
- (iii) During the Forum, many international organizations expressed their commitment to working with sectors and Delta provinces in “climate proofing” development sectors and building resilience in vulnerable communities and areas. We should seek to implement the Paris accord in harmonizing, coordinating and consolidating national and international investments to focus on the highest priorities for action.
- (iv) We should seek to derive financing for climate change from multiple sources, including both public and private funds – but commencing with a more clearly labeled and readily available flow of government funding for the purpose. Climate financing should complement efforts to promote development in accordance with national priorities and should include both program-based and project-based approaches.
- (v) Adaptation and mitigation are inextricably linked and need to move forward together. We should seek to implement in the Mekong Delta the Declaration on Climate Change, Energy Security and Clean Development in Sydney in 2007 and the decisions taken in Bali, Indonesia later that year. They set targets for reducing energy intensity and increasing forest cover. Sustainable forest management plays an important role in mitigation and adaptation. Similarly, we should seek to rehabilitate and enhance all natural systems in the Delta as a foundation for building resilience in the region. Reduced emissions from deforestation and forest degradation in developing countries and sustainable forest management play an important role in mitigation and adaptation.

This Forum was the first of its kind in Vietnam – of a practical and applied nature – to bring a sharp focus and collaboration to addressing climate change problems in the Mekong Delta. It is critical to national development and well-being that we maintain the momentum the Forum has created. It is also of international importance given the identification of the Delta as global hot spot. The global community is observing closely how well Vietnam and its partners cope with this challenge.

We need to ensure the Mekong Delta becomes a global flagship of innovation and achievement in climate change resilience. That aim and the ingredients for achieving it will be carried by the Vietnamese delegation to the December meeting in Copenhagen as a positive demonstration of how government and international organizations can work together effectively to stem the tide and adapt while maintaining the principles of ecological and social sustainability.

**ANNEX 5: ABSTRACTS AND BIODATA**

The abstracts and biodata as listed below is the information available at the moment of report writing. The abstracts follow the numbering of the presentations as they appear in the Forum agenda.

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## 2. TRAN THUC: CLIMATE CHANGE IN VIETNAM AND RESPONSE

Climate change impacts to Vietnam are serious, a challenge to the cause of hunger eradication and poverty reduction, millennium development goals, and the country's sustainable development. Most vulnerable sectors and regions to climate change are water resources, agriculture and food security, public health, deltas and coastal areas.

Climate change impacts to different sectors and regions in Vietnam have been studied. It is found that changes of climate factors and sea level have the following noticeable features:

- Over the past 50 years, annual average temperature has increased about 0.5 to 0.7°C;
- Typhoon trajectory moves southward and typhoon season shifts to later months of the year and there were more typhoons with high insensitive;
- Number of drizzle days decreases significantly;
- Frequency of cold fronts in the North decreased significantly in the past three decades, from 288 events in the period of 1971 -1980, 287 events in 1981 - 1990, to 249 events in 1991 - 2000. Number of extreme cold spell decreases, however, in some years it prolongs with historical intensity, e.g. in 2008;
- Number of hot waves is more in the period of 1991 - 2000, especially in the Central and South;
- Rainfall increases in rainy season (September to November) causing more frequently severe floods in the Central and Southern Vietnam. However, it decreases in dry season (Jul. to Aug.) causing drought every year in most regions of the country. Off-season extreme rainfall events occur more frequently, More profound are events in November in Hanoi and surroundings in 1984, 1996, 2008;
- ENSO (El Niño-Southern Oscillation) has stronger effects on weather and climate in Vietnam.

Climate change and sea level rise scenarios for Vietnam are developed. The global climate model (MRI-AGCM) from the Meteorological Research Institute and Japan Department of Meteorology, PRECIS model of the Hadley Center - UK, and statistical downscaling method area applied. The low emission scenario (B1), medium emission scenario (B2), and high emission scenario (A2) area considered in the study. Due to the complexity of climate change and the limitation of our knowledge of climate change, both in Vietnam and in the world, together with the consideration of mentality, economy, and uncertainty in green house gas emission, the medium scenario is, therefore, harmonious and recommended for climate change impacts assessment and action plan development for Vietnam.

## 4. DOUGLAS GRAHAM: CLIMATE CHANGE: GLOBAL PERSPECTIVES AND RELEVANCE FOR THE DELTA

This presentation reviews the international experience of the World Bank as it is relevant for the Mekong Delta. As examples of some regional or global initiatives of local relevance, information is presented on the following:

- Global Perspective on Climate Change: World Development Report 2010;
- Economics of Adaptation to Climate Change;
- Climate Resilient Cities: A Primer;
- Adaptation on National scale: Bangladesh;
- Adaptation in a City: Bangkok;
- Adaptation at Local Level: What Can Be Done?

## 5. JEREMY BIRD: MEKONG CLIMATE CHANGE AND ADAPTATION INITIATIVE AND THE MEKONG RIVER COMMISSION

The countries of the Lower Mekong Basin (LMB) are recognised as among the most vulnerable countries to climate change in the world. Their economies, ecosystem sustainability and social harmony are at risk. There is a high demand for better understanding of the potential impacts from climate change and variability and in particular the options for adaptation to these changes. The LMB countries through the Mekong River Commission (MRC) have recently committed to a collaborative regional initiative, called the

Mekong Climate Change and Adaptation Initiative (CCAI). It will support them in adapting to the challenges posed by climate change by building a systematic process of planning, implementation and learning.

This presentation describes the major threats and risks of climate change impacts for the Mekong river basin in a trans-boundary and regional development context, some results of initial work by the MRC on climate change modelling and its relationship with other scenarios of development in the basin. It also presents the main features, the objectives, outcomes and outputs of the Mekong CCAI, its extensive partnership network, priority activities, a plan for basin-wide pilots and local demonstration activities as well as key on-going activities supporting the adaptation process in Mekong Delta.

## 6. JUZHONG ZHUANG: THE ECONOMICS OF CLIMATE CHANGE IN SOUTHEAST ASIA: A REGIONAL REVIEW

Southeast Asia is highly vulnerable to climate change as a large proportion of the population and economic activity is concentrated along coastlines; the region is heavily reliant on agriculture for livelihoods; there is a high dependence on natural resources and forestry; and the level of extreme poverty remains high.

