Symposium on Inter-State Water Conflicts in Southern Asia
18 February 2011

Organised by the South Asia Programme of the RSIS Institute for Defence and Strategic Studies (IDSS)
and the RSIS Centre for Non-Traditional Security (NTS) Studies

Centre For
Non-Traditional
Security Studies

Institute of Defence and Strategic Studies
S. Rajaratnam School
of International Studies
A Graduate School of Nanyang Technological University

SYMPOSIUM ON INTER-STATE WATER CONFLICTS IN SOUTHERN ASIA

REPORT

ORGANISED BY
THE SOUTH ASIA PROGRAMME OF
THE RSIS INSTITUTE FOR DEFENCE AND STRATEGIC STUDIES (IDSS)
AND
THE RSIS CENTRE FOR NON-TRADITIONAL SECURITY (NTS) STUDIES

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S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES (RSIS)
NANYANG TECHNOLOGICAL UNIVERSITY (NTU)
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This report summarises the proceedings of the Symposium as interpreted by the rapporteurs and editors of the RSIS Centre for NTS Studies and the South Asia Programme of the RSIS Institute for Defence and Strategic Studies. Participants neither reviewed nor approved this report. This Symposium adhered to a variation of the Chatham House Rule. Accordingly, beyond the speakers, no attributions have been made.

Executive Summary

Water conflicts are a subject of intense debate and discussion in Southern Asia, which comprises India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka and China. Factors such as the history of partition, a burgeoning population, increasing urbanisation and scarcity of water resources have only magnified transboundary river disputes in the region. It was against this backdrop that the Symposium on Inter-State Water Conflicts in Southern Asia was organised by the South Asia Programme of the RSIS Institute for Defence and Strategic Studies (IDSS), and the RSIS Centre for Non-Traditional Security (NTS) Studies, on 18 February 2011.

The Symposium brought together participants from diverse fields – politics, academia, media and civil society – to present points of view from both sides of India's water conflicts with Pakistan, Bangladesh and China, and to discuss those perspectives. The aim was to understand and identify areas of agreement and disagreement, come up with ways to reduce differences, and explore new, practical steps to reduce friction among states.

Key Issues

During the Symposium, a number of noteworthy points were raised:

- **The China Factor:** China is one of the most significant factors when examining the issue of water resources in Southern Asia – many of the major rivers in the region emerge from China and the Tibetan Plateau after which they flow into India, Pakistan and Bangladesh. China itself is a tremendously thirsty country and there are fears that in the process of quenching its own thirst, China will cause other countries to suffer from thirst. It is therefore critical to ensure that China is effectively and positively engaged and transboundary river waters are shared amicably.

- **Water Management:** All countries in the region need to focus on effective water management. They must formulate robust national water policies, and also share best practices on water saving and management to curb the fast depletion of resources.

- **Transparency:** There should be greater transparency on water issues. To bridge the trust deficit among countries, dialogue and interaction should be increased – not just between governments but also among academics, policymakers and think tanks. Water issues should not be politicised, but dealt with as a collective good. Non-issues brought up repeatedly on the basis of misinformation will have to be avoided and constructive cooperation encouraged.

- **Emerging Issues:** New and critical issues such as climate change, the melting of glaciers, deforestation, pollution and other forms of ecological damage can have a devastating impact on water resources. As these issues are not country-specific, they would have to be jointly tackled by all countries.

- **The Way Forward:** To achieve the optimum utilisation of water resources in the region, multilateral and regional approaches would be needed. All countries should recognise and respect each other's rights, and efforts should be made to firm up regional cooperation and international law to this end.

Opening Remarks

Associate Professor Ralf Emmers
Acting Head, Centre for Non-Traditional Security (NTS) Studies
S. Rajaratnam School of International Studies (RSIS)
Nanyang Technological University
Singapore

Associate Professor Ralf Emmers stated that understanding inter-state water conflicts in Southern Asia requires, first and foremost, a thorough understanding of the nature of the river systems flowing into the region. A majority of the rivers originating in the Himalayas are transboundary. Thus many of these countries are highly dependent on water resources from outside of their countries.

