

PANDEMIC PREPAREDNESS IN ASIA

12-13 JANUARY 2009
SINGAPORE



PANDEMIC PREPAREDNESS IN ASIA

REPORT ON A CONFERENCE ORGANISED BY
THE RSIS CENTRE FOR NON-TRADITIONAL SECURITY (NTS) STUDIES
AT THE S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES (RSIS),
NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE.

12-13 JANUARY 2009
SINGAPORE

S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES,
NANYANG TECHNOLOGICAL UNIVERSITY
2009

1. Executive Summary	3
2. Welcome Address	4
3. Keynote Address	5
4. Overview of Pandemic Preparedness Frameworks: From Global to Local	6
5. Pandemic Preparedness Interventions in East Asia: (A) Surveillance and Border Control	13
6. Pandemic Preparedness Interventions in East Asia: (B) Continuity in Crisis	16
7. The Role of Other Actors	20
8. The Way Forward: Challenges and Areas for Further Cooperation	24

This report summarises the proceedings of the conference as interpreted by the rapporteurs and editors appointed by the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University. Participants neither reviewed nor approved this report.

The conference adheres to the Chatham House Rule. No attributions have been included in this report.

Executive Summary

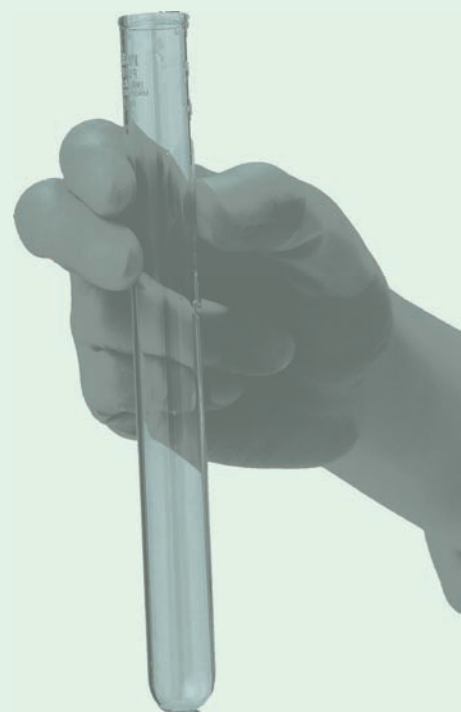
According to the World Health Organization (WHO), pandemic preparedness in most, if not all, countries and regions still remain inadequate as of 2008. The need to act upon this is urgent as there is increasing complacency around the world due to “flu fatigue” and the precise timing, location and overall impact of a future pandemic is also speculative at best.

This conference on *Pandemic Preparedness in Asia* was organised by the RSIS Centre for Non-Traditional Security (NTS) Studies to examine the various framings of pandemic preparedness. Its objective is to stimulate participants into thinking up possible approaches that can be adopted by Asia. The conference brought together the best medical experts and security analysts from the region and the world who examined various pandemic preparedness models, identified gaps in planning and determined pandemic preparedness indicators. The conference also involved discussions on the roles of different societal actors in the formulation of operational pandemic preparedness frameworks, and the prospects of regional cooperation. The conference targeted a wide audience ranging from security analysts to health practitioners, the business community and leaders of civil societies. It aimed to facilitate the creation of a holistic and comprehensive pandemic preparedness plan which can be applicable on many scales; from local to global levels.

A session on *Local Frameworks of Pandemic Preparedness in Southeast Asia* was convened in order to identify current gaps in planning, to determine indicators for evaluating the systems in place and to find ways to further improve existing plans. Representatives from Indonesia, Thailand, Vietnam, the Philippines and Singapore were invited to present their models of pandemic preparedness. Civil society actors from Cambodia, Indonesia and Malaysia also spoke on the level of preparedness in their respective countries and the role that non-governmental organisations play in early-warning and surveillance.

The session *The Way Forward: Challenges and Areas for Further Cooperation* examined how pandemic preparedness can be improved. This session identified areas for further regional and international cooperation, and outlined necessary improvements for existing preparedness plans. It was noted that the potential development of a global public health regime could improve global healthcare, especially in the developing world.

The discussions and presentations during the conference highlighted the need to identify the challenges of health and related security issues beyond pandemic preparedness and addressed issues of equity. A simple but important point was consistently relayed — It is everyone’s responsibility to improve pandemic preparedness and work towards a global public health regime.



Welcome Address



Mr Eddie Teo, Chairman of both the RSIS Board of Governors and the Public Service Commission, Singapore, extended a warm welcome to the participants and thanked Deputy Prime Minister (DPM) and Minister for Home Affairs, Mr Wong Kan Seng for his presence at the conference. In his welcome address, Mr Teo used the example of the Severe Acute Respiratory Syndrome (SARS) crisis in 2003 to highlight the serious threat posed by a global influenza pandemic. If left unchecked without proper pandemic preparedness measures, the fallout from SARS could

potentially have resulted in an estimated 2 million deaths worldwide and caused an economic loss of US\$800 billion. Mr Teo urged collective efforts to counter the emergence of new pandemics, of which the spread of the H5N1 Avian Influenza is a prime example.

According to Mr Teo, there has been gradual but steady progress made in addressing pandemic threats. For example, a surveillance system has been established by the World Health Organization (WHO) to allow countries to report serious pandemic incidents. Local stockpiles of antiviral drugs have been increased and Singapore also serves as a hub for regional cooperation in dealing with infectious disease outbreaks. However, Mr Teo reminded delegates that there is much more to be done as challenges to the implementation of pandemic preparedness plans at both national and local levels in Asia still remain. This is a result of different national strategies and interstate coordination. As it is impossible to predict and pinpoint the next pandemic outbreak, the conference presents a good opportunity for participants from diverse sectors to discuss and examine the issues of pandemic preparedness holistically.



Keynote Address



Deputy Prime Minister (DPM) and Minister for Home Affairs, Mr Wong Kan Seng opened the conference when he delivered his keynote address. The DPM reminded the audience of the persistence of H5N1 by citing the outbreak in December 2008 that affected Hong Kong. He pointed out that Hong Kong was better prepared on this occasion, having drawn lessons from a similar outbreak in 1997. The DPM was encouraged by the decline in sporadic human infection levels and mortality rates in 2008 which he attributed to improvements in national and international capacities for animal and human health surveillance that have enabled governments to respond swiftly to outbreaks. In addition, the introduction of compensation schemes by a number of countries to encourage early reporting of outbreaks by poultry farmers were an important and welcomed measure.

While the H5N1 situation appears to be stable for now, the DPM warned that the threat from a pandemic remains unchanged. He likened the H5N1 virus to a jackpot machine where different combinations are permuted over and over again. With the right combination and the element of chance, the virus could hit the jackpot — which in this instance would make it easily transmissible amongst people. Furthermore, whether the next pandemic is caused by H5N1 still remains unpredictable. He cautioned that a very severe global pandemic could have devastating consequences — a death toll of as many as 70 million people and an estimated global economic loss of US\$3 trillion. He noted that the socioeconomic loss from a pandemic outbreak in the future could exceed the costs associated with a terrorist attack.

As such, the DPM reminded participants that pandemic preparedness cannot be compromised, especially during the current global economic slowdown which could impact pandemic planning.

The DPM went on to say that countries could, and should, do much more to prepare for pandemics. This would include interstate collaboration to develop an effective disease surveillance system, which is especially crucial for regions with low overall health capacities. He noted that only 53 percent of countries have actually tested their pandemic strategies, with only a quarter of these having done so at all levels of government. He also urged countries to evaluate the effectiveness of their pandemic plans and to extend them beyond the health sector. Indeed, drawing from its experience in dealing with the SARS outbreak, Singapore has been preparing for a pandemic since 2004 with a national crisis management system in place. According to the DPM, a multi-sectoral approach combining medical and non-medical interventions is needed to deal with a pandemic in the most sensible and pragmatic manner. However, such a strategy requires significant investments of time and resources and would be a long and drawn out process. In addition, the DPM pointed out that there is no “one size fits all” approach in dealing with a pandemic due to the varying country contexts, and cross-border controls. At the end of his keynote address, the DPM launched a book titled *Preparing for a Human Influenza Pandemic* in Singapore published by the Ministry of Home Affairs. The book outlines Singapore’s pandemic planning and its endeavours to facilitate the alignment of pandemic strategies of both public and private sectors.



Overview of Pandemic Preparedness Frameworks: From Global to Local

The *Overview of Pandemic Preparedness: From Global to Local Frameworks* panel was convened to highlight issues surrounding the uncertainty of the threat posed to the world by emerging infectious diseases (EIDs) and to deliver a general outline on the roles of existing institutional mechanisms in place to combat a pandemic threat. Participants were also invited to discuss ideas on how to improve pandemic preparedness frameworks from local to international levels.

Global Frameworks

Emerging Infectious Disease — Balancing Traditional and Non-Traditional Strategies

The role of WHO and the global consequences of EIDs constitute the present focus on global pandemic preparedness as unexpected EID outbreaks could happen anywhere and at any time. Of the 335 known EID types, 54 percent are caused by bacteria and 25 percent by viruses. Tropical Asia is one of the EID hotspots alongside Central America and tropical Africa.

There are many factors that could contribute to the development of pandemics such as urbanisation, migration, as well as climate change. Climate change could cause crop failures, which in turn results in malnutrition. This heightens the risks of infection, especially in the developing world. According to the World Bank, the estimated economic cost in the event of a severe global pandemic outbreak would amount to US\$3 trillion. The economic cost alone, apart from human and environmental costs, certainly necessitates readiness against such an eventuality. However, the resources for pandemic preparedness are mostly concentrated in developed countries where an EID outbreak is deemed least likely. Conversely, developed countries are also the origin of most of the carbon emissions causing climate change.

Traditionally, WHO has served as a platform for poor countries to voice their concerns, particularly regarding the access to healthcare systems and antiviral stockpiles. However, there is a need for WHO to look beyond its traditional roles by “casting a wider net”, which involves:

- Global information sharing;
- Coordination of international responses;
- Control of outbreaks through the International Health Regulation system;
- Issuing of standards and guidelines;
- Serving as a neutral broker and convenor;
- Capacity-building assistance; and
- Promotion of research.

Equally important is the need for public health authorities at the national and international levels to reach out to the local communities by inculcating good health practices to prevent and implement adequate responses against EIDs. However, one participant suggested that public health authorities should not adopt only a “top-down” approach but should take into account the best local health and anti-pandemic practices, in order to enhance pandemic responses across all levels.

An Overview of Pandemic Preparedness in the Western Pacific Region

Between 2003 to 2008, cases of H5N1 were prevalent in many countries, especially across Asia. There was a total worldwide fatality rate of 63.1 percent. Even though there was no pandemic reported in the previous four years and there is, as of yet, no evidence of sustained human-to-human transmission of the H5N1 virus, there is no room for complacency due to the attendant risks of new strains emerging overtime as the virus evolves rapidly in animals. In fact, modern social and demographic conditions facilitate a faster spread of EIDs, thus heightening pandemic risks.

Based on historical knowledge of pandemic outbreaks (such as the Spanish Flu in 1918), and according to current scientific knowledge, it is recognised that the risk from the emergence of another pandemic is increasing overtime. Fortuitously, scientific advancements can collate genetic information pertaining to new viruses, thereby enabling health authorities to prevent future EID outbreaks. Therefore, ongoing and timely surveillance is critical in order to ferret out any signs of “silent” mutations in EID strains. However, the key question that remains unanswered is: how severe will the next pandemic be?

To counter such a situation, a long term perspective on pandemic preparedness is needed urgently. A multi-sectoral and a continuing pandemic preparedness process involving long-term medical and non-medical measures remains essential. The Asia-Pacific Strategy for Emerging Diseases (APSED) constitutes the starting point for regional countries to strengthen their capacities against EIDs through a multi-pronged approach of risk reduction, early detection, rapid response, effective preparedness and technical collaboration. Mooted in 2005, APSED targets a five year step-wise approach for each regional country to attain a minimum core capacity by 2010.

While most countries have pandemic preparedness plans, it remains a challenge to operationalise them. An assessment of eight developing and seven developed countries/regions in June 2008 found pandemic preparedness sorely lacking at every level. Table-top and simulation exercises are needed to test and update plans to ensure their operational readiness. Equally important is the need to go beyond a state-centric approach to one that incorporates new and innovative solutions that emphasises not only responses to, but also the prevention of new EID outbreaks.

Some participants wondered whether scientific methods alone could help policymakers in decision-making since rapid, decisive policies have to be formulated and implemented in times that precede research outcomes. However, as one participant noted, bridging this difference requires closer cooperation between research and policymaking agencies. He pointed out that random judgement, as a result of a lack of explicit options, could potentially create errors in resource allocation and have

dire consequences. As such, critical policy-oriented scientific research remains essential towards providing evidence-based options for political decision-makers to make rational judgements.

What is Pandemic Influenza Preparedness? Definitions, Best Practice and Gaps

While pandemic surveillance is a global responsibility, pandemic response is still largely confined within national domains. However, national strategic goals are often unclear and under-developed. There is often a gap between these goals and actual operational capacities for pandemic preparedness. Due to socioeconomic constraints, it is difficult to allocate scarce resources on pandemic planning. In many African and Asian countries, the gap between strategic focus and operational capacities remain considerable.

To further aggravate the situation, there is still no universally-accepted, organised and validated method for pandemic preparedness. The effectiveness of various pandemic preparedness strategies and the roles of various sectors within society, as well as the measurement of preparedness remain crucial issues to consider.

The panellists also outlined the following future challenges to pandemic preparedness:

- Fatigue;
- Dwindling international funds;
- The linking of capacities and governance to strategic objectives;
- Ethical concerns, such as duties, obligations and global inequities; and
- Upstream challenges such as food, trade and climate change.

One participant asked whether there are ways of bridging the gap between strategic focus and operational capacities. This is a monumental task indeed, although local communities could play an important role in complementing public health authorities. Governmental transparency in regards to pandemic planning outcomes, as well as investments in healthcare systems aimed at enhancing national nutrition levels to bolster immunity to

infections are essential as an important part of the effort to bridge the gap. Participants also agreed that emphasis on future scenario forecasting, resource optimisation and a code of conduct universally adhered to by international donors, recipient countries and non-state actors such as faith-based organisations could go a long way towards alleviating the effect of fatigue in pandemic preparedness and bolstering national capacities.

Regional Frameworks

ASEAN Cooperation in Pandemic Preparedness and Response

In the regional context of pandemic preparedness, the SARS crisis in 2003 had dire consequences on many Association of Southeast Asian Nations (ASEAN) member countries. Since then, several ASEAN regional initiatives in combating EID, such as the ASEAN HPAI Taskforce, have been established. There have also been collaborations with non-ASEAN countries and international organisations such as WHO.

Within ASEAN, a notable regional initiative towards pandemic preparedness is the ASEAN Agreement on Disaster Management and Emergency Response (AADMER). It was established to effectively reduce human and property loss in the event of a major disaster. A regional working group known as the ASEAN Technical Working Group on Pandemic Preparedness and Response (ATWGPPR) aims to narrow intra-regional gaps with respect to state-level pandemics response. During its first meeting in July 2008, the ATWGPPR endorsed the ASEAN Work Plan for Pandemic Preparedness and Response. ATWGPPR's vision is for all ASEAN member countries to be prepared for an influenza pandemic, with the following key activities:

- Creation of ASEAN non-health indicators for pandemics preparedness and response, which will be used as the minimum required standard applicable to the entire region to monitor the progress of national pandemic planning;
- Assessment of all ten ASEAN member states to identify the level of preparedness of non-health sectors in order to recommend activities to strengthen institutional capacities, based on the ASEAN indicators;
- Development of an ASEAN Policy Brief for use in mainstreaming pandemic preparedness and response in relevant ASEAN working bodies;
- Strengthening multi-sectoral national capacities and on-scene command and response system through the Incident Command System (ICS).
- Development of an ASEAN Regional Pandemic Preparedness and Cross-border and Resource Sharing Response Plan; and
- Exploring the establishment of an ASEAN Pandemic Preparedness Quick Response Team (QRT).

Given the fact that H5N1 and other EIDs appear to be concentrated in Southeast Asia, (6 of 10 members reported human H5N1 cases), ASEAN needs to be well prepared for a future pandemic outbreak. ASEAN, with its unique geographic, economic and sociocultural identity, would serve as an ideal platform for collaboration towards a concerted response against such contingencies.

Local Frameworks of Pandemic Preparedness in Southeast Asia

Indonesia

Ever since the first human case of H5N1 was reported in 2005, Indonesia has become the country with the most cases of infection. As of 15 December 2008, there were 391 cases of H5N1-related infections. 139 (36 percent) involved human infection of H5N1, of which 113 (81 percent) were fatal (resulted in death).

A strategic plan to prepare against an H5N1 pandemic was formulated in December 2005. This was followed up in 2006 with the establishment of the National Committee for Avian Influenza and Pandemic Preparedness in Indonesia to coordinate inter-agency activities. In 2007, Presidential Instruction 1/2007 was issued to relevant national institutions (including assistance from the army), for the coordination of national and local pandemic preparedness plans. Within the same year, a number of guidelines and protocols were issued, along with a code of conduct for local and national-level pandemic preparedness simulations.

Moving beyond the existing framework and mechanisms, Indonesia faced several issues — the first being financial constraints. The scenario planning-based budget which was formulated for 2006 to 2008 required US\$1.5 billion in funding and the project was constantly fraught with delays.

The second issue relates to pharmaceutical stockpiling, which has logistical and financial challenges. Effective vaccines are still medically unproven and vaccine development is relatively slow with the process taking several weeks or months. Indonesia faces an uphill logistical battle in ensuring effective vaccine distribution amongst its population of more than 150 million due to the high cost of stockpiling large supplies of vaccines that require restocking biannually. Furthermore, the affordability of vaccines has been a point of contention as Indonesia is opposed to sharing virus specimens with WHO unless the cost of vaccines is made affordable to developing countries.

Thirdly, Indonesia also has very large, dispersed provinces. There is a high level of decentralisation in health and agricultural functions which makes administrative and sector coordination a major challenge.

As such, there is a need to go upstream with the pandemic preparedness plan in Indonesia to ensure the prioritisation of resources for programmes related to animal control. There is also a need for interdisciplinary and cross-sectoral approaches for disease prevention, surveillance, monitoring, control and mitigation, as well as broader environmental conservation.

Thailand

In response to the H5N1 outbreak in 2004, Thailand adopted the National Strategic Plan on Influenza Pandemic Preparedness on 25 January 2005 with three principal objectives: to prevent an influenza pandemic outbreak, to reduce influenza morbidity and mortality, as well as developing an effective pandemic response. According to the plan, the key strategies comprise the following:

- Strengthening influenza surveillance systems;
- Preparedness of essential medical supplies and equipment;
- Preparedness for pandemic responses;
- Public relations and education; and
- Developing sustainable and integrated management systems.

Pandemic preparedness has been integrated into the national disaster prevention and mitigation plan. In 2007, a Disaster Prevention and Mitigation Act was issued to decentralise authority in disaster response management to local levels. However, the question of which organisations are responsible for technical support and plausible action remain unclear.

It was argued that a centralised authority leads to untimely responses, compounded by problems of inadequate pandemic preparedness training for provincial and local authorities and inadequate early warning and monitoring systems. Therefore, the development of an ICS at various levels of government is recommended to empower provincial and local authorities with responsibilities in their areas of jurisdiction. This also empowers civil society in the local early warning and monitoring system.

With respect to the role of civil society in pandemic preparedness, a comment was raised by one of the participants regarding the neglect of sociocultural considerations which contribute to the weakness of current health systems. It was agreed that in the future, any agenda aimed at strengthening the current health system should take into account sociocultural considerations as well as the role of civil societies.

To attain this goal, the following needs to be addressed. First, the ICS should play a central role in pandemic preparedness response, implying a clear need for relevant stakeholders under the command system. Second, guidelines for all related sectors should be established to fulfill local preparedness. Third, a partner-friendly warning system should be developed. Surveillance needs to be complemented by information made accessible to relevant government agencies and the public. Fourth, the ICS post should be empowered through the development of a clear provincial-level protocol for conducting annual disaster drills.

The Philippines

Although it remains free from H5N1, the Philippines has a pandemic preparedness framework in place that is mainly focused on mitigation, combining surveillance, disease control and health emergency tools. Learning from the SARS experience, the Philippines acknowledges that the potential risk of a pandemic outbreak can be overwhelming.

In contrast with Indonesia, the decentralised government system in the Philippines facilitates the development of a system heavily reliant on community-based responses via a reporting chain structure, the highest link in the chain being the National Avian Influenza Task Force and the lowest being the local community, such as poultry owners. The Philippines has built a central command and control structure for pandemic response and delegated pandemic stage responses to different leading state agencies. For instance, human-to-human infection falls under the purview of the Ministry of Health. Preparedness plans at the various levels are supported by legal mandates which are deemed sufficient. However, these plans remain open for further assessment and improvement. Similar to Indonesia, however, the Philippines faces financing and resource constraints.

Looking at existing preparedness levels in the Philippines, the panellist argued for the need to clarify preparedness frameworks in accordance to international standards and trade conventions, as well as a need to harmonise local frameworks with regional and international standards and best practices alongside periodic preparedness assessments. The existing operational plans must also be locally relevant, rather than mere duplicates of the national plan.

A discussion was held on whether any pandemic preparedness initiatives beyond the national frameworks exist. There is a commitment, by the Filipino government to sharing experiences and technical expertise within the ASEAN framework. However, there was scant evidence of regional responses beyond international donor support.

Vietnam

Having experienced SARS in 2003 and the H5N1 Avian Influenza in 2004, the Vietnamese government was considered nimble in its pandemic preparedness as a result of the scale of risks it faced. As such, a legal framework for pandemic prevention and control was created and the law on Prevention and Control of Infectious Diseases was adopted on 1 July 2008. This particular law enhances unitary leadership, specifies the responsibilities of various ministerial and administrative agencies and coordinates inter-agency actions to effectively prevent and control the spread of infectious diseases, while banning pandemic information concealment.

Vietnam has experienced numerous shifts in pandemic preparedness approaches that range from:

- The need for urgent response to medium- and long-term preparedness;
- Separate to integrated responses;
- General strategies to operational programming; and
- Problem-oriented response to capacity-building and prevention or early containment.

These shifts could explain the focus of the Law on Prevention and Control of Infectious Diseases on prevention aspects. Pandemic preparedness in Vietnam focusses not only on the health sector, but also on the agricultural sector.

It was argued that a centralised one-party government enhances effectiveness in dealing with infectious diseases. The pandemic surveillance system is hierarchical from the highest levels of government down to grassroots levels, albeit centralised. The central coordination mechanisms, which are replicated at the provincial and, in many cases, the district levels, are controlled by the National Steering Committee on Avian Influenza Control and Prevention (NSCAI) and the National Steering Committee for Avian and Human Influenza (NSCAHI). The centrality of this system also applies to information dissemination, such as building up public awareness in the prevention and control of infectious diseases as well as coordination among international donors.

Although effective, this system also has several constraints. First, the preparedness framework places an emphasis on early containment over preparedness. Second, with respect to H5N1, the preparedness framework is reactionary instead of being proactive. Third, it is perceived to have a socioeconomic rather than national security concern. Fourth, national pandemic preparedness is needed and necessary but not prioritised. These constraints are related to the lack of resources in terms of facilities and manpower.

Singapore

Singapore has established a systematic preparedness framework in response to the pandemic threat. The main strategies used are:

- Effective surveillance through utilising existing systems;
- Mitigating the impact of the pandemic including healthcare service preparedness, ensuring the sustainability of essential services during a pandemic outbreak;
- Reducing the viral spread by creating social distancing measures; and
- Vaccination which will include stockpiling antiviral drugs and vaccines as well as securing a contract from a pharmaceutical company for the timely provision of vaccines in times of contingency.

A colour-coded risk management approach, mirroring that of WHO, is used by Singapore. The colours guide national responses prior to and during a pandemic; green, yellow and orange are used for pre-pandemic phases that prioritise early detection and containment, while red and black are alert phases emphasising the mitigation of pandemic impact. Scenario plans were formulated, according to these colour-coded phases, and tested. Relevant government agencies have carried out exercises to test their pandemic preparedness plans so as to enable healthcare providers to fine-tune their operational plans for an influenza outbreak. Exercises were also conducted by the financial sectors. When a pandemic hits Singapore, the response plan aims to achieve three outcomes:

- Maintenance of essential services to limit social and economic disruption;
- Reduction of morbidity and mortality through treatment; and
- Slow and limit the spread of influenza to reduce the surge on healthcare services.

Question of Resource Allocation

Looking at various priorities taken by different countries in pandemic preparedness and the issues of budget constraints, a question was raised on how to achieve a balance in the allocation of scarce resources between the health and agricultural sectors. So far, budgets spend less on agriculture. Nevertheless, it was argued that there is a necessity to go upstream in pandemic preparedness, which implies higher expenditures to prevent the spread of viruses instead of improving the healthcare systems.

On the other hand, the healthcare systems in the region are considered weak and encumbered by budgetary constraints. In addressing H5N1, financial resources have to be balanced with preparedness against other infectious diseases. In terms of surveillance, a proposition was made by participants to create modular surveillance systems which can be tapped whenever pandemics break out. With this, financial resources can be shared more easily amongst other infectious diseases, eradicating the necessity for creating a new budget for a specific disease.

Snapshots from the Conference



Pandemic Preparedness Interventions in East Asia: (A) Surveillance and Border Control

The panel on *Pandemic Preparedness Interventions in East Asia: Surveillance and Border Control* was convened to analyse the efficacy of surveillance systems and border controls and to examine the level of preparedness needed to ensure the continuity of essential services in times of crises and emergencies.

Clinical and Laboratory Surveillance on Influenza in Korea

Korea's revised plan for pandemic preparedness was released in 2006 with the stated objectives of protecting the population, mitigating economic impact, maintaining social security and essential services during the pandemic period. The emphasis is on early detection of viruses through an elaborate network of surveillance and detection mechanisms carried out at two levels: First — Clinical and Laboratory Surveillance; Second — Hospital-based Surveillance.

Clinical and Laboratory Surveillance

Laboratory surveillance is the first stage of Korea's pandemic preparedness plan. The Korea National Institute of Health (KNIH) lies at the apex of the entire programme. To facilitate early detection of Influenza Like Illness (ILI), a new clinical surveillance system on ILI, the Korean Influenza Surveillance Scheme (KISS) was constituted in 2000 and operates under the KNIH. Under the KISS framework, the Korea Centers for Disease Control and Prevention (KCDC) is responsible for a sentinel surveillance system, reporting its findings on a weekly basis through the internet reporting system.

Hospital-based Surveillance

The hospital-based surveillance of admissions and deaths due to pneumonia was operationalised in 2006 to supplement the clinical and laboratory surveillance systems. The number of participating hospitals increased from 9 in 2006 to 20 between 2008 and 2009. This system was instrumental in detecting early signs of ILI in cases such as pneumonia.

Korea's surveillance mechanisms are now fully in place and have improved in efficiency. Furthermore, Korea has broadened its scope by collaborating closely with the environmental and livestock sectors in order to prevent outbreaks in the future.

Efficacy of Border Controls for Pandemic Surveillance and Containment

Border control as a measure to contain pandemic outbreaks should be specific to time and geography. Four factors related to source, knowledge, preparedness and time should be taken into consideration while implementing border control measures. Adapting border control to the following four factors will lead to reduced local infection rates.

Factor 1: Source of the Outbreak

As demonstrated by the recent SARS outbreak, the influenza subtype A (H5N1) first emerged in Guangdong province of China from where it spread to Hong Kong through the import of live poultry. Hong Kong could very well have emerged as the next source of the H5N1 pandemic given its high import of poultry from China and its close proximity to Guangdong in terms of both trade and migratory bird routes.

Factor 2: Pandemic Preparedness

Countries that are prepared to handle pandemics are those using the Global Influenza Pandemic Preparedness Plan (GIP) prepared by WHO as a guide. GIP provides nations with operational recommendations for surveillance and containment of pandemics through six defined alert levels grouped as Inter-Pandemic (IP), Pandemic Alert (PA) and Pandemic (P) periods. It is also important for countries to take into consideration the operational manual prepared by Rothstein in the aftermath of the SARS outbreak.

Factor 3: Knowledge of the Pathogen

At present there is no conclusive proof of human-to-human H5N1 virus transmission. Most transmissions occur between poultry, birds and even animals. However, continued and extensive exposure of humans to H5N1 viruses increases the likelihood that the virus could acquire,

through mutation or re-assortment with a prevailing human influenza A virus — the necessary characteristics for human-to-human transmission.

Factor 4: Generational Time of the Pandemic

Knowing the dynamics of incidence specific to a season and country allows a country to fine-tune the effectiveness of surveillance and/or border controls, as seasonality is an important determinant for both predictions of outbreaks and emergence of highly pathogenic H5N1. For example, Singapore being a tropical region has moderate to high influenza incidence throughout the year with some supporting evidence indicating an increase during rainy seasons.

The four factors noted above will result in reduced local infection rates due primarily to:

- Reduced time to detection;
- More targeted containment measures; and
- Minimal socioeconomic disruptions.

The Challenge of Border Control

Border control, as a non-pharmaceutical measure, was often hastily employed by countries with little concern for the consequences that might arise from such outright implementation. The rationale for adopting border control is to restrict and control the movement of people in specific circumstances and for specific purposes such as to protect a community from the threat of a pandemic. However, border control was constrained by a number of factors which limits its utility:

- Border control can delay the introduction of an epidemic to a country or area but it cannot stop the eventual spread of the disease;
- It is a politically sensitive issue as it involves individual rights and their freedom of movement;
- It is also undermined by other factors like inadequate surveillance and security systems at ports, corrupt officials, lack of expertise, lack of awareness about the magnitude of the problem, porous borders, lack of border security especially on land borders between states, and poor national health systems; and

- It can also have unintended consequences through reduction in the flow of tourism, labour, trade, etc. thereby adversely affecting the regional economy.

How can border control be successfully implemented? It requires efforts at both national and global levels. At the national level, public health infrastructure and basic health services should be improved and international health regulations should be implemented as part of the pandemic preparedness strategy. This will allow countries to control diseases at their sources. At the international level, countries need to improve the level of cooperation and coordination amongst themselves by instituting bilateral and multilateral frameworks for implementing border control, in order to manage the sensitivity of the measure.

In order to raise the level of urgency at the national level, the issue should be securitised through concerted efforts by security analysts, health experts, non-governmental organisations (NGOs) and the media. Securitisation will provide the much needed impetus and the political will to respond to pandemics in a timely manner.

Malaises Sans Frontiers: Containing and Controlling Pandemics Across Borders

A globalised world characterised by an ever increasing and virtually unstoppable movement of people means that in an event of a pandemic outbreak, detection and isolation of infected people has become a highly challenging, if not impossible task. In light of this, how effective are border control measures? The panellists raised several complications associated with border control in an age of low cost budget airlines.

Even with screening upon departure and arrival, there is a limited probability of successfully detecting an asymptomatic incubating virus. Drawing the example of the 2003 outbreak of SARS, WHO concluded that the best estimate of the maximum incubation period is 10 days. By contrast, many flights within Asia and beyond take less than 24 hours. Thus, an individual who has not displayed symptoms of a pandemic may be free to interact with the wider public until the full onset of the disease occurs.

In-flight infections are actually lower than perceived. Although SARS was spread on board five flights in 2003, no additional on-board transmissions occurred after WHO issued in-flight precautionary guidelines. The guidelines included simple practices of good hygiene, such as frequent washing of hands and covering of one's mouth and nose while coughing to reduce the risk of disease transmission.

The individual's freedom of movement and dignity are discriminated and violated by border control measures like mandatory testing, conditional entry, and quarantining. This made border control a highly sensitive and hotly debated issue.

Border control is not always pragmatic, due to its low cost-benefit yield. It can have a negative impact on tourism and hospitality sectors causing economic disruption that is not always proportionate to the health threats in question. During the SARS outbreak tourist arrivals in Asia dropped by 20 to 70 percent in April 2003. The Asian Development Bank (ADB) estimated the total cost of SARS to East and Southeast Asian economies in 2003 was at US\$ 18 billion in nominal GDP terms, or US\$ 60 billion in the overall loss of demand and business revenue.

Border control measures adopted at airports are expensive and have a low rate of success. Most detection occurs at land borders. The resources invested in expensive thermal scanning machines may have been better invested in measures meant to strengthen screening and infection control capabilities at points of entry into the healthcare system.

In light of this presentation, participants observed that border control alone is incapable of achieving desired outcomes. It could also be counterproductive if the measures were employed without broader scientific analyses. Border control measures should thus be employed as a final measure to contain pandemics when all else fails.

Should Pandemics Be Securitised?

There was an extensive discussion on the securitisation of pandemics. One participant pointed out that the "absence of urgency in taking action at the national level often serves as the most difficult problem for an effective collective response to the threat." The fact that there is a lack of urgency in addressing or tackling the issue was collectively agreed upon by all the participants. Securitisation was thus seen as a necessity, although with necessary provisions in place.

Securitisation in international relations is a means to specify whether a given area of interest is merely ordinarily politicised or if the area is considered essential for survival. Principally, anyone can succeed in constructing something as a security problem through acts of speech. The ability to effectively securitise a given subject is, however, highly dependent on both the status of a given actor and on whether similar issues are generally perceived to be security threats. If a subject is successfully securitised, it is possible to legitimise extraordinary means to solve a perceived problem.

One participant pointed out that securitisation is a political issue and influencing politicians with regard to the urgency of the matter in order to implement necessary measures and allocate resources was necessary. However it was noted that politicians have their plates full with issues demanding their attention and it remains an uphill task to convince them of the need to securitise pandemics.

Resource Allocation

The discussion touched upon the feasibility of border control measures with respect to available resources. It is well understood that resources are scarce and should be spent wisely. In reality, one participant noted, resource allocation was far from ideal and, indeed, problematic at times. Border control measures adopted at airports was a case in point. A large sum of money was invested in the acquisition of expensive state of the art thermal imaging and scanning equipment used to scan passengers before they boarded their flights. However, the rate of successful detection was much lower than anticipated. In hindsight, resources would have been better applied elsewhere, and particularly within the healthcare system, to strengthen screening and infection control capacities.

Pandemic Preparedness Interventions in East Asia: (B) Continuity in Crisis

The goal of this panel was to explore how pandemic preparedness plans could ensure that essential services continue to operate in the food, business and medical sectors. The problems in ensuring adequate surge capacity in the event of a full scale pandemic in terms of physical and human resources were discussed, so that possible solutions could be brought out and explored. Finally, the need for cooperation between the different sectors of society and government was stressed as essential in ensuring an effective response to a pandemic.

Multi-sectoral Pandemic Preparedness

The panel began by defining what multi-sectoral preparedness really is. In contrast to the conventional concept of pandemic preparedness which involves mostly the animal and human-health sectors, multi-sectoral pandemic preparedness requires the involvement of the whole of society. This includes sectors such as food, health, defence, law and order, transport as well as telecommunications. The rationale behind multi-sectoral preparedness is the need to maintain optimum readiness for the government and the health sectors, which is impossible if other sectors are unprepared due to the nature of widespread interdependence between different sections of society. For instance, prolonged absenteeism in the agriculture sector could lead to a decrease in production as a result of reduced manpower for harvesting produce. Absenteeism could also lead to an increase in demand for particular resources in the telecommunications, health protection and military sectors.