Climate change is happening now in Southeast Asia. Mean temperature increased at 0.1–0.3°C per decade between 1951 and 2000; rainfall trended downward during 1960–2000; and sea levels have risen 1–3 mm per year. Heat waves, droughts, floods, and tropical cyclones have become more intense and frequent. The worst is yet to come. Annual mean temperature is projected to rise 4.8°C on average by 2100. Mean sea level is projected to rise by 70 cm in the same period\*. Rice yield potential is projected to decline up to 50% by 2100, threatening food security; and a large part of the dominant forest could be replaced by those with low carbon sequestration potential. The region is also projected to experience increasing water stress and adverse impact on human health.<sup>5</sup>

The cost of climate change could equal a loss of 6.7% of combined GDP each year by 2100, more than twice the world average.\* Adaptation makes economic sense. Annual benefit (avoided damage) is likely to exceed the annual cost by 2060. By 2100, benefits could reach 1.9% of GDP, compared to the cost at 0.2% of GDP. Measures considered include protection of coastal zones and development of heat-resistant varieties.

There is an urgent need to further strengthen adaptive capacity in Southeast Asia by mainstreaming climate change adaptation in development planning. Southeast Asia has great mitigation potential. Current emissions are 12% of global total (in 2000). But this is expected to rise significantly in the future given high economic and population growth. Forestry sector is largest contributor to regional emissions. Major mitigation measures include reducing emissions from deforestation/degradation, afforestation/reforestation, and improving forest management.

The region's energy sector also holds vast potential for mitigation. "Win-win" options include efficiency improvements in power generation, buildings, industry and transport. Such "win-win" options could mitigate up to 40% of energy-related CO<sub>2</sub> emissions per year by 2020.\* Another 40% could be mitigated through positive-cost options such as fuel switching from coal to gas and renewable energy in power generation, at a total cost below 1% of GDP. Low-carbon growth brings significant benefits: the costs of inaction far outweigh costs of action.

International funding and technology transfer and cooperation are essential for the success of adaptation and mitigation in Southeast Asia. The region should enhance its capacities to make better use of the existing and potential funding sources. As climate change cuts across all of government agencies, there is a need for strong inter-governmental policy co-ordination among various ministries, led by heads of State. Regional cooperation offers an effective means to deal with cross boundary issues, such as water resource

<sup>5</sup> For the 4 countries included in modelling: Indonesia, Philippines, Thailand and Vietnam.

management, forest fire prevention, disaster and risk management, and controlling the outbreak of diseases; and for learning and knowledge sharing.

The current economic crisis provides an opportunity for Southeast Asia to start the transition toward a climate-resilient and low-carbon economy. There is scope for building “green investment” programs into fiscal stimulus packages that combine adaptation and mitigation measures with efforts to shore up the economy, create jobs, and reduce poverty.

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#### 10. LE THI THU HIEN: CLIMATE CHANGE AND HEALTH: CHALLENGE AND RESPONSE PLAN

Climate change is one of the greatest challenges that humankind is facing in the 21st century. Its impacts are to the global environment, with the most evident impact to people’s health, agriculture, biodiversity and water resources, and especially to poor and near-poor people.

Climate change has direct impacts to the lives of people in many areas on the Earth. Annually, disasters leave 3 million people dead and 200 million people affected. They increase the incidence of vector-borne diseases, diarrhea, malnutrition, costing an estimated US\$ 40 billion every year in damages. According to the Asia-Pacific WHO, there are about 77,000 death cases every year in the region caused by climate change and this figure is exclusive of the deaths caused by air pollution.

Vietnam is one of the countries which is most vulnerable to climate change. In the recent 10 years, climate change has caused clear impacts to the economy as well as people’s health. Temperature rise makes increasing negative impacts to human health, causing the risks of suffering diseases in old people and children. Floods have contaminated water sources and damaged safe water supply systems, leading to difficulties in water treatment and supply of safe water to people. This is the reason for the incidence of epidemic diseases such as: acute diarrhea, cholera, typhoid and some vector-borne diseases such as dengue fever and malaria. Some dangerous contagious diseases has occurred and threatened human life such as SARS, Bird Flu A (H5N1) and Swine Flu (H1N1).

Coping with climate change is one new task of the health sector. It is facing difficulties and challenges, specifically: 1) Climate change is continuing and on a rising trend at serious level; 2) Incidence of epidemic and vector-borne diseases caused by climate change is increasing; 3) Knowledge and skills of climate change response of the health sector and communities is limited; 4) Staffing and organizational system for working in response to climate change of the health sector is not yet established. In this context, the health sector is developing a response plan to climate change, with a focus on the following three areas of priority: 1) Conduct assessment of climate change impacts to human health and propose response solutions; 2) Strengthen organizational capacity and policies of the health sector in response to climate change; and 3) Conduct information, communications and campaigns for raising awareness, responsibilities of health staff and communities in response to climate change.

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#### 11. NGUYEN VAN THANH: DRAFT OF MINISTRY OF INDUSTRY AND TRADE’S ACTION PLAN TO RESPOND CLIMATE CHANGE (AP-RCC) AND CHALLENGES

Climate change and its impacts have been more and more complicated which seriously affect all activities of mankind, including industrial and trade ones. Although research results and available data are not yet comprehensive, consequences of climate change did cause severe damage to industrial and trading work in the past years. Major impacts include a collapse of houses and works, flooding and drought which prevent production processes; sea level rise may cause salt water intrusion which poses threats to coastal infrastructure work.

In order to implement a Decision No. 158 of the Prime Minister on the National Target Program to response to climate change, the Ministry of Industry and Trade is actively developing sector action plan that aims to build capacity and actively response to negative impacts of climate change, to ensure

sustainable development of the sector. Within a framework of this Forum, a presentation from Ministry of Industry and Trade will focus on:

- Typical impacts of climate change on industrial and trade sector;
- Key contents of a draft Action Plan to response to climate change of the Ministry of Industrial and Trade, including objectives, key tasks, phases to implement mitigation and adaptation projects;
- Challenges that the Ministry of Industrial and Trade may face when responding to climate change.

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#### 12. ANOND SNIDVONG: CLIMATE CHANGE THREATS IN THE MEKONG DELTA: CASE STUDIES AND KNOWLEDGE GAPS TOWARD CLIMATE-RESILIENCE DEVELOPMENT

Previous efforts by Southeast Asia Global Change System for Analysis, Research and Training (START) Regional Centre with international partners, such as Southern Institute of Hydrology, Meteorology and Environment, Can Tho University, An Giang University, and the Technical University of Helsinki used outputs from PRECIS downscaled climate projection to assess vulnerability of selected systems and sectors to future risk from climate. Priority was given to rain-fed agriculture and urbanization, where not only monsoon driven climate was concerned but also the increasing trend of major storms in South Vietnam provinces. Precise knowledge about future climate and their influence on local weather events need to be appropriately addressed in the context of local and regional developments and thus climate should not be treated as an isolated agenda.

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#### 14. HOONAE KIM: WORLD BANK SUPPORT TO CLIMATE CHANGE RESILIENCE OF THE MEKONG DELTA

The closing presentation by the World Bank presents a brief summary of the Bank's strategic thoughts on climate change interventions in Vietnam, as well as a summary of major ongoing climate change analytical work and investments in Vietnam for both adaptation and mitigation. The Bank is supporting 25+ pieces of major analytical work in Vietnam on climate change. Some of the more important are the EACC studies and research in urban environments, disaster risk mitigation, and rural development. On the mitigation side, the Bank is working on carbon finance, REDD, energy efficiency, and intends to look at low carbon growth opportunities in Vietnam.

Although not explicitly developed as climate change projects, there are a number of major investment projects that are developing climate change resilience in Vietnam. These include transport and urban projects and most notably the Natural Disaster Risk Mitigation Project. On the mitigation side, hundreds of millions of dollars are going into projects to reduce energy use in generation and transmission as well as in urban and rural environments. Specifically for the Mekong Delta, for more than 10 years the Bank has been investing heavily in the development of climate change resilience in the Mekong Delta. Large investments have notably targeted water resources management, mangrove restoration, aquaculture, mitigation of natural disasters, and vulnerabilities in urban and rural environments. Looking forward, the Bank is now preparing the Mekong Integrated Rural Development Project (MIRD). This large investment, intended to focus on water resources management and agricultural production in the Mekong, is being developed through the lens of climate change resilience. Other future projects are the Natural Disaster Risk Mitigation Project Phase II which could in part be relevant to the Mekong Delta, the Mekong Transport and Flood Protection Project, and others.

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#### 18. THAI THANH LUOM: CLIMATE CHANGE, COASTAL PROTECTION, TOURISM AND NATURE CONSERVATION IN KIEN GIANG

Kien Giang will be badly affected by climate change with much of its 570,000ha of land below 1m above msl, 208 km of coastline, 140 small islands, including Phu Quoc Island. There are extensive coral reefs (>700ha) that are important marine animal habitats and tourist attractions. The Kien Giang Biosphere Reserve Project funded by AusAID and implemented by GTZ is supporting the Kien Giang PPC to improve the management of natural resources of the province.



Kien Giang has had rapid recent economic and population growth now stabilising at about 1.7 million people with 300 people per square kilometre. The main inputs to the economy are from agriculture, fisheries, forestry and tourism. The export of seafood products especially shrimp has expanded lately. The rapid increase in tourism to Phu Quoc has potential to have negative effects on biodiversity. Land conversion of forests for rice and shrimp production over the last 15 years has reduced the area of Melaleuca forest to only 43,000ha and mangroves to 5,000ha. This change has been made possible by the construction of the 71 canals that drain the Mekong River flood waters to the sea but only 44 have sluice gates. One estimate indicates a 1m rise in sea level will likely flood >66% of the land area and affect up to 50% of the population. Already rising sea levels are causing loss of coast line of up to 27m per year with breaching of dykes and loss of mangroves more common as well as saline intrusion. Replanting of mangroves has had limited success. Acid sulphate soils predominate in Kien Giang and need careful management of the hydrology of the region in order to prevent acid production that destroys the productive capacity of the land. This will be made more difficult with climate change and along with construction of upstream dams, it is likely to result in large reductions of the Mekong River water flows particularly in the non rainy season.

A feasibility study of the potential for mitigation of climate change through Reduction of Emissions from Deforestation and forest Degradation is measuring the carbon sequestered in mangrove and Melaleuca forest and the opportunities for sustainable management of forests and addressing forest degradation. New approaches to mangrove nursery development and planting have been initiated. Equitable Payment for Environmental Services through money obtained for the carbon credits is essential for such a program to work.

The province is adapting to climate change through building more sluice gates on the canals, reinforcing dykes to 2m above msl and building more dykes, expanding the mangrove belt, building pumping stations to remove sea water flooding, designing houses that escape the flood waters, investing in meteorological and hydrological monitoring stations and staff capacity building for early warning.

## 19. LAZLO PANCEL: CLIMATE CHANGE RELEVANT ENGAGEMENT OF GERMAN TECHNICAL COOPERATION IN THE MEKONG DELTA

The Mekong Delta is one of the most vulnerable regions worldwide to the effects of climate change. No single province, government institution, national or international organization, actor or stakeholder can solve all the emerging problems. The huge challenges ahead require close cooperation, coordination and joint spirit of all stakeholders involved. Therefore the German Technical Cooperation has decided to implement a programmatic approach in the Mekong Delta in corporation with relevant government institutions, local people, NGOs, research institutions, and international organizations such as the Australian Government. The tentative total budget until 2014 is approximately US\$ 28 million.

The German Technical Cooperation is currently working in the Provinces of Soc Trang, Bac Lieu, Kien Giang, Ben Tre and Tra Vinh, with initiatives in An Giang and Ca Mau in the planning stage. The projects in Soc Trang, Tra Vinh and Ben Tre are commissioned by the German Federal Ministry of Economic Cooperation and Development (BMZ), the one in Bac Lieu by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). Formal cooperations exist with the Government of Australia (Kien Giang, planned projects in An Giang and Ca Mau) as well as with the International Fund for Agricultural Development (Tra Vinh and Ben Tre). The projects are implemented by the concerning Provincial Government Authorities and the Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ). It is planned that other German Implementation Organizations such as the KfW Development Bank and the Centrum fuer Internationale Migration und Entwicklung (CIM) will also join the programmatic approach.

The program called 'Management of coastal zone ecosystems relevant to mitigate and adapt to climate change related effects' will work in the five provinces of Soc Trang, Kien Giang, Bac Lieu, An Giang and Ca Mau. The objective is to efficiently manage and protect coastal ecosystems for the mitigation and adaptation to environmental hazards related to climate change. Major subjects covered are support to a

conducive legal and institutional framework for an integrated coastal zone management, the protection, management and rehabilitation of coastal ecosystems, the piloting of dyke protection and rehabilitation, the improvement of Biodiversity especially in protected areas, and the promotion of income opportunities for the local communities. Important national policies and frameworks for the alignment of the program are the Forest Sector Support Partnership (FSSP), the National Forestry Strategy (NFS), the National Target Program to Respond to Climate Change, the National Law on Biodiversity and the National Dyke Rehabilitation Program. Impacts of the Program are measured against the Sector Monitoring Framework FOMIS.

## 20. GEOFF MORRIS: RESEARCH FOR CLIMATE CHANGE ADAPTATION IN RICE-BASED CROPPING SYSTEMS

The Australian Centre for International Agricultural Research (ACIAR) is an independent Statutory Authority under the Australian Governments Foreign Affairs Portfolio. Part of Australia's overseas Aid program, ACIAR funds collaborative research partnerships to solve problems in agriculture, forestry and fisheries in developing countries. ACIAR's model is to fund projects with a strong emphasis on capacity building that establish lasting research partnerships.

ACIAR has in principle agreed to fund a four year research project (2010-2014) on Rice-Based Cropping Systems in the Mekong Delta. The project size is likely to be US\$ 3.5 million and will be led by the International Rice Research Institute. Main Vietnamese partners will be Can Tho University, Cuu Long Delta Rice Research Institute, Southern Institute for Water Resources and Planning and the Institute for Agricultural Sciences. Australian partners will include the Australian National University and the Yanco Rice Research Station. The focus of the research will be developing farming systems tolerant to flooding and saline conditions. The project will have four main components. The first will be to support the application and field trials of submergence and salt tolerant rice and other crop varieties. The second component on crop and water management includes agronomic research (soil, water and nutrient management), changed hydrological regimes, and evaluation of different cropping systems (e.g. rice-shrimp, rice and non-rice crops). A third component on socio economic studies will aim to understand the drivers and constraints to farmers adopting new cropping practices. Additionally GHG emission measurements will be undertaken to understand the emissions from different cropping systems. We hope the research will provide a suite of agronomic packages that build a more resilient farming system to cope with temperature & water changes. This research project is currently in the development stage and aimed to commence in mid 2010.

## 21. JEREMY CAREW-REID: HO CHI MINH CITY CLIMATE CHANGE IMPACT AND ADAPTATION STUDY

Located just above the mouth of the Dong Nai basin on low lying land of the river delta, HCMC is particularly at risk of the effects of climate change. 40-45% of land in the City is at an elevation of between 0 and 1 m and 15-20% between 1 and 2m. HCMC has been identified as one of the ten cities most likely to be severely affected by climate change and has been ranked fifth by population likely to be exposed to the effects of climate change by 2070. The HCMC Adaptation to Climate Change Study, prepared by ICEM – the International Centre for Environmental Management – for the Asian Development Bank (ADB) in partnership with the HCMC Peoples Committee, is an initial step in a planned response by the City to the challenges it faces in adapting to climate change. It explores climate threats and their possible impact on the city and makes recommendations for adaptation options.

HCMC is already subject to extremes in climate and hydrological influences. A significant part of the city is often flooded on a regular basis (i.e. daily and seasonal) and in extreme events, due to a combination of tides, storm surge, rains, floods, and man-made structures. The flood dynamics, scope and level of climatic impacts, and the ecosystems and areas affected are changing because of rapid urban development and other localized human activities. Major drainage and dyke works are planned in three stages to enclose HCMC and divert floods, rain water and high tides towards the Thi Vai River. These works, due to be

finished by 2025, will have a significant impact on the hydrology of the city and have the potential to form the backbone of the City's climate change adaptation approach.

The study presents in detail the climate threats for 2050 and potential impacts under a high and low emission scenario (A2 and B2 of the IPCC scenarios), for regular and extreme weather conditions, and with and without a planned comprehensive dyke system. It considers industry and employment, the road and transport system, the energy production system, inhabited areas, water supply infrastructure under drought and inundation, agriculture and forestry, and water treatment and land fill sites.

Natural systems provide a number of essential services in the river basin, some also with important roles in mitigating the potential impacts of climate change. However, these systems are already under direct pressure from human activities. Climate change represents additional pressure and disruption to the effective functioning of these systems. Agriculture will be severely affected by increases in the extent, depth and duration of both regular and extreme flooding events. Saline intrusion is likely to pose an increasing problem for agricultural production during regular flooding events and droughts in 2050.

A comprehensive and coordinated approach to adaptation is needed which integrates construction of new or improved infrastructure with the enhancement and use of adaptation measures based on natural systems. Preparedness will be a key element in ensuring that flooding is managed and dealt with quickly when it occurs and that recovery plans are implemented. Important mitigation measures are needed for construction materials, port facilities, navigation channels and contingency planning.

Implementing the climate change adaptation, the HCMC Peoples Committee will need to take a proactive leadership role. The appropriate policy framework, economic and financial incentives and technical backing for all areas of city government are required to plan and implement adaptation. As a first step, the HCMC PC needs to oversee the preparation and adoption of a Climate Change Adaptation Plan for the City based on the conclusions of this study. Key agencies which shape overall land use, spatial zoning, environmental quality and natural disaster response management in the City include DONRE, the Department of Architecture and Planning, the Department of Construction, the HCMC Environment Protection Agency, sector line agencies and the HCMC Steering Committee for Flood and Storm Control. Although climate change is moving faster than anticipated, with potential severe effects on HCMC, there is still time to develop appropriate solutions and to adapt.

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## 22. KY QUANG VINH: CAN THO CITY: CLIMATE CHANGE AND URBAN PLANNING

Can Tho City faces significant impacts from climate change. It is the biggest city in the Vietnamese Mekong Delta and a leading economic player in the region. Physically, it is also typical for the Mekong Delta – a flat, low area acutely subject to the impacts of climate change.

Future projections show that the adverse impacts of climate change are becoming increasingly severe. In the dry season, the water in the Hau river will not be sufficient for domestic use any more. In the rainy season, the inundation level of Can Tho City will increase by twice as much as the sea level rise. When sea levels rise by 50cm, most of the activities of the city will be affected. Construction works need to build their foundations 2.5m above mean sea level but this is not possible because there is not be enough soil to do so. People not only need a place to live but also livelihoods and fewer people will find employment under the severe conditions of the changed climate. Further, local people may not be able to produce enough fish and rice supplies in the dry and the flood season, resulting in food shortages and contributing to the global food security problem. Planned infrastructural measures for adapting to climate change must address the whole of the Mekong Delta, not Can Tho alone. Awareness and understanding of climate change for local people and government officials is essential. Support from the international community is needed to help Can Tho and the Mekong Delta to find optimal and appropriate measures for adaptation.

## 25. JEREMY CAREW-REID: THE MEKONG DELTA CLIMATE CHANGE IMPACT AND ADAPTATION STUDY

Viet Nam is one of the countries likely to be most affected by global climate change and the Mekong Delta region, in the south of Viet Nam, has been identified as being particularly susceptible to the impacts of extreme climate events and climate variability. The Government of Viet Nam has identified the Mekong Delta region as a priority region for climate change action in the recently adopted National Target Program to Respond to Climate Change (NTP). However, despite its recognized importance and vulnerability to climate change, no comprehensive study of the potential effects of climate change in this region has been undertaken to date and local development planning makes scant reference to climate change effects and responses.

Effective climate change adaptation measures are required to be developed and integrated into development planning in the region as a matter of urgency. To this end, a Technical Assistance is proposed for the implementation of a study entitled “Climate Change Impact and Adaptation in the Mekong Delta Region of Viet Nam”. The TA will identify the potential future climate conditions in the Mekong Delta region and develop a suite of climate change adaptation recommendations to climate-proof future sector and provincial development planning.

The outcome of the TA is that sector and provincial authorities in the Mekong Delta region are better enabled to improve climate-resilience of programs, plans and/or policies to guide future development planning. Currently, development planning in the Mekong Delta region contains minimal reference to climate change issues. By working initially within two target provinces (Kien Giang and Ca Mau) and two target sectors (energy and transport), the TA will involve a comprehensive evaluation of the effectiveness of the current planning framework in the light of future climate challenges. As the existing capacity and knowledge of Government authorities to address issues of climate change is low, the TA will incorporate an institutional strengthening component to complement the technical tasks and allow authorities to meet their development planning obligations in the context of future climate conditions. Capacity building activities will be targeted at both technical staff and senior decision makers within Government.

The TA will involve four main outputs:

1. Identification of future climatic conditions and the effects on natural, social and economic systems in the Mekong Delta region.
2. Identification of appropriate climate change adaptation measures for targeted provinces and sector programs, plans, projects and/or policies.
3. Implementation of institutional strengthening to enable authorities to fulfil their development responsibilities in future climate conditions.
4. Establishment of collaborative mechanisms for information sharing and coordinated action on climate change by Government and international partners in the Mekong Delta region.

MONRE will be the Executing Agency for the project. Implementation of the project will be carried out directly with those authorities responsible for planning and policy formulation. The Implementing Agencies for the project will be the Provincial Peoples Committees of the two target provinces, and the Ministry of Industry and Trade, Viet Nam Electricity (EVN), and the Ministry of Transport. The national level NTP Committee will be briefed regularly on study progress. The Climate Change Working Group of the International Support Group for the Environment (ISGE) convened by MONRE will allow dissemination of study progress and outcomes to a wide audience of Government and non-Government stakeholders.

## 27. LE ANH TUAN: AGRICULTURE, RICE PRODUCTION AND CLIMATE CHANGE – METHODS AND LESSONS FROM THE MEKONG RIVER DELTA, VIETNAM

Over the past ten years, climate change has become one of the most socio-economic and environmental problems for the world. The change of world climate will cause crop failures, life damages and losses and other critical ecosystem characteristics, especially in Asia and the Pacific Ocean region.

The Mekong Delta is the largest agriculture and aquaculture production region of the nation. Future climate projections indicate that the Mekong River Delta region tends to be warmer in the future with longer and drier summertime. Seasonal patterns could be altered under influence of global warming. Moreover, changes in the climate pattern in the upstream region of the Mekong River also affect the flood regime of the Mekong Delta, where the boundary of future flood could expand to wider coverage. This paper presents the potential climate change in the Mekong River Delta and the key concerns on future climate threats to the rice production sector.

This paper presents the potential climate change in the Mekong River Delta and the key concerns on future climate threats, especially to the rice production sector. Some lessons from Climate Change and Adaptation in the Delta have been found.

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#### 28. KLAUS SCHMITT: MANAGEMENT OF THE NATURAL RESOURCES IN THE COASTAL ZONE OF SOC TRANG PROVINCE

The lack of an integrated approach to sustainable management, utilisation and protection of the coastal zone in Soc Trang Province and economic interests in shrimp farming have led to the unsustainable use of natural resources in the coastal zone, thus threatening the protection function of the mangrove forest belt and reducing income for local communities. The GTZ project Management of Natural Resources in the Coastal Zone of Soc Trang Province therefore aims to protect and sustainably use the coastal wetlands for the benefit of the local population. To achieve this aim we need to address the question how can management of natural resources contribute to the protection of the coastal zone from the negative impacts of climate change?

Mangrove forests form a narrow belt which protects the coast and the sea dyke from erosion and at the same time provide food, shelter and nursery grounds for a wide range of aquatic life. The flow regime of the Mekong River, the tidal regime of the South China Sea and coastal long-shore currents driven by prevailing monsoon winds, create a dynamic process of accretion and erosion along the coast of Soc Trang Province. In such a setting mangrove management must be part of integrated coastal area management (ICAM). This requires institutionalised co-ordination and cooperation of local authorities from provincial through district to commune level, participation of all affected stakeholders in the planning process, as well as risk management over space and time.

New approaches for mangrove planting is based on lessons learnt from past experience, and will include planting which mimics nature following the precautionary principle, with the aim to create diverse coastal forests in terms of species composition as well as horizontal and vertical structure and thus increase their resilience to the negative effects of climate change. Co-management is implemented as one of the new approaches to more effective mangrove management. It is partnership arrangement in which a resource user group gets the right to use natural resources on a defined area of state owned land and the responsibility to sustainably manage the resources (including protection). Benefits of co-management include effective protection of mangrove forests through zonation and ownership, livelihood improvement through secure and sustainable resource use, reduced workload for authorities and benefit sharing as part of an ICAM approach.

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#### 29. TRINE GLUE DOAN: COMMUNITY DEVELOPMENT EXPERIENCE IN CLIMATE CHANGE IMPACTS AND ADAPTATION - METHODS AND LESSONS FROM THE MEKONG DELTA

CCWG seeks to contribute to reducing the vulnerability of poor people in Vietnam to the impacts of climate change through NGO coordination, advocacy and capacity building for environmentally and economically sustainable and socially just responses to climate change. The presentation outlines some of the key actions of NGO CCWG and its partner organisations

#### Mitigation

- Contribute to the development of national climate change mitigation strategies that address social equity and biodiversity conservation;
- Engage with private stakeholders to link investment in carbon finance with VNGOs;
- Promote the use of pro-poor standards in carbon markets.

#### Adaptation

- Build capacity of NGOs to assist vulnerable communities adapt to climate change through training opportunities in community-based adaptation;
- Influence government policy and support for community based adaptation and financing.

#### Policy Dialogue

- Engage in policy dialogue with the Government of Vietnam and provide CCWG expertise where appropriate to ensure pro-poor responses to climate change;
- Support the implementation of the National Target Program (NTP) and MARD Action Framework at the local level for example, by providing technical advice on mainstreaming or planning methodology; and tools that ensure meaningful and full participation of local communities;
- Engage with international donors to achieve appropriate adaptation financing.

#### Awareness-raising and Behaviour Change

- Raise awareness and understanding on the issue of climate change throughout all spheres of Vietnamese society;
- Work closely with media and press agencies to encourage a greater focus on climate change news;
- Participation with mass media to raise awareness and increase the capacity of journalists to report on relevant climate change developments;
- Develop climate change awareness material for a range of audiences.

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## ANOND SNIDVONGS (PRESENTATION 12)

Dr. Anond Snidvongs is an oceanographer by training and has been working on regional climate, ocean and hydrologic modelling for Southeast Asia. He has been the director of the Southeast Asia Regional Centre for the Global Change System for Analysis, Research and Training (START) since 2000, where one goal of the Centre is to promote mainstreaming of climate related issues into the local, national and regional development agenda. Dr. Snidvongs is also a teaching faculty at Chulalongkorn University in Bangkok and the Director of Climate Knowledge Management Centre of Thailand’s Ministry of Science and Technology.

## AYUMI KONISHI (15, OPENING SPEECH)

Mr. Ayumi Konishi is the Country Director of ADB’s Vietnam Resident Mission. He assumed office on 3 April 2006. Mr. Konishi is responsible for setting the priorities for ADB’s assistance programs to Vietnam.

He leads in the preparation of ADB's results-based country strategy and program for Vietnam in close consultation with government agencies, development partners, and civil society and nongovernment organizations. He also oversees the implementation of ADB's current loan portfolio in Vietnam, consisting of 81 projects totalling about \$6.667 billion. Mr. Konishi also works in harmony with the government agencies and development partners for improved Greater Mekong Subregion cooperation.

Prior to this, Mr. Konishi worked on assistance to Thailand in 1997 in the wake of the Asian economic crisis and then became ADB's principal desk officer for Indonesia between 1998 and 1999. In 2000, he was appointed Program Manager of Programs Department (East) and supported ADB operations in the People's Republic of China, Indonesia, Malaysia, Mongolia, and the Philippines. From 2002, Mr. Konishi served as Director, Governance in the Finance and Trade Division of the Southeast Asia Department. Mr. Konishi was employed by the UN from 1982 in various capacities before joining ADB in 1988. A Japanese national, Mr. Konishi is a graduate of Oregon State University in the U.S., and Waseda University in Japan, and has a Master's Degree in Economics from New York University.

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#### CLAIRE IRELAND (3)

Claire Ireland is AusAID's Environment Adviser based in Canberra. She is an environment specialist with broad experience in the environment and natural resources sectors, including strategic environmental assessments (SEA) and integrating environment and climate change considerations into organisational planning processes. Over the last 15 years, Ms Ireland's work has focused on equitable and sustainable ways to unlock the potential of environmental wealth in developing countries. Areas of particular interest include food security, safety nets, climate change adaptation and building livelihood assets of the poor.

Ms. Ireland worked within DFID as an environment adviser before being seconded to the Government of Uganda. Whilst working for the Government of Uganda she supported colleagues to institutionalise processes for integrating environmental considerations into Uganda's national and local planning processes. After leaving Uganda, she worked as an international consultant both with donors and developing country governments to support the integration of environment into development planning and programs. She has experience in supporting donors, governments and NGOs to conceptualise, design and evaluate policies, strategies and programmes within the environment and natural resource sectors. She worked extensively in Africa and Asia before joining AusAID in April 2009.

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#### DOUGLAS GRAHAM (4)

Douglas J. Graham is the Environment Country Sector Coordinator for the World Bank in Vietnam, and Acting Social Sector Coordinator. He is a biologist, a graduate of University of Calgary and Université du Québec in Montreal, Canada. Working at the World Bank since 1992, he has specialized primarily in biodiversity conservation, environmental impact assessment, and project management. More recently, he has focussed on climate change. He managed three carbon finance projects with the Bio-Carbon Fund in Latin America and now is the focal point for Climate Change work at the Bank's office in Hanoi.

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#### JEREMY BIRD (5)

Jeremy Bird joined the Mekong River Commission Secretariat as Chief Executive Officer in March 2008. He is from the UK and holds qualifications in Civil Engineering, Irrigation Engineering and a Master's degree in Water Law and Policy, specialising in international water law and shared river basins. He has gathered broad experience across the water sector over the past 25 years, working with international organisations such as the Asian Development Bank (1992 – 1998), World Commission on Dams (1998 – 2001) and the United Nations Environment Programme (2001 – 2003). Immediately before joining MRCS, Mr Bird's work included assessing policy compliance on a number of proposed hydropower projects in Southeast Asia and assignments to update water policy and law in India and Africa.



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GEOFF MORRIS (20)

Dr. Geoff Morris is the Country Manager for Vietnam for the Australian Centre for International Agricultural Research. Mr Morris has a Bachelor of Forest Science and Science from the University of Melbourne and an MBA from the University of New England. He has a wide range of experience in natural resource management, project co-ordination and community development. In Australia he worked at a senior level for a State Government forest management agency with responsibilities for strategic planning, community engagement and forest land management.

In Vietnam Mr. Morris previously worked in Son La Province as a Senior Advisor for the Forest Science Institute of Vietnam, working on programs for community forestry in the North West Uplands. He has also been engaged on a number of other project and review teams in Vietnam in the field of rural development. Since 2007 he has worked for ACIAR, based in the Australian Embassy in Hanoi, with responsibilities for program development and implementation of agricultural research projects in horticulture, livestock, forestry, fisheries and agricultural policy.

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HOONAE KIM (14, OPENING SPEECH)

Ms. Hoonae Kim, a Korean national, is Sector Manager for the Sustainable Development program of the World Bank in Vietnam, which covers agriculture and rural development, environment and the infrastructure sectors, including energy, urban, water and transport. Ms. Kim joined the Bank in 1984 as a Young Professional and since then she has worked in 40 plus countries in four different regions both at the World Bank and IFC. Prior to the current position in Vietnam, Ms. Kim's most recent assignment was Sector Manager, Rural Development Unit, in the East Asia and Pacific Region. Prior to joining the Bank, she worked in the private sector and at Cornell University. Ms. Kim is educated in Engineering and Economics from UC Berkeley, McGill University and Cornell University.

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JEREMY CAREW-REID (21, 25)

Dr Carew-Reid has more than 30 years experience from work in 30 countries. The Mekong region, where he has been working since 1992, is his main focus. He is a water resources specialist by training with an emphasis on climate change, strategic environmental assessment and planning, and institutional and policy reform in the environment and natural resource management sectors. Dr Carew-Reid was Director of IUCN's global Conservation Services.

Since the year 2000, he has been Team Leader in numerous projects in Cambodia, Lao PDR, Thailand and Vietnam and at the LMB regional level. Most recently he has led the regional review of climate change initiatives for the MRC, the Ho Chi Minh City Climate Change Impact and Adaptation Study for the ADB and a rapid assessment of sea level rise in Vietnam. He is also leading in the MRC Strategic Environmental Assessment of hydropower on the mainstream Mekong River which has a climate change component.

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JUZHONG ZHUANG (6)

Juzhong Zhuang is currently Assistant Chief Economist in the Economics and Research Department of the Asian Development Bank (ADB). He joined ADB in 1997. His main research interests include growth and income distribution; international finance and early warning systems; and, more recently, the economics of climate change. Prior to joining ADB, he was a research fellow in the Development Economics Research Program at the London School of Economics from 1992 to 1997. He graduated from the Manchester University of UK in 1992 and has a PhD in economics.

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KLAUS SCHMITT (28)

Mr. Schmitt holds a Ph.D. in vegetation ecology and an M.Sc. in forestry. He has been working for more than 23 years in research and development cooperation projects for IUCN, WWF, World Bank and GTZ in

Kenya, Ghana, Nigeria, Uganda, Cambodia and Vietnam. The focus of his work has been on integrated natural resource management, nature conservation, protected area planning and management and climate change adaptation.

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KY QUANG VINH (22)

Mr. Ky Quang Vinh (1955) is the Director of the Can Tho Environmental Monitoring Centre and a member of the Can Tho Climate Change Steering Committee, established in August 2009. He has 30 years of work experience in various positions related to agriculture, tourism, environmental management, and environmental monitoring. He obtained his B.Sc degree in Agronomy from Can Tho University in 1978 and an M.Sc degree in Environmental Treatment Technology from the Polytechnic University in Ho Chi Minh City in 1997.

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LE TUAN ANH (27)

Dr. Le Anh Tuan currently holds the position of Senior Lecturer at the College of Environment and Natural Resources and the Research Institute for Climate Change – Can Tho University, Vietnam. He has been working at Can Tho University since 1982. Dr. Tuan has many years in teaching and research in the fields of Water Resources Planning and Management, Environmental Engineering, Constructed Wetlands, Natural Disaster Prevention and Preparation, and Rural Development Projects. Recently, he has participated in research on Climate Change and Adaptation in the Mekong River Delta.

He completed his Bachelor of Engineering in Water Management and Land Improvement at Can tho University, Vietnam in 1982 and Master of Engineering in Water Resources Engineering at Asian Institute of Technology, Bangkok, Thailand in 1990. He completed his PhD. in Applied BioSciences and Engineering, specialized in Environmental Hydrology at Catholic University of Leuven, Belgium.

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NGUYEN BINH THIN (9)

Dr. Nguyen Binh Thin works in Ministry of Agriculture and Rural Development (MARD) as a Deputy Director General of the Department of Science, Technology & Environment. He also is Director of Standing Office of Steering Committee for climate change mitigation and adaptation. He has qualifications in Water resources development with 34 years of professional experience.

From 1975 to 1995 Dr Thin worked in Ministry of water Resources as an Engineer of Water Resources. From 1995-1997 he worked in the Vietnam National Mekong Committee as an expert of Hydraulic projects and as Deputy Secretary General of Standing Office of Vietnam National Mekong Committee. From 1998 up to now he is the Deputy Director General of the Department of Science, Technology & Environment (MARD). His main duties are to manage water resources research projects and to organize the design and implementation of water resources standards. Since 2008 he is also the Director of the Standing Office of Steering Committee for climate change mitigation and adaptation. He and his colleagues set up the 2008-2020 Action Plan Framework for Adaptation and Mitigation of Climate Change of the Agriculture and Rural Development sector.

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NGUYEN VAN THE (24)

Dr Nguyen Van The (1966) is Deputy Director of the Department of Transportation in Dong Thap province. He works in Dong Thap province since 2001; in 2005 he was appointed Deputy Director. From 1989 to 1998 he also worked in Dong Thap. He studied at Polytechnic University in Ho Chi Minh City, followed by studies at the Transportation University in Moscow. Between 1998 and 2001 he did his PhD research at the Transportation University in Moscow.

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PETER LYSHOLT HANSEN (KEYNOTE SPEECH)

H.E. Mr. Peter Lysolt Hansen is the Danish Ambassador to Vietnam. He got his MSC in Economics from the University of Copenhagen in 1978. He held positions in the Ministry of Foreign Affairs, alternated with positions in the Danish Mission to the United Nations in New York, the Danish Embassy in New Delhi and the Danish Embassy in Pretoria. In 1998 he became the Danish Ambassador to Tanzania. Prior to his assignment in Vietnam, Mr Lysolt Hansen was Undersecretary of State in the Ministry of Foreign Affairs.

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THAI THANH LUOM (18)

Mr Thai Thanh Luom is Director of the Department of Natural Resources and Environment in Kien Giang province since 2008. He has a doctorate degree in agriculture. For his masters he did a major in forest biology. Mr Luom held positions as Deputy Director of the Department of Kien Giang Agriculture and Rural Development (1996-2002), Director of U Minh Thuong National Park (2003-2005), and Chairman of Phu Quoc island district from 2006 to 2007.

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TRAN THI MINH HA (1)

Ms. Tran Thi Minh Ha is Director General at the Department of International Cooperation in the Ministry of Natural Resources and Environment. From 1983 to 1994 she worked at the General Department of Land Management and from 1994 to 2002 at the General Department of Land Administration. During the last decade Ms Ha finalised various studies: Diploma of Senior official of the National Academy of Public Administration (2007), Diploma of Senior Politics at the HCM National Institute of Politics (2002-2004) and LL.M at the Hanoi National University, Faculty of Law (1999-2003).

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TRAN THI THANH PHUONG (PANEL EXPERT TECHNICAL SESSION C)

Ms. Phuong Thi Thanh Tran, a Vietnamese national, is Senior Environmental Specialist in the Sustainable development Department of the World Bank. She has been working for the World Bank in Vietnam since 1998 and acted as the Vietnam Environment Sector Coordinator during the periods of 1999-2002 and November 2006 – October 2007. Her work is related to environmental and natural resource management, climate change and carbon finance, environmental safeguards for urban and energy infrastructure development.

Prior to joining the World Bank, Ms. Phuong worked 12 years for the former Ministry of Science, Technology and Environment with the last assignment as Deputy Director for Planning and International Relations Division of the Vietnam Environment Agency. She also worked at the Swedish International Development Agency as a National Environment Program Officer. Ms. Phuong holds a PhD degree in Chemistry from the Kishinev National University (1985) and a Masters degree in Environmental Management and Development from the Australian National University (1995).

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TRAN THUC (2)

Mr Tran Thuc is the Director General of the Vietnam Institute of Hydro-Meteorology and Environment. He also serves as Chairman of the Vietnam National Committee for the International Hydrological Program (IHP), and Co-Chairman of the Vietnam - US Working Group on Climate Change Adaptation and Mitigation. He holds qualifications in Hydrology and a Doctoral degree in Hydraulics and Coastal Engineering.

Tran Thuc has almost 30 years' experience in environmental and water resources management, institutional capacity building, policy analysis, planning, management, monitoring, evaluation and development of environmental and water resource projects. His demonstrated abilities and experience include formulation and preparation of climate change adaptation and mitigation strategy and action plans; partnership building as a means to achieving adoption of integrated water resources management, and development and implementation of integrated multi-purpose watershed management plans; development and mentoring of environmental and water resource professionals; formulation and implementation of water resource and quality projects, coordinating and negotiating projects in climate change and watershed management in Vietnam.

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TRINE GLUE DOAN – CCWG (29)

Ms Trine Glue Doan represents the NGO Climate Change Working Group (CCWG). The CCWG was established in February 2008 in recognition of the fact that Vietnam is likely to be significantly affected by climate change and that NGOs are well placed to support localised responses. CCWG provides a forum for Vietnamese NGOs (VNGOs) and International NGOs (INGOs) to actively participate in the climate change debate.

CCWG plays a significant role in facilitating information and resource-sharing and coordination among NGOs currently engaged in addressing climate change across a number of sectors and themes. CCWG consists of a core group which facilitates and coordinates the working group. Current core members include: the VUFO-NGO Resource Centre; Oxfam; CARE; CRS; SNV; EMW; WWF; Challenge to Change and SRD. In addition to the core group, CCWG maintains three thematic groups: Climate Change Adaptation, Climate Change Awareness & Behaviour Change and Climate Change Mitigation. Thematic groups meet separately to exchange relevant information and ideas and provide updates to the core group.

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TRUONG DUY HAI (30)

Mr Truong Duy Hai (1959) is Director of the Ben Tre Provincial Department of Natural Resources and Environment. He has been involved in the Environmental Protection Planning for Ben Tre Province in the period 2008-2010 and orientations towards 2020, and the investigation of the state of environmental resources in coastal areas of Ben Tre and proposals of environmental protection solutions. Mr Hai holds a master in Public Administration.