He also noted that the increasing demand for water in Southern Asia is the result of high population growth, rapid urbanisation and industrialisation, and increasing demand for food, among others. Competition over the use of shared river waters therefore has the potential to become a major source of conflict in the future. However, transboundary rivers can also act as a conduit for fostering cooperative mechanisms. Already, there are interesting bilateral arrangements between some of the countries of the region.

There is also an urgent need for the countries of Southern Asia to move beyond the current sectoral approach to managing shared rivers. Rivers in the region are highly vulnerable to climate change, given that they are fed by melting ice from glaciers atop the Himalayan mountain range and the Tibetan Plateau. An integrated approach to the management of not only rivers, but the entire spectrum of hydrological features, is thus the surest way of sustainably managing shared rivers.

Finally, Dr Emmers suggested that the Symposium should serve as a platform to exchange ideas on how best to manage shared rivers both at the bilateral and the regional level.

Dr Rajesh Basrur
Senior Fellow
Coordinator, South Asia Programme
Institute for Defence and Strategic Studies (IDSS)
S. Rajaratnam School of International Studies (RSIS)
Nanyang Technological University
Singapore

Dr Rajesh Basrur remarked that the Symposium was of great interest to the South Asia Programme as the Programme had hitherto focused on issues of hard security.

However, addressing the water issues in Southern Asia requires a consideration of a broader range of perspectives. First, water is a source of national power and thus closely linked to issues of hard security. Second, it creates interdependence among states (even though the upper riparian nation may sometimes have an advantage). Finally, water is a resource that is critical to human security in terms of life and productivity. Rising tension over water in many countries reflects this human security aspect. This tension is set to heighten further, as the availability of water is predicted to decrease. Thus, although inter-state water disputes have their own complexities, these are often inseparable from domestic politics.

The Symposium would focus on three sets of relationships of existing and potential conflicts over water, that is, the ones between India, and Bangladesh, China and Pakistan respectively. Relationships involving countries such as Nepal, Bhutan and Afghanistan also require attention and would be taken up for discussion in the future.

Dr Basrur noted that the aims of the Symposium were practical and realistic: to begin tackling the issues rather than to believe that they can be immediately resolved; to try bridging differences in order to discern how much the gap can be narrowed; and finally, to try and think of new ways to open up areas of cooperation to deal with existing and potential disputes.

The Symposium comprised five sessions exploring water conflicts in Southern Asia: (1) Inter-state Water Conflicts: An Overview; (2) India-Pakistan; (3) India-Bangladesh; (4) India-China; and (5) The Way Ahead.

Session I: Inter-state Water Conflicts – An Overview

Panellists:

Dr Rita Padawangi
Research Fellow
Institute of Water Policy
Lee Kuan Yew School of Public Policy
National University of Singapore
Singapore

and

Dr Arpita Mathur
Research Fellow
South Asia Programme
Institute for Defence and Strategic Studies (IDSS)
S. Rajaratnam School of International Studies (RSIS)
Nanyang Technological University
Singapore

This session set the stage for the Symposium by providing a general overview of water conflicts, identifying the major water conflicts in the Southern Asian region.

Water is a natural resource, and natural resources, in general, exhibit a number of characteristics that have an impact on conflict/peace dynamics. First, they are embedded in a shared social space and can generate conflicts. Actions undertaken by one individual or group may generate effects far off-site. Second, natural resources are subject to increasing scarcity, which is complicated by such issues as unequal distribution or environmental problems. Finally, natural resources are often used in a symbolic manner relating to national identity or for ideological, social and political purposes.

From the perspective of the above characteristics, transboundary waters are especially important in the development of patterns of conflicts or cooperation. The popular press and policy-oriented writings tend to emphasise the alleged potential for triggering wars that shared water resources might have, but so far not a single war over water has been documented. In fact, the track record of hydropolitics reveals a significant degree of cooperation and negotiation.