A problem pointed out by the panellists was that most so-called “multi-sectoral pandemic preparedness plans” are actually just Health Sector Preparedness and National Response Plans, which in reality offer little about how to ensure the operational continuity of other sectors. In order to create true multi-sectoral pandemic preparedness plans, the following are necessary:

- Separate sector plans;
- Specifications in plans of tools, templates, guidelines, best practices, checklists and experts; and

- A guiding/coordinating body, to monitor deployment and implementation of all plans, this need not be the Ministry of Health (MOH), since the MOH may not have the legal authority or the capability to coordinate other sectors.

Ministries, on the other hand, should be responsible for providing legal and regulatory requirements, monitor the compliance of their own institutions to continuity plans, and test the connectivity of different sectoral plans through exercises. At the moment, ASEAN is the only regional organisation that has developed an indicator system to assess multi-sectoral preparedness.

Towards Pandemic Preparedness: Some Reflections on Continuity in Crisis and Food Security

The traceability of food supplies has become an important guarantor of food safety. Traceability enables governments to ensure that food stocks, especially poultry, remain free of disease. It has also become an important incentive in motivating producers to establish clear and visible supply chains. Due to a growing awareness of the importance of food safety, and scandals regarding tainted food supplies, traceability has been made mandatory in export guidelines. Failure to meet these requirements will result in the exclusion from export markets, which accounts for a greater share of sales due to the increasing complexity of supply chains and demand for products. This has made suppliers more accountable to their consumers.

With regards to the private sector, the panellist suggested that existing models of traceability used by the private sector should be utilised to ensure minimum transmission of disease, and that biometrics be utilised to ensure the health of poultry. Recognising the role of the private sector and adopting its best practices could allow for better protection of food supplies. A participant added that the private sector should be offered incentives, defined by academia and the public sector, to increase cooperation.

Global Banking and Markets — Business Continuity Management Pandemic Preparedness Framework

Considerable attention was paid to the business sector and what it has done to prepare for potential pandemics and to ensure business continuity. For the benefit of those not familiar with business continuity management, the conceptual framework for Business Continuity Management (BCM) was discussed. BCM was defined as the act of anticipating incidents that will affect critical functions and processes, and ensuring a response to these incidents in a planned and rehearsed manner.

Singapore's Financial Sector has been active in planning for and implementing BCM. To date, an industry BCM taskforce has been established, with pandemic drills conducted to test guidelines and plans. Seminars and workshops were also conducted with actors outside the financial industry. As a result of these activities, several factors were identified as crucial for the successful implementation of BCM. These include the need for commitment from the top levels of management and using a top-down approach in ensuring proper policy-setting and resource allocation. Both are key aspects in ensuring that BCM awareness and plans are implemented successfully throughout an organisation.

Strategies in dealing with pandemics included stopping non-critical functions, redefining business priorities, allowing employees to work from home, increasing use of teleconferencing and activating succession plans when necessary. However, absenteeism and its associated uncertainty remains a problem that is still difficult to address.

Another problem that remains to be addressed is that many pandemic plans created for the use of corporate entities are made in isolation from the broader national framework and tend to be institution specific. In addition, a "one size fits all" solution to business continuity planning is elusive, due to the uncertainty involved in anticipating a potential crisis. While it would be more efficient to design a standard programme that could be tweaked for use by all corporate clients, the panellist pointed out that corporate culture inhibits companies from sharing their best practices with potential rivals. This was also pointed out by a discussant in explaining how, in Europe,

vested interests prevent corporations from sharing plans in order to benefit from the weaknesses of competitors in the event of a pandemic. To address potential problems, it was suggested that increased public-private partnerships be tapped to allow BCM to be more multi-dimensional.

Business Continuity Management — A Regional Perspective

While protecting local business remains a pressing concern for policymakers, protection of regional business, particularly trade, is an issue that should not be ignored. Regional cooperation is necessary to protect growing inter-regional trade, which now comprises of 55 percent of the trade in the region, compared to 43 percent a decade ago.

The Asian Development Bank (ADB) offers itself as an exemplar to other large organisations in preparing for a pandemic. As a regional organisation with broad responsibilities, the ADB's experience in preparing itself and regional businesses for a pandemic could provide valuable lessons for other actors. The bank has considerable assets in accounts receivable and a large workforce, so any crisis could potentially have grave effects on the stability of the organisation.

The bank has prepared for a pandemic crisis by institutionalising quarterly meetings on pandemic preparedness to review policies. Furthermore, it has held inter-departmental discussions on pandemic preparedness in 2006, staged a simulation exercise in early 2008, and continues to regularly identify gaps in plans and address these where necessary. Preparations have revolved around three components:

- To ensure employee health and safety;
- To ensure continuity of functions and operations; and
- To assist in cross-border business preparation.

To prevent costly manpower shortages, the ADB has covered the potential health costs of employees and their dependents, as well as those of subcontracted partners whose operations are critical to the bank. To ensure continuity, both the physical protection of people and hard assets have been guaranteed in the event that social disruptions take place as a result of a prolonged crisis.

Finally, the ADB has plans to assist businesses in the region by ensuring that essential trade continues even during an emergency. This assistance will take the form of helping businesses to stockpile goods and to support the export sectors that may be affected if trade is disrupted. The bank also suggests that plans be shared between institutions to improve preparations and to share best practices and awareness of problems.

Medical Surge Response Capability

Medical Surge Response Capability, perhaps the most visible component of pandemic preparedness, can save many lives when managed well. The panellist defined Medical Surge Response Capability (MSRC) as the ability or capacity to meet a surge in demand for medical services. MSRC is composed of four elements: fixed assets, human resources, supplies and equipment, and management systems.

However, it must be noted that two exogenous variables exist in anticipating a crisis. One is the delivery of non-medical products or services that are otherwise critical to medical response capacity, such as energy, food, security and telecommunications. Second, state-society relations, especially in terms of the organisational effectiveness of government and civil society can also affect response capabilities. The strong civil society/weak state case of the US in 1918 and the strong state/weak civil society case of China in 2003 illustrate this.

The urgency of developing MSRC in time for a new pandemic is tied to the potential surge in demand for medical services. A potential pandemic can spread very rapidly due to modern air travel, and the supply of many products needed for MSRC may be vulnerable to supply disruptions in a “just in time” economy. Future challenges may include “flu fatigue” as policymakers grow tired of calls for preparation, and the diversion of national resources to meet the current financial crisis.

The panellist stressed that prevention should be given as much importance as intervention. Surveillance and epidemiological capabilities are the first line of defence and should be improved. Improving connectivity within organisations can ensure that plans can be activated as early as possible. Involving civil society groups and tapping them as alternative sources of information, discipline

and health resources can also augment public surge capacity. Flu fatigue can be combated by demonstrating the benefits of pandemic preparedness in terms of how it can solve problems other than pandemic flu, such as improving public health capabilities, especially in dealing with disease prevention and control.

Is Preparedness Feasible? Looking Beyond the Immediate Horizon

While much has been said and done with regards to pandemic preparedness, it is easy to underestimate the law of unintended consequences, which holds that if something can go wrong, it will. In the case of pandemic preparedness, three major problems loom — first, health systems, especially in developing countries, do not have the capacity to deal with a pandemic. Second, the flu virus mutates so rapidly that developing solely medical responses may prove impossible in the long run. Finally, flu preparedness plans assume that people will act rationally in a crisis, which cannot be counted upon in the event of a disaster.

Even then, the way that the problem has been addressed may be short sighted. Pandemic flu may have serious consequences, but it is also not very probable. The costs need to be justified, particularly for agricultural stakeholders, as the culling of their livestock will undoubtedly result in the loss of their household income. In the discussion, it was also pointed out that inflated risk assessments can often lead to interventions with negative externalities. The Swine Flu case in the US, where the expected pandemic never materialised and vaccinations resulted in adverse effects underscores the argument. In the end, it may be better to mobilise general response capabilities rather than planning specifically for the outbreak of a single disease.

Looking far into the future, the way food is produced needs to be examined critically as well. Disease has always been an ecological issue. The demands of industrialisation has required livestock to be crammed into tight spaces and injected with antibiotics and hormones to keep them alive, which has made it easy for microbes to develop into diseases and become resistant to a wide range of antibiotics. It has also made it easier for animal diseases to jump the species barrier and affect humans. It is, hence, vital to acknowledge the link between modern food production and diseases.

Snapshots from the Conference



The Role of Other Actors

This session examined the role of non-state actors, such as non-governmental organisations (NGOs), faith-based organisations (FBOs), inter-governmental organisations (IGOs) and business communities, in preparing the public for a pandemic outbreak.

Role of NGOs and Faith-based Organisations — Cambodia

A low level of economic development has been a contributing factor to the spread of H5N1 in Cambodia. It has limited the state's ability to provide proper social infrastructure and services, such as comprehensive primary health care and sanitation to the local people. Moreover, most Cambodian households rear their own poultry in their backyards and, as such, there is a high likelihood of flu transmission, coupled with the lack of proper preventive measures and response procedures. This leads to a vicious cycle of poverty and disease, as an outbreak of H5N1 has the potential to disrupt livelihoods and further threaten social and economic security.

NGOs and FBOs can contribute to pandemic response at the community level. This is done mainly by promoting education and raising awareness on pandemic preparedness via community campaigning, information leaflets, people-to-people contact, mass media and quarantine simulations. A number of NGOs also provide social and material support to vulnerable communities and households such as medicine, home care, food supplies and assist in implementing measures for social distancing. Various groups also work with either the provincial health, or agricultural, departments, depending on their mission and mandates.

However, there have been several challenges to the work of these groups. First, only 10 out of more than 200 NGOs and FBOs in Cambodia were involved in anti-H5N1 activities. Second, the interventions of these 10 groups have, for the most part, been piecemeal and intermittent due to a lack of financial support. As such, these groups depend on external assistance. Third, these groups are organised ad hoc and lack contingency plans for sustaining critical pandemic preparedness activities such as community education, utilisation of the mass media and community

reporting. Fourth, given the rarity of the H5N1 virus and the similarity of symptoms it has to the Newcastle Disease, Cambodians are sometimes unsure when to, and when not to, report an outbreak. There is also a disincentive in reporting due to the travel and time costs, as well as the fact that Cambodians are not provided with any form of compensation for culled birds. Lastly, there is the challenge of maintaining the readiness of response teams and the adequacy of logistics and supplies.

Role of NGOs and Faith-based Organisations — Indonesia

Turning to the case of Indonesia, Muhammadiyah, an established moderate Islamic movement in Indonesia, has played a proactive role in H5N1 infected areas for the past two years with its community-based H5N1 objectives:

- Increasing community capacity, knowledge and awareness of H5N1;
- Strengthening community response, coordination and networking; and
- Increasing community surveillance and mass mobilisation.

Muhammadiyah has also developed a syllabus for its community-based training programmes, as its volunteers play a significant role in transferring information to the masses. Muhammadiyah also ensures that its activities are sustainable by strengthening networking and community action to increase the social capital of villages, conducting discussions regarding local resources with local people and working towards building a resilient community.

Nevertheless, there are challenges ahead. First, some locals still do not see H5N1 as a threat and are complacent in responding to an outbreak. Second, issues may arise due to the different goals of donors and the organisation. Third, given Indonesia's vast geography and the voluntary management system of Muhammadiyah, it is difficult to cover all regions. Fourth, at times there is a clash between local cultures and pandemic prevention methods. Finally, the lack of coordination with stakeholders and limited financial resources at the local levels can also

impede the organisation's activities. Despite these challenges, Muhammadiyah has set out an agenda for 2009 which includes the strengthening of its provincial branch offices, collaborating with members of the private sector, developing new projects and continuing its monitoring and evaluation of H5N1 cases and its advocacy on pandemic preparedness.

A comment was raised noting similar trends in faith-based organisations working in other areas, such as the environment. Responding to the question as to whether Muhammadiyah incorporates Islamic teaching in their education programmes, a panellist noted that apart from Islamic teachings on cleanliness, lessons on healthy behaviour and practices are also included. However, it was noted that while there is an increased understanding of the issues, changes in behaviours and habits take longer as locals do not have the necessary financial support to adopt preventive measures. Hence, while building awareness is critical, it must be substantiated with social and financial support to address the issues.

A participant noted that the openness of religious organisations is critically important in countries with religious divides. It would be useful to further examine the transnational capacity and transnational links of these groups, and how these links would affect or facilitate pandemic preparedness. A comment was also made regarding the tendency for locals to take on a fatalistic understanding of their religion and hence reduce the likelihood of them taking action to prevent the spread of diseases. A panellist responded to this by noting that Islam clearly states the need for prevention rather than the adoption of a fatalistic view.

Responding to a comment on the lack of coordination in Indonesia's pandemic preparedness schemes, a panellist noted that Muhammadiyah's communication clusters were created to prevent miscommunication. Monthly meetings are also held to discuss the division of labour between Muhammadiyah volunteers and those of other civil society groups working in the same area. Meetings with the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) are also conducted, with regard to developing contingency plans. A comment was also made that coordination would be better facilitated if national policies in pandemic preparedness were effectively implemented.

The Role of NGOs in Pandemic Preparedness

Despite the initiatives of promoting awareness on pandemic preparedness by reputable and respected NGOs and faith-based organisations, the urgency to act and prepare for an outbreak still has not sunk into the minds of many locals. Moreover, there is a lack of integration of pandemics in disaster risk reduction and a gap between knowledge and application of the knowledge to daily life in Asia. NGOs also still have a tendency to "hold on to their turf" and thereby impede the valuable process of networking, which would be vital in synergising the efforts and strengths of various NGOs. Hence, there is a pressing need to further strengthen community based surveillance, education, mitigation and economic impacts of pandemics.

Useful lessons can be learnt from other disasters when trying to further internalise the risks of H5N1. In the case of the Asian Tsunami in 2004, an initiative to promote awareness on preparing for a tsunami was to translate Japanese comic books, which had tsunami related storylines, into common languages spoken in tsunami prone regions. This was an effective way of promoting awareness of the issue, especially to the younger generation.

Internalising the concept of risks of H5N1, however, may be more difficult than that of natural disasters. MERCY Malaysia is nevertheless working on this by developing toolboxes — a set of various practices in Asia originally designed for disaster reduction to cater for pandemic preparedness. Other MERCY Malaysia initiatives also include integrating pandemic preparedness activities into preparedness programmes in schools. Another area would be integrating sanitation programmes as a means of pandemic preparedness, especially in impoverished or disaster affected areas.

Formulating solutions to pandemic preparedness would still very much be a "test and learn" process. An example of this would be the Pandemic Preparedness Learning Exercise (P2LX) which is a joint initiative by the World Food Programme (WFP), World Health Organization (WHO), the Government of Malaysia, and MERCY Malaysia. P2LX highlights the importance of logistics in pandemic preparedness, and ultimately aims to produce a guidebook on best practices on pandemics operations.

As such, the NGO sector cannot be overlooked, given the pool of expertise and experience available. Community participation is a critical factor in the success of pandemic preparedness initiatives, as communities need to feel that they have ownership of the situation rather than be a victim of it. It is also vital to go beyond the health sector to ensure multi-sector and multi-stakeholder involvement and to adopt a “test and learn” approach to be better prepared.

Pandemic Influenza Preparedness in the EU — The Regional Value Added

Since 1998, the European Union (EU) has discussed health issues as a means of further streamlining and efficiently dealing with communicable diseases regionally. In 2005, the EU adopted a Community Preparedness Plan, which included generic guidelines on the content of national plans, a description of tools and forums for inter-operability at EU level and a description of the role of community institutions. Since then, several tools and forums have been created to facilitate the EU’s work on pandemic preparedness, including a Public Health Preparedness and Response Planning Group (PRPG) at the technical level, a high level Health Security Committee (HSC), an Early Warning and Response System (EWRS), and the European Centre for Disease Prevention and Control (ECDC). Inter-operability is also facilitated within the EU with a common set of key concepts, agreed communication protocols, numerous meetings and common projects and exercises, as well as a network of press officers and spokespersons. These efforts demonstrated the region’s strengths in addressing pandemics, which include:

- The EU’s ability to reinforce international health regulations and clear legal obligations to report cases early;
- A strong degree of coordination with regard to animal health issues; and
- An EU research programme to further understand the intricacies of communicable diseases.

There are, however, challenges that need to be addressed. First, there are significant disparities in the level of flu preparedness amongst member countries, which is intricately related to their GDP levels. There are also problems like “flu fatigue”, the lack of contingency plans for maintaining essential services, a lack of bilateral coordination, a lack of assessment of antiviral resistance, a lack of confidence at local levels and insufficient work on vaccine supply. Hence, while the EU has a comprehensive framework to address a flu pandemic, it is still an ongoing process with major gaps to be filled and significant effort is needed over the next 2 to 3 years, at least. There is also the need to work on inter-operability and to further test and refine plans. Pandemic preparedness planning also needs to be integrated within business continuity preparations. For non-health sector entities, business continuity may be the starting point within which the threat from a pandemic can be addressed.

A comment was made with regards to the presentation providing a good overview and showing how to overcome shortfalls in capacity. This reflected the fact that regionalism can create better mitigation outcomes when working with civil society. Nevertheless, what was perhaps missing in the presentation was a lack of focus on events happening in Asia, since a pandemic outbreak is most likely to happen in Asia but would ultimately also affect the EU. A participant further built on this comment by noting that this would only provide greater exchange between EU and ASEAN, particularly in multi-sectoral plans.

Business Continuity Planning for Pandemic Flu for Business Organisations

Business continuity (BC) plans are vital to ensure proactive action in responding to, and preparing for, a crisis. The implementation of a BC plan would differ in various cultural and regional contexts. A BC plan has four stages namely:

- Reduce;
- Respond;
- Recover/resume; and
- Restore/return.

In terms of a flu pandemic outbreak, it would be important to streamline these BC stages with WHO's pandemic stages. The first BC stage would include health prevention measures and surveillance, and would occur during WHO's Inter-Pandemic, Pandemic Alert and Pandemic stages. The second BC stage would include quarantine. It would be operational during the pandemic-alert and pandemic stages. The third stage, recovery/resumption, would occur towards the end of the pandemic alert stage and the pandemic stage. The fourth stage would occur in a post pandemic situation, where business resumes as per normal. It is also important to include contingency planning during the inter-pandemic stage and crisis management during the pandemic alert and pandemic stages.

Question of Capacity, Social Trust and Norms

A prominent theme in the presentations was the issue of capacity and the role that social trust and norms play in facilitating, and/or complementing it. It is evident that states and international organisations (IO) lack resources to respond to crises and thus need to include civil society groups who can be significant contributors, given their presence and influence over civil society, as a means of avoiding confusion on the ground. Nevertheless, further state-society cooperation and coordination is needed. A comment was made regarding the absence of the role of the military in the presentations. Given the fact that militaries are a formidable force, especially in the Asian region, and have the capacity to respond quickly to crises, it would be good to consider the role that they would play in pandemic preparedness. This is also reflective of how NTS issues have changed many traditional security roles over time.



The Way Forward: Challenges and Areas for Further Cooperation

The panel on *The Way Forward: Challenges and Areas for Further Cooperation* was convened to examine how pandemic preparedness can be enhanced by identifying areas for further regional and international cooperation and underlining the necessary improvements to existing preparedness plans. The panel also discussed the possible development of a global public health regime that could improve global healthcare, especially in the developing world.

Challenges and The Way Forward

The problem of “flu fatigue” has set in, as there have been no serious pandemic outbreaks since SARS in 2003 and H5N1 in 2004. However, preparedness should remain a central issue in the national agenda as pandemic and public health experts caution against a false sense of complacency. Information sharing and integration of pandemic preparedness behaviour into everyday life is crucial to enable risk perceptions to converge over time.

The principle of a global public health regime - One World & One Health - has to be taken more seriously. While ASEAN has created the framework for regional cooperation in health, member countries should be pressured to participate fully and move beyond pure rhetoric. It is essential to avoid covering up weaknesses in domestic health systems, improve networking amongst related agencies, build linkages between NGOs and the grassroots, and examine health issues beyond national borders.

Policymakers and the wider community in the developing world must be convinced of the need to push ahead with pandemic preparedness despite developmental and political issues and a lack of resources. There is a role for local and regional champions to remind people of the pandemic threat and the need to act; only when politicians feel a need to invest political capital, will there be any real progress.

ASEAN countries ought to build up capacities and take preventive measures. The international community can help by extending further developmental and capacity building assistance. Civil societies play an essential role

in educating people of the threat to their livelihoods and communities, should an outbreak occur. Regional think-tanks and public health practitioners have a responsibility to remind governments of the importance of pandemic preparedness and offer recommendations on mitigating measures, particularly since the country presentations indicate Southeast Asia is not prepared for a pandemic, with the exception, perhaps, of Singapore.

Strategies to Strengthen Regional Pandemic Preparedness

Since the SARS epidemic of 2003 to 2004, the understanding of a pandemic threat has grown as people became more aware that a single country might conceal a public health emergency with wide-reaching international consequences. Accordingly, pandemic responses have evolved with the introduction of the International Health Regulations and the global surveillance network — Global Outbreak Alert and Response Network (GOARN), biosurveillance systems and pathways for reporting outbreaks have also expanded to take into account environmental threats and global information sharing. Nevertheless, it is important to note the strategic trade-offs in disease detection. Systems that focus on specific syndromes and diagnostic criteria could offer high accuracy in determining disease incidence but this is often at the expense of timeliness and the ability to detect unusual events.

Moving forward, the evaluation of existing systems is an important step towards identifying capabilities, critical gaps, and areas where local, national, and international priorities overlap. Firstly, the existing biosurveillance capacity should be assessed to improve the understanding of various mechanisms such as networks and frameworks for information sharing, training, and surveillance that are led by NGOs, academics, WHO and the public and private sectors. While pandemic preparedness programmes have proliferated, metrics to test their effectiveness remain mostly on subjective indicators. Objective and accurate input data about local capabilities and conditions must be used together with tools and models to evaluate disease

surveillance networks, and stakeholders should find ways to test operational readiness and strengthen successful systems with research grounded in local realities.

Secondly, emphasis should be placed on quality assurance and the human element of capacity building. There should be no assumptions made about laboratory capacity because without testing assumptions, systems cannot be transferred from one country to another. Laboratory systems should take into account specimen transport, quality control and assurance (access to reference strains, equipment maintenance, continuous training), and comprehensive biorisk management.

Thirdly, it is important to maintain cross-sector involvement and balanced stakeholder engagement since single sector plans are inadequate. The advocacy approach should also be refined in order to cultivate experts with outreach skills and build trust with policymakers before a pandemic crisis.

Fourthly, the real costs of compliance with the International Health Regulations and other international pandemic preparedness coordination commitments must be quantified before existing gaps can be bridged. Standards for pandemic preparedness must be identified and an economic model for compliance should be developed. This model should move beyond minimalist influenza scenarios and take into account opportunity costs, and help in delineating reciprocal responsibility between the developing countries vulnerable to pandemic outbreaks and the international community.

Lastly, stakeholders need to build up the surge capacity and assess and operationalise plans. Issues for consideration include routine disease surveillance and reporting, seasonal influenza vaccine development, production, distribution and use, and capabilities and size of the workforce. In operationalising surge capacity plans, simulations and drills should accompany tabletop exercises to help generate a growing body of best practices. To ensure effective learning among countries, stakeholders should ensure transparency in self-assessments. Finally, stakeholders have to be particularly mindful of “what we

don't know that we know”. This is a reminder that there could be someone who knows the imminent threats, and emphasises the need for networking and building the foundations for information sharing.

Capacity Building and Regional Cooperation

Non-traditional security issues such as pandemic preparedness and food security should be adopted into the traditional security agenda. Pandemic preparedness is not a high priority in Cambodia as the country lacks resources, and attention is now focused on mitigating the adverse impacts of the global financial crisis. Existing funding allocated to pandemic preparedness might dry up as donor agencies turn their focus to immediate economic concerns. Nevertheless, the issue of preparedness requires attention and the way forward lies in improving data quality, budget allocation and regional cooperation.

There is an urgent need for capacity building in developing countries, particularly in the areas of data collection and analyses for quantitative and qualitative studies. Many developing countries lack vital registration data on births, deaths and other demographic information, due to inadequate resources for data collection and analysis. This, in turn results in a weak health information system. Further, resources are not always allocated optimally as the allocation of public funds for rural health is not commensurate with healthcare needs and population size. Instead, funds tend to be directed to high-tech and high cost curative services that benefit a select few in urban areas.

Increased regional cooperation and information sharing is crucial to limit the spread of diseases across countries and encourage the adoption of best practices. A regional mechanism dealing specifically with pandemic control could be established to ensure information sharing and communication amongst stakeholders. On a broader level, ASEAN could assist member countries in strengthening their healthcare systems. While governments might lead the effort for preparedness, they cannot act alone and must consult and collaborate with a range of sectors and actors.

Responsible Virus and Benefit Sharing

The WHO system of sharing influenza virus samples, Global Influenza Surveillance Network, has limited effectiveness as it obtains resources from developing countries but leaves them vulnerable to an influenza pandemic, thus placing emphasis on risk assessment at the expense of pandemic response. Furthermore, limited global production capacity for influenza vaccines is a serious challenge for developing countries, as they are likely to face an acute shortage of H5N1 vaccines — a challenge compounded by advanced vaccine orders placed by developed countries. With a maximum production capacity of 500 million dosages for a global population of 6.7 billion, an immense gap exists between demand and supply.

To address these limitations, the WHO has adopted Resolution 60.28 which requires WHO to “identify and propose... frameworks and mechanisms that aim to ensure fair and equitable sharing of benefits... taking strongly into consideration the specific needs of developing countries”. At the Inter-Governmental Meeting (IGM) convened in December 2008 to implement the terms of the resolution, Member States committed to sharing influenza viruses and the benefits on an equal footing. The elements of the benefit sharing system are as follows:

- Provision of diagnostic tests and materials;
- Laboratory capacity building;
- Regulatory capacity building;
- WHO antiviral stockpile;
- WHO pandemic influenza vaccines stockpile;
- Access to vaccines for developing countries;
- Technology transfer; and
- Financial support.

Notable progress was made as countries demonstrated political will to implement a Standard Material Transfer Agreement, agreeing to place the elements of benefit sharing under constructive consideration and committing to the establishment of a traceability and advisory mechanism to monitor the implementation process. The WHO and IGM agreement and benefit sharing system is a model that ASEAN could consider as a regional response.

Ways Forward for ASEAN

ASEAN members have huge economic disparities which translate into differences in decision making, capacities, resources and abilities. Hence, the following is a realistic account of what ASEAN can do in the way forward. Firstly, ASEAN should keep up the momentum on health and pandemic preparedness. Despite the problem of fatigue, momentum has kept on going in the form of existing frameworks and mechanisms. It is important to build relations among member states to ensure immediate contact of relevant stakeholders and open communication channels in the event of a pandemic outbreak. In this regard, ASEAN's strengths lie in active and personal engagement with all stakeholders in the region for collective action to crises, particularly those that are multi-dimensional and require coordinated responses.

Secondly, ASEAN should continue strengthening capacity and linkages within countries and across borders. While existing regional mechanisms address various aspects of H5N1, there remains a need to strengthen the institutional capacity of key animal and human health institutions, as well as the institutional capacity of the ASEAN Secretariat to implement, coordinate and facilitate key activities at the regional and national levels.

Finally, ASEAN ought to develop partnerships with all stakeholders in the public and private sectors and civil society. ASEAN has not cast its net wide enough in establishing partnerships, particularly with civil society, as the concept of civil society has different understandings amongst the member states. Thus, officials have hesitated to include actors such as NGOs and the private sector. However, it is clear that local NGOs such as Muhammadiyah in Indonesia operate at the grassroots level and have immense potential to assist governments in improving the effectiveness of containment measures. The ASEAN Secretariat would be keen to increase dialogue with civil society actors and businesses in the future and enrich the work of ASEAN by learning and exchanging ground-level information.

Accessibility of Vaccines in ASEAN

A question had been raised as to whether ASEAN had a reliable system of vaccine distribution. In response, a panellist explained that ASEAN has a regional stockpile of vaccines in Singapore and distribution plans have been put in place. In addition, ASEAN is also helping countries to build up national stockpiles and establish distribution procedures.

Profitable Vaccine Production

A participant wanted to know the type of commercial conditions that would drive pharmaceutical companies to increase vaccine production. A panellist noted that countries could come together and create advance warning to indicate demand. While profits from seasonal vaccines have increased around 16 percent in recent years, the capacity to produce vaccines remains a security issue that should be discussed on a regional level as there is a need to create real capacity to meet demand.

Building Up ASEAN's Credibility

A comment was raised regarding ASEAN's credibility given its limited ability to achieve significant progress. The perception has been that ASEAN lacks credibility as Southeast Asian societies at large tend not to trust or support ASEAN agendas. Examples include the ASEAN human rights mechanism which has been described as weak, at best, as well as the problem of economic integration, which critics have said is over-ambitious due to wide economic disparities amongst member countries. Health issues, however, could play a strong role in helping ASEAN to develop the social and cultural pillar. In response, a panellist reminded participants that it would take time for ASEAN to build up the ground work before being able to make much progress. For ASEAN to move forward, it was emphasised that security analysts and public health practitioners need to engage politicians and provide policy relevant research so they would exercise rationality when making tough decisions.

Closing Remarks

The discussions and presentations highlighted the need to focus on five points in advancing pandemic preparedness and more broadly, health security. Firstly, apart from highlighting pandemic preparedness, there is a need to identify the challenges of health and related security issues. How should one develop the thinking and internalise the risk? Apart from pandemic preparedness, the issues of equity should also be heard. Hence, it is in this iterative process that the Centre for NTS Studies has brought together various minds from different sectors.

Secondly, there is the question of whose responsibility is the problem of public health? It is often said that one's insecurity in any particular country could become an insecurity for all. It can be argued cogently, as several participants did, that it is everyone's responsibility to advance pandemic preparedness, and more broadly, work towards a global public health regime. Thirdly, there is an urgent need to address the issue of limited resources, thus the idea of the pooling of regional resources needs to be reiterated. The importance of regional frameworks cannot be overstated as inter-regional cooperation and learning are key elements to improving health and pandemic preparedness systems.

Fourthly, one should bear in mind, and advocate, the need for transparency, since fixed mindsets and a defensive outlook will hamper efforts in sharing information. Finally, leaders, advocates and catalysing actors are needed at the global, regional, national and local levels to push for the ever-important goal of health and human security.

Snapshots from the Conference



Programme

11 January (Sunday)		10:30 – 12:30	Session 1 – Part 1
	Arrival of overseas participants		Overview on Pandemic Preparedness: From Global to Local Frameworks
7:00 – 9:30	Welcome Reception/Dinner		An Overview
12 January (Monday)			Regional Frameworks
	Conference Day 1		
8.30 – 9:20	Conference Registration	12:30 – 14:00	<i>Lunch</i>
9:30 – 9:35	Welcome Address	14:00 – 15:35	Session 1 – Part 2
	Mr Eddie Teo Chairman, RSIS Board of Governors & Chairman, Public Service Commission Government of Singapore		Overview on Pandemic Preparedness: From Global to Local Frameworks
9:35 – 10:00	Keynote Address		Local Frameworks
	Mr Wong Kan Seng Deputy Prime Minister and Minister for Home Affairs Government of Singapore	15:35 – 15:50	<i>Coffee Break</i>
	<i>Brief book presentation</i>	15:50 – 17:20	Session 2 – Part 1
10:00 – 10:30	<i>Coffee Break</i>		Pandemic Preparedness Interventions in East Asia: Surveillance, Border Control & Continuity in Crisis
			Surveillance
			Border Control
			Discussant
		18:30	Dinner at AquaMarine, Marina Mandarin Singapore

13 January (Tuesday)

Conference Day 2

9:30 – 12:00 **Session 2 – Part Two
Continuity in Crisis**

Multi-sectoral Pandemic Preparedness

Food supply

Business

Business – Regional Perspective

Medical Surge Capacity

Discussant

12:00 – 13.00 *Lunch*

13:00 – 15:00 **Session 3 - The Role of Other Actors**

NGOs and Faith-based Organisations

Regional Organisations

Business

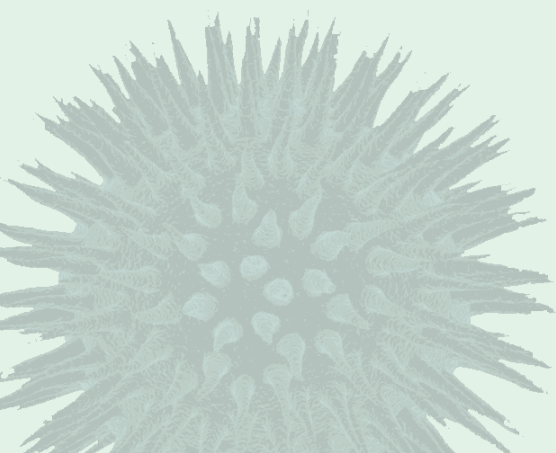
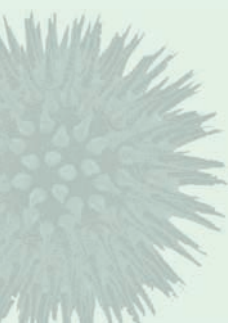
Discussant

15:00 – 15:15 *Coffee Break*

15:15 – 17:15 **Session 4 - The Way Forward:
Challenges and Areas for
Further Cooperation**

17:15 – 17:30 **Closing Remarks**

18:30 – 21:00 **Dinner at Jumbo Seafood Restaurant,
East Coast Parkway**



List of Participants

*in alphabetical sequence according to first name

1. Dr Anish Kumar Roy

Director

Bureau for Resources Development

ASEAN Secretariat

70 A Jalan Sisingamangaraja

Jakarta 12110, Indonesia

Tel: +62 (21) 726 2991

+62 (21) 724 3372 Ext. 494

Fax: +62 (21) 739 8234

+62 (21) 724 3504

Email: anish@asean.org

2. Dr Bounpheng Philavong

Assistant Director

Head, Health and Population Unit

Bureau for Resources Development

ASEAN Secretariat

70A Jl, Sisingamangaraja,

Jakarta 12110, Indonesia

Tel: +62 (21) 724 3372 Ext. 423

Email: b.philavong@aseansec.org

3. Dr Carlo Irwin Panelo

Institute of Epidemiology

College of Medicine, University of the Philippines

Fernando Calderon Hall, Pedro Gil Street,

Manila, Philippines 1000

Tel: +63 (2) 525 4098

Email: capanelo@gmail.com

4. Dr Christian Enemark

Lecturer at the Centre for International Security Studies

Director of the National Centre for Biosecurity

Room 382

H04 – Merewether Building

The University of Sydney

NSW 2006 Australia

Tel: +61 (2) 9036 9292

Fax: +61 (2) 9351 6635

Email: c.enemark@econ.usyd.edu.au

5. Mr Do Thanh Hai

Research Fellow, Center for Political and Security Studies

Institute of Foreign Policy and Strategic Studies

Diplomatic Academy of Vietnam

Ministry of Foreign Affairs

69 Chula Lang St., Dong Da,

Hanoi, Vietnam

Tel: +84 (4) 834 3542

+84 (4) 834 4540

+84 (4) 834 4637

Fax: +84 (4) 834 3543

Email: dothanhhai80@gmail.com;

iirmofa@hn.vnn.vn (for general enquiries)

6. Dr Dukhyoung Lee

Director General for Disease Policy

Ministry for Health, Welfare and Family Affairs

75 Yulgong-ro, Jongno-gu,

Seoul, Korea 110-793

Tel: +82 (2) 380 1402

Fax: +82 (2) 388 4601

Email: leeduk0125@hanmail.net

7. Ms Elina Noor

Analyst

Institute of Strategic & International Studies, Malaysia

No.1, Persiaran Sultan Salahuddin

PO Box 12424

50778 Kuala Lumpur, Malaysia

Tel: +60 (3) 2693 7937

Fax: +60 (3) 2697 7266

Email: elina@isis.org.my

8. Mr Francis Chua

Managing Director

Biochip Devises Pte Ltd

30 Biopolis Street

#09-02 Matrix S

Singapore 138671

Tel: +65 6777 7139

Fax: +65 6777 7140

Email: fcvision@singnet.com.sg

9. Dr Goh Moh Heng

President
 Business Continuity Management Institute
 315 Outram Road
 #15-04 Tan Boon Liat Building
 Singapore 169074
 Tel: +65 6323 1500
 Fax: +65 6323 0933
 Email: info@bcm-institute.org
 moh_heng@bcm-institute.org

10. Mr Gunawan Husin

Head of Business Continuity Management, Global
 Banking and Markets
 Royal Bank of Scotland, Singapore
 ABS (Association of Banks in Singapore) Fellow
 The Royal Bank of Scotland, plc
 1 George Street
 #10-00 Singapore 049145
 Email: ISGHusin@ntu.edu.sg
 gunawan.husin@rbs.com

11. Dr Ingo Neu

Senior Planning Officer
 UNOCHA Regional Office for Asia & Pacific
 UNESCAP
 UNCC Building, 2nd floor,
 Rajdamnern Nok Ave,
 10200, Thailand
 Tel: +66 (2) 288 2849
 Fax: +66 (2) 288 1043
 Email: neu@un.org

12. Ms Irene Teo

Technical Account Manager
 ROSS Scientific Pte Ltd
 Innovation Centre Units 211-212,
 16 Nanyang Drive
 Singapore 637722
 Tel: +65 6793 6527
 Email: irene@ross-scientific.com

13. Dr Jacques Jeugmans

Practice Leader (Health)
 Asian Development Bank
 Manila, Philippines
 Tel: +63 (2) 632-6392
 Email: jjeugmans@adb.org
 Web: www.adb.org

14. Dr James Gillespie

Sesquicentennial Senior Lecturer in Health Policy
 School of Public Health
 University of Sydney
 Deputy Director
 Menzies Centre for Health Policy (MCHP)
 (School of Public Health) on MDR-TB in PNG
 Room 320A
 Edward Ford Building (A27)
 The University of Sydney
 NSW 2006 Australia
 Tel: +61 (2) 9351 5048
 Fax: +61 (2) 9351 7420
 Email: jimg@health.usyd.edu.au

15. Dr Jeffery Cutter

Senior Consultant
 Communicable Diseases Division
 Ministry of Health, Singapore
 Tel: +65 6325 9018
 Fax: +65 6325 1168
 Email: jeffery_cutter@moh.gov.sg

16. Dr Jenny-Ann Toribio

Senior Lecturer in Epidemiology
 Faculty of Veterinary Science,
 The University of Sydney
 JL Shute Building (C01)
 425 Werombi Road
 Camden NSW 2570 Australia
 Tel: +61 (2) 9351 1609
 Fax: +61 (2) 9351 1618
 Email: jennyt@camden.usyd.edu.au

17. Datuk Dr Jemilah Mahmood

President
 MERCY Malaysia
 Level 2, Podium Block
 Citypoint, Kompleks Dayabumi
 Jalan Sultan Hishamuddin
 50050 Kuala Lumpur, Malaysia
 Tel: +60 (3) 2273 3999
 Fax: +60 (3) 2272 3812
 E-mail: president@mercy.org.my
 Web: www.mercy.org.my

18. Mr Jonathan Herington

Project Officer, Biosecurity (synthetic biology)
The University of Sydney
Room 466
H04 – Merewether Building
NSW 2006 Australia
Tel: +61 (2) 9351 5739
Fax: +61 (2) 9351 6635
Email: j.herington@econ.usyd.edu.au

19. Dr Julie Fischer

Senior Associate, Head
Global Health Security Program
Henry L. Stimson Center
1111 19th St NW, 12th Floor
Washington, DC 20036 USA
Tel: +1 (202) 478 3419
Fax: +1 (202) 238 9604
Email: jfischer@stimson.org

20. Mr Jusuf Wanandi

Vice Chair, Board of Trustees
CSIS Foundation
Centre for Strategic and International Studies
Jalan Tanah Abang III/27
Jakarta 10160, Indonesia
Tel: +62 (21) 386 5532
+62 (21) 386 5535
Fax: +62 (21) 380 9641
+62 (21) 384 7517
Email: csis@csis.or.id

21. Dr Phua Kai Hong

Associate Professor of Health Policy & Management
Lee Kuan Yew School of Public Policy
National University of Singapore
Singapore 119260
Tel: +65 6874 1540
+65 6874 4984
Fax: +65 6779 1489
DID: +65 6516 1540
Fax: +65 6778 1020
Email: spppkh@nus.edu.sg
cofpkh@nus.edu.sg

22. Dr Khim Keovathanak

Lecturer at MDS,
Royal University of Phnom Penh
Health Sector Consultant,
Ministry of Health, Cambodia
Email: kkvathanak@yahoo.com

23. Dr Larry Chee-Yoong Wong

Senior Fellow
Institute of Strategic and International Studies
(ISIS) Malaysia
No. 1, Persiaran Sultan Salahuddin
P.O. Box 12424
50778 Kuala Lumpur, Malaysia
Tel: +60 (3) 2693 9366
Fax: +60 (3) 2691 5435
+60 (3) 2691 3210
Email: larry@isis.org.my
info@isis.org.my

24. H.E. Dr Makarim Wibisono

Former Ambassador
Permanent Mission of Indonesia to the United Nations
Lecturer in International Relations
Universitas Paramadina
Jalan Gatot Subroto Kav. 97
Mampang, Jakarta 12790, Indonesia
Tel: +62 (21) 7918 1188
Fax: +62 (21) 799 3375
Email: mawibi@hotmail.com

25. Ms Marie-Paule Benassi

First Counsellor – Food Safety, Health and Consumers
European Union – Delegation of the
European Commission
15, Dongzhimenwai Dajie, Sanlitun
100600 Beijing
P.R. China
Tel: +86 (10) 8454 8186 (direct)
Fax: +86 (10) 8454 8011
Email: Marie-Paule.BENASSI@ec.europa.eu
Web: www.delchn.ec.europa.eu

26. Ms Moe Thuzar

Visiting Research Fellow
 Lead Researcher - Socio-Cultural Affairs
 ASEAN Studies Centre, Institute of Southeast
 Asian Studies (ISEAS)
 30 Heng Mui Keng Terrace, Pasir Panjang,
 Singapore 119614
 Tel: +65 6870 4512
 Email: moe@iseas.edu.sg
 Web: www.iseas.edu.sg/asc/asc.htm

27. Dr Nicholas Thomas

Associate Professor
 Department of Asian and International Studies
 City University of Hong Kong
 83 Tat Chee Avenue,
 Kowloon Tong,
 Kowloon, Hong Kong SAR
 Tel: + 852 3442 5301
 Fax: +852 2788 8092
 Email: ndthomas@hkucc.hku.hk

28. H.R.H. Prince Norodom Sirivudh

Supreme Privy Counselor to His Majesty the King
 of Cambodia
 Founder and Chairman of the Board of Directors
 Cambodian Institute for Cooperation and Peace
 P.O. Box 1007
 Phnom Penh 12202, Kingdom of Cambodia
 Tel: +855 16 982 558
 Fax: +855 16 982 559
 E-mail: cicp@everyday.com.kh
 cicp01@online.com.kh
 Web: www.cicp.org.kh

29. Prof. Purnawan Junadi, M.D.

Chair, Health Administration and Policy Department,
 School of Public Health,
 University of Indonesia
 F Building, 1st Floor, Faculty of Public Health (FKM-UI)
 University of Indonesia,
 Depok West Java, Indonesia
 Tel: +62 (21) 390 0538
 Email: pije1@yahoo.com
 Email: maya@kemangmedicalcare.com (Assistant)

30. Dr Richard Coker

Reader in Public Health,
 Head, Communicable Disease Policy Research Group
 (CDPRG), London School of Hygiene & Tropical Medicine,
 9th Floor, Anek Prasong Building, Faculty of Tropical
 Medicine, Mahidol University
 420/6 Rajvithi Road,
 Bangkok 10400 Thailand
 Tel: +66 (0) 2354 9195
 Fax: +66 (0) 2354 9195
 Email: richard.coker@lshtm.ac.uk

31. Prof. Richard Fielding

Head, Behavioural Sciences Unit and the Centre for
 Psycho-Oncology Research and Teaching
 The University of Hong Kong
 Department of Community Medicine
 5/F William MW Mong Block Room 5-17
 21 Sassoon Road SAR,
 Tel: +852 2819 9288
 Fax: +852 2855 9528
 Email: fielding@hkusua.hku.hk

32. Dr Rizal Sukma

Executive Director,
 Centre for Strategic and International Studies
 Jalan Tanah Abang III/27
 Jakarta 10160 Indonesia
 Tel: +62 (21) 386 5532
 +62 (21) 386 5535
 Fax: +62 (21) 380 9641
 +62 (21) 384 7517
 Email: csis@csis.or.id, rizalsukma@hotmail.com

33. Dr Rodney Hoff

Executive Director
 REDI Centre
 10 Biopolis Road, #02-01
 Singapore 138670
 Tel: +65 6874 7029 (Secretary)
 +65 6874 7030 (Direct)
 Fax: +65 6874 7031
 Email: rhoff@redi.org.sg

34. Dr Satoko Otsu

WHO Consultant
 World Health Organization - Western Pacific
 Regional Office
 P.O. Box 2932, United Nations Avenue
 Manila, Philippines 1000
 Tel: +63 (2) 528 9916
 E-mail: otsus@wpro.who.int

35. Ms Siti Masyitah Rahma

Avian Flu Program Manager
 Muhammadiyah
 Jln. Menteng Raya 62,
 Jakarta 10340, Indonesia
 Fax: +62 (21) 391 1915
 Email: stmasyitah@yahoo.com

36. Dr Lee Soo Sim

Asst. Director (Laboratory Research)
 REDI Center
 10 Biopolis Road #02-01, Chromos
 Singapore 138670
 Tel: +65 6874 7027
 Fax: +65 6874 7031
 Email: Isoosim@redi.org.sg

37. Dr Sudibyo Markus

Vice Chairman, National Board of Muhammadiyah
 Chairman, Muhammadiyah Committee for
 Aceh Recovery
 Jln. Menteng Raya 62,
 Jakarta 10340, Indonesia
 Fax: +62 (21) 391 1915
 Email: s_markus@cbn.net.id

38. Dr Tay Joc Cing

Adjunct Fellow
 Centre for Non-Traditional Security (NTS) Studies, RSIS
 & CEO/Chief Scientist
 ROSS Scientific Pte Ltd
 Innovation Centre
 Units 211-212,
 16 Nanyang Drive
 Singapore 637722
 Tel: +65 6793 6528
 Fax: +65 6795 1615
 Email: joccing@ross-scientific.com

39. Ms Ting Fang Tay

RBS Global Banking and Markets
 The Royal Bank of Scotland, plc
 1 George Street
 #10-00 Singapore 049145
 Tel: +65 6517 5962
 Email: Tingfang.tay@rbs.com

40. Dr Tikki Pang (Pangestu)

Director, Research Policy & Cooperation (RPC/IER),
 World Health Organization,
 Avenue Appia,
 CH-1211 Geneva 27, Switzerland.
 Tel: +41 (22) 791 2786
 +41 (22) 791 2788
 Fax: +41 (22) 791 4169
 Email: pangt@who.int
 Web: www.who.int/rpc

41. Dr Vernon Lee

Head
 Biodefence Center
 Ministry of Defence
 701 Transit Road
 #04-01 Singapore
 Tel: +65 6477 2601
 Email: vernonljm@hotmail.com

42. Dr Wiput Phoolcharoen

President, Thai Healthy Policy Foundation
 205/7 Soi Chaikiat 1, Ngamwongwan Road,
 Laksi, Bangkok 10210 Thailand
 Tel: +66 85 141 1180
 +66 81 666 6300
 Email: pwiput@yahoo.com
 wiput@hsrint.hsri.or.th

43. Dr Yanzhong Huang

Associate Professor and Director, Center for
Global Health Studies
John C. Whitehead School of Diplomacy and
International Relations
Seton Hall University
McQuaid Hall 103,
400 South Orange Avenue,
South Orange, New Jersey 07079 USA
Tel: +1 (973) 275 2515
+1 (973) 275 2815
Fax: 973-275-2519
Email: diplomat@shu.edu
huangyan@shu.edu

RSIS

44. Mr Eddie Teo

Chairman, Board of Governors,
S. Rajaratnam School of International Studies
Chairman, Public Service Commission
Public Service Division, Prime Minister's Office
Public Service Commission Secretariat
100 Victoria Street
#08-01 National Library Building
Singapore 188064
Tel: +65 6332 4101
Fax: +65 6332 4183
Email: eddie_teo_psc.gov.sg

45. Assoc. Prof. Joseph Chinyong Liow

Associate Dean
S. Rajaratnam School of International Studies (RSIS)
Tel: +65 6790 4908
Fax: +65 6793 2991
Email: iscyliow@ntu.edu.sg

46. Mr Kwa Chong Guan

Head of External Programmes
S. Rajaratnam School of International Studies (RSIS)
Tel: +65 6790 6975
Fax: +65 6793 2991
Email: iscgkwa@ntu.edu.sg

47. Assoc. Prof. Kumar Ramakrishna

Head, Centre of Excellence for National Security
S. Rajaratnam School of International Studies (RSIS)
Tel: +65 6790 6924
Fax: +65 6793 2991
Email: iskumar@ntu.edu.sg

RSIS CENTRE FOR NTS STUDIES

48. Assoc. Prof. Mely Caballero-Anthony

Head, Centre for Non-Traditional Security (NTS) Studies &
Secretary General, NTS-Asia
S. Rajaratnam School of International Studies (RSIS)
Tel: +65 6790 5886
Fax: +65 6793 2991
Email: ismcanthony@ntu.edu.sg
Web: www.rsis.edu.sg/nts
www.rsis-ntsasia.org

49. Ms Julie Balen

Fellow for Pandemic and Security Programme
Centre for Non-Traditional Security (NTS) Studies
S. Rajaratnam School of International Studies (RSIS)
Tel: +65 6513 2035
Fax: +65 6793 2991
Email: Julie.Balen@qimr.edu.au
Web: www.rsis.edu.sg/nts
www.rsis-ntsasia.org

50. Ms Belinda Hui Kheng Chng

Associate Research Fellow
Centre for Non-Traditional Security (NTS) Studies
S. Rajaratnam School of International Studies (RSIS)
Tel: +65 6592 7522
Fax: +65 6898 4060
Email: ishkhchng@ntu.edu.sg
Web: www.rsis.edu.sg/nts
www.rsis-ntsasia.org

51. Mr Kevin Christopher D.G. Punzalan

Research Analyst
Centre for Non-Traditional Security (NTS) Studies
S. Rajaratnam School of International Studies (RSIS)
Tel: +65 6592 7521
Fax: +65 6793 2991
Email: iskevinpunzalan@ntu.edu.sg
Web: www.rsis.edu.sg/nts
www.rsis-ntsasia.org

52. Dr. Chang Youngho

Assistant Professor
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6316 8781
 Fax: +65 67932991
 Email: isyhchang@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

53. Dr Alvin Chew

Research Fellow
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6790 6845
 Fax: +65 6793 2991
 Email: isalvinchew@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

54. Assoc. Prof. Rajesh M. Basrur

Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6513 7608
 Fax: +65 6793 2991
 Email: israjesh@ntu.edu.sg
 rmbasrur@hotmail.com
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

55. Ms Irene A. Kuntjoro

Associate Research Fellow
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6513 2036
 Fax: +65 6793 2991
 Email: isirene@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

56. Mr Nur Azha Putra Abdul Azim

Associate Research Fellow
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6592 7521
 Fax: +65 6793 2991
 Email: ISNAzha@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

57. Mr Koh Swee Lean, Collin

Research Analyst
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6513 2037
 Fax: +65 6793 2991
 Email: iscollinkoh@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

58. Mr Pau Khan Khup Hangzo

Research Analyst
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6513 2036
 Fax: +65 6793 2991
 Email: ISKKPau@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

59. Ms Sofiah Jamil

Research Analyst / Webmaster
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6513 2037
 Fax: +65 6793 2991
 Email: issofiah@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

60. Mr Roderick Chia

Research Analyst
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6592 7521
 Fax: +65 6793 2991
 Email: isroderickchia@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

61. Ms Berlany Ng

Administrative Officer
 Centre for Non-Traditional Security (NTS) Studies
 S. Rajaratnam School of International Studies (RSIS)
 Tel: +65 6513 2035
 Fax: +65 6793 2991
 Email: isberlany@ntu.edu.sg
 Web: www.rsis.edu.sg/nts
 www.rsis-ntsasia.org

About the RSIS Centre for Non-Traditional Security Studies

The RSIS Centre for Non-Traditional Security (NTS) Studies conducts research and produce policy-relevant analyses aimed at furthering awareness and building capacity to address NTS issues and challenges in the Asia-Pacific region and beyond.

To fulfil this mission, the Centre aims to:

- Advance the understanding of NTS issues and challenges in the Asia-Pacific by highlighting gaps in knowledge and policy, and identifying best practices among state and non-state actors in responding to these challenges;
- Provide a platform for scholars and policy-makers within and outside Asia to discuss and analyse NTS issues in the region;
- Network with institutions and organisations worldwide to exchange information, insights and experiences in the area of NTS;
- Engage policy-makers on the importance of NTS in guiding political responses to NTS emergencies and develop strategies to mitigate the risks to state and human security; and
- Contribute to building the institutional capacity of governments, and regional and international organisations to respond to NTS challenges.

Our Research

The key programmes at the RSIS Centre for NTS Studies include:

- Internal and Cross-Border Conflict Programme
 - Dynamics of Internal Conflicts
 - Multi-level and Multilateral Approaches to Internal Conflict
 - Responsibility to Protect (R2P) in Asia
 - Peacebuilding
- Climate Change, Environmental Security and Natural Disasters Programme
 - Mitigation and Adaptation Policy Studies
 - The Politics and Diplomacy of Climate Change
- Energy and Human Security Programme
 - Security and Safety of Energy Infrastructure
 - Stability of Energy Markets
 - Energy Sustainability
 - Nuclear Energy and Security
- Health and Human Security Programme
 - Health and Human Security
 - Global Health Governance
 - Pandemic Preparedness and Global Response Networks

The first three programmes received a boost from the John D. and Catherine T. MacArthur Foundation when the RSIS Centre for NTS Studies was selected as one of three core institutions leading the MacArthur Asia Security Initiative* in 2009.

** The Asia Security Initiative was launched by the John D. and Catherine T. MacArthur Foundation in January 2009, through which approximately US\$ 68 million in grants will be made to policy research institutions over seven years to help raise the effectiveness of international cooperation in preventing conflict and promoting peace and security in Asia.*

Our Output

Policy Relevant Publications

The RSIS Centre for NTS Studies produces a range of output such as research reports, books, monographs, policy briefs and conference proceedings.

Training

Based in RSIS, which has an excellent record of post-graduate teaching, an international faculty, and an extensive network of policy institutes worldwide, the Centre is well-placed to develop robust research capabilities, conduct training courses and to facilitate advanced education on NTS. These are aimed at, but not limited to, academics, analysts, policy-makers and NGOs.

Networking and Outreach

The Centre serves as a networking hub for researchers, policy analysts, policy-makers, NGOs and media from across Asia and farther afield interested in NTS issues and challenges.

The RSIS Centre for NTS Studies is also the Secretariat of the Consortium of Non-Traditional Security Studies in Asia (NTS-Asia), which brings together 14 research institutes and think-tanks from across Asia, and strives to develop the process of networking, consolidate existing research on NTS-related issues, and mainstream NTS studies in Asia.

More information on our Centre is available at www.rsis.edu.sg/nts

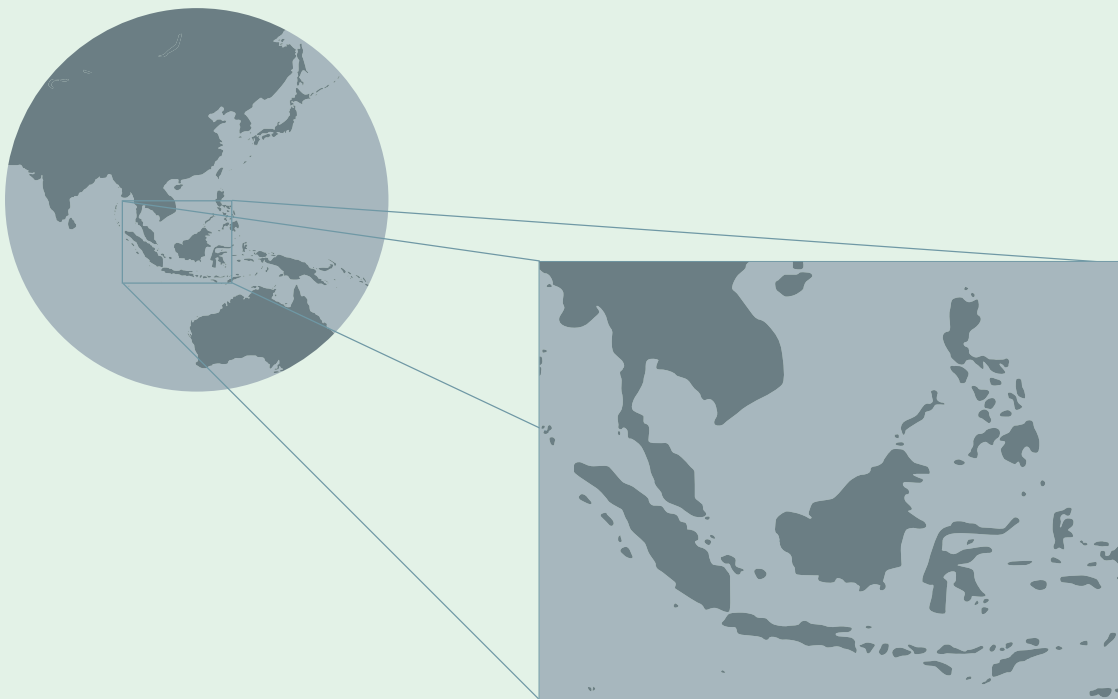
About the S. Rajaratnam School of International Studies

The S. Rajaratnam School of International Studies (RSIS) was inaugurated on 1 January 2007 as an autonomous School within the Nanyang Technological University (NTU), upgraded from its previous incarnation as the Institute of Defence and Strategic Studies (IDSS), which was established in 1996.

The School exists to develop a community of scholars and policy analysts at the forefront of Asia-Pacific security studies and international affairs. Its three core functions are

research, graduate teaching and networking activities in the Asia-Pacific region. It produces cutting-edge security related research in Asia-Pacific Security, Conflict and Non-Traditional Security, International Political Economy, and Country and Area Studies.

The School's activities are aimed at assisting policymakers to develop comprehensive approaches to strategic thinking on issues related to security and stability in the Asia-Pacific and their implications for Singapore.





S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES

A Graduate School of Nanyang Technological University