CONSORTIUM OF
NON-TRADITIONAL SECURITY
STUDIES IN ASIA
SECURITY BEYOND BORDERS

Edited by: Mely Caballero Anthony and Tapani Vaahtoranta

S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES
A Graduate School of Nanyang Technological University

GCSP Geneva Centre for Security Policy
Centre de Politique de Sécurité, Genève
Genfer Zentrum für Sicherheitspolitik

11-12 October 2007

International Conference on Climate Change and Security

INTRODUCTION

The S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University, Singapore, in collaboration with the Swiss Embassy in Singapore held an **International Conference on Climate Change and Security**. Held at the Traders Hotel, Singapore on 11-12 October 2007, the Conference on Climate Change and Security is one of the major activities organized by the RSIS' programme on Non-Traditional Security (NTS) in Asia.

Since its inception in 1999, the NTS programme in RSIS has become one of the major pillars of the School's research agenda, culminating in the establishment of NTS-Asia in 2007—a network of 14 research institutes in Asia which aims to advance the study of "non-traditional security" issues in the region; to build long-term and sustainable regional capacity for research on NTS issues; and to promote and mainstream the field of non-traditional security studies in Asia.

The discussions at this policy forum served to highlight the complex challenges of climate change in Asia and their salience beyond the region. In his opening remarks, **Barry Desker** (Dean of RSIS) noted that as with other non-traditional security issues, climate change has now dominated the security agenda of many states in the region. At the

Opening session of Conference on Climate Change and Security

UN Summit in New York on 24 September 2007, world leaders also agreed that climate change is now a global problem, and UN Secretary General, Mr. Ban Ki-moon has urged the international community that the time has come for decisive action on a global scale."[1]

However, the global consensus on the grave security challenges posed by climate change is not matched by a consensus on how best to address this problem. Ironically, whilst there is agreement on the need for a new global framework to observe the key principles put forward by the United Nations Framework on Climate Change Convention (UNFCCC), particularly on the reduction of carbon emissions—the contentions between the developed and the developing countries on how to proceed remain a serious obstacle in the global mission to mitigate the impact of climate change.

Thus, for Asia and Europe, there are at least three reasons why climate change must be placed on top of their security agenda. These are: the severe consequences of climate change, the need for concrete Asian action on mitigating its impact, and the emerging initiatives that are coming out from both regions in responding to the challenges of climate change.

Daniel Woker (Ambassador of Switzerland to Singapore) concurred with the points raised by Barry Desker. From a Swiss perspective, the security implications of climate change have been vividly illustrated by the melting glaciers on the Swiss Alps. It was therefore important that Asia and Europe find common grounds in addressing the security challenges of climate change.

1 See *Statement on the Future in our Hands: Addressing the Leadership Challenge of Climate Change*, UN Headquarters, New York, 24 September 2007

OVERVIEW OF CLIMATE CHANGE AND SECURITY: GLOBAL AND ASIAN PERSPECTIVES

Jose Romero (Federal Office for the Environment, Switzerland) highlighted the need for the international community to increase what he calls "environmental intelligence" to address the global consequences of climate change. In this regard, he cited the important contributions of the Intergovernmental Panel on Climate Change (IPCC) in providing a series of comprehensive scientific studies on the risks of human-induced climate change.

In conclusion, Romero pointed out that there will be more losers than winners, particularly in developing countries and among the poor. To tackle climate change, the international community must support the international institutions that had been established to address climate change and continue to undertake national and international actions for mitigation and adaptation.

Terence Siew (National Environment Agency, Singapore) presented the Asian perspective of climate change. Siew argued that while climate change is a global problem that requires global solutions, it is nevertheless important to better understand the security implications of climate change on Asia's growth and prosperity.

Siew also highlighted Asia's vulnerability to climate change, based on the IPCC findings. These include: the risks faced by Asia's coastal settlements because of rising sea levels, more intense, more frequent and longer periods of summer heat waves in East Asia and increase in incidence of extreme rainfall and winds associated with tropical cyclones.

As one of the low-lying states in the region, Singapore has been very pro-active in its climate change policies particularly in the area of promoting energy efficiency. According to Siew, Singapore has identified energy efficiency as a priority in its climate change strategy. Singapore also advocates the use of cleaner energy sources and has invested heavily in research into key environmental technologies. Siew remarked that Singapore is now using natural gas to meet 80 percent of its electricity needs and has committed S$350 million to research clean energy technologies over the next 5 years.

Some likely consequences of global warming - 4th IPCC's Assessment Report (AR4) 2007

- **Human health: heat waves, spread of infectious diseases, etc.**
- **Some regions will be more affected than others:**
  - The Arctic (ice sheet loss, ecosystem changes)
  - Sub-Saharan Africa (water stress, reduced crops)
  - Small islands (coastal erosion, inundation)
  - Asian mega-deltas (flooding from sea and rivers)
- **Highly vulnerable ecosystems**
  - Coral reefs, marine shell organisms
  - Tundra, boreal forests, mountain and Mediterranean regions
  - 20-30% of plant and animal species at risk of extinction

CLIMATE CHANGE AND SECURITY: ISSUES AND CHALLENGES

Panel on Climate Change and Security- Issues and Challenges

ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

One of the key challenges in handling issues of climate change is managing environmental issues that have serious implications on climate change. Yet, according to **Euston Quah** (Division of Economics, Humanities and Social Sciences Department, Nanyang Technological University) environmental concerns have mostly been addressed within the framework of sustainable development. However, sustainable development has come to mean different things to different people. A cursory look at the literature reveals that there are at least 24 varied ways of operationalising the concept, which include a higher awareness of environmental issues, and a coordinated and organized theory for economic policy. There is also the concept of weak and strong sustainability where the latter requires non-decreasing aggregate natural capital whilst the former allows for substitutes between man-made and natural capital. Sustainability is also linked with human welfare, progress and development needs. Hence, while these new dimensions do enrich intellectual thinking on the protection of the natural resource base and the environment, they increasingly lead to intellectual confusion – not only in terms of conflicting concepts and objectives in but also problems of operationalising and implementing them.

Economics plays a significant role in many of these approaches and in this regard, three important areas require immediate attention in public policy making in Asia.[2]

The first area is the NIMBY (Not In My Backyard) syndrome, which refers to avoiding environmental problems within one's own realm. The changes in the Asian environment have contributed to this syndrome – primarily, rising affluence; greater educational opportunities and higher literacy rates; wider information dissemination; impact of globalization; distrust of governments and private corporations; demands for energy, expansion of facilities to meet growth and bias in cost-benefit analysis due to accounting stance.

2 Quah, E. 2007, *Growth and Environmental Security: Some Key Challenges for Asian Governments*, Policy Brief presented at the Conference on Climate Change and Security on 11 October 2007 at Traders Hotel, Singapore

There is, therefore, a need to learn from North American and European experiences where public policy research aims to reduce intrasocial conflicts by innovating new conflict resolution instruments. The second area, closely related to the NIMBY syndrome is on the issue of waste accumulation and disposal, where waste reduction methods rather than landfills, is the solution. The waste reduction solution requires an optimal combination of technology advancement, education, a willing and complying public, use of a variety of economic instruments (e.g. volume pricing, control regulations, and cost-benefit analysis). The third area, was the neglect of measuring environmental intangibles. Quah noted that a price was needed to be put on environmental intangibles in order to argue for environmental protection against economic interests. To address this, methods of non-market evaluation could be used to measure environmental intangibles.[3]

Several pragmatic principles can also be used for environmental policy management. First, is to ensure more cost-benefit analysis of any significant proposals so as to ensure that other equally pressing needs such as health care and education are not ignored. Second is the principle of using clean technology with long term benefits in mind. The third principle would be to explore and expand the use of market solutions by providing the right incentives and /or disincentives for pollution control. This would allow for flexibilities in addressing the questions about where, when, and how much to reduce. Emission fees, deposit– refund systems and tradable pollution emission permits are instruments in point. The fourth principle is to understand and be aware of multiple stakeholders in any environmental management or transfer of one land use to another.

HUMAN INSECURITIES

Mr Manfred Rist with Dr Albrecht Schnabel

Albrecht Schnabel (Human Security Research Programme, Swisspeace Foundation) argued that there are human security threats arising from climate change. According to the findings from the Oxford Research Group[4], Asia suffered 44 percent of worldwide natural disasters, with 119 million people killed or affected (83% of all reported victims worldwide),

3 ibid
4 Oxford Research Group, *Global Responses to Global Threats: Sustainable Security for the 21st Century*, Briefing Paper, June 2006, pp. 6-7.

and US$ 25 billion in economic damage (72.9% of worldwide damage). The World Health Organization's (WHO) also reported that 35.3 million died from communicable disease while 184,000 people died from collective violence.

But while there are no mono-causal and direct links between environmental degradation or climate change and the outbreak of violent conflict, the negative impacts of climate change cannot be understood or mitigated outside larger political, economic and social conditions – and existing threats characterizing a society. Hence, the higher the level of instability and fragility due to other threats, the greater the impact of climate change on for instance, migration pressures and conflicts over shared resources.

Against these insecurities, a human-security approach that focuses on threats to the survival of individuals and populations is critical. A human-security approach places great emphasis on the prevention and reduction of human suffering. It also allows for the use of a context relevant analysis of human security threats and responses by addressing three main issues:

1 What are the main threats in a given context?
2 How are they best addressed?
3 How are they or will they be affected by climate change?

By using this framework as the basis for climate change-affected threats, urgent threats can be addressed and entry points for effective counter measures – both in adapting to and mitigating the harmful effects of climate change can be identified.[5]

Finally, there should also be a more proactive action from authorities at all levels–local, national, regional, and global levels—to reduce existing threats that limit populations' coping/adaptation capacity, strengthen the ability to cope and prepare for incremental as well as sudden climate disasters.

FOREST AND NATURAL HABITATS

The impact of climate change on natural habitats (forestry) can be quite severe from – increased frequency and intensity of fires in tropical forests due to the El Nino effect, to decrease forest productivity and reduced growth rates as temperatures rise. These would also have several implications for carbon uptake and the productivity of forests and plantation crops given the changes in environmental habitats due to the migration of forest plants and animals to areas where environmental conditions are optimal for any given species. As discussed by **Shawn Lum** (Natural Sciences and Science Education Academic Group, National Institute of Education, Singapore) if climatic shifts are too quick or if habitats are fragmented into discontinuous components, a loss or reduction in range in some species might be expected as species are unable to keep up with the rate of change or to effectively migrate from one place to another.

Despite these projections, the area covered by tropical forests has shrunk, and continues to shrink by a substantial amount every year. The primary causes, which are well-documented, include: the conversion of forests to plantations, local subsistence agriculture, unsustainable rates of timber extraction, illegal logging and corruption. These mentioned causes do not include specific threats to selected species of flora and fauna such as poaching or the illegal trade

5 Schnabel, A. 2007, *Climate Change, Human (In-) Security and Stability*, Policy Brief presented at the Conference on Climate Change and Security on 11 October 2007 at Traders Hotel, Singapore

Dr Shawn Lum and Dr Elisabeth Bui

in rare species. Even in the absence of climate change, tropical forests are fast disappearing and may not persist outside of a few national parks (although in some countries, even national parks are not safe from illegal logging and poaching)[6].

The future of the tropical forests will therefore be dictated by a number of factors such as limiting the conversion of "High Conservation Value Forests" to plantations; balancing resource use with the ability to produce (and where possible, recycle) them at a sustainable level; the ability to enact and enforce laws aimed to protect tropical forests; managing tropical forests and forest corridors effectively; restoring degraded forests; social factors including the provision of employment opportunities (other than those that lead to the diminution of forests) for people living near forests, educating local communities as well as consumers and reducing corruption.

Against these trends, the following recommendations are offered. First, to identify and protect a network of forest reserves along a latitudinal and climatic gradient that captures a wide sampling of forest habitats. Second, to provide, either through protection of existing habitats or through restoration, adequate connections or habitat corridors between nature reserves. Third, to maintain substantial habitat buffers between nature reserves and surrounding areas. Fourth, to improve protection and effective management of watersheds, rivers, and wetlands. Fifth, to implement plans for fire control and prevention over a broad geographic scale in tropical countries. Sixth, to act on large-scale restoration of degraded forests, particularly freshwater swamp forest in Asia. Seventh, to formulate and implement regional conservation strategies for the protection of existing forests and investment in ex-situ conservation. Eighth, to provide training, incentives and employment opportunities for young people to pursue forest research, management and conservation in tropical countries. Ninth, to educate local communities, students, corporations – everyone – on the threats facing forests and on how we can work together to better manage and protect forests. And finally, to address the many social and economic factors that contribute to the loss of high-value conservation forests in the tropics.[7]

6 Lum, S.K. 2007, *Global Warming – Implications for Tropical Forests*, Presented at Conference on Climate Change and Security, 11 October 2007, Traders Hotel, Singapore
7 ibid.

MARINE AND COASTAL ENVIRONMENTS

The impact of climate change on marine and coastal environments are primarily driven by higher sea surface temperatures, higher carbon dioxide levels, rises in sea levels and extreme weather events. But the extent of the impact from the interaction between these climatic drivers and spatial patterns of human development and natural ecosystems will be most severe in tropical and sub-tropical regions.

Elisabeth Bui (Humanities and Social Studies Education Academic Group, National Institute of Education, Singapore) explained the factors that account for these vulnerabilities. These include the large human populations that live along coasts, especially in South and Southeast Asia where 13 of the 16 most populous cities in the world are located and the fact that several of these cities are built on subsiding sediments of mega-deltas. They will not only be more exposed to sea level rise, coastal erosion, more intense tropical storms and storm surges, and water-borne diseases, but they will also have low revenues and therefore low adaptive capacity (in terms of engineering solutions and capital to finance relocation programs). Some small island nations may disappear altogether and climate change is expected to produce 'environmental refugees'.