Nevertheless, it is possible that water-related issues can contribute towards the formation of inter-state conflicts. This is especially true where resource sovereignty is ill-defined or non-existent, existing institutional regimes are destroyed by political change, or where there are rapid changes in resource environments which are beyond the institutional capacity to manage.

Conflicts over water could be due to a number of reasons, some of which are: scarcity, mismanagement, misallocation of water resources, interdependence on the common water resource among states, geographic and historic criteria of water ownership, relative power of involved parties, existence of other conflicts that underlie the water dispute and ambiguous property rights.

There are several theories explaining the conflict and cooperation dynamics in a situation of shared water resources. It is important to understand these dynamics as a significant number of countries depend on water sources beyond their borders for three-fourths or more of their total river flow. One theory states that where water is scarce, competition for limited supplies can lead nations to see access to water as a matter of national security. Another theory, the eco-modernisation theory, states that cooperation is more likely than water wars because states respond to scarcities through innovation, substitution and flexible pricing of the resource. This is especially true in cases involving developed countries. Other theories emphasise the geographical situation of transboundary waters. For instance, theoretically, rivers that cross state borders are more likely to trigger conflicts than those that run along state borders. However, it seems that water scarcity levels and international institutions are the most significant influence on the ways in which states try to resolve contentious claims over rivers and the effectiveness of those settlement attempts.

Another question often asked by scholars dealing with transboundary or shared water resources is whether rivers as state boundaries have a greater potential for triggering conflicts than any other forms of borders. Statistically, this proposition has not been proven. However, there have been conflicts over the specific demarcation (or usage rights) of river-based borders. Examples include the Sino-Soviet conflict of 1969 and the Mauretania-Senegal inter-ethnic violence.

Scholars look at transboundary water issues from various angles. Some try to analyse them by focusing on their economic aspects, while others look at them from a legal or international relations perspective. Depending on the adopted perspective, scholars tend to emphasise different factors shaping the conflict dynamics between the states that share water resources. Some of the most commonly analysed factors include: the nature of the political regimes, boundary lengths and scarcity levels. Factors that affect inter-state water conflict management are also considered, such as the capacity of institutions and the degree of water scarcity.

It is important to note that water disputes are likely to compound other existing conflicts that are potentially violent. For instance, existing high levels of inequality and ethnic tensions could be aggravated by an additional dispute concerning access to water resources. This was evident in such cases as the inter-ethnic riots in Pakistan in 2001 or the North-South Korean dispute in 2009.

Major Water-related Conflicts in Southern Asia

Even as the heavily populated states of India, Bangladesh and Pakistan seek water security, the involvement of a very powerful contestant – China – adds immeasurably to the region's problem of ensuring the working out of fair water resource sharing.

The region is watered by three of the world's largest rivers – the Ganges, Brahmaputra and Indus. Broadly, the primary international basins in the region are the Indus basin and the Ganges-Brahmaputra-Meghna basin:

- The Indus basin's waters originate in the Tibetan Plateau (which is mostly under China's jurisdiction), proceed through northern India and eastern Pakistan and drain into the Arabian Sea. The six rivers of the Indus system (Indus, Jhelum, Chenab, Ravi, Beas and Sutlej) are critical to both India and Pakistan.

- The Ganges-Brahmaputra-Meghna is India's largest river system. The basin covers an area of 1.7 million square km and occupies over 30 per cent of Indian territory. The basin's resources are of great importance to downstream regions, and to parts of China and Nepal. The system is prone to severe flooding and droughts.

There are several major challenges faced by Southern Asia as a region: a large population of over 2 billion people, half of which depends on river systems for their water needs; a sense of water insecurity arising from sharp variations in water flows; a distinct decline in water availability per capita in the region; and problems of cross-border distribution, utilisation and management of water resources. India seems particularly likely to be affected by potential inter-state water-related conflict as it has borders with all other states in the region and is already in conflict with some of them over other issues.

There is a mismatch between the region's political boundaries and its water resource endowments. The partition of India and Pakistan was based on religious identities and not on the distribution of water resources. In addition, there is a strong tendency among national

leaders to pursue national water resource security unilaterally, which inevitably tends to bring on conflