

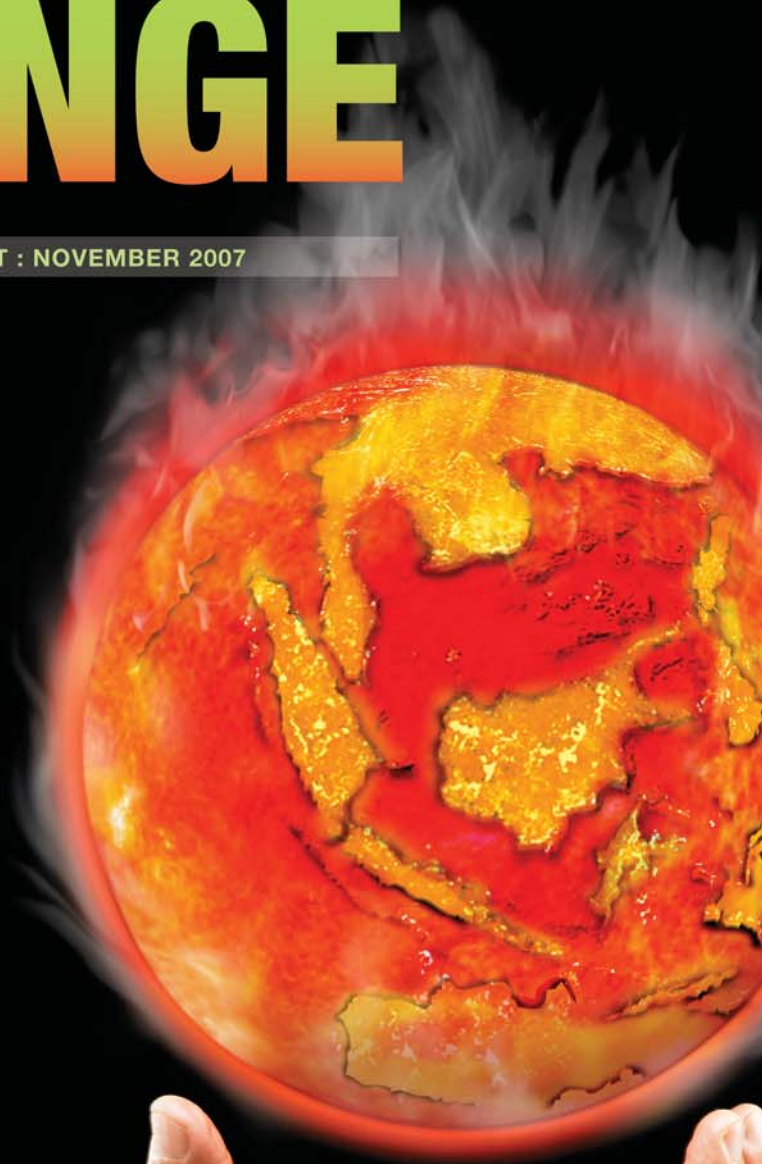
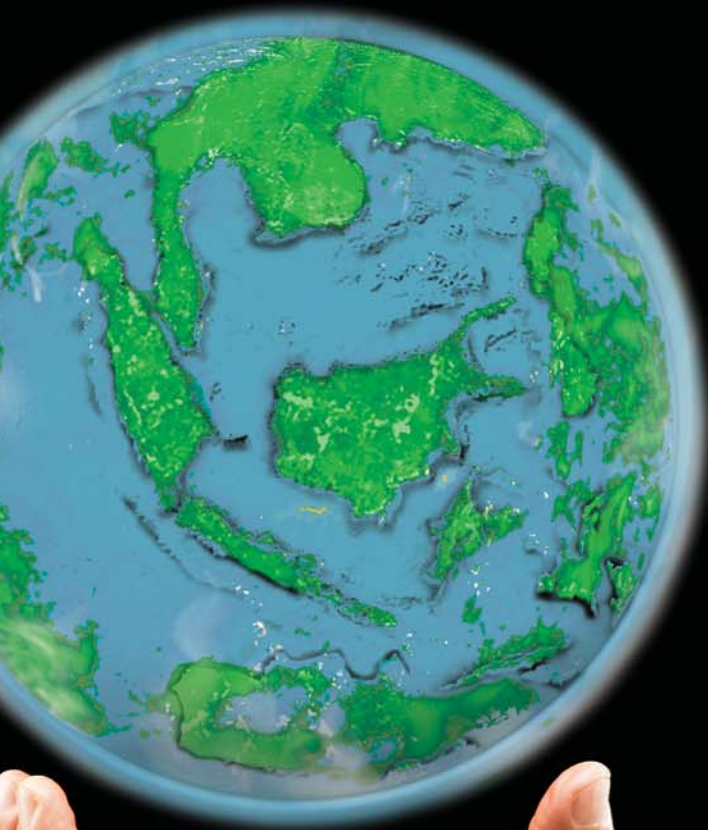
SOUTH-EAST ASIA REGIONAL CONFERENCE ON

CLIMATE

REDUCING THE THREATS AND HARNESSING THE
OPPORTUNITIES OF CLIMATE CHANGE

CHANGE

RAPPORTEURS' REPORT : NOVEMBER 2007



The Regional Conference on Climate Change was jointly organised by the Ministry of Natural Resources and Environment Malaysia and the British High Commission to Malaysia on 29-30 October 2007 in Kuala Lumpur, Malaysia.

The purpose of the Conference was to:

- Effectively re-frame the debate on climate change so that a broad range of constituencies recognise the importance of considering climate impacts in their policy making.
- Build up the local evidence base and develop mitigation /adaptation strategies of regional governments,
- Help the constituencies understand their role in this global shared dilemma.

Issues discussed during the Regional Conference are highlighted below.

IMPACTS OF CLIMATE CHANGE

Climate change impacts will affect everyone but developing countries are already vulnerable to climate variability and have the least capacity to respond. Costs of climate change can be reduced through both adaptation and mitigation. However, adaptation is the only way to cope with unavoidable impacts over the next few decades. In addition, it was noted that the costs of strong and urgent action to avoid serious impacts from climate change are substantially less than the damages avoided.

In Asia, the main vulnerabilities surround water being either too little, too much or polluted; all of which are exacerbated by climate change. The South, East and Southeast Asian regions have heavily populated mega-delta areas that are vulnerable to flooding events. Temperature rise is expected to impact on rice cultivation, with a predicted 10 per cent drop in yield for every one degree Celsius increase in temperature.

Based on current agricultural practices in the Association of Southeast Asian Nations (Asean) region, there has to be a variation in adaptation strategies due to the characteristics of crops. Potential diseases affected by climate change are caused by direct exposure, indirect exposure and social and economic disruption.

Regional patterns of sea-level rise are attributed to ocean thermal expansion and melting of glaciers. The current sea-level rise is at the upper limit of the Intergovernmental Panel on Climate Change projections. However, there are still uncertainties in the sea-level rise such as ice-sheet stability which could cause a substantially larger rise in sea level. Sea-level rise is expected to have regional variations.

CLIMATE CHANGE ADAPTATION

Adaptation is the main concern of developing countries

as impacts of climate change are unleashed. Despite this, progress on adaptation in developing countries is limited; it has been accorded low priority in national communications. In addition, a sense of urgency is still missing in Southeast Asia as not one country has an adaptation policy framework. And while there are signs of integration with disaster planning, this is still not so with economic planning.

Although adaptation policies are largely local and site specific, regional initiatives to compile data in a uniform and compatible manner would enhance these efforts. Both the direct and hidden costs of climate change must be accounted for in planning adaptation strategies.

An adaptation plan is needed to mitigate the impacts of sea-level rise and extreme scenarios. Greater cooperation and partnership development among the scientific, governmental and business communities and the population at large are also required.

A research and development approach should be adopted to address the adaptation options and mainstream the adaptation process within the Asean region. Mainstreaming should be regarded as a process instead of an end product. Factors contributing to the mainstreaming process are information, institution, enabling environment and stakeholder participation.

Several suggestions to take forward actions on adaptation include:

- Using the Nairobi Work Programme of the United Nations Framework Convention on Climate Change (UNFCCC).
- Reviving existing initiatives like the Asean climate change initiative.
- Establishing an institutional framework such as a regional coordination agency for adaptation.
- Exploiting local knowledge for micro adaptation.

SOUTH-EAST ASIA REGIONAL CONFERENCE ON CLIMATE CHANGE

Reducing the Threats and Harnessing the Opportunities of Climate Change

29-30 October 2007
Putra World Trade Centre (PWTC)
Kuala Lumpur, Malaysia

RAPORTEURS' REPORT
November 2007

- Creating guidebooks for regional adaptation plans.
- Reforming the Clean Development Mechanism (CDM) further, both at conceptual and operational levels, to prioritise projects for adaptation in addition to just emissions reduction at present.

CLIMATE CHANGE MITIGATION

The myth that climate action is bad for the economy was dispelled. Examples of climate action that are good for the economy include energy conservation initiatives. On the other hand, climate change is also an opportunity to re-examine our lifestyles and consumption patterns. The idea of personal carbon rationing would help people adjust their lifestyles to less carbon intensive ways. Companies should take the opportunity to enter new markets to cater for green products and technology.

Several measures for mitigating climate change were discussed. Carbon, capture and storage can be considered as the bridge to a more sustainable energy system, but there are concerns with respect to risks, costs and implementation. A sustainable transport policy in the context of mitigation of climate change includes pertinent elements such as efficiency assessment of accessibility in all modes of transport, transport modes that generate least greenhouse gas emissions and increased vehicle occupancy with public transport and mobility management.

Integration of climate change and air pollution management was suggested due to its potential co-benefits. They include greater understanding of how the policies overlap, reduction in the cost of mitigation issues as well as increased likelihood of the policies being implemented. Utilising photovoltaic to generate electricity from solar power, which is a proven and reliable technology, can save 0.63 tonne of carbon dioxide with 1kWh electricity generated.

Biofuel production has been driven globally due to several reasons including energy security, agricultural support and the environment, for example to reduce pollution and greenhouse gas emissions.

Deforestation has the biggest land-use impact on the carbon cycle through the release of large carbon stocks accumulated in the forest ecosystems. On the other hand, tropical forest ecosystems including peat lands have the potential for modulating and mitigating such an impact, with their existing huge storage of carbon pools and expansion of carbon sinks.

Halting emissions from tropical forests and valuing their carbon stocks offers a major opportunity to not only mitigate climate change but also to maintain the very significant ecosystem services forests provide to humanity. It will also help alleviate poverty among 1.4 billion of the world's poor who depend upon these forests for their livelihoods.

Besides that, it is also important to look into sustainable forest management as it will enhance tree growth as well as re-growth and therefore, sequester more carbon.

TECHNOLOGY

There was a general agreement that the Kyoto Protocol has been slow in effecting technology transfer and in activating the climate change funds. However, this is largely due to slow action on the part of certain countries and not due to the Protocol. Several suggestions to foster greater transfer of technology include:

- Promotion of joint research and development (R&D) to enhance access to knowledge and know-how.
- Support of endogenous development and diffusion of technology.
- Regional cooperation on technology development, with each country taking a lead in a particular type of technology.

In addition, technology-needs assessment is a dynamic and evolving process. It should be regularly updated in line with technology development and implementation of the UNFCCC.

INVESTMENT AND FINANCE

A framework should be put in place to guide investment and provide a stable environment for business. Power plants built today will most likely still be operational in 2060; hence policies today are crucial to guide investment decisions. Investors need an international cost effective framework soon if energy security and climate change objectives are to be met.

It was noted that current levels of public sector energy R&D investment are not adequate given the magnitude of the climate challenge. Government spending on energy R&D has fallen while private-sector R&D is increasingly focused on projects with short-term payoffs.

Concerns were also raised on the issue of financial resources in current international negotiations in the UNFCCC where funding for technology, the Special Climate Change Fund and the Adaptation Fund are either not available or have not been operationalised.

THE FUTURE CLIMATE REGIME

Climate change is a global problem that requires global actions, as recognised in the UNFCCC, and should be undertaken under the Convention framework. Actions beyond the first commitment period of the Kyoto Protocol, which ends in 2012, must be built upon the UNFCCC and Kyoto Protocol.

There should be no gap between the commitment periods. Any future considerations must take into account the principle of common but differentiated responsibilities. Difference in national circumstances must also be recognised. It is generally recognised that developed countries should lead in tackling climate change.

At the upcoming UNFCCC Conference of Parties (COP) 13 in Bali in December, a Bali Roadmap is expected to be established. It will focus on the need for reaching international agreement on concrete steps to be taken in view of a post-2012 framework for the Kyoto Protocol.

Several prerequisites to move the process forward include:

- Closer international cooperation among Parties.
- Reduction of suspicion and building confidence through concrete works (for example on the transfer of technology).
- Recognition of national initiatives by developing countries at their own costs.
- Further encouragement of these initiatives through financial and technological support.
- Closer cooperation in capacity building and joint R&D.

All of these actions will facilitate better regional and sub-regional efforts in addressing climate change.

Contents



1 Executive Summary

5 Welcoming Remarks and Address

5 Keynote Address and Official Opening

Plenary 1: Climate Change in the Global Context

6 Key Presentation 1 — Economic Impact of Climate Change

6 Key Presentation 2 — Key Vulnerabilities and Climate Change

7 Key Presentation 3 — Reducing the Risk to Extreme Climate Events: The Hyogo Framework for Action (2005-2015)

7 Key Presentation 4 — Transition to Low, Sustainable Carbon Economy

8 Discussion (Q & A Session)

Session 1A

Thematic Areas: Adaptation to Climate Change

9 Adaptation in Agriculture

9 Turning Climate Crisis into Economic Opportunities

10 Understanding Sea-Level Rise and Its Impact

10 Regional Cooperation on Climate Change Adaptation

11 Discussion (Q & A Session)

Session 1B

Thematic Areas: Mitigation of Climate Change

12 Development, Transfer and Diffusion of Environmentally Friendly Technology

12 Sustainable Transport Policies in the Context of Climate Change

13 Co-Benefits: Integrating Climate Change and Air Quality Management

13 Carbon Capture and Storage: Promising Technologies for Mitigating Carbon Dioxide Emissions

14 Discussion (Q & A Session)

Plenary 2: Threats and Opportunities of Climate Change

15 Key Presentation 1 — Energy Security and Climate Change: Time is Running Out

16 Key Presentation 2 — Current Concerns on International Climate Change Negotiations

17 Discussion (Q & A Session)

Session 2A
Thematic Area: **Climate Change and Land-use Change and Forestry**

- 18 Tropical Forest and Climate Change: Current Understanding and Future Scenarios
- 18 Carbon Off-setting and Scope for Forestry and Agriculture
- 19 Tropical Forests and Climate Change: Market Approaches to Reducing Emissions and Protecting Forests
- 19 Carbon Sequestration Projects: Avoiding Logging Damage and Forest Rehabilitation
- 19 Discussion (Q & A Session)

Session 2B
Physical, Economic and Technological Aspects of Climate Change

- 20 Study of the Impact of Climate Change on the Hydrologic Regime and Water Resources of Peninsular Malaysia
- 21 Impact of Climate Change on Public Health
- 22 Detailed Climate Projections for Vulnerabilities and Impacts Assessment Using the Precis Regional Model
- 23 Southeast Asia Regional Climate in the 21st Century: Change and Linkage to Risk, Vulnerability and Adaptation Assessment
- 24 Discussion (Q & A Session)

Session 3A
Thematic Area: **Energy and Climate Change**

- 25 Energy Outlook in Southeast Asia
- 26 Prospects for Green Energy in Southeast Asia
- 27 ADB's Clean Energy Initiatives
- 27 Regional Trends on Nuclear Energy and Climate Change: Malaysia's Perspectives
- 28 Discussion (Q & A Session)

Session 3B
Thematic Area: **Financing and Technology**

- 29 Issues in Financing Clean Energy Projects
- 30 Market Opportunities for Clean Energy
- 30 Biofuels: Production, Use and Its Implication on GHG Emission
- 31 Promotion of Solar Power
- 31 Discussion (Q & A Session)
- 33 Panel Discussion — **Climate Change Negotiations: The Way Forward**
- 37 Appendix 1: Programme
- 38 Appendix 2: List of Participants

Welcoming Remarks and Address

The conference began with welcoming remarks by British High Commissioner to Malaysia, Mr Boyd McCleary. He emphasised that the British Government was convinced climate security and sustainable development are crucial to the future equilibrium of the planet. He noted that Southeast Asia has an important role in climate security, being one of the world's greatest regions of biodiversity and a significant source of carbon emissions at the same time.

The Natural Resources and Environment Minister of Malaysia, Dato' Seri Azmi Khalid noted there was an urgent need for countries to work together. This conference would build momentum towards the United Nations Framework Convention on Climate Change Thirteenth Conference of Parties to be held in Bali in December.



H.E. BOYD MCCLEARY
BRITISH HIGH COMMISSIONER
TO MALAYSIA



Y.B. DATO' SERI AZMI KHALID
MINISTER OF NATURAL RESOURCES
AND ENVIRONMENT MALAYSIA

Keynote Address and Official Opening

In his keynote address, Deputy Prime Minister of Malaysia, Dato' Seri Mohd. Najib Tun Razak highlighted a broad range of issues. They included the threats of climate change, the Malaysian Government's initiatives on sustainable development, negotiations on the post-2012 framework of the Kyoto Protocol and what they should take into account, and the opportunities presented by climate change.

He said the climate change phenomenon is too real, too important, too far-reaching and too time-sensitive for continued bickering, indifference or cynicism. As becoming mere spectators as the earth turns inhospitable for human habitat is not an option, he called for action to be taken immediately.

The Deputy Prime Minister highlighted the Malaysian Government's initiatives to promote sustainable development, especially in encouraging renewable energy. The recently announced tax incentives under the national budget for 2008 includes tax exemptions for income derived from trading certified emission reductions, or CERs, and from forestry management. The expected amount of CERs from Malaysian Clean Development Mechanism-supported projects is about 1.8 million tonnes of carbon dioxide equivalent annually.

With regard to action beyond the first commitment period of the Kyoto Protocol which ends in 2012, he noted that while it would be useful to work speedily through decentralised groupings such as the Asia Pacific Economic Cooperation, etc., their decisions would nevertheless have to be brought to the United Nations Framework Convention on Climate Change for agreement.



Y.A.B. DATO' SERI MOHD NAJIB TUN
ABDUL RAZAK
DEPUTY PRIME MINISTER OF
MALAYSIA

Additionally climate change efforts at the international level would be successful only if they were congruent with national interests. Different types of emission targets would enable countries to participate effectively. Mechanisms for forest preservation should also be included in the post-2012 Kyoto framework. He added that technology transfer and capacity building were key factors in fighting climate change.

The Deputy Prime Minister regarded climate change as an opportunity to re-examine lifestyles and consumption patterns. He supported the idea of personal carbon rationing that would help people adjust their lifestyles to less carbon intensive ways. He also called on companies to take the opportunity to enter new markets to cater for green products and technology.

His message also encapsulated the moral dimension of the climate change issue in that we should hand a healthy and liveable earth to future generations.

Climate Change in the Global Context

• CHAIRED BY DATUK SUBOH MOHD YASSIN,
• MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT

Key Presentation 1

Economic Impact Of Climate Change

Ms Su-Lin Garbett, Department of Environment, Food and Rural Affairs, United Kingdom

REFERRING TO THE STERN REVIEW, MS GARBETT highlighted that:

- Costs of strong and urgent action to avoid serious impacts of climate change are substantially less than the costs of inaction.
- Adaptation must be a crucial part of development strategy even with strong action to reduce greenhouse gas emissions.
- Policy requirements include urgent and international action, pricing for damages from greenhouse gases, support for technology development and combating deforestation.

Ms Garbett presented the following implications for Asia:

- Developing countries are already vulnerable to climate variability and have the least capacity to respond.
- Costs of climate change can be reduced through adaptation and mitigation; but adaptation is the only way to cope with impacts of climate change over next few decades.
- Global initiatives for clean energy investment, reduced deforestation and development of global public goods can benefit the region.
- Asian leaders have an important role in shaping the international debate.
- Heads of State and Economics/Finance Ministries should take leadership on the issue.

She concluded by stating that technology and economic incentives would be the tools to combat climate change.

Key Presentation 2

Key Vulnerabilities And Climate Change

Professor Zbysek Kundzewicz, IPCC Coordinating Lead Author for Freshwater Resources and Their Management (Working Group II)

PROF. KUNDZEWICZ EXPLAINED CLIMATE VULNERABILITY and described vulnerable systems in Asia, as well as tipping points in the earth system directly relevant to Southeast Asia. Vulnerability included exposure to climate stimuli, sensitivity and adaptive capacity. He identified traditional knowledge as supporting adaptive capacity.

In Asia, the main vulnerabilities surround water – either too little, too much or polluted, all of which are exacerbated by climate change. He pointed out that South, East and Southeast Asia all have heavily populated mega-delta areas that are vulnerable to flooding events.

Professor Kundzewicz also highlighted the much higher rate of coral damage in Asia of 30 per cent in 30 years compared to the global average of 18 per cent, and the impact on rice cultivation with a predicted 10 per cent drop in yield for every one degree Celsius increase in temperature.

He concluded by summarising the twin ideas of mitigation and adaptation as having to avoid the unmanageable and manage the unavoidable.

Key Presentation 3

Reducing The Risk Of Extreme Climate Events: The Hyogo Framework For Action (2005-2015)

Mr Salvano Briceno, United Nations International Strategy for Disaster Reduction

MR. BRICENO STARTED BY REDEFINING CERTAIN CATCH phrases. He said it is incorrect to talk about natural disasters as disasters are social, human events and not natural. However, hazards are natural and can become disasters due to vulnerabilities.

He introduced the Hyogo Framework for Action on disaster risk reduction. It was, coincidentally, formulated two weeks after the Asian tsunami in 2004. He then demonstrated the framework's applicability for climate change adaptation.

Practical actions to reduce vulnerability to natural hazards and adapt to climate change include:

- Developing a culture of prevention and resilience.
- Building institutions (policies, legislation, plans, etc.) to actively contribute to these goals.
- Identifying risks (hazard and vulnerability assessments, mapping, etc.) and avoiding high risk zones.
- Building hazard-resistant structures (schools, hospitals, houses, etc.).
- Protecting and developing hazard buffers (forests, reefs, mangroves, etc).
- Improving early warning, preparedness and response.

Key Presentation 4

Transition To Low, Sustainable Carbon Economy

Mr Henry Derwent, Department of Environment, Food and Rural Affairs, United Kingdom

MR. DERWENT EXPLAINED THE UK'S COMMITMENT towards a low carbon economy. The UK accounts for around two per cent of global carbon emissions and the goal is to be on a path to cutting carbon dioxide emissions by at least 60 per cent by about 2050. While noting that the UK had already reduced emissions while maintaining strong economic growth, he added that energy and climate change policy must be planned together.

Principles of the UK's policy framework are:

- Climate change and energy security are international issues, requiring action internationally as well as in the UK.
- Independently regulated competitive markets are the most cost-effective and efficient way to deliver goals.
- Market failures must be corrected to align the objectives of market participants with the UK's energy policy goals; the most obvious way is through a carbon price.

He also described the elements contained in the UK climate change bill, the first of its kind. They include:

- Setting five year targets and budgets.
- Establishing a committee on climate change.
- Providing enabling powers.
- Reporting to the public in a transparent manner.

DISCUSSION
(Q & A Session)

QUESTION 1

Datuk Suboh Mohd Yassin (Ministry of Natural Resources & Environment Malaysia) asked Ms. Su-Lin Garbett:

- Is there a sense that technology is being deployed to combat climate change?
- There are a number of contributory sectors to climate change, e.g. transportation, electricity and heat, forestry and land use, etc. Is there a need to reflect key contributing elements for the future in order to come out with an approach that is more symmetrical?

Response: Ms Garbett agreed that technology is being deployed at the moment. But, it is easier said than done, as we need commitment to develop the technology. However, it is difficult to get technology developed without incentives. More government efforts are needed to push this agenda further.

She also said we may need to make carbon cuts where the options are the cheapest i.e. by looking at better energy efficiency/ conservation methods. Avoided deforestation could be another option to look at.

QUESTION 2

Mr. Gurmit Singh (Centre for Environment, Technology and Development Malaysia) wanted to know:

- Why transportation figures have been excluded in measuring emissions from the residential sector in the UK – shouldn't there be a figure for comparison purposes?
- Why aviation fuels consumption has also been left out from the database.
- Whether the UK government is ignoring this sector in collating emissions data?

Response: Mr Derwent agreed that transport plays a part in emissions. He explained that personal travel accounts for 25 per cent of total emissions in the UK. But, transportation raises a whole host of other issues.

A current emissions reading under the transport category for the UK only includes domestic aviation but not international aviation. Ten years have passed but not much progress has been achieved in including the international aviation's contribution towards GHG emissions. If it does, it will not go down well with a lot of countries. However, there is a pressing need to include aviation emissions into the EU global carbon emissions indicator, as this is a thriving industry. It is also recognised that aviation is the fastest growing emission contributor within the transportation sector. As such, aviation designers must make radical changes in their designs to combat climate change.

QUESTION 3

Ms Aimi Lee Abdullah (Malaysian Timber Council) commented that one way to stop carbon emissions is to stop deforestation. Although a lot of resources have gone into preventing major deforestation, the underlying reason for it, which is poverty, seem to be missing. If poverty could be arrested first, then deforestation will eventually cease.

Response: Mr Derwent indicated that the cost of developing and buying technology in Asia would be a huge cost to bear. Therefore it makes sense if more work is dedicated in measuring opportunity costs, like in the forestry sector.

Comment: Datin Susheela McCoy (Environmental Protection Society Malaysia) suggested that everyone currently seem to be responding to symptoms rather than addressing the underlying issue. There is nuclear technology, but I do not think this is the answer in combating global warming. Instead the nature of our economy must be addressed, which is currently very energy intensive. Therefore, a change in lifestyle is pertinent.

QUESTION 4

Ms Meena Raman (Sahabat Alam Malaysia) indicated she has been following the climate change discussion in the international arena.

- She said that the implication of targets was not made explicitly. The EU has proposed 50 per cent reduction, whereas some countries have proposed 60-80 per cent reductions by 2050. There might be political support, but targets need to be made more clearly.
- How much of China's emissions are going into the UK through importation of Chinese products?

Response: Mr Derwent elaborated that the 50 per cent reduction in GHG emissions by 2050 is a broad target for the EU. The UK is embarking on an ambitious path of reducing GHG emissions in 2050 by more than 50 per cent. What this means in the real context for developed regions/countries still need to be worked out through various formal discussions. He also felt that the money for any reconstruction purposes in vulnerable regions would not come from the carbon market. It was for the private sector to make the necessary breakthrough innovations in combating climate change.

On the question on international trade, namely with China, Mr Derwent thought it was a fair point for discussion. The notion of reducing demands from developed countries of goods from developing countries will have a disastrous economic impact. However, eventually, global resources used or consumed must be costed thoroughly and fairly for emission impacts. But, this must be agreed through a fair international carbon pricing.

Response: Mr. Briceno agreed that reconstruction is an important issue to highlight as part of risk response to disaster. The tsunami in 2006, for example, demonstrated that disaster poses a high visibility to society whereas risk response does not. He further reiterated that the cost of adaptation is huge, but it should be dealt wholly as a development issue, rather than as a separate matter.

Adaptation To Climate Change

Adaptation In Agriculture

Dr Vute Wangwacharakul, Kasetsart University, Thailand

BASED ON CURRENT AGRICULTURAL PRACTICES IN THE Asean region, Dr Wangwacharakul noted that adaptation strategies have to vary due to the characteristics of crops. This variability will require a research and development (R&D) approach to address the adaptation options and mainstream the adaptation process within Southeast Asia.

Mainstreaming should be regarded as a process instead of an end-product. Factors contributing to the mainstreaming process are:

- Information (must be timely, relevant and useful for policy makers).
- Institution (strengthening the institutional framework and making it relevant and effective).
- Enabling environment (adaptation plans from national and international platforms are needed).
- Stakeholder participation (adequate representation from the stakeholders).

Issues pertaining to mainstreaming on agriculture adaptation in Southeast Asia include:

- Climate change impacts and adaptation.
- Technical limitations (uncertainties and long-term).
- Practical applicability (socio-economic aspects).

Enhancement of effective mainstreaming for agriculture in Asean require:

- A consultative approach.
- Careful links with sectoral models.
- Recognising limitations on technique and policy implementation.
- Enhancing climate risk management capacity of farmers.
- Enhancing the early warning and forecast systems.

Turning Climate Crisis Into Economic Opportunities

Mr Rae Kwon Chung, United Nations Economic and Social Commission for Asia and the Pacific

MR RAE STARTED BY DISPELLING THE MYTH THAT climate action is bad for the economy. He pointed out that energy conservation initiatives are good for the economy and energy conservation is climate action. He also questioned whether target-setting for developing countries is feasible.