Coral reefs and mangroves are the key ecosystems threatened by climate change. Both ecosystems are already stressed by coastal development induced by population pressure, and from human activities like over-fishing, blast fishing, the aquarium trade, and coastal pollution. Tourism, which is the most important category of export earnings for many developing countries, is also likely to be affected by climate change impacts. Many resorts are in coastal areas, located as a function of attractions such as coral reefs and bird parks. Hence, small island nations that depend on tourism, such as Maldives and Fiji, may be submerged by sea level rise and coral die-off could severely reduce their revenue. Social stress driven by environmental change could exacerbate political instability in these countries. Moreover many traditional fishing communities depend on reefs and mangroves for their livelihoods. Coral reef decline may have a severe impact on the economies of developing countries and their ability to finance mitigation and adaptation measures.

Policymakers, therefore, must undertake a series of actions to protect the environment and to educate the public on environmental issues. Firstly, regulate land use/development along coasts so as to protect sensitive ecosystems and to decrease human exposure to hazards. To do this, the first step is to identify the sensitive ecosystems, the hazards and vulnerable populations and map them. Secondly, seek participation from all stakeholders in communities concerned to ensure mutually agreeable decisions based on social equity and environmental justice. Thirdly, negotiate trans-boundary agreements if necessary, to avoid conflict of interests. Fourthly, develop policies to discourage current urbanization trends that are environmentally unfriendly. Bui cites the example of Bangkok, which despite being one of the fastest growing cities in Asia, is sinking due to over-extraction of groundwater. Fifthly, limit population growth, thereby decreasing one of the major pressures on coasts. Sixth, continue efforts in regulating greenhouse gas emissions, the major driver of climate change.

Seventh, protect more coral reefs and mangroves (as done so in protected marine parks) so as to ensure the long-term sustainability of many fisheries is at stake. Eighth, regulate (and enforce) over-fishing; outlaw blast fishing. Ninth, educate general public on benefits of coral reefs and mangroves. This includes improving science "literacy" in general so as to provide stronger links between science and policy. Participatory decision-making will also occur from a better footing if everyone is better educated. Tenth, there is the need for more improved monitoring of environmental conditions and ecosystems responses as mentioned in many countries' State-of-the-Environment reports. Action must be taken if trends in indicators show degradation in environmental condition(s). Environmental protection regulations must also be more effectively enforced. Finally, there should be greater investment in basic science to understand what will happen to coral reefs under acidifying seawater as well as investment in more multi- (or trans-disciplinary or integrative) scientific research to improve understanding of interactions between system components.

VIOLENT CONFLICT AND WARS?

Dr Tapani Vaahtoranta

While the physical consequences of climate change are already impacting on human security, there is also the potential for conflicts. However, as **Tapani Vaahtoranta** (Finnish Institute of International Affairs) noted, it is still unclear how climate change causes wars. The lack of clarity is primarily due to two factors – firstly, the confusion that arises from discussing the wide-range of issues on climate change's impact on security; and secondly, the lack of research-based information regarding climate change as a potential cause of violent conflict. Knowledge on the latter is important for policy making in mitigating climate change and managing its consequences. Moreover, given the differing perspectives of what the term security entails, policy makers need to be more precise on what constitutes security in this day and age. There are however existing research on the different impacts of environmental degradation—and whether or not it causes violent conflict and war.

Does Climate Change Cause Wars?

A Cause of War

- According to the UNEP#, the current crisis in Darfur is a consequence of climate change.
  - Conflict between African farmers and Arab herders were sparked by droughts which resulted in a fight for increasingly scarce water resources from shared wells.
- A rise in the number of environmental refugees – people displaced not due to military conflict but the effects of climate change such as floods in South Asia – may lead to violent conflict.
- Compilation of historical data demonstrates the co-relation between changes in climate that cause a scarcity of resources, (such as shrinking agricultural output), and the frequency of wars in China between 1000 and 1911^.
- US Pentagon's 2003 report* predicted serious food shortages due to decreases in global agricultural production, decreased availability and quality of fresh water, and disrupted access to energy supplies.
  - As a result, resource-abundant nations may react to this development with increased defenses in order to preserve resources for their populations while resource-scarce nations may resort to desperate means to ensure their access to food, clean water, and energy.
  - A possible result would be large population movements and the escalation of the degree of global conflict

Not a Cause of War

- To some, political factors are the root cause of the situation in Darfur.
- Other instances of resource scarcity or population movement did not result in violent conflict.
  - Drought in Malawi
  - Asian Tsunami in 2004
- More an issue about **"intervening variables"**.
  - While environmental scarcities or population movements do not directly cause violent conflict, the outcome depends on social and political factors that impact on the potential for violent conflict.
  - The severity of these factors to result in violent conflict will vary and it is still difficult for us to know precisely what these factors are and how they will impact on the linkage between climate change and war.

* United States Pentagon Report, October 2003, *An Abrupt Climate Change Scenario and Its Implications for United States National Security*

\# Environmental Degradation Triggering Tension and Conflict in Sudan, UNEP Press Release June 2007, Available from: http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=512&ArticleID=5621&l=en

^ Based on research by David Zhang of Hong Kong University – see Climate Change Linked to a millennium of war in China, New Scientist, 23 July 2007, Available from: http://environment.newscientist.com/article/mg19526135.500.html

Given these contrasting linkages and patterns, three important points must be noted. Firstly, there should be a more analytical way of discussing climate change's impact on security. Secondly, greater systemic research on the linkage between climate change and violent conflicts must be done. And finally, in implementing mitigation and adaptation methods, particular attention should be paid towards more vulnerable and poorer nations.[8]

8 Vaahtoranta, T. 2007, *Climate Change and Security: The Knowns and Unknowns*, Policy Brief presented at the Conference on Climate Change and Security, 11 October 2007, Traders Hotel, Singapore

WHITHER REGIONAL COOPERATION?

Prof. Simon Tay and Assoc. Prof. Euston Quah

While climate change is indeed a security issue, it is unclear whether existing security establishments are able to fully understand the issues at hand and help frame solutions. **Simon Tay** (Singapore Institute of International Affairs) noted that it was important to avoid mis-steps and come up with false solutions in the rush to address climate change. Three trends accounts for this note of caution. Firstly, increased competition for traditional energy resources has led to creeping resource nationalism, which could potentially create tensions amongst states. Secondly, the expansion of nuclear energy use in Southeast Asia has led to heightened concern about safety measures and long term maintenance. And thirdly, the increasing use of green bio-fuels, such as palm oil, has led to the problem of state subsidies for land clearing, which bring about other environmental issues such as the transboundary haze in Southeast Asia.

Against these trends, the region would do well to better utilize readily available energy sources as well as further develop efficient methods in using these resources. It has been observed that underinvestment in traditional energy has resulted in market inefficiency and increased corruption. Greater investment in alternative energy must be done as well as efforts to increase "test-bedding" where more developed countries in the region, such as Singapore, could take the lead. By recognizing these genuine opportunities, states would have greater leverage and flexibility in cooperating to address climate change.[9]

Although regional organizations like ASEAN has been rather late in waking to the issue of climate change compared to its European counterparts, it has nonetheless, made some developments. There is now increasing focus on climate change, particularly in the upcoming ASEAN Summit in Singapore in November 2007. Moreover, climate change has also been included in the agenda of the East Asian Summit.

However, while these political initiatives are commendable, ASEAN would need to do more in terms of understanding the shared ecological vulnerabilities of the region. This is

9 Upton, S. 2007, *Avoiding the wrong solutions to the wrong problems*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore

vital to enable states to generate greater coordination and priority in dealing with the issues. This would call for strong political will at the regional level (ASEAN and East Asian Summit) so as to deliver a more holistic solution to address climate change. ASEAN would also need to look at arrested deforestation initiatives, which require greater attention and international cooperation and also a re-adjustment of the Kyoto Protocol.[10]

THE POLITICS OF CLIMATE CHANGE

Given what is currently known and the possible impacts of the climate change on the security and well-being of states and societies, the international community has and is constantly being urged to act decisively, design strategies, as well as establish the necessary policy frameworks for a more concerted effort in addressing climate change. Yet, the global mission is hampered by conflicting national priorities that define the prevailing politics of climate change.

In the session on the politics of climate change, **Zhao Xingshu** (Institute for China Studies, Seoul National University) argued that the nations in the world need to support the idea of common but differentiated responsibilities. Hence, developed nations must take the lead and demonstrate commitments, while developing countries should contribute to efforts in tacking climate change based on their capacities and circumstances. China's response to climate change is determined by a number of critical factors such as the economic costs of adopting climate change strategies, its overall domestic capacity, other competitive priorities, normative principles, and the international context. Given these competing priorities, China's response has to be carefully calibrated.

China's environmental policy has evolved in three stages. Firstly, the period prior to 1973 when there was no special legislation or policy targeted at environmental protection in China. In the second phase between 1973 to 2002, gradual environmental efforts were made in the GDP-oriented development program and subsequently resulted in formulation of the Environmental Protection Law of the People's Republic of China in 1979. However, with an overwhelming emphasis on the growth of economy, the deterioration of the environment could not be completely controlled. Hence the third stage (since 2003) marked the Chinese government's full support for environmental improvement. In this regard, China has made great strides in climate policy. For instance, China has decreased its reliance on coal for energy and has increased the percentage of its forest coverage since 1990.[11]

Brahma Chellaney (Centre for Policy Research, New Delhi) argued that the challenge of climate change is essentially a challenge of sustainable development. But the global debate on climate change and the rising greenhouse gas emissions have not moved beyond platitudes to agreed counteraction to slow down climate change. There have also been concerns that leadership in this area is lacking. For instance, while Europe has been leading the campaign to fight climate change, the leadership vacuum in the European Union (EU) may hamper this.

In the meantime, developments in Asia, particularly the surging demands for oil and gas resources indicate that the nature of climate change will be determined in this region. Asian competition over oil

10 ibid.
11 Zhao, X. 2007, *Politics of Climate Change: Perspective from China*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore

Panel on the Politics of Climate Change

and gas resources is becoming sharper, driven by rapid economic growth. This growing competition is compounded by the fact that Asia is also a water-stressed region. Climate change is therefore a 'threat multiplier' , which could worsen the tense inter-state relations over resource scarcity.

With these developments, the international community must work towards increasing global efforts in the following areas:

1 The need to make sustainable development the basis for tackling the current climate crisis.
2 Deal with the front-end of the problem through major investments in "renewables".
3 Adopt mitigation strategies to focus on capping the greenhouse-gas level in the atmosphere.
4 Devise new international carbon standards on manufacturing, transportation, housing and trade.
5 Promote emission cuts without recourse to offsets through third-party reductions.
6 Build greater institutional and organizational capacity.
7 Ensure efficient water management and early warning systems.
8 Begin formulating an enforceable regime post-Kyoto Protocol, which expires in 2012.
9 Build on the international experience developed, among others, through the Basel Convention and the Montreal Protocol.[12]

Adding an Australian perspective to the politics of climate change, **Ros Taplin** (Graduate School of the Environment, Macquarie University) remarked that Australia's 2007 Climate Change Policy is defined by two objectives. One is to contribute to achieving global reductions in emissions that will avoid dangerous climate change and the other is to maintain the strength of Australia's economy. This would be done using a framework of 4 criteria - reducing domestic emissions at least economic cost, engaging in the use of emission technologies, energy efficiency and supporting households and communities, supporting climate science and adaptation, and pursuing effective international responses to climate change.

While Australia has been active in the Asia Pacific Partnership on Clean Development and Climate (AP6)[13], the latter can be considered as an

12 Chellaney, B. 2007, *Politics of Climate Change*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore
13 The AP6 is a technology cooperation agreement that was created in late July 2005 aimed at promoting clean energy technologies and energy efficiency programs. Its member states are the US, Australia, South Korea, Japan, India and China.

ad hoc hyper realist regime that may not be an effective alternative– it is not legally binding, has not set any targets and is based on aspirational emissions intensity goals and is inconsistent with the UNFCCC. Moreover, given its dependency on the free market and private sector, it lacks the mechanisms to ensure political and economic stability.

With the shortcoming of such an initiative, a participatory stakeholder driven approach to climate change security must be adopted. This approach must take on both a horizontal and vertical approach in assessing specific needs. This also allows for more pragmatic and practical information to be disseminated to policy-makers. For future policy development, it is also vital that a climate change security assessment is carried out for Asian regions and nations focusing down to their localities.

ENERGY SECURITY AND CLIMATE CHANGE

Assoc Prof Joseph Liow and Dr Chang Youngho

In this session, issues were raised with regards to energy production and consumption in a bid to limit climate change. Given the speakers' diverse backgrounds – economist, politician and civil society activist – their presentations complemented each other and provided a holistic view on energy security and climate change. They also noted that energy security required three important elements - Security of access, Abundance of the resources and Safety in its use.

On the concept of energy security, **Chang Youngho** (RSIS, NTU) explained that this idea would refer to the adequate and reliable supply of energy at a reasonable price. The factors determining these energy supplies are: the availability of resources, the applicability and reliability of technology and its affordability and acceptance by society.

There are several ways of ensuring energy security. Firstly, on the supply side of energy, it is important to increase the potential supply or economic resources. On the demand side, there is a need to improve energy efficiency and encourage energy conservation. There would also need to be a regional integration of energy markets.

10 ibid.
11 Zhao, X. 2007, *Politics of Climate Change: Perspective from China*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore

Participants at the Conference

Finally, there is a need to advance backstop technology for energy security such as renewable energy resources. The latter has the potential to be an ultimate and abundant resource but would need to be economically and technologically viable. It would also act as a price ceiling on the resources currently in use.

Undertaking this would require a systematic framework that incorporates the economy, energy and environment sectors. Chang's E3 model is an example of this systematic framework which incorporates an economic growth model, an aggregate representation of the carbon dynamics and an endogenous substitution of energy use in an economy. Such a model thus combines a top-down economic approach with a bottom-up engineering approach.[15] It should also be noted that while the costs of renewable energy would decrease overtime, there is the possibility that in the very long-term, the demand for coal may rise again. This is due to the fact that given the abundance of coal available and the assumed clean air with reduced greenhouse gas emissions as a result of effective use of renewable energy, there would be an incentive to pollute and use cheap resources such as coal.[16]

In his concluding remarks, Chang raised several points. Firstly, energy use is in the loop of energy security and climate change that binds the world. As such, energy security must be ensured through exploring more conventional energy sources or technological developments in harnessing various alternative energy sources. Initiatives in limiting energy use or altering energy use behavior would also influence the availability of energy, the applicability of relevant technology and the societal acceptability towards the energy. Unless the concentrations of greenhouse gases in the atmosphere are stabilized within or at a threshold level, the vicious cycle of using more energy will continue to cause further environmental degradation/climate change effects and a breakdown of the harmless or benign natural cycle. This cycle, however, can be made less vicious with the use of a backstop technology – i.e. an ultimate, clean and abundant energy source. To make this switch in energy resources possible, three elements are needed. Firstly, it is vital to be clear about the definition of energy security and how energy supply is determined. Secondly, measures to

15 Chang, Y. 2007, *Energy Security and Climate Change: The Loop that Binds the World*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore
16 ibid

Rt. Hon. Simon Hupton

ensure energy security and mitigate climate change through supply and demand side instruments must be identified and implemented. And thirdly, a backstop technology (of renewable resources) must be developed to facilitate a smooth transition.

Simon Upton (Pricewaterhouse Coopers) outlined the current state of global energy security issues. He noted that while it was important to ensure sustained energy resources (since power shortages would lead to acute and political unrest), it was also the case that much of the debate over climate change often muddles up terms such as environmental insecurity. Hence Upton emphasized the need for a broader definition of energy security, which, in addition to abundance and access, would include environmental impact. He also questioned the extent to which alternative sources of energy such as biofuels would be able to bring about a win-win situation for all. Given the high subsidies given to the production of biofuels, the loss of soil carbon and the significant displacement of crops and threatened food security, Upton argued that biofuels provided an apt illustration of mistakes made by governments, who have not fully grasped in any relative order the magnitude of options available to them.

Given this current scenario, it is noted that much has not been explored regarding the abundant scale of resources available. More research was therefore needed to provide economically viable means of energy conversion, in particular converting cheap dirty coal into gas. For instance, renewable energy is limited as it only makes up 21% of total global energy use. Out of this 21%, 96% of it comes from hydro-electric power, while the rest comes from new renewables such as wind, geothermal and solar energy. What is more surprising is that the presumably more abundant source of solar energy only makes up 4% of new renewable energy sources. It can also be observed that much of the renewable sources of energy were not in developing states that are in deep need of energy but rather in developed states.

Against these trends, further research and development in using conventional sources of energy is needed, together with more effective measures in reducing carbon emissions. Since our civilization has been built around the density of fossil fuels, the challenge was therefore to reduce the footprints of existing stocks. Using Upton's 'security scorecard', he suggested that the use of coal, complemented with Carbon Capture and Storage measures (CCS) would be the most viable option in meeting global energy demands.[17]

17 Upton, S. 2007, *Avoiding the wrong solutions to the wrong problems*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore

Mr Fabby Tumiwa

Fabby Tumiwa (Institute for Essential Services Reform, Jakarta) divided his presentation in four parts: the impacts of climate change; paradigm and definition of energy security, paradigm and definition of energy security; the climate-energy nexus and the state of energy security in Indonesia.

While raising similar arguments on the need to attain energy security, Tumiwa also discussed the use of Energy Security Indicators in assessing the sustainability and security of energy resources – primarily:

1 The diversification of energy supply sources.
2 The net energy import dependency.
3 A non-carbon based fuel portfolio.
4 The net oil import dependency and Middle East oil import dependency.

He noted the energy security challenges at various levels of society. At the global level, there is the challenge of ensuring adequacy of (energy) resources. Regionally, it is the challenge of networking and coordinating regional (energy) trading/exchange. There is also the challenge at the national level of maintaining energy supply security and managing demand & supply.

The interesting dynamics on the Climate- Energy nexus points to the fact that climate change gives a negative feedback to the supply and use of fossil fuels as it threatens investments especially for states that are highly dependent on fossil fuels. As a result, countries such as the US still refuse to engage in international efforts of reducing greenhouse gasses and/or avoiding binding emission reduction targets. On the other hand, climate change does provide positive feedback in diversifying energy sources and thus enhancing energy security.

On the state of energy security in Indonesia, it was noted that while fossil fuels are limited in the country, there remains many non-traditional energy sources that have not been developed. The latter should be given more attention due to the high growth of energy demand (7%), high energy intensity despite low consumption per capita, and high dependence on imports of refinery oil. This is also a result of the Indonesian government's high subsidy on oil prices, which accounts for 20% of the national budget. This dependence on carbon emitting energy sources therefore does not relieve Indonesia of its high vulnerability to climate change, which can disrupt its energy supplies.

To address these issues, a number of steps can be done. Firstly, an integrated assessment and adaptive changes must be included in energy planning and development models. Secondly, the importance of maintaining data and information of energy resources and technological development must be recognized so as to ensure better anticipation scenarios. Thirdly the need to develop local energy resources and diversify energy supplies -both energy form and supplier. Finally, encouraging technology transfer to developing countries should be advocated, especially in multilateral negotiations and agreements.

ADDRESSING ENERGY SECURITY

A number of issues were raised following the presentations on energy security. One was the need to come up with useful indicators in assessing energy security. These criteria would provide the basis of research but could also be expanded upon to include other indicators such as energy misuse and the impact on conflict. Attention was also drawn to the future of energy supplies in Southeast Asia. It was noted that while renewable energy is a viable option, the price is problematic. In Indonesia, the development of renewable energy is still very low and therefore would require a boost from the government in developing these industries and also greater equality when providing subsidies for various energy sources. The example of Singapore was cited where portable tanks have been installed in its public housing. These measures required incentives that had to be provided for by the government and have therefore been successful. Since the use of renewable energy is still sustainable in the long term, what is essentially needed now is carbon capture and storage (CCS) in preventing further carbon emissions.

A question was raised why nuclear energy did not feature largely in the energy scorecard. The response was that while nuclear energy plays a significant but rather small role in global electricity generation, its role is not a decisive one as governments have very limited leverage and human capital resources. As such, it was more viable for states to concentrate on developing traditional sources of energy rather than spreading themselves out too thinly.

A comment was made regarding the lack of practicability of solar energy in domestic setting. It was noted that solar panels could be damaged in the event of cold snaps. There was also the problem of transporting solar energy to from vast desert areas to city or town areas that needed energy sources. A suggestion to address this was to develop a sort of battery technology in which solar power would be able to be stored and transported elsewhere.

On a question regarding the feasibility of recent initiatives of oil-rich Gulf states in pursuing renewable sources of energy, it was noted that fossil fuels would still be used as the Arab states have premium quality oil. As such, it would be in their national interest to have the best price for it. Rather than seeing this as a source of discontent, greater ties should be forged with them so as to ensure that they are allies in further developing possible solutions in mitigating carbon emissions.

On the issue of incentives, it was noted that it should include rules and regulations to ensure greater responsibility of all parties involved. In this regard, regulations had to be well thought through and accurate, as a mistake in regulations could be detrimental to the whole process. Moreover it is important to note that all energy options should be kept open, including mixing of renewables, which could function as a baseload. There is still the possibility of being competitive but this would ultimately depend on whether the price is right.

MOVING FORWARD: ADVANCING THE KYOTO AGENDA

Panel on Advancing the Kyoto Agenda

This session centred on the problems of mitigating climate change, highlighting some of the issues that impact on the cooperation among the international community as they work through the modalities of international frameworks and conventions. **Bharat Desai** (Jawarhalal Nehru University, New Delhi) discussed the formal linkages now formed between the IPCC and UNFCCC and remarked that with these increasingly strengthened linkages, there appears to be hope for a more holistic approach to dealing with climate change by incorporating the views of scientists as well as policy makers.

However, while the emergence of the UNFCCC framework has led to the adoption of the Kyoto Protocol, the framework agreement by its very nature is limited since it did not go into the specifics of detailed steps needed, nor envisage subsequent instruments to prescribe them. It is therefore based on a precautionary approach, which would only be able to progress with the approval of all its members. State practice does not testify it to be a principle in international law and it is perceived to be merely an approach to development. Despite this, there has been some progress given that even after 8 years of uncertainty, the 1997 Kyoto Protocol did finally come into force in 2005.

Nevertheless, it is argued that even with the emergence of these frameworks, the concerns expressed by developing countries must be recognised. Given their economic conditions, it is understandable that these countries are reluctant to accept any kind of commitments that would jeopardize their developmental requirements. It was also not surprising that the insistence by the industrialised countries for inclusion of some of the developing countries into the Annex I of the convention (such as China and India), was turned down in view of their insistence upon per capita distribution of emission rights. In this regard, there is a need to distinguish between survival emissions and luxury emissions, which should be assessed based on issues of poverty and underdevelopment and the degree of vulnerability of the state to climate change.[18]

18 Desai, B. 2007, *The Climate Change Regime: Select Legal Issues for Post -2012 Negotiation 'Process'*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore

It was also argued that developed countries have not been doing as much as their historical contribution to the problem would require them to do. They have therefore failed to understand the extent and nature of the 'differentiated' responsibility they bear for the climate change problem. Since damage would be universal and the cost would fall on everyone, the principle of equity therefore demands that those who benefited the most need to undertake a commensurate share in meeting the costs and to compensating those affected by the problem.[19]

The issue of funding is another critical concern. According to the protocol, a financial mechanism to channel financial assistance to developing countries to help address climate change and adapt to its adverse effects had been established and is currently operated by the Global Environment Facility (GEF). However the GEF has not been able to effectively perform this role. The subsequent Bonn Agreements and related decisions have thus provided for the establishment of three new funds:

(i) Special climate change fund.
(ii) Least developed countries fund under the Convention
(iii) Adaptation fund under the Kyoto Protocol. Annex II Parties have pledged to collectively contribute US$410 million a year to the funds by 2005.

Against these concerns, it was argued that the international community must be aware of a number of things and take on the following issues. Firstly, short-term focus on developing country commitments could be politically expedient for those who intend to upset the Kyoto applecart. Secondly the insistence on burden sharing by the "key developing countries" such as Brazil, China and India, is a tactical *subterfudge* to shift the focus from the basic requirement to take the lead at 'home' as per the Kyoto Deal. With the exception of the European Union, there appears to be little evidence of 'leadership' by the industrialized countries. Hence, Desai notes that beyond reforming policies and investments in equipment and infrastructure that reduce GHGs, developed countries can help promote sustainable economic growth in developing countries. It is also vital to facilitate developing countries' actions to keep growth in GHGs to a minimum: e.g. transferring technologies to replace old and inefficient equipment. Desai also noted the critical need for a 'formal' UNFCCC assessment as regards the 'criteria' of judging the 'lead' to be taken by the developed countries as per Article 3 (1). This would be the key to the road map for taking regulatory process forward and thus a basis for the post-2012 institutionalized dialogue.[20]

Takashi Hattori (APEC Secretariat, Singapore) gave Japan's view of security and climate change. Japan has a comprehensive security strategy since the 1980s and was a forerunner in advocating human security. Japan has actively contributed to this cause through the the United Nations Trust Fund for Human Security in 1999 and the role of Dr Sadako Ogata in the UN Commission on Human Security in 2001. Similarly, on the issue of climate change, Japan's Environment Council's report on climate security identified participation from the corporate sector as being crucial in this global mission in order to protect the safety and welfare of citizens. This would be done via developing appropriate mitigation and adaptation measures based on scientific data, and also cooperation with international society in order to protect the climate, which serves as a global public good.

In this regard, Japan's "Cool Earth 50" proposal, initiated by former Prime Minister Shinzo Abe is a very important initiative. The proposal reflects the importance of Asian action in the fight against climate change as it is the center of growth worldwide. Hattori explained that "Cool Earth 50" encompasses 3 proposals and 3 principles. The first

19 ibid
20 ibid

proposal is a long term strategy that aims to set a long-term target of cutting global emissions by half from the current level by 2050 and present a vision for developing innovative technologies and building a low carbon society, centering on those technologies. The second proposal is a mid term strategy that is driven by three principles – (1) all major emitters must participate, thus moving beyond the Kyoto Protocol, leading to global reduction of emissions; (2) the framework must be flexible and diverse, taking into consideration the circumstances of each country – similar to the principle of "common but differentiated responsibilities and respective capabilities."; and (3) the framework must achieve compatibility between environmental protection and economic growth by utilizing energy conservation and other technologies. The final proposal is the launching of a national campaign for achieving Kyoto target.[21]

Japan's "Cool Earth 50" Strategy underscores Japan's position that Climate change must be considered as a comprehensive/ human security concern. As such, all nations must choose a development path towards a low-carbon society. Moreover, all stakeholders must re-consider their consumption and production patterns. Equally important is for innovative technologies to be developed and disseminated. Finally, the post-2012 Climate Change Framework must consider long-term objective and mid-term measures.[22]

Providing the Swiss perspective was **Barbara Haering** (Chair of the Defence Committee, Swiss National Council), who highlighted four major concerns on climate change and security. Firstly, the need to protect the environment due to its inherent moral value of protecting human life. Secondly, concerns about direct and indirect effects of environmental change on national, regional or trans-regional security. Thirdly, responding to situations where environmental threats and conflicts overlap and concerns about the adverse impact of violent conflicts and military actions on the environment.

Environmental vulnerability is a complex phenomenon that combines three elements – exposure (varying change effects in different regions worldwide); sensitivity of regions to these effects; and adaptive capacities, which can vary with the given wealth of a country. While there has been improvement of environmental management – in terms of both quantity and quality - there is still the possibility of clashing with national interests. Unfortunately, research could not yet identify any evidence of an impact of climate change on the policies of national delegations in international negotiations.[23]

There are also the risks posed by military activities and facilities on the environment and human health. Restructuring or decommissioning such activities or facilities may reduce or increase such risks depending on whether proper consideration is given to environmental factors. Moreover, countries with post-conflict areas face dangerous leftovers and environmental depredation. Despite this, there has been positive military action with regards to the environment. At national level, the military is already involved in assisting disaster management. At international level, protocols are in force and initiatives are in discussions.

21 Hattori, T. 2007, *Japan and the Post-2012 Climate Change Framework*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore
22 ibid
23 Haering, B. 2007, *Environmental Security: New Challenges for Comprehensive Security Strategies*, Policy Brief presented at the Conference on Climate Change and Security, 12 October 2007, Traders Hotel, Singapore

In increasing efforts to address environment concerns, attention must be given to engendering environmental security. This is important given the greater degree of vulnerability faced by women in conflict as well as environmental risk areas. Statistics from the 2004 Asian Tsunami showed that the ratio of female to male deaths was 4:1. Majority of environmental refugees worldwide have also largely been women. Moreover, numerous studies have shown an increase of domestic and sexual violence not only during violent conflicts but also following natural disasters. Reasons for women's vulnerability are their lack of access to resources, their over-representation in vulnerable sectors, reduced possibilities of migration and cultural factors. Hence, more proactive work must be taken to ensure the security of women so as to be gender neutral.[24]

Against these trends, a series of recommendations can be considered for various areas. There has to be continued discussions at the UN on crafting strategies as well as binding regulations. These would include substantive and implemented environment security strategies; including the acknowledgement of women's specific living conditions as well as their potential to contribute to disaster management and peace building processes; and the mainstreaming environmental factors into foreign and security policies.[25]

On risk management, the prediction of instabilities that cuts across issues, multi stakeholder based and trans-boundary must be strengthened. Secondly, preventive measures need effective and efficient environmental policies with a comprehensive human security approach. And finally, increased capacity in national and international institutions must be developed so as to be able to cope with – or to adapt to – possible risks and also increased public awareness.

On role of the military, it was stressed that military/civil co-operation should be enhanced on both strategic and operational level, and in all stages of the crisis management cycle. Military training and testing should also be made less harmful to the environment via the use of battle simulators. There should also be an inclusion of rules with regard to environmental security challenges in the codes of conduct for military personnel. International regulations relating to mercenary and private military companies should also include provisions with regard to the environment. Those responsible for war should also be made responsible for repairing environmental damages. By doing so, new technologies for detection and clean-up should be fostered.

The notion of "trans-institutions" must also be introduced in policy making, which would bring together state actors, the economy, science, humanities as well as NGOs as partner for a sustainable collaboration. Finally, the role of civil society must also be strengthened.

24 ibid
25 ibid

CONCLUSION

Climate change is indeed a serious security concern that requires no less than a comprehensive and multi-sectoral approach to security. In the concluding session, several points were raised as reflections on the kinds of challenges ahead.

First, despite the existence of several frameworks that address climate change, perhaps one unified framework would be more useful—given that while the international community had the roadmaps to progress, they lacked the compass. However, while a single framework would be ideal, this was in reality difficult to do given the variety of opinions at the global level thus impeding efforts of coming to a consensus.

Most often, international frameworks have to work on the lowest common denominator.

In this regard, the involvement of civil society organization is critical to providing the extra push to get governments to act.

Addressing climate change is also about international governance.

But this is only possible if there is consensus. In working at this, it is critical that industries are responsive to the work of scientists and other important actors in the international arena that provide important inputs to policies. Moreover, greater thought must be given to the issue of 'common but differentiated responsibility' and the existing dichotomy between developed and developing countries. The latter may be problematic given the existence of wealthy countries such as Qatar and the United Arab Emirates that remain labeled as developing countries.

There is therefore the need to advance the debate and address questions such as – who should pay?

Which countries can still be considered developed or developing? These are important issues which, if not sufficiently addressed, could continue to pose a fundamental problem to the Kyoto Protocol in getting more proactive global action via 'common but differentiated responsibilities'.

In addressing climate change, there is no substitute to informed environmental intelligence.

Moreover, in order to maximize the knowledge we have on how to address climate change, there should also be more discussions between economists, scientists, analysts, and policy makers.

The need for inter-disciplinary and inter-agency collaboration is one of the best ways forward in addressing such a complex security challenge like climate change.

This is indeed a challenge to the international community, given the lack of past institutional knowledge and massive scale involved in addressing global climate issues.

PROGRAMME / AGENDA

Wednesday, 10 October 2007

1500 Arrival of commentators and speakers for Registration

1800 End of Registration

1900 Cocktail Reception and Welcome Dinner for commentators and speakers Penang II, Level 2A, Traders Hotel Singapore

Thursday, 11 October 2007

0830 Conference Registration @ The Gallery, Level 2

0915 **Welcome Remarks:**
Barry Desker, *Dean, S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore*

0915 **Opening Remarks:**
Daniel Woker, *Ambassador of Switzerland to Singapore*

0930 **Session 1: Climate Change and Security: Overview**

Global Perspective on Climate Change
Jose Romero, *Senior Advisor, International Affairs, Federal Office for the Environment (FOEN), Switzerland*

Asian Perspective on Climate Change
Terence Siew, *Head (Climate Change Unit), National Environment Agency, Singapore*

1045 Coffee Break

1100 **Session 2: Climate Change and Security: Issues and Challenges (I)**

Chairperson:
Manfred Rist, *South-East Asia Correspondent, Neue Zürcher Zeitung (Swiss Daily)*

The Environment Factor in Human (In-) Security
Albrecht Schnabel, *Senior Research Fellow & Director, Human Security Research Programme, Swisspeace Foundation*

Environment and Economic Security
Euston Quah, *Head, Division of Economics, Humanities and Social Sciences Department, Nanyang Technological University, Singapore*

Regional Cooperation on Environmental Security
Simon Tay, *Chairman, Singapore Institute of International Affairs, Singapore*

1230 Lunch (For All Registered Participants) @ Cafebiz (Level 1)

1400 **Session 3: Climate Change and Security: Issues and Challenges (II)**

Chairperson:
Kwa Chong Guan, *Head, External Programmes, S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore*

Impact of Climate Change on Natural Habitats (Forestry)
Shawn Lum, *Natural Sciences and Science Education, National Institute of Education (NIE), Singapore*

Impact of Climate Change on Marine and Coastal Environments
Elisabeth Bui, *Humanities and Social Studies Education, National Institute of Education (NIE), Singapore*

Climate Change as a Cause of Insecurity: Knowns and Unknowns
Tapani Vaahtoranta,
Programme Director, Editor-in-Chief, Finnish Institute of International Affairs

1600 Coffee Break

1415 **Session 4: The Politics of Climate Change**

Chairperson:
Kumar Ramakrishna, *Head, Centre of Excellence for National Security, S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore*

China and Climate Change
Zhao Xingshu, *Visiting Scholar, Institute for China Studies, Seoul National University*

India and Climate Change
Brahma Chellaney, *Professor of Strategic Studies, Centre for Policy Research, Delhi, India*

Australia and Climate Change
Ros Taplin, *Director, Environmental Management Program, Graduate School of the Environment, Macquarie University, Australia*

1745 Conference Adjourns

1900 Conference Dinner (For invited guests only) Capers Restaurant, The Regent Singapore

PROGRAMME / AGENDA

Friday, 12 October 2007

0900 **Session 5: Energy Security and Climate Change**

Chairperson:
Joseph Liow, *Head of Research (IDSS), S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore*

Energy Security and Climate Change: The Loop that Binds the World
Chang Young-ho, *Research Fellow, S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore*

Avoiding the Wrong Solutions to the Wrong Problems
Simon Upton, *Adviser on Climate Change, PricewaterhouseCoopers*

Energy Security and Climate Change: Issues and Challenges for Indonesia.
Fabby Tumiwa, *Chairman/Acting Director, Institute for Essential Services Reform (IESR) Jakarta, Indonesia*

1045 Coffee Break

1100 **Session 6: Moving Forward: A Roundtable on Advancing the Kyoto Agenda**

Chairperson:
Mely Caballero Anthony, *Coordinator, Non-Traditional Security Programme (NTS), S. Rajaratnam School of International Studies (RSIS) & Secretary-General, Consortium on Non-Traditional Security Studies in Asia (NTS-Asia)*

Advancing the Kyoto Climate Deal: Some Legal Issues
Bharat Desai, *Jawaharlal Nehru Chair in International Environmental Law, Centre for International Legal Studies, Jawaharlal Nehru University, New Delhi, India*

Japan and Post-2012 Climate Change Framework
Takashi Hattori, *Director (Program), APEC Secretariat*

Comprehensive Environment Security Strategies – New Challenges for National and International Security Policies
Barbara Hearing, *Chair of the Defense Committee, Swiss National Council*

1230 **Concluding Remarks**

1245 Lunch (For All Registered Participants) @ Penang I, Level 2A

1400 Conference Ends

LIST OF CHAIRPERSONS & PAPER PRESENTERS

1. Dr. Mely Caballero-Anthony
   Associate Professor
   Coordinator, Non-Traditional Security Programme (NTS)
   Secretary-General, Consortium of Non-Traditional Security Studies in Asia
   S.Rajaratnam School of International Studies
   Nanyang Technological University

2. Dr. Elisabeth Bui
   Associate Professor
   Humanities and Social Studies Education Acad. Grp.
   National Institute of Education (NIE)
   Nanyang Technological University

3. Dr. Chang Youngho
   Research Fellow
   S.Rajaratnam School of International Studies
   Nanyang Technological University

4. Prof. Brahma Chellaney
   Professor of Strategic Studies
   Centre for Policy Research
   New Delhi, India

5. Prof. Bharat Desai
   Jawaharlal Nehru Chair in International Environmental Law
   Centre for International Legal Studies
   School of International Studies
   Jawaharlal Nehru University

6. Ambassador Barry Desker
   Dean
   S. Rajaratnam School of International Studies
   Nanyang Technological University

7. Dr. Barbara Haering
   Chair, Defense Committee
   Swiss National Council

8. Dr. Takashi Hattori
   Director (Program)
   APEC Secretariat

9. Mr. Kwa Chong Guan
   Head of External Programmes
   S. Rajaratnam School of International Studies
   Nanyang Technological University

10. Dr. Joseph Liow
    Associate Professor
    Head of Research at the Institute of Defence and Strategic Studies
    S. Rajaratnam School of International Studies
    Nanyang Technological University

11. Dr. Shawn Lum
    Assistant Professor
    Natural Sciences and Science Education Acad. Group
    National Institute of Education (NIE)
    Nanyang Technological University

LIST OF CHAIRPERSONS & PAPER PRESENTERS

12. Dr. Euston Quah
Associate Professor, Head of Division and
Associate Chair of Research
School of Humanities & Social Sciences
Nanyang Technological University

13. Dr. Kumar Ramakrishna
Associate Professor
Head of the Centre of Excellence for
National Security (CENS)
S.Rajaratnam School of International Studies
Nanyang Technological University

14. Mr. Manfred Rist
South-East Asian Correspondent
Neue Zuercher Zeitung (Swiss Daily)

15. Dr. José Romero
Senior Advisor
Swiss Federal Office for the Environment (FOEN)

16. Dr Albrecht Schnabel
Senior Research Fellow & Director
Human Security Research Programme
Swisspeace – Swiss Peace Foundation

17. Mr Terence Siew
Head, Climate Change Unit
Resource Conservation Department
National Environment Agency, Singapore

18. Dr Ros Taplin
Director, Environmental Management Program
Graduate School for the Environment
Macquarie University, Australia

19. Prof. Simon Tay
Chairman
Singapore Institute of International Affairs (SIIA)

20. Mr. Fabby Tumiwa
Chairman / Acting Director
Institute for Essential Services Reform (IESR)

21. Rt. Hon. Simon Upton
Adviser on Climate Change
PricewaterhouseCoopers

22. Dr. Tapani Vaahtoranta
Programme Director, Editor-in-Chief
Finnish Institute of International Affairs

23. H.E. Daniel Woker
Ambassador
Embassy of Switzerland in Singapore

24. Dr. Zhao Xingshu
Visiting Scholar
Institute for China Studies
Seoul National University

OTHER PARTICIPANTS

1. Major Taharudin Ampatuan
   Visiting Research Analyst
   International Centre for Political Violence
   and Terrorism Research
   S.Rajaratnam School of International Studies
   Nanyang Technological University

2. Mr. Martin Andrew
   Doctoral Student
   International Security Studies
   Bond University

3. Dr. Pavin Chachavalpongpun
   First Secretary
   Royal Thai Embassy

4. Ms. Ann Chan
   Assistant Director
   National Security Coordination Centre, PMO

5. Mr. Patrick Chan
   Director, Industry Development
   Singapore Business Federation

6. Dr. Alvin Chew
   Research Fellow
   S.Rajaratnam School of International Studies
   Nanyang Technological University

7. Mr. Michael Clausen
   Second Secretary - Economic
   Embassy of the United States of America

8. Ms. Stéphanie Cubier
   Commercial Attaché
   French Embassy in Singapore

9. Mr. Philippe Denier
   Policy Officer
   Delegation of the European Commission

OTHER PARTICIPANTS

10. Mr. Rolf Frei
Counsellor / Deputy Head of Mission
Director Swiss Business Hub ASEAN
Embassy of Switzerland

11. Ms. Martine Hager
Academic Intern
Embassy of Switzerland

12. Mr. Mark Hong
Visiting Research Fellow
Institute of Southeast Asian Studies

13. Ms. Sofiah Jamil
Research Analyst
Non-Traditional Security Programme (NTS)
S.Rajaratnam School of International Studies
Nanyang Technological University

14. Mr. Elijah Lau
Assistant Director
National Security Coordination Centre, PMO

15. Col. Jimmy Mak
Deputy Director
National Security Coordination Centre, PMO

16. Mr. Mersole Mellejor
Third Secretary
Embassy of the Philippines

17. Dr. Suzanne Hraba-Renevey
Executive Director
Swiss House, Singapore

18. Mr. Tay Thiam Chye
Associate Research Fellow
Centre of Excellence for National Security (CENS)
S.Rajaratnam School of International Studies