He addressed the concern that measures being discussed look at only the symptoms rather than the cause of climate change. He pointed out that climate change is fundamentally the result of the largest market failure because the market price is less than ecological price. He called for a shift to an ecological efficient paradigm to address this.

He introduced the idea of the green growth paradigm which moves away from quantitative growth based on market price and replaces it with qualitative growth based on ecological efficiency. He identified eco tax reforms (ETR) as a useful tool in this. ETRs are intended to change lifestyles by taxing energy and resource use rather than income.

With regard to post-2012 Kyoto negotiations, he said imposing targets on developing countries would not be feasible. He proposed using the existing Clean Development Mechanism (CDM) that already engages developing countries, and improving on it.

An improvement he suggested is to:

- Include unilateral CDM projects i.e those developed solely by developing countries and apply a certified emission reductions (CERs) discount based on income levels of the developing country and nature of activity generating the CERs.

He also suggested removing the project additionality requirement for CDM projects and streamlining procedures to ensure the quality of CERs.

Understanding Sea-level Rise And Its Impact

Dr John Church, Commonwealth Scientific and Industrial Research Organisation, Australia

DR CHURCH HIGHLIGHTED THAT SEA-LEVEL RISE CAN cause the following effects:

- Inundation
- Storm surges
- Coastal erosion
- Impacts on emergency
- Environmental refugees

The regional patterns of sea level rise are attributed to ocean thermal expansion and melting of glaciers. Dr Church pointed out the current sea-level rise is at the upper limit of the Intergovernmental Panel on Climate Change (IPCC) projections. However, there are still uncertainties in sea-level rise such as ice-sheet stability which could cause a substantially larger rise in sea level. He referred to the dynamic instability of the Greenland ice sheet.

Sea level rise is expected to have regional variations. There is a need to have an adaptation plan and to mitigate the impacts of sea-level rise and extreme scenarios. There is also a need for greater cooperation and partnership development among the scientific, governmental and business communities and the population at large.

Regional Cooperation On Climate Change Adaptation

Dr Ancha Srinivasan, The Institute for Global Environmental Strategies

DR SRINIVASAN STATED EXISTING ADAPTATION POLICIES:

- Are largely local and site specific.
- Have a broad focus with nearly all sectors.
- Have high prospects for failure due to the involvement of numerous stakeholders and often broad mandates.
- Encounter limited progress even in developed countries.

Although adaptation is localised, regional initiatives to compile data in a uniform and compatible manner would enhance these efforts. Both the direct and hidden costs of climate change must be accounted for in planning adaptation strategies.

Dr Srinivasan noted that a sense of urgency is still missing in Southeast Asia as not one country has an adaptation policy framework. While there are signs of integration with disaster planning, this is still not so with economic planning.

He added that the focus on adaptation in national communications has been low, largely due to the focus on inventory and mitigation policy. He hoped the second national communications would improve on this.

Barriers to developing adaptation plans include:

- Information barriers
- Institutional barriers
- Lack of political will
- Lack of financing
- Limitation of human capacities for R&D

Dr Srinivasan concluded with the following suggestions:

- Using the United Nations Framework Convention on Climate Change (UNFCCC) Nairobi Work Programme.
- Reviving existing initiatives like the Asean climate change initiative.
- Establishing an institutional framework — a regional coordination agency for adaptation.
- Exploiting local knowledge for micro adaptation.
- Creating guidebooks for regional adaptation plans.

DISCUSSION (Q & A Session)

QUESTION 1

Dr Joy Jacqueline Pereira (LESTARI, UKM) requested opinions regarding the possibilities for setting up an adaptation funding facility based on a market mechanism similar to that of the CDM.

Response: Mr Rae explained that there is no market mechanism for adaptation. Dr Srinivasan suggested the establishment of national development bonds.

QUESTION 2

Dr Abdul Rahim Nik (Forest Research Institute Malaysia) asked Dr John Church why island states are not indicated as vulnerable to sea-level rise.

Response: Dr Church explained that the population density on island states is not as high as in the delta areas.

Mitigation Of Climate Change

Development, Transfer And Diffusion Of
Environmental Friendly Technology

Mr Chow Kok Kee, Chair, Expert Group on Technology Transfer, UNFCCC

IN SUPPORT OF CLIMATE CHANGE MITIGATION, MR CHOW said environment-friendly technology development, transfer and diffusion could be expedited via:

- Joint R&D with developed countries to access knowledge.
- Support for endogenous development and diffusion of technology.
- Regional cooperation on technology development.
- UNFCCC's Conference of Parties (COP) 13 which is crucial in shaping new directions for transfer of technology
- Pragmatic cooperation programmes which would spur developing countries towards modification of emission trends and adaptation to negative climate change impacts.

Sustainable Transport Policies
Especially In The Context Of Climate
Change

Ir Gurmit Singh, Centre for Environment, Technology and Development Malaysia

IR SINGH SAID THAT PERTINENT ELEMENTS OF A sustainable transport policy in the context of mitigation of climate change include:

- Assessing efficiency of accessibility in all modes of transport.
- Prioritising transport modes that generate least greenhouse gas (GHG) emissions per person-km or load-km, for example non-motorised and water-based modes through preferential treatment.
- Increasing vehicle occupancy with priority for public transport in space and budget allocation.
- Managing mobility with emphasis on non-motorised transport, traffic calming and charging full costs to private transport vehicles.

Co-benefits: Integrating Climate
Change And Air Quality Management

Ms Sophie Punte, Clean Air Initiative for Asian Cities Center

THE TRANSPORT SECTOR MS PUNTE NOTED IS A significant contributor to GHG emissions, air pollutants and traffic congestion in the urban environment. Incorporating and integrating climate change considerations into National Clean Air Act, air quality management programmes and energy efficiency programmes will reduce the cost of mitigating issues individually.

It will also make implementation of the policies more likely. The incorporation of the Clean Air Act and National Energy Efficiency Program as proposed in Vietnam was cited as an example.

Carbon Capture And Storage:
Promising Technologies For Mitigating
Carbon Dioxide Emissions

Mr Shantanu Chatterjee, Royal Dutch Shell

MR CHATTERJEE HIGHLIGHTED THAT CARBON, CAPTURE and storage (CCS) can be considered as the bridge to a more sustainable energy system. It is also a key solution for combating climate change within a portfolio of solutions. The IPCC has identified CCS as the most promising technology for rapid reduction of global emissions of up to 55 per cent until the year 2100.

CCS technology involves capturing carbon dioxide before it is emitted into the atmosphere, transporting it to a secure location and isolating it from the atmosphere, for example, by storing it in a geological formation such as depleted oil and gas reserves, deep saline formations and unmineable coal beds. Other ways, though still in infancy, are to store captured carbon dioxide by injecting it into oceans or converting it into inorganic mineral carbonates.

But there are concerns with respect to risks, costs and implementation. According to experience from existing projects, risks such as leakages are found to be low. Costs are relatively more expensive – between US\$30-\$200/tonne depending on the sourcing combination used. Implementation requires government action in providing long-term policy and regulatory frameworks, with incentives, that enable widespread deployment on commercial basis.

DISCUSSION
(Q & A Session)

QUESTION 1

Concerning the integration of climate change and air pollution, Dr Tayphasavanh Fengthong (Department of Environment Laos) asked how both outdoor and indoor air pollution could be included. He also asked if a linkage exists between indoor air pollution and climate change and if yes, how?

Response: Ms Punte informed that air pollution includes all sources including indoor and outdoor sources. The relationship between climate change and air pollution refers to GHGs-related air pollutants. The linkage between indoor air pollution and climate change is a complex matter. In theory only urban pollution is included. But in countries like Mongolia where burning of coal is done indoors, it will be included. Linkages depend on the definition of air pollution (indoor and/or outdoor) and its common causes. There is a need to address both.

QUESTION 2

Ms Meena Raman (Sahabat Alam Malaysia) posed the following questions to all the speakers:

- She noted the policy incoherence at national level, i.e. transport not being integrated with clean air policy. She enquired about the situation at international level, i.e. non-tariff barriers, and asked how policy coherence could be encouraged at the international level?
- What is technology-needs assessment.
- What are the costs and risks associated with carbon capture and storage (CCS)? And why has it taken so long for CCS to be made available?

Responses: Mr Gurmit informed he is aware that the World Trade Organization pushes a lot of positions that undermine international environmental conventions. There is a lot of policy incoherence at the international level, i.e. nuclear technology, and large hydro as a renewable energy source is being pushed in a number of Southeast Asian countries.

Ms Punte added there is a need for much more high profile forums prior to international meetings as there is a tendency for developed countries to dominate discussions at the negotiations.

On technology-needs assessment, Mr Chow informed that each country has its own needs even within the industries/ministries. There is therefore a need for a cross-sectoral assessment. However he noted that not all imported technology is better than local indigenous technology.

Mr Chatterjee informed that the risks of CCS are low and have been demonstrated from previous CCS projects conducted over the years. Nevertheless it still has potential risks that need to be assessed carefully. Costs are relatively

more expensive (\$30-\$200 per tonne), as it is still new, and depend on the combination used. When the technology rapidly develops and incentives are in place, it can be more easily implemented.

There are three issues concerning its implementation:

- Legal framework for investment
- Right incentives
- Long-term certainty provided by legal framework

QUESTION 3

Mr Ridwan Tamin (Ministry of Environment Indonesia) noted that the previous BAQ was held in Yogyakarta to get buy-in from stakeholders. What is expected from the next BAQ and will this be highlighted in COP13 in Bali?

Response: Ms Punte informed that the plan for the next BAQ in Bangkok is to have a long-term collaboration with UNEP driven by national governments. It will be held separately from COP13 to be more focused and to obtain ministers' involvement.

Threats And Opportunities For
Climate Change

- CHAIRED BY IR HAJI AHMAD JAMALLUDDIN SHAABAN,
NATIONAL HYDROLOGICAL RESEARCH INSTITUTE OF MALAYSIA

Key Presentation 1

Energy Security And Climate Change:
Time Is Running Out

Dr Richard Bradley, International Energy Agency

DR BRADLEY SHOWED SEVERAL EMISSION PATHS IN achieving the different stabilisation targets as highlighted in the IPCC Special Report on Emissions Scenario (SRES). Three scenarios were adopted for International Energy Agency (IEA) analysis, i.e. A1, A2 and B, with stabilisation targets ranging from 445-590 parts per million (ppm) of carbon dioxide equivalent.

By setting the scene based on population without electricity in 2005 and regional shares of world gross domestic product, Dr Bradley showed projections in the reference scenario until 2030 on several aspects.

These include world primary energy demand, primary energy demand by region, energy-related carbon dioxide emissions by region, incremental coal-fired electricity generation by region (2004-2030), Chinese power generation by fuel, primary oil demand, vehicle ownership, net oil imports and world primary oil supply.

He said a framework should be put in place to guide investment and provide a stable environment for business. Power plants built today will most likely still be operational in 2060. Hence, policies today are crucial to guide investment decisions. As governments will require some time to put in place a stable environment framework/policy, implementation of energy efficiency measures is needed before the policy could be in place.

The projection of the alternative policy scenarios showed the following:

- Improved end-use efficiency of electricity and fossil fuels accounts for two-thirds of avoided emissions in 2030.
- Fifteen policies in the United States, European Union, China and India account for over 40 per cent of the global emissions reduction in 2030.
- Coal-fired generation falls sharply, with a third of the savings coming from China.
- Savings in industry in non-Organisation for Economic Cooperation and Development (OECD) countries are over two-and-a-half times greater than in OECD countries.

- OECD emissions peak and then decline before 2030; falling below 2004 levels in Europe and Japan.
- Emissions growth in China is twice as large as in the OECD, but in 2030 its per capita emissions will still be lower than the current OECD level.

Nevertheless, current levels of public sector energy R&D investment are not adequate given the magnitude of the climate challenge. Government spending on energy R&D has fallen, while private sector R&D is increasingly focused on projects with short-term payoffs.

Dr Bradley showed several examples of the impacts of energy efficiency policies in the US, including California, as well as Denmark.

In conclusion, he indicated it is not yet possible to discern a human influence on emissions reduction. While fossil fuels will dominate the energy supply for the foreseeable future, technology development on renewable energy is being focused on but this may not be adequate.

He emphasised that investors need an international cost effective framework soon if energy security and climate change objectives are to be met.

Current Concerns On International Climate Change Negotiations

Mr Chow Kok Kee, Chair, Expert Group on Technology Transfer, UNFCCC

REGIONAL CONFERENCE
ON CLIMATE CHANGE

REDUCING THE THREATS
AND HARNESSING
THE OPPORTUNITIES OF
CLIMATE CHANGE

MR CHOW SUMMARISED SEVERAL KEY EVENTS ON climate change in 2007 directly and indirectly paving the way to the UN climate conference in Bali in December. These include the draft final IPCC Fourth Assessment Report and the Nobel Peace Prize being awarded to two leading climate advocates, as well as meetings of UN Security Council, G8, UN High Level Event, Asia Pacific Economic Cooperation (Apec), Bogor Ministerial Consultation and Pre-Bali Finance Ministers Conference.

He said there are several issues of concern in current international negotiations. These include:

- Reduction of greenhouse gases (GHG) post-2012: Decisions will be sought on targets of emissions reduction for developed countries, participation of developing countries in next commitment period and the CDM issue.
- Financial resources: Funding for technology, the non-availability or non-operationalisation of the Special Climate Change Fund and Adaptation Fund yet, and limits to the benefits of CDM.
- Technology: There should be support for technology cooperation like joint R&D, access to know-how as well as support for endogenous development of technology.
- Adaptation programme: This is the main concern of developing countries as impacts of climate change are already being faced. There is still a lack of action-oriented programmes while developing countries continue to face adverse impact of climate change.
- Forestry issues: Focus is on reducing emissions from avoided deforestation in developing countries. While developing countries are split into two different groups on the issue, the developed countries require more detailed deliberation on methodologies. Hence, the negotiations will continue for another two to three years.
- Other issues: These include consideration on the IPCC Fourth Assessment Report, capacity building and national communications of non-Annex I countries.

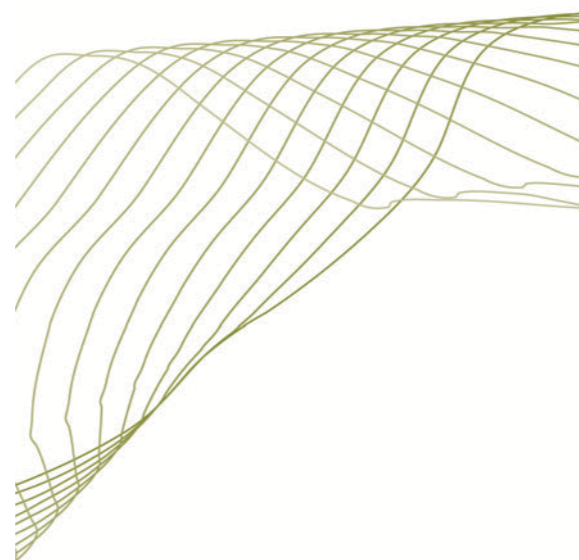
On the upcoming climate conference in Bali in December, he informed that a Bali Roadmap is expected to be established. It will focus on the need for reaching international agreement on concrete steps to be taken in view of a framework to follow the end of the Kyoto Protocol's first commitment period in 2012.

Several agreements that could possibly be achieved include:

- A timeline for conclusion on second commitment period reduction targets.
- Work on methodological issues related to Reduction of Emissions from Deforestation in Developing Countries under the UNFCCC's Subsidiary Body for Scientific and Technological Advice (SBSTA).
- A new body/approach for technology transfer.
- Application of the IPCC's Fourth Assessment Report.

In order to move forward, Mr Chow noted several prerequisites:

- Closer international cooperation among Parties.
- Reduction of suspicion and building confidence through concrete works, for example on lack of technology transfer.
- Recognition of many national initiatives by developing countries at their own costs and further encouragement through financial and technological support.
- Closer cooperation in capacity building and joint R&D to facilitate better regional and sub-regional efforts in addressing climate change.



DISCUSSION (Q & A Session)

QUESTION 1

Dr Fauziah Mohd Taib (Wisma Putra Malaysia) noted there are different groups among developing countries. As an emerging economy, how should Malaysia align or ally with other developing countries in pursuing the negotiation?

Response: Mr Chow informed that the climate change negotiations have been ongoing for the last 15 years in developed and developing countries. Within developing countries there are China, Organization of the Petroleum Exporting Countries (Opec) and Alliance of Small Island States (Aosis) with different interests. As an emerging economy, the way to position Malaysia is to ensure decisions made within the Convention and Protocol will address the global issue of climate change, i.e. emission reductions in developed countries. While emissions in developing countries will continue growing, access to technology (by joint R&D) must be made available so that it can be utilised to reduce emissions and move towards a low carbon society. Economic competitiveness is another aspect that needs to be considered.

QUESTION 2

Ms Kate White (British Embassy, Jakarta) observed optimistic signs to the several challenges highlighted particularly the UN High Level Segment. Held for the first time, it was attended by many high-level officials. The EU recognises the urgency of the issue, particularly forestry, and is also finding ways to cooperate with other countries. She suggested that Malaysia as a country with forests may play a greater role in this matter.

Response: Mr Chow clarified that besides the UN General Assembly meeting on climate change, there is an annual resolution in the assembly. But the key is how to translate those decisions in the upcoming Bali conference. It is hoped that the ministers attending the Bali climate conference keep their commitments expressed earlier to ensure a 'Bali Roadmap' is established.

On forestry issues: Although the EU has expressed concern on the matter, the upcoming conference will merely focus on providing guidance on methodologies which will help resolve the issue. Hence, no funding can be expected in Bali.

QUESTION 3

Citing the situation on sea level rise, Dr John Church (CSIRO) commented that the key issue is to ensure the future of the world but not the funding.

Response: Mr Chow remarked that funds already committed are not forthcoming. Hence cooperation in technology may be another feasible option to foster the transfer of technology. Nevertheless, poor vulnerable countries (like the least developed countries and Aosis) would still require early funding to assist them to adapt to the impacts of climate change.

REGIONAL CONFERENCE
ON CLIMATE CHANGE

REDUCING THE THREATS
AND HARNESSING
THE OPPORTUNITIES OF
CLIMATE CHANGE

Climate Change And Land-use Change And Forestry

Tropical Forest And Climate Change: Current Understanding And Future Scenarios

Dr Abdul Rahim Nik, Forest Research Institute Malaysia

DR ABDUL RAHIM INFORMED PARTICIPANTS THAT TROPICAL forests represent about 10 per cent of the earth's land cover but contain about 40 per cent of the carbon in the terrestrial vegetation. In addition, tropical forests harbour more than 50-70 per cent of the world's plant species. Hence, relatively small changes across the remaining tropical forest biomass may have a significant impact on global climate and carbon cycle.

Deforestation has the biggest land-use impact on the carbon cycle through the release of large carbon stocks accumulated in the forest ecosystems. On the other hand, tropical forest ecosystems including peat lands have the potential for modulating and mitigating such an impact, with their existing huge storage of carbon pools and expansion of carbon sinks.

Land-use changes involve both the change in land area as well as in carbon store. There is a need for reliable and long-term data on their respective rates. There is also uncertainty on estimating emissions of below-ground biomass.

If the current land-use changes continue, it would mean a release of 1.2 million tonnes of carbon per year. Peat land constitutes four per cent of forest land. But a drainage of 1m depth will lead to a release of 90 tonnes of carbon per hectare per year. The contribution is large in that sense.

Dr Abdul Rahim also emphasised that it is important to look into sustainable forest management as it will enhance tree growth as well re-growth and therefore, sequester more carbon.

Carbon Off-setting And Scope For Forestry And Agriculture

Mr Bill Maynard, Global Forestry Services Malaysia

MR MAYNARD INFORMED THAT THE SCOPE OF FORESTRY is partly dependent on the market mechanism. The premise is that the market works. A good example is the prevalence now of biofuels. Yet, forestry is still unable to tap the potential. Why does the market structure fail?

The energy sector is able to take-off because eco-securities companies put up their capital first. They can assess the risks and are willing to take them. Is there a likelihood of success in forestry? There is nobody out there willing to take the risk.

A company launched a programme for it 10 months ago. But people do not know about the market mechanism and its potential. Therefore policy makers must make the process simpler to be able to survive in the new market. There is supply and demand. But both do not speak the same language or the language is not clearly defined.

Tropical Forests And Climate Change: Market Approaches To Reducing Emissions And Protecting Forests

Dr Andrew Mitchell, Global Canopy Programme, John Krebs Field Station, United Kingdom

THERE IS AN EMERGING MARKET FOR CARBON BUT there is a crisis of values. Three sets of securities are involved, namely food, energy and land.

Dr Mitchell emphasised that halting emissions from tropical forests and valuing their carbon stocks offer a major opportunity to not only to mitigate climate change but also to maintain the very significant ecosystem services forests provide to humanity. It will also help alleviate poverty among 1.4 billion of the world's poor who depend upon these forests for their livelihoods.

The effective exclusion of tropical forests from global carbon markets has left them vulnerable to the need for cheap land on which to grow agricultural products and source timber driven by international demand.

The scale of funding required will mean that new market mechanisms will be needed. Governments can play a role by alleviating some of the risks of early entry into these markets.

Climate stabilisation cannot be reached unless emissions from forests are tackled with equal priority to other measures such as in the energy sector. Dr Mitchell then went on to describe the Amazonas Initiative in Brazil, which offers a valuable case study for the way ahead.

Carbon Sequestration Projects: Avoided Logging Damage And Forest Rehabilitation

Dr Waidi Sinun, Yayasan Sabah Malaysia

TWO PROJECTS CONDUCTED BY YAYASAN SABAH, A government-owned body, set up with the aim to improve the lives of the people in Sabah, were described.

By using criteria that were effective, credible and measurable, both these projects aimed to achieve a significant reduction of released carbon. It would be verified by an environmental audit committee.

DISCUSSION

Yayasan Sabah and the Sabah State Government were given credit for the projects in the Danum Valley. Their efforts are an example of good cooperation between various international agencies.

The discussion also focused on how to make the market mechanism effective for forestry, both within and outside of the CDM. It was noted that a free market will benefit certified emission reductions, as it find its own level, and normal market forces would balance demand and supply.

Physical, Economic And Technological Aspects Of Climate Change

Study Of The Impact Of Climate Change On The Hydrologic Regime And Water Resources Of Peninsular Malaysia

Professor ML Kavvas, University of California, United States

PROFESSOR KAVVAS SHOWED THE RELATIONSHIP between the increase of carbon dioxide concentration in the atmosphere since the industrial revolution and the observed warming of the earth's surface temperature during the last 100 years. Carbon cycle model studies show the carbon dioxide concentration in the atmosphere will increase more than twice the pre-industrial value by the year 2100. This may have serious ramifications on the earth's surface temperature and earth's energy balances.

The equilibrium climate change studies were generally adopted to model the climate change. By the 1990s, a new approach, the transient climate change studies, was introduced and applied. Since 1995, the global climate models (GCMs) have been simulating gradually changing climate conditions where carbon dioxide and other atmospheric trace concentrations are assumed to increase in the atmosphere by one per cent per year.

Such simulations are run, for a single realisation, starting at a present date (such as January 1, 2000) and then simulating the global atmosphere and oceans for about 100 years, usually until the year 2100.

As global-scale GCM climate change projections are relatively unreliable at regional (continental/country) and watershed scales, a study, namely Regional Hydroclimate Model of Peninsular Malaysia (RegHCM-PM) was initiated.

Using the climate change scenario in the IPCC – Third Assessment Report (IS92a), the study down scaled the coupled general circulation model of the Canadian GCM (CGCM1) at coarse spatial resolution (~410km) to the region of Peninsular Malaysia at fine spatial resolution (9km) with more refined topography and land surface characteristics.

Professor Kavvas briefed the audience on the nested domains and configuration of the RegHCM-PM, which is nested into the first generation of CGCM1. The CGCM1 provides the initial fields and boundary conditions to the RegHCM-PM. The CGCM1 simulation results are then downscaled to the region of Peninsular Malaysia through several nesting procedures.

He showed the process flow of the study, along with nested domains and configuration of the modelling. Peninsular Malaysia was divided into 11 sub-regions for simulation and validation of RegHCM-PM.

Summaries of several results of the projections include:

- Monthly streamflow volumes will be decreasing at 95 per cent at the Klang and Selangor watersheds during the dry months of March and July.
- Monthly streamflow volumes will be increasing during the wet months in the Terengganu (October-November), Kelantan (October-December), Pahang (November-December), and Perak (October-November) watersheds.
- Monthly streamflow volumes will be decreasing during the dry month of July at the Terengganu and Kelantan watersheds.
- Monthly streamflow volumes will also be decreasing at the Kedah watershed during December and January.



Impact Of Climate Change On Public Health

Dr Hishashi Ogawa, World Health Organization Regional
Office for the Western Pacific

DR OGAWA GAVE AN OVERVIEW ON THE RELATIONSHIP between health and climate change through direct exposures, indirect exposures and social and economic disruption. Also affecting human health are other conditions such as environmental, social and health systems. He then summarised several health effects of climate change. While some expected impacts will be beneficial, most will be adverse. Expectations are mainly for changes in frequency or severity of familiar health risks.

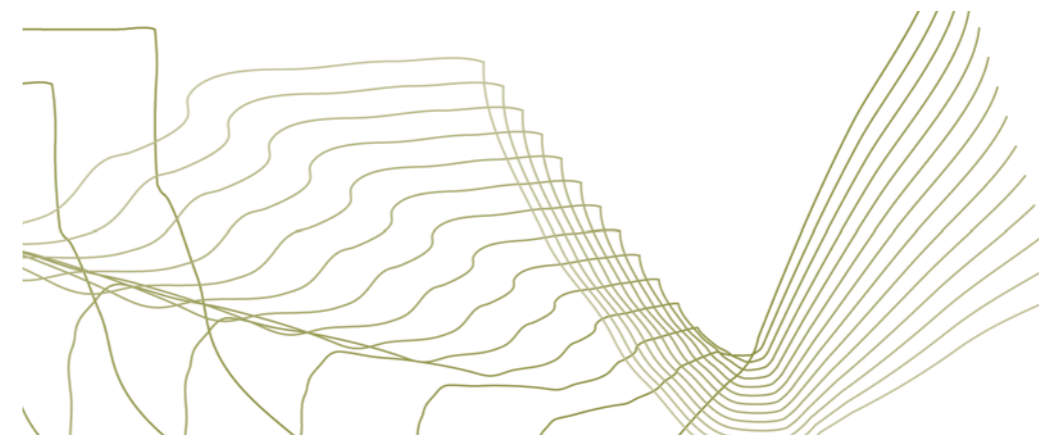
He then cited several examples of health effects already observed. They include heat-related incidents in Europe and Asia, air pollution and dengue. He emphasised that health risks are significant and concentrated on the poor.

The World Health Organization's (WHO) comparative risk assessment estimated that by 2000, climate change that had occurred since the 1970s was causing over 150,000 additional deaths per year globally and 77,000 in the Asia Pacific region. Based on the latest IPCC Fourth Assessment Report, future effects of climate change will have both negative and positive impacts on human health. Greater negative effects are expected.

In terms of adaptation to potential diseases effected by climate, he described the importance of infectious disease surveillance, health action in emergencies, safe drinking water, integrated vector management, environmental health capacity building and healthy development.

Dr Ogawa also suggested the consideration of co-benefits action in protecting health while reducing GHG emissions through buildings, industry, agriculture, transport, energy supply and conversion and waste management.

He reported on the WHO's regional initiatives in addressing the impact of climate change on public health. The outcome from a related workshop in July 2007 provides important recommendations to governments to develop national



action plans which include health concerns and:

- Incorporate climate change risks in policies of health and other sectors.
- Strengthen existing infrastructure and interventions.
- Establish early warning systems for climate sensitive diseases.
- Promote community-based interventions.
- Facilitate health sector participation in national communications to the UNFCCC.

He also reported on the First Ministerial Regional Forum on Environment and Health held in Bangkok in August 2007 in collaboration with the United Nations Environment Programme. It proposed six regional priorities:

- Air quality
- Water supply, hygiene and sanitation
- Solid and hazardous waste
- Toxic chemicals and hazardous substances
- Climate change, ozone depletion and ecosystem change
- Environmental health emergencies

He then went on to describe the effort of WHO in developing a global strategy and regional action plans to collaborate with member states and other international partners to protect health from climate change.

Dr Ogawa concluded by announcing that WHO has planned to conduct a side event during COP13 in Bali. Its objectives are to brief senior health officials and major partners and donors on the latest evidence on climate change and health; to discuss WHO's global strategy on health protection from climate change; and define an action plan for the Asia Pacific region.

Detailed Climate Projections For Vulnerability And Impacts Assessments Using The Precis Regional Model

Mr David Hein, Hadley Centre, United Kingdom

MR HEIN COMMENCED HIS PRESENTATION BY DEFINING climate scenario, climate projections and climate change scenarios. He described the various types of climate scenarios.

They include:

- Incremental scenarios for sensitivity.
- Analogue scenarios.
- Other scenarios based on weather generator and expert judgement.
- Scenarios based on outputs from climate models.

Several stages are required to provide climate scenarios. They start from:

- Determining emission scenarios.
- Modelling concentration of gases.
- Modelling of global climate change
- Downscaling in regional details and impacts modelling.

He then defined the regional climate model (RCM) and its main features and representations of the physical processes before introducing the Precis regional climate modelling system. Precis (Providing Regional Climates for Impacts Studies) is a portable RCM that can be run on a personal computer and applied to any area of the globe to generate detailed climate change scenarios.

Mr Hein highlighted several strengths of modelling regional climate scenarios using Precis. They include its ability to project changes over smaller islands and peninsulas and to simulate and predict changes in extremes more realistically. Further, data from Precis can be used to drive other models.

The Precis regional climate modelling system can provide detailed climate scenarios for impacts assessment over Southeast Asia. However, Mr Hein emphasised the need to evaluate the uncertainties added by climate scenario construction when assessing impacts of climate change, particularly in dealing with uncertainty in model formulation, emissions scenarios and natural variability. In terms of model formulation, he cautioned that much is still not understood about the workings of the climate system.

Hence, uncertainties arise because of incorrect or incomplete description of key processes and feedbacks in the model. Meanwhile, uncertainty due to natural variability occurs as the climate also varies naturally on timescales of years and decades due to natural interactions between climate components.

Due to these two uncertainties, Mr Hein strongly recommended the use of a number of different GCMs (or an ensemble of GCMs) as input to climate impacts studies using RCMs.

Emissions scenarios uncertainty is another identified major cause of uncertainty in projected future climate. He informed that this uncertainty can be allowed for by making climate projections for a range of IPCC Special Report on Emissions Scenarios (SRES).

He added that Hadley Centre's GCM with SRES A1FI, A2, B2 and B1 emissions cover most of the range of uncertainty. It can be regionalised using the Precis system.

Mr Hein concluded by informing the audience that Precis software is available at workshops run regularly by Hadley Centre. The protocol for receiving Precis involves attending a workshop in which scientific training in regional climate modelling is provided, along with technical training in use of the model and its analysis software.

Prospective Precis users need to understand the limitations of all methods for generating climate scenarios, as well as their advantages.

Southeast Asia Regional Climate In 21st Century: Change And Linkage To Risk, Vulnerability And Adaptation Assessment

Mr Suppakorn Chinvanno, Southeast Asia Start Regional Centre, Thailand

MR CHINVANNO'S PRESENTATION WAS BASED ON results of two research activities: 'Climate change in Southeast Asia' and 'An assessment on the impacts, vulnerability and adaptation on rice production and water resource and future climate projection for Thailand and surrounding countries'. The method applied was through dynamic downscaling of climate simulation using Precis.

He elaborated on the scope of study for climate scenario simulation for mainland Southeast Asia. The Southeast Asia Start Regional Centre used Precis with the Max-Planck Institute for Meteorology ECHAM4 global dataset to generate a high-resolution climate scenario for Southeast Asia.

Several preliminary results of the simulated scenario over the 21st century include:

- Change in decadal average daily maximum temperature.
- Change in decadal average daily minimum temperature.
- Decadal average number of annual hot day (max temp $\geq 35^{\circ}\text{C}$).
- Decadal average number of annual cool day (max temp $\leq 16^{\circ}\text{C}$).
- Change in annual precipitation (relative to baseline period).
- Change in annual rainy day.

In summary, the results are consistent with those presented in the IPCC Fourth Assessment Report. They indicate that:

- The region will tend to be slightly warmer over the next few decades, but will be much warmer towards the end of the century.
- A longer summer time, extended into winter.
- Higher precipitation, increasing in intensity while the length of the rainy season tends to be more or less the same.

He commented on the evaluation of the model performance based on the comparison between the simulation results for baseline period (1980s) against observation data from 50 stations in the Southeast Asia. The precipitation is biased from the actual observation with high fluctuation in the coastal area and underestimation in the inland area.

The maximum temperature, especially in summer, is generally overestimated but minimum temperature is reasonably close to the observed data. However, the model captures seasonal patterns quite well.

Mr Chinvanno concluded with an overview of future plans and challenges of the study as well as the need for regional collaboration. These were especially in the areas on high resolution climate scenarios, multiple climate scenarios and inter-comparison climate scenarios.

He stressed that efforts to produce such extended scenarios require a lot of work, and regional collaboration can help identify more efficient ways to utilise limited resources/expertise. He proposed a scaleable research scope for Southeast Asia in terms of time scale and spatial scale to generate climate change scenarios.

DISCUSSION (Q & A Session)

Discussion after the presentations focused primarily on the need to rigorously validate the models and how they could be used to communicate to various stakeholders in preparing adaptation measures. During the question and answer session, the following questions were raised:

QUESTION 1

Ms Sophie Punte (CAI-Asia Center) asked Mr David Hein whether the Precis Regional Model could be used to predict indirect impacts of climate change such as air pollution or health effects. If yes, can this be done directly or by linking Precis to other models on air quality or health impacts?

Response: Mr Hein reiterated that Precis data could be used to drive other models. Therefore, a prediction of indirect impacts of climate change such as air pollution or health effects could be done using high-resolution output data from Precis, which could be linked to other models such as air quality and health impacts models. He used the example given during his presentation where a cyclone in the Bay of Bengal is simulated by Precis, and the resulting high water levels in the Bay is simulated by a coastal shelf model driven by Precis data.

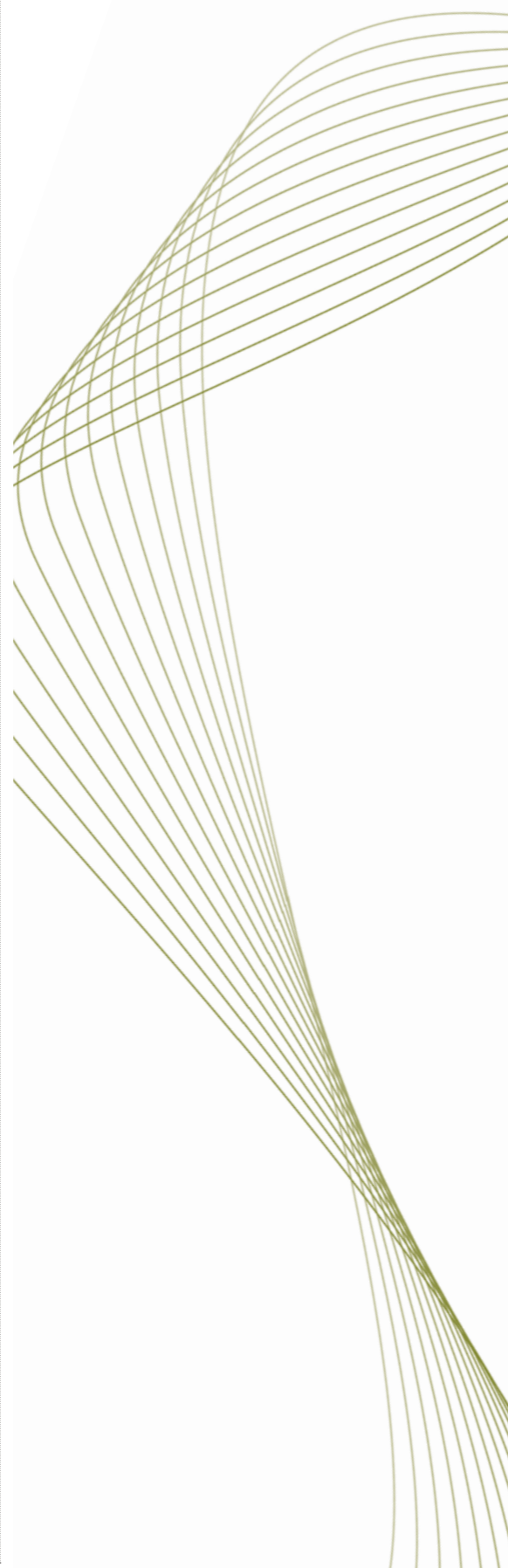
QUESTION 2

Mr Peter Ho (Environmental Management and Research Association) asked Professor ML Kavvas, Mr David Hein and Mr Suppakorn Chinvanno to elaborate on the reliability of their prediction models. He noted that models used to predict climate provide plausible future situations. However, these are not often accepted as the 'truth' by many policy and decision makers. While improvements are being made to such models to increase their precision and acceptability, what measures or steps could be taken to 'convince' such policy/ decision makers to accept the results of these models.

Response: Mr Hein reiterated the uncertainties in each of the main stages required to provide climate change scenarios for assessing its impacts. He added that the uncertainties in future greenhouse gas emissions, response of climate and natural variability need to be addressed adequately in the modelling procedures and discussion of results. In modelling tasks, modellers are not predicting climate change but are projecting a range of climate change scenarios. This must be clearly communicated to policy/decision makers.

Professor Kavvas noted the importance of defining a clear objective or purpose of any study when using a certain climate prediction model for impacts assessment. An assessment of the reliability of a prediction model depends on the purpose of using outputs from this model. Further, the results must be discussed in detail with policy/decision makers.

Mr Chinvanno said that communicating information on climate change impacts assessment to the public and community in comprehensive ways is very important. It will help convince them about the results derived from modelling studies.



Energy And Climate Change

• CHAIRED BY MR AZMAN ZAINAL ABIDIN,
MALAYSIA ENERGY CENTRE

Energy Outlook In Southeast Asia

Mr Kotara Kimura, Asia Pacific Energy Research Centre

MR KIMURA GAVE A BRIEF INTRODUCTION TO THE ASIA Pacific Energy Research Centre and its initiatives. They include an outlook on Apec's energy demand and supply every two years, research on regional energy market developments and publications on energy policies and related issues.

He presented an outlook of the total energy demand in Southeast Asia (SEA). Substantial energy demand growth is expected across the region. While oil remains a dominant fuel, coal use is expected to grow fastest at the rate of 6.1 per cent per year followed by natural gas and hydro. The consumption of biomass and new energy is rising but at a slower pace.

The main energy demand drivers are income growth, urbanisation and industrialisation. With an expected population growth of one per cent per year, there will be a greater demand for conveniences including a higher growth in car ownership. This will translate to higher energy requirements. The SEA region is expected to maintain a high industrial share to total value added for the service, agriculture and industry sectors in comparison to other regions.

Electricity demand of SEA is expected to grow at the fastest rate of 5.4 per cent per year compared to other regions. This will be due to its robust income growth and rapid pace of urbanisation. The power generation mix in SEA is expected to have an increasing share of coal to meet the demands of this growth. Coal is an available and cost-effective resource.

In terms of the incremental growth of energy requirements for the various sectors in SEA between 2002-2030:

- The power sector is expected to lead coal demand.
- The transport sector is expected to drive oil demand.
- The power and industry sectors are expected to increase natural gas demand.

All SEA countries (except Brunei) are expected to become net oil importers by the year 2020.

The power sector, industry sector and transport sector contribute most to carbon dioxide emissions. In SEA, Indonesia and Thailand have the highest total carbon dioxide emissions while Brunei and Singapore have the highest emissions per capita. The increase in carbon dioxide emissions are due to three factors:

- Energy intensity
- Country's energy requirements
- Growth in gross domestic product (the main factor)

While energy intensity is expected to improve, it will only be at a moderate rate. Total energy investment requirements are expected to grow and more than 60 per cent will be for electricity generation. China is expected to provide a major part of these investment requirements.

In conclusion, Mr Kimura said SEA's energy demands will more than double by the year 2030. Subsequently, the power, industry and transport sectors would more than triple their carbon dioxide emissions. To meet the energy demand increase, investments in energy infrastructure are indispensable.

However action needs to be taken to ensure sustainable growth. These could include:

- Improving energy efficiency.
- Requiring investments that take advantage of differences in time and diversity in energy demand.
- Constructing power pipe lines that extend beyond borders.
- Developing an emergency oil sharing system.

Prospects For Green Energy In Southeast Asia

Dr Weerawat Chantanakome, Executive Director, Asean Centre for Energy

DR CHANTANAKOME SAID THE IMPORTANCE OF renewable energy (RE) is highly emphasised in the Asean Plan of Action for Energy Cooperation (Apaec) for 2004-2009.

Strategies for RE, one of the six programmes under the Apaec, include:

- Developing a policy and institutional framework.
- Promoting the development and contribution of RE in energy supply.
- Further strengthening information networking in RE.
- Promoting intra-Asean cooperation on Asean-made products and services.
- Promoting the utilisation of biomass-based cogeneration technology.
- Promoting the utilisation of biofuels.

There is a possibility RE will play a big role in the future (estimated to grow from 3-25 per cent by 2050) based on its steady growth worldwide. Drivers for the growth worldwide are environment, economy, social and security factors. However, in Asean, the main drivers for RE growth are to:

- Enhance energy security
- Increase energy self-sufficiency
- Provide a sustainable energy supply
- Help reduce poverty
- Provide better and immediate access to electricity in rural areas
- Reduce environmental impacts
- Use abundant untapped resources
- Save foreign exchange
- Efficiently utilise fossil fuels

Dr Chantanakome discussed the types of RE currently used in Asean and their potential. Solar and hydro power are used by all Asean countries. Wind, geothermal and biogas are used by most countries. However, biomass is underutilised by most countries. He then discussed the ambitious targets of Asean countries to increase the utilisation of RE in the national energy mix and initiatives taken by each country to achieve them.

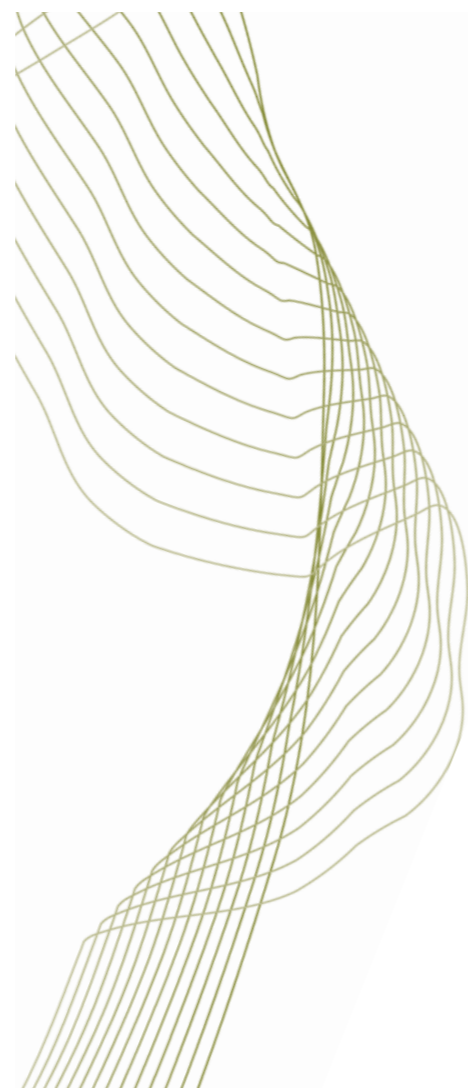
The Asean Centre of Energy (Ace) is already taking the lead to initiate the region's RE development. Activities initiated include:

- The Asean-German Mini Hydro Project, a joint project with German Technical Cooperation.
- Development of regional competency standards for RE training.
- Survey on the current policies and outlook for biofuel utilisation in Asean countries.
- Asean energy awards (to feature best practices in Asean).

- East Asia Summit (EAS) Energy Cooperation Task Force (ECTF), to give guidance on EAS energy co-operation to energy ministers, leaders and others.

Asean leaders will visualise a path to ensure sustainable energy development at the 26th Asean Ministers for Energy Meeting to be held in 2008 in Bangkok. The growing contribution of RE to Asean's energy security requires concerted action among member nations.

Given the growing concerns on energy security, rising fuel prices and global warming, Asean/Ace will endeavour to provide the necessary support to the development of RE and the RE industry as sources of green energy in Asean. It will also pursue efforts to implement options for future energy security.



ADB's Clean Energy Initiatives

Mr Tae Yong Jung, Senior Economist, Economics and Research Department, Asian Development Bank

MR TAE INFORMED THE ASIAN DEVELOPMENT BANK'S (ADB) energy policy identifies four operational priorities:

- Poverty reduction
- Promoting private sector involvement
- Addressing regional and global environmental impacts
- Promoting regional cooperation

The ADB's energy policy is currently being reviewed to give greater focus to address energy security and climate change through improved energy efficiency and greater use of indigenous forms of renewable energy. Clean energy is envisaged to help reduce poverty, which is ADB's first mission and mandate.

Mr Tae elaborated on some of ADB's clean energy and environment programmes. ADB has targeted to spend billions on the clean energy component of its loans. Efforts have been made to link and mitigate clean energy into projects. Energy efficiency efforts have also been mainstreamed into ADB's operations.

The Energy Efficiency Initiative Programme's (EEIP) inception and implementation will be supported by two regional technical assistance allocations with ADB's operational departments to take the lead. Six countries currently in focus to push the EEIP are China, India, Pakistan, Philippines and Vietnam.

The Carbon Market Initiative Programme gives up-front capital investment and shares project risks through the Asia Pacific Carbon Fund, CDM Technical Support and Credit Marketing Service.

The Energy for All Programme aims to increase access to modern energy services for the poor. Currently, these types of projects are in sectors such as micro finance, rural development, agriculture, energy, etc.

Regional Trends On Nuclear Energy And Climate Change: Malaysia's Perspectives

Raja Dato' Abdul Aziz Raja Adnan, Director General, Atomic Energy Licensing Board Malaysia

RAJA DATO' ABDUL AZIZ EXPRESSED THAT NUCLEAR power is steadily being perceived as a clean and climate-friendly technology as it produces virtually no GHG emissions. It is more competitive than fossil-fueled power plants. There is also a future initiative towards reducing GHG levels.

This is in addition to the commitment of industrialised countries to the Kyoto Protocol to reduce collective GHG emissions of at least 5.2 per cent below 1990 levels by 2008-2012. There is a steady and continuous improvement in nuclear safety and performance.

Nuclear power's future role in Asean is uncertain and varying. Countries like Indonesia, Thailand and Vietnam have declared nuclear power programmes by 2016, 2019 and 2021 respectively. However, others, including Malaysia, have either no policy or it is not yet in place.

Yet, many regional declarations, international conventions, international treaties and codes of conduct are already in place regarding the use and development of nuclear power.

Some critical factors to govern nuclear power programmes are:

- Nuclear safety – public perception, environment (e.g. lower regional emission limits; this is something the whole region needs to decide) and nuclear waste management and disposal (e.g. a high water table is a problem in nuclear waste management).
- Liability.
- Non-proliferation safeguards and verification.
- Security including physical protection and terrorism.
- Political and public acceptance.
- Lack of technical expertise.
- Others such as high cost of infrastructure, long construction time and return on investment, etc.

In conclusion, Raja Dato' Abdul Aziz emphasised that if nuclear power is included in the efforts to mitigate climate change, it must be employed in a manner that ensures nuclear safety security and non proliferation in particular as its safeguards.

DISCUSSION
(Q & A Session)

QUESTION 1

Ms Mageswari Sangaralingam (Consumers' Association of Penang) asked Mr Tae Yong Jung to:

- Clarify ADB's definition of clean energy and clean fuel.
- Inform how ADB justifies coal power plants as clean energy. Coal-fired power plants are one of the largest sources of greenhouse gases.
- Comment on waste to energy (W+E) plants. While producing less sulphur oxides (SOx) and GHGs depending on the fuel waste burned, W+E produces toxic emissions/residues/ashes. These plants are also expensive and destroy valuable resources that can be reused or recycled and composted. In view of this, what is ADB's rationale in providing loans for 'dirty' projects disguised as clean energy projects?

Response: Mr Tae said there is no precise definition for clean energy. However, the two components of clean energy would be energy efficient improvements and renewable energy.

Seventy per cent of power plants are coal based. The choice of funding from ADB is based on the member countries' requests. Mr Tae quoted an example on Vietnam that requested for a loan for a coal powered plant. After ADB called energy experts to raise technical questions, it approved that loan as it found the coal powered plant was necessary and justified.

ADB's mandate is poverty reduction and ruling out coal powered plants will not solve the problem. ADB's clean energy development is limited as there are other factors to consider in poverty reduction and meeting energy demand. Renewable energy tends to relate to small scale projects. Therefore, coal energy is still essential in supplying the current energy mix.

QUESTION/COMMENT 2

Dr Ronald McCoy (Malaysian Physicians for Peace and Social Responsibility) commented that the world needs energy that is safe, clean and affordable, renewable, socially acceptable and environmentally sound. Nuclear energy does not meet those criteria.

He said the argument that nuclear energy is a solution to climate change is a false one based on these facts:

- There is lack of focus on how to handle radioactive waste. There is no method of disposal and it will mean exposure for many years. Using more nuclear power will also mean accumulation of more nuclear waste.
- Another concern is nuclear weapon proliferation. There is a danger arising from a terrorist attack

on a nuclear facility or environmental damage caused by it.

- The risks if there is a Chernobyl-like accident and its consequences to the region have to be carefully considered.
- Nuclear energy plants are expensive to build and to maintain. Decommissioning of these nuclear reactors is also very expensive. Who will subsidise nuclear energy needs? Governments spend a lot subsidising insurance policies for nuclear energy.

Dr McCoy concluded that there is a need to very careful about using nuclear energy. The fundamental cause of climate change — which is the nature of global economy — needs to be looked at.

Response: Raja Dato' Abdul Aziz emphasised he was not advocating nuclear energy as the best option.

Radioactive waste has to be dealt with. He quoted Finland as a country which has completed the whole cycle of utilising nuclear energy up to the final disposal. Lessons can be learned from Finland on the safe management of nuclear waste. In addition, reactors are being developed to address waste disposal issues by burning waste (transmutating nuclides) into something more manageable.

Ultimately, the decision is still up to individual countries on whether the advantages outweigh the risks in choosing nuclear energy for fuel.

Financing And Technology

• CHAIRED BY MR TERENCE SIEW, CLIMATE CHANGE UNIT,
• NATIONAL ENVIRONMENT AGENCY, SINGAPORE

Issues In Financing Clean Energy
Projects

Mr Anand Prakash, Global-Asia Clean Energy Services Fund

MR PRAKASH BRIEFLY PROFILED FE CLEAN ENERGY ASIA Pte. Ltd. It is a fund manager focusing on energy efficiency, renewable energy and carbon credits. Currently, FE Clean Energy is managing three funds — a combination of private and public sector participants.

He highlighted several issues in financing clean energy projects. The most significant one is the renewable resource risk such as access to resources and price control. Another is the lack of business development and the operational experiences of partners or project developers. Other issues included counterparty credit risk, availability of non-resources debt, implementation risk and exit risk.

Mr Prakash continued his presentation with two case studies in China (a 96MW hydro power project) and Thailand (a 9.9MW biomass power generation facility feeding 100 per cent on rice husk). He highlighted major issues arising during the projects.

Market Opportunities For Clean Energy

Mr Soeren Varming, Managing Director, SV Carbon Sdn Bhd

MR VARMING SAID THAT DESPITE THE HIGH PRICE AND shortage of fossil fuels and the advancement of clean energy technology, there are only few examples of implementation of clean energy projects. This was followed by an overview of the current scenario on renewable energy in Malaysia.

According to Mr Varming, there are three main barriers in the implementation of renewable energy:

- High investment costs and performance risks for renewable energy technology.
- No institutional champions in the renewable energy sector.
- Conflict of interest between the biomass producing sector (e.g. palm oil sector) and the conventional industrial sector (e.g. utilities); and conflict of policy framework with existing provisions of subsidies for fossil fuel.

He then provided some suggestions on overcoming the barriers.

- Adapting renewable energy technology to meet local conditions to overcome performance risks.
- Exerting political pressure on utility companies to improve current conditions and overcome the institutional barrier. (This is already seen in the increasing of the tariff from 17 per cent to 21 per cent for grid renewable energy. Oil palm industries are gradually changing their attitude towards renewable energy as it generates additional revenue.)
- Providing incentive schemes for both renewable energy and conventional fuels to create the political framework.

Mr Varming remarked that the global market tool, CDM, is creating profits from environmental improvement. The CDM has transformed reductions in emissions of carbon dioxide and methane into a cash-flow proposition. Among Asean countries, Malaysia is the main player with Indonesia coming up.

He presented three business strategies on how to benefit from CDM and some case studies on the CDM. He concluded by stressing the importance of conducting CDM project development as parallel to normal project development.

Biofuels: Production, Use And Its Implication On Greenhouse Gas Emissions

Dr Lim Weng Soon, Malaysian Palm Oil Board

DR LIM FIRST DEFINED THE TWO TYPES OF LIQUID BIOFUELS:

- Biodiesel; derived from biomass materials (e.g. vegetation oils, sugar, starch and lignocellulosic materials) – an alternative to petroleum diesel.
- Bioethanol; derived from sugarcane – an alternative to petrol.

The most efficient crop for biofuel in terms of land utilisation is sugarcane, recording 104GJ/ha/year. Palm oil, the most economical choice with the highest yield, records 81GJ/ha/year.

The main drivers for global biofuel production are energy security and agricultural support and the environment – to reduce pollution and GHG emissions. Policies, incentives, taxes and increased prices of petrol are needed to support these activities.

The combustion of biofuels is not completely carbon free as GHGs are released to the atmosphere in the biofuel production cycle. The actual GHG balance can be obtained from a life cycle assessment from production to use. Dr Lim then explained the chemical process of biodiesel which applies to palm oil or vegetable oil.

He remarked that the EU is targeting 5.75 per cent biofuel use for transport by 2010 and 10 per cent by 2020. The Cramer Commission of Netherlands proposed at least 30 per cent GHG reduction requirement for biofuels and 50-70 per cent reduction for electricity generation.

A proposed EU legislation on biofuels is due in November 2007. Currently, the minimum level of GHG savings for biofuels compared to fossil fuel is still under debate.

Challenges faced by Malaysia in the use of biofuel due to the imposition of sustainability criteria include:

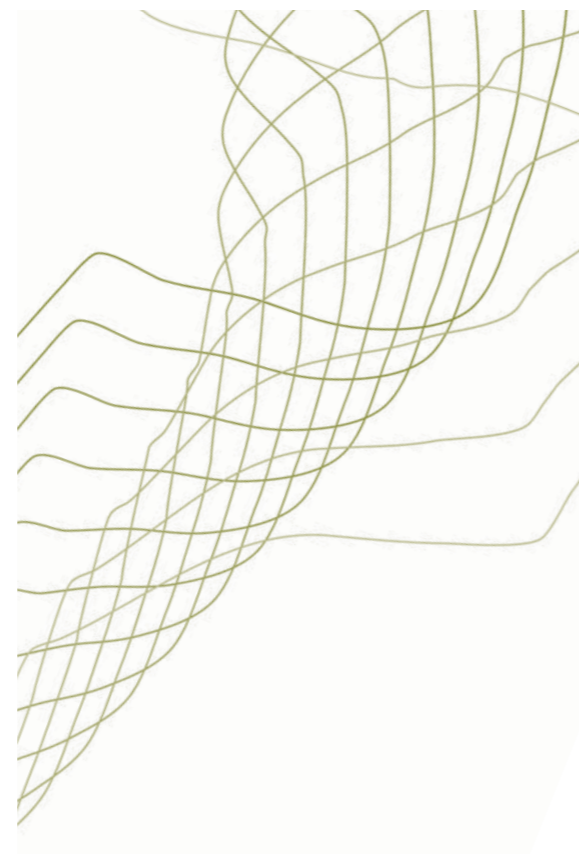
- Lower emissions of GHG compared with fossil fuel.
- Threats to food supply and other local applications, e.g. medicine, building materials, etc.
- Effects on biodiversity and environment.
- Contribution towards local prosperity.
- Contribution towards social well being of employees and local population.

He mentioned Malaysia's National Biofuel Policy released on March 21, 2006. The Malaysian Industrial Development

Authority has approved 92 licences to set up biodiesel plants. However, these plants are facing difficulties as the current high price of palm oil has increased the cost of production. Local use of biodiesel blended with diesel is still not commercially implemented as the government is yet to decide on the type of biofuel to be blended. Additional subsidies of about RM400 million will be required to promote the use of biofuel as the cost is increasing.

Dr Lim said a paper published by Nobel Laureate Paul Crutzen suggested the use of biofuel may add rather than reduce GHG emissions. This is due to the application of nitrogen fertilisers in biofuel crop production.

Nevertheless, he concluded there can be net savings in carbon dioxide emissions when biofuels are used to replace fossil fuels. However, the GHG balance must be measured over the whole production and use-chain through a life cycle assessment.



Promotion Of Solar Power

Dr Anuar Abdul Rahman, Malaysian Energy Centre

DR ANUAR EXPLAINED THE BENEFITS OF UTILISING solar power and the potential of solar power in Malaysia. Utilising photovoltaic (PV) electricity from solar power of 1kWh saves 0.63 tonne of carbon dioxide. PV is a proven and reliable technology applied since the 1950s with a global market.

An example of a stand alone PV system for a home with a grid connected PV system was presented. Stand alone PV in Malaysia was initiated during the Seventh Malaysia Plan and was extended to cover certain rural areas in the Eighth Malaysia Plan. Examples of recent developments of stand alone PV were presented.

He added there is a big jump in installing solar PV because of the Malaysia Building Integrated Photovoltaic Technology Application (MBIPV) project implemented by the Malaysia Energy Centre and United Nations Development Programme. Under this project, incentives are given from BIPV showcase, BIPV demonstration and Suria 1000 in the form of technical and financial assistance.

The project expects a 20 per cent reduction in the unit cost by 2010. To date, the public response to the Suria 1000 programme is overwhelming and the willingness to pay has increased by up to 38 per cent.

DISCUSSION (Q & A Session)

QUESTION 1

Dr Andrew Mitchell (Global Canopy Programme) asked Dr Lim Weng Soon:

- Why emissions from land use (e.g. from palm oil grown in peat forests) were excluded from the life cycle analysis of palm oil efficiency as a replacement for fossil fuels as this will be taken into account in future EU markets?
- Could oil palm be grown on degraded land instead of land from forest conversion, thus reducing carbon dioxide emissions in production?

Response: Dr Lim responded that conducting life cycle analysis for land use is a challenge, especially when trying to convert from rain forest, peat forest, etc. The matter is still being reviewed. Research institutions will be set up to carry out related R&D. Dr Lim agreed that degraded lands to grow oil palm may be a better alternative as Peninsular Malaysia has limited land.

One of strategies that can be employed is replanting with higher yield oil palm to get more oil per hectare without expanding existing land area. He also emphasised caution in recommending land for development.

QUESTION 2

Apart from conversion of peat land forest to oil palm plantations, Ms Meena Raman (Sahabat Alam Malaysia) expressed her concern on over-cultivation of oil palm on lands being contested as indigenous people's lands' and land rights, since the new expansion for oil palm land will be in Sarawak.

Response: Dr Lim agreed that the land rights of native people should be taken into consideration. He was not in a position to give any further comments as land is a state matter under the Malaysian Constitution.

QUESTION 3

Mr G Lalchand (Malaysia Energy Centre) commented that biomass power generation should concentrate on self-generated waste instead of importing waste from other sources.

On renewable energy (RE) technology, he believed adaptation is not a problem. Technologies in biomass and biogas power generation are available locally and operating satisfactorily. Existing plants have shown effective use of RE including management and treatment of empty fruit bunches for combustion. Also, palm oil mills have operated for decades with bio-wastes and acquired sufficient experience for such operations.

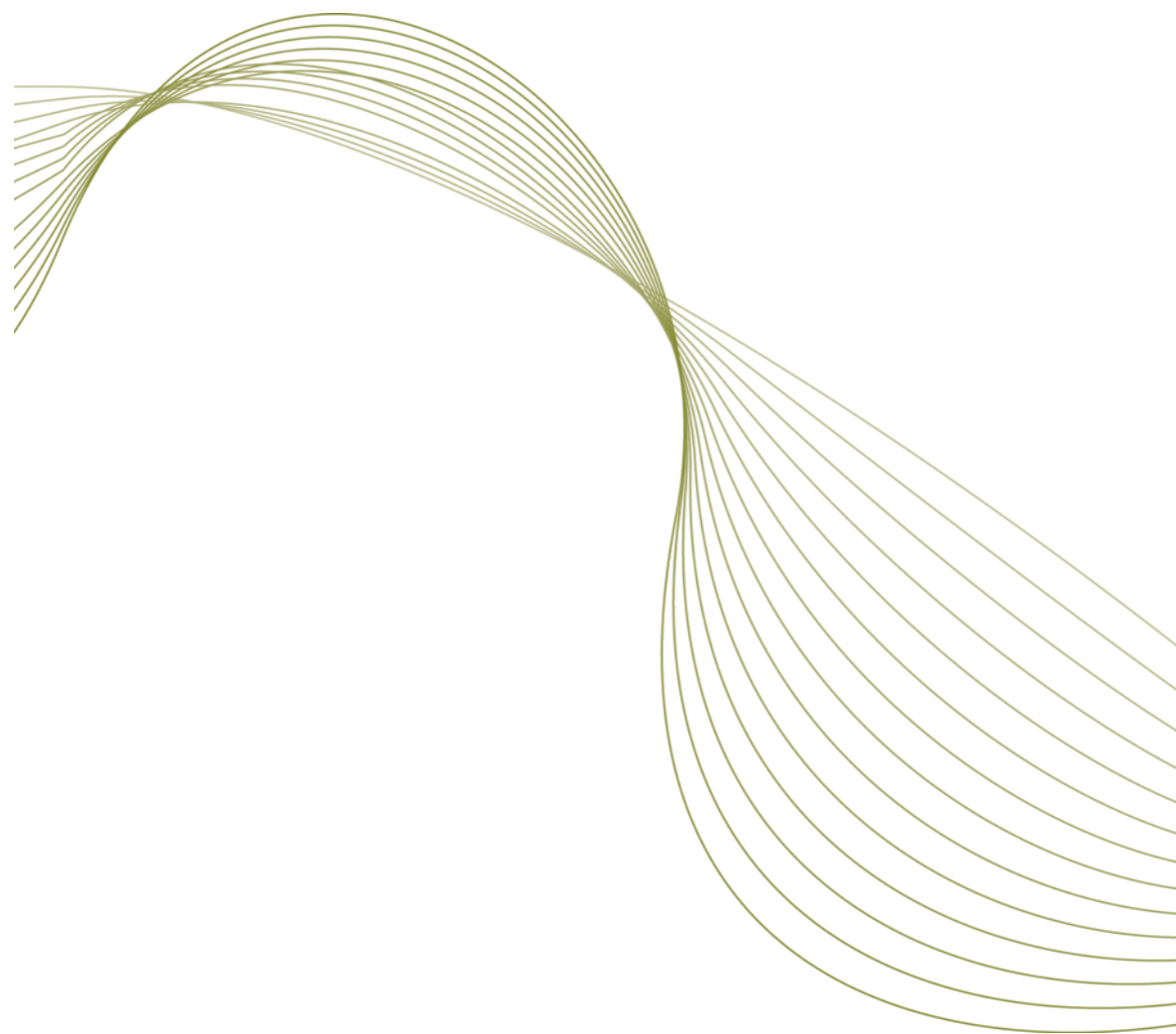
Response: Referring to Mr Lalchand's first comment, Mr Anand Prakash commented that his company has looked into a lot of projects. The number of projects that can be done based on that formula may be limited.

Mr Soeren Varming opined that there was potential for self-generation.

QUESTION 4

Dr Glen Reynolds (Royal Society's Southeast Asia Rainforest Research Programme) raised the question on the implications for soil organic matter if large quantities of crop residues/waste are removed and burned for power generation rather than returned to the field.

Response: Dr Lim responded that Malaysia does not practise open burning of crop residues as practised in some countries. Most of the biological residues would be returned to the ground as mulch. Some residues may be removed and used for other products. For example, oil palm fronds are a rich source for producing bioethanol.



Climate Change Negotiations: The Way Forward

CHAIRIED BY DR RAMAN LETCHUMANAN, ASEAN SECRETARIAT

This discussion began with the panel expressing their views on the topic. An open forum followed with comments and questions from the participants. Panel members were later invited to address the comments and questions.

Dr Raman highlighted this session was an opportunity for Asean members to share negotiation issues of importance to them. He also noted Mr Chow Kok Kee's contribution on negotiation issues in his presentation.

SINGAPORE

- Climate change is a global problem that requires global actions, as recognised in the UNFCCC and it should be undertaken under the Convention framework.
- Differences in national circumstance must be recognised. Any consideration must take into account the principle of common but differentiated responsibilities.
- Developed countries should lead in tackling climate change.
- Post-2012 actions must be built upon the UNFCCC and Kyoto Protocol, and there should be no gap between the two commitment periods.
- There is a need to provide a clear signal to the market on certainty of the continuity of the commitments.
- In Singapore, efforts have been undertaken to reduce energy consumption and reduce vulnerability. These include carrying out a two-year study to form a basis for an adaptation plan.
- Stern Review has identified various issues related to climate change; the importance of curbing deforestation in particular. The issue of reducing emissions from avoided deforestation will be an important one in Bali and should be worked out together by both developed and developing countries.

THAILAND

- Active participation by all parties to the UNFCCC and Kyoto Protocol is important.
- The Prime Minister of Thailand has put climate change as one of the items on the national agenda under the Environment Day.
- The Thai Government had identified several areas of importance in tackling climate change including adaptation, mitigation, awareness, capacity building and international cooperation. In addition, the importance of regional and sub-

regional cooperation on adaptation programmes is also recognised.

- It is necessary to implement programmes to identify activities and areas vulnerable to climate change. These include water resources, coastal environment and agriculture, and performing economic impacts' assessment.
- Thailand supports establishing a mechanism for regional cooperation in facilitating regional expert groups and countries' efforts to reduce GHG emissions, sharing and exchange of information, and assessment of vulnerability and adaptation. The Asean Secretariat should be the focal point which coordinates, collates and disseminates information, as well as promotes technology transfer.
- CDM should continue to be promoted for GHG emissions reduction and sustainable development.

UNESCAP

- Imposing targets on developing countries is not a feasible option. Instead, the existing mechanism on CDM, with some modifications, should be utilised.
- The nature of CDM has changed since 2000 and unilateral projects have been allowed since 2005. To-date, more than 70 per cent of CDM projects are unilateral and not initiated by Annex I countries. It shows developing countries can start emission reduction projects on their own.
- The additionality criterion is preventing the eligibility of many projects. It is proposed this criteria be removed to allow the expansion of CDM activities. This will provide greater incentive to developing countries to pursue projects to reduce GHG emissions.
- It is also proposed a new rule be introduced to discount certified emission reductions (CER). This will help as imposing targets are both not politically viable nor technologically feasible. In addition, it helps stabilise the price of CER which will eventually be beneficial to developing countries.

PHILIPPINES

- The Philippines is highly vulnerable to impacts of climate change and susceptible to land slides and diseases such as dengue and malaria. Ecosystems are diversified with large populations located at coastal areas.
- The Philippine's Ministry of Natural Resources and Environment is chairing a multi-agency effort

REGIONAL CONFERENCE
ON CLIMATE CHANGEREDUCING THE THREATS
AND HARNESSING
THE OPPORTUNITIES OF
CLIMATE CHANGE

in developing an integrated action plan to carry out mitigation measures to reduce GHG emissions and adaptation to climate change. Key areas of study include security, natural disasters, health and welfare of society, etc. To ensure sustainability of the measures, the role of education is important. It is also recognised that risks to climate change should be integrated into national development plans.

- As at September 2007, Philippines ranked seven on the list of total CDM projects registered with the Executive Board.
- A global strategy is also needed to tackle climate change with mandatory reduction by developed countries and funding on adaptation to be provided to developing countries.

VIETNAM

- The fund for adaptation should be the top priority issue as it is the key to poverty reduction and sustainable development.
- As an obligation under the UNFCCC, the most vulnerable countries must be assisted in order to cope with the impacts of climate change.
- Climate change is serious and life threatening and means are urgently needed for adaptation which will ultimately facilitate and adequately address sustainable development.
- The recent discussion under the UNFCCC adaptation programme indicates that adaptation funding amounting to USD10 million is required and was to be allocated. However, only a few million USD a year are made available.
- There is huge gap between the funding available and needs. As such, it is important to come up with ways to fill this gap.

LAOS

- Laos is one of the least developed countries in Asean. Institutional and legislative frameworks are established to address climate change.
- Laos has signed and implemented activities in various international agendas including the Kyoto Protocol.
- The country has carried out various activities such as the formulation and implementation of programmes for reducing GHG emissions, national communication (Initial national communication was submitted; now embarking on second national communication), technology needs' assessment, awareness activities on climate change, CDM project activities and the National Adaptation Programme of Action.
- As a way forward, ongoing projects and creation of public awareness on clean energy must continue. It is also imperative to establish a secretariat on climate change urgently.
- In addition, it is important to have climate data collection. Laos does not have a climate observation station. There is a need to establish human resources, processing tools, etc. for this purpose.
- To achieve the intended goal (for Laos), there is

a need for external support i.e. from Asean and other donors on tools and facilities for upper air stations and air pollution stations.

Discussion

During the open discussion session, Ms Sophie Punte (CAI-Asia Center) enquired if Asean is developing a joint approach or stance in preparation for COP13 in Bali. As individual countries, they will not be able to negotiate with large countries like the US, China, India and others.

The Chair responded that there will be a greater voice within Asia, and more at COP13 as it is being hosted by Indonesia.

Ms Ruth Yeoh (YTL Corporation Berhad) questioned the suggestion by one of the panelists to remove the project additionality rule on its applicability in the broader market and developing countries. She informed that YTL has been working on sustainability activities for a long time including their first fuel-switching power plant, awareness programmes, etc.

While enquiring if the costs of their projects could be recouped based on the suggestion, she invited partners to collaborate in their activities.

Given that the ongoing discussion on climate science is for a reduction in global emissions, Ms Meena Raman (Sahabat Alam Malaysia) informed that there are already proposals from the EU on global emission reductions targets of 50 per cent by developing countries and 60-80 per cent by developed countries by 2050. She enquired if this implies the targets for developing countries are set and how Asean should respond to it.

The Chair stressed that the average emissions per capita from developing countries is much lower than those in developed countries and market mechanisms can be used to drive reductions in GHG emissions globally.

Mr Khampadith Khammounheuang (Department of Environment, Laos) expressed his full support on adaptation and CDM as top priorities in the Bali negotiation. On the other hand, although Laos had already prepared its National Adaptation Programme of Action (Napa), which identified 46 priority projects, he informed there is no support to implement it.

Dr. Joy Jacqueline Pereira (Lestari, Universiti Kebangsaan Malaysia) suggested that CDM be reformed further, both at conceptual and operational levels. This is to prioritise projects for more than just emission reductions but also for adaptation.

The Chair underscored that one of the CDM's objectives is to support sustainable development in developing countries.

Appendix 1

Programme

	Sunday, 28 October	Pre-registration of participants (2-5pm) at Secretariat Room (Kenanga Room) PWTC
		Reception at 6.30 pm hosted by British High Commission at Best Western Seri Pacific Hotel
	Monday, 29 October	DAY ONE
8.00-9.00am		REGISTRATION OF PARTICIPANTS
9.00-9.10am		Welcoming address by Y.B. Dato' Seri Azmi Khalid, Minister of Natural Resources and Environment Malaysia
9.10-9.20am		Welcoming remarks by H.E. Boyd McCleary, British High Commissioner to Malaysia
9.20-9.40am		Keynote address and official opening by Y.A.B. Dato' Sri Mohd Najib Tun Abdul Razak, Deputy Prime Minister of Malaysia
9.40-10.10am		KEY PRESENTATIONS Plenary I – Climate Change in the Global Context <i>Chairperson: Datuk Suboh Mohd Yassin, Secretary-General, Ministry of Natural Resources and Environment</i>
		1. Economic Impact of Climate Change – A Briefing Based on the Stern Review <i>Presenter: Ms. Su-Lin Garbett, Economic Advisor, International Stern Review Strategy Team, Office of Climate Change, DEFRA, UK</i>
10.10-10.40pm		Official Tour of Exhibition Area, Press Conference and Coffee Break
10.40-10.55am		Prize Presentation to the winners of BP Climate Change Essay Contest by Datuk Suboh Mohd Yassin, Secretary-General, Ministry of Natural Resources and Environment
10.55-12.45pm		Continuation of Plenary 1 2. Key Vulnerabilities and Climate Change <i>Presenter: Prof. Zbysek Kundzewicz, Professor of Earth Sciences, Polish Academy of Sciences, Poland and IPCC Coordinating Lead Author for Freshwater Resources and Their Management (Working Group II)</i>
		3. Natural Disaster and Risk Reduction <i>Presenter: Mr. Salvano Briceño, Director, International Strategy for Disaster Reduction, Geneva</i>
		4. Transition to Low, Sustainable Carbon Economy – A Policy Measure to Address Climate Change <i>Presenter: Mr. Henry Derwent, Director, International Climate Change, Air and Analysis, DEFRA, UK</i>
12.45-2.00pm		Lunch
2.00-4.30pm		PARALLEL SESSION 1 – ADAPTATION AND MITIGATION OF CLIMATE CHANGE
	Session 1A Thematic Area: Adaptation to Climate Change	Session 1B Thematic Area: Mitigation of Climate Change
	1. Adaptation in Agriculture <i>Presenter: Dr. Vute Wangwacharakul, Kasetsart University, Thailand</i>	1. Development, Transfer and Diffusion of Environment Friendly Technology <i>Presenter: Mr. Chow Kok Kee, Chair of EGTT, UNFCCC</i>

REGIONAL CONFERENCE
ON CLIMATE CHANGEREDUCING THE THREATS
AND HARNESSING
THE OPPORTUNITIES OF
CLIMATE CHANGE

REGIONAL CONFERENCE
ON CLIMATE CHANGEREDUCING THE THREATS
AND HARNESSING
THE OPPORTUNITIES OF
CLIMATE CHANGE

2. Turning Climate Crisis into Economic Opportunities
Presenter: Mr. Rae Kwon Chung,
UNESCAP, Bangkok

3. Understanding Sea-Level Rise and Its Impact
Presenter: Dr. John Church,
CSIRO, Australia

4. Regional Cooperation on Climate Change Adaptation
Presenter: Dr. Ancha Srinivasan,
Institute for Global Environmental
Strategies (IGES), Japan

2. Sustainable Transport Policy
Presenter: Mr. Gurmit Singh,
CETDEM, Malaysia

3. Co-Benefit of Urban Quality Management and Climate Change
Presenter: Ms. Sophie Punte,
Clean Air Initiative-Asia Center,
Philippines

4. Carbon Capture and Storage
Presenter: Mr. Shantanu Chatterjee,
Shell International Renewables,
The Netherlands

4.15pm

Tea Break

4.30pm

Side Events

(i) Chemistry/Climate Interactions, Biogenic Emissions and The OP3 Project organised by Malaysian Meteorological Department

(ii) The Way Forward in Alternative Energy organised by Wetlands International

(iii) Facilitating Forestry's Role In Climate Change Mitigation: Is Perfection the Enemy of the Good? organised by Global Forestry Services (GFS) Malaysia

(iv) Community Responses to Climate Change organised by SE Asia CSO Environment Alliance and Global Environment Centre

8.00pm

Conference Dinner hosted by the Ministry of Natural Resources and Environment

**Tuesday,
30 October**

DAY TWO

8.30-8.45 am

Report of Day 1

8.45-10.00 am

KEY PRESENTATIONS**Plenary 2 - Threats and Opportunities of Climate Change**

Ir. Haji Ahmad Jamalluddin Shaaban, National Hydrological Research Institute of Malaysia (NAHRIM)

1. Energy Security and Climate Change

Presenter: Dr. Richard Bradley, Head, Energy Efficiency and Environment Division, International Energy Agency, Paris

2. Current Concerns on International Climate Change Negotiations

Presenter: Mr. Kishan Kumarsingh, Chair of SBSTA, UNFCCC

10.00am

Coffee-break

10.30-12.30pm

PARALLEL SESSION 2**CLIMATE CHANGE AND ITS SOCIO-ECONOMIC ASPECTS****Session 2A**

Thematic Area: Climate Change and Land Use Change and Forestry

1. Tropical Forests and Climate Change

Presenter: Dr. Abdul Rahim Nik, Forest Research Institute Malaysia (FRIM)

2. Carbon Off-Setting and Scope for Forestry and Agriculture

Presenter: Mr. Bill Maynard, Global Forestry Services, Malaysia

3. Market Based Mechanism for Forestry

Presenter: Dr. Andrew Mitchell, Global Canopy Programme, UK

Session 2B

Thematic Area: Physical, Economic and Technological Aspects of Climate Change

1. Climate Change and Water Resources

Presenter: Prof. ML Kavvas, University of California, USA

2. Impact of Climate Change on Public Health

Presenter: Dr. H. Ogawa, WHO Regional Office for the Western Pacific, Philippines

3. Detailed Climate Projections for Vulnerability & Impacts Assessments using the Precis Regional Model

Presenter: Mr. David Hein, Hadley Centre, UK

12.30-2.00pm

Lunch

2.00-4.00pm

**PARALLEL SESSION 3
CLIMATE CHANGE AND THE ENERGY SECTOR****Session 3A**

Thematic Area: Energy and Climate Change

1. Energy Outlook in South East Asia

Presenter: Mr. Kotara Kimura, Asia-Pacific Energy Research Centre (APEREC), Japan

2. Prospects for Green Energy in SEA

Presenter: Dr. Weerawat Chantanakome, ASEAN Centre for Energy, Indonesia

3. ADB's Clean Energy Initiatives

Presenter: Mr. Tae Yong Jung, Asian Development Bank, The Philippines

4. Nuclear Energy and Climate Change

Presenter: Raja Dato' Abdul Aziz bin Raja Adnan, Atomic Energy Licensing Board, Malaysia

4.00-4.30pm

Tea Break

4.30-4.45pm

Report of Day 2

4.45-5.30pm

PANEL DISCUSSION

Topic: CLIMATE CHANGE NEGOTIATIONS: THE WAY FORWARD

Chairperson: ASEAN Secretariat

5.30pm

Official Closing

4. Carbon Sequestration Projects: Avoided Logging Damage and Forest Rehabilitation
Presenter: Dr. Waidi Sinun,
Yayasan Sabah, Malaysia

4. Southeast Asia Regional Climate in 21st Century: Change and Linkage to Risk, Vulnerability and Adaptation Assessment
Presenter: Mr. Suppakorn Chinvanho,
South-East Asia START Regional Centre,
Thailand

REGIONAL CONFERENCE
ON CLIMATE CHANGEREDUCING THE THREATS
AND HARNESSING
THE OPPORTUNITIES OF
CLIMATE CHANGE

**REGIONAL CONFERENCE
ON CLIMATE CHANGE**

**REDUCING THE THREATS
AND HARNESSING
THE OPPORTUNITIES OF
CLIMATE CHANGE**

- Organisation
- SIRIM
- Ministry of Natural Resources and Environment Msia (NRE)
- Thailand Royal Forest Dept
- Thailand Ministry of Energy
- Thailand Ministry of Natural Resources and Environment
- Thailand Office of Natural Resources and Environmental Policy and Planning (ONEP)
- Thailand Office of Natural Resources and Environmental Policy and Planning (ONEP)
- Thailand Meteorological Dept
- Third World Network
- Third World Network
- TNB Research
- TNB Research
- Trienekns Sarawak Sdn Bhd
- UNDP
- Economic Planning Unit Kedah
- Economic Planning Unit Kelantan
- Universiti Islam Antarabangsa
- Universiti Islam Antarabangsa
- Universiti Kebangsaan Malaysia
- Universiti Malaysia Sabah
- Universiti Malaysia Sabah
- Universiti Malaysia Sabah
- Universiti Malaysia Sabah
- Universiti Malaysia Sabah
- Universiti Malaysia Sarawak
- Universiti Perguruan Sultan Idris
- Universiti Perguruan Sultan Idris
- Universiti Putra Malaysia
- Universiti Sains Malaysia
- Universiti Sains Malaysia
- Universiti Sains Malaysia
- University of Cambridge, UK
- University of Nottingham, Malaysia Campus
- University of Oxford, UK
- Vietnam VEPA, Ministry of Natural Resources and Environment
- Vietnam VEPA, Ministry of Natural Resources and Environment
- Vietnam VEPA, Ministry of Natural Resources and Environment
- Vietnam VEPA, Ministry of Natural Resources and Environment
- Wetlands International
- Wetlands International
- Wetlands International
- World Bank
- World Bank Thailand
- World Bank Thailand
- World Bank Thailand
- Yayasan Sabah

Name
Rohani Hashim
Mohd Fadly Amri Aliaman
Vitoon Luangviriyasaeng
Chaiwat Munchareon
Dr Saksit Tudech

Nisanat Sathirakul

Prasertsuk Chamornmarn

Thosakdi Vanichkajorn
Esther Ong
Chee Yoke Heong
Mohamad Irwan Aman
Ir. Mohd Noh Ahmad
Gerhard Wilhelm Hermann Aubert
Asfaazam Kasbani
Zulhusni Mohamad Rashid
Hj. Mohd Sobri Ramli
Rustam Khairi Zahari
Dr. Niza Samsuddin
Prof. Madya Dr. Fredolin Tangang
Alona C. Linatoc
Prof. Datin Dr. Maryati Mohamed
Prof. Datuk Dr. Mohd Noh Dalimin
Dato Chew Yun Ming
Datuk Dr Lee Chang Meng
Prof. Wan Sulaiman Wan Harun
Mohd Hairy Ibrahim
Dr. Syakira Samsudin
Prof. Shahwahid
Zakaria Nasir
Lee Lik Meng
Dr. Zainal Abidin
Prof. John Pyle
Prof. Brian P. Atkin
Alexandra Morel
Dr Tran Thuc

Nguyen Anh Hieu

Dinh Viet Cuong

Nguyen Manh Hung

Gabriel Chong
Nyoman Suryadiputra
Sarala Aikanathan
Dr. Thiagaraj Sivanandam
Jitendra J. Shah
Pongtip Puvacharroen
Waraporn Hirunwatsiri
Jaludin Abu

CHIEF RAPORTEURS

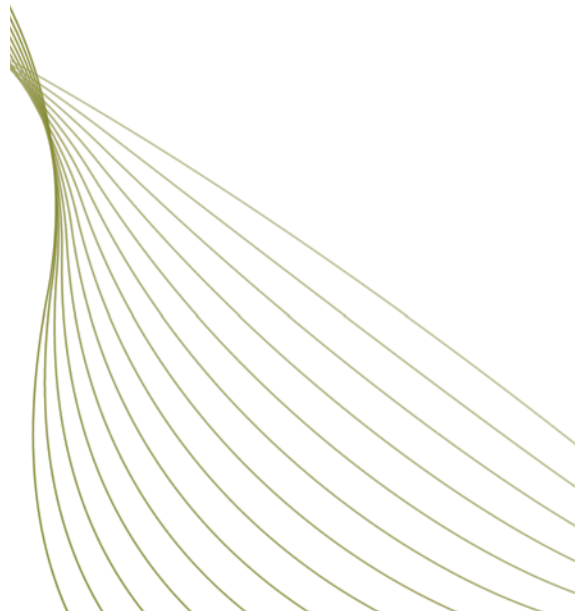
1. Mr. Azhar Noraini
Conservation and Environmental Management Division
Ministry of Natural Resources and Environment
2. Associate Professor Dr. Joy Jacqueline Pereira
Institute for Environment and Development (LESTARI)
Universiti Kebangsaan Malaysia

LEAD RAPORTEURS

1. Dr. Wan Azli Wan Hassan
Malaysia Meteorological Department
2. Ir. Haji Ahmad Jamalluddin Shaaban
National Hydraulic Research Institute of Malaysia (NAHRIM)
3. Dr. Gary William Theseira
Forest Research Institute Malaysia (FRIM)
4. Ms. Lakshmi Lavanya Rama Iyer
Second National Communication Project, Malaysia
5. Dr. Mohana Anita Anthonysamy
Conservation and Environmental Management Division
Ministry of Natural Resources and Environment
6. Ms. Gan Pek Chuan
National Capacity Self-Assessment Project, Malaysia

RAPORTEURS

1. Ms. Chan Lu Ai
British High Commission, Kuala Lumpur
2. Mr. Charanpal Singh
Department of Environment, Malaysia
3. Ms. Normadiah Hj. Husien
Department of Environment, Malaysia
4. Dr. Christine Fletcher
Forest Research Institute Malaysia (FRIM)
5. Dr. Ong Hwee Keng
Malaysia Agricultural Research and Development Institute (MARDI)
6. Ms. Noorly Akmar Ramli
Malaysia Energy Centre (PTM)
7. Dr. Rawshan Ara Begum
Institute for Environment and Development (LESTARI)
Universiti Kebangsaan Malaysia
8. Mr. Tan Ching Tiong
Institute for Environment and Development (LESTARI)
Universiti Kebangsaan Malaysia
9. Ms. Koh Fui Pin
Institute for Environment and Development (LESTARI)
Universiti Kebangsaan Malaysia
10. Ms. Azrina Azhar
Institute for Environment and Development (LESTARI)
Universiti Kebangsaan Malaysia
11. Mr. David Lee
National Capacity Self-Assessment Project, Malaysia
12. Ms. Azareena Yahya
Conservation and Environmental Management Division
Ministry of Natural Resources and Environment



CONTACT

Ministry of Natural Resources and Environment (NRE)
Wisma Sumber Asli, No.25, Persiaran Perdana, Precinct 4
62574 PUTRAJAYA, MALAYSIA
Tel : 603 88861111 Fax : 603 88892672

www.nre.gov.my



This publication was made possible by the generous support of the British Government

This report is printed on Options White 100% recycled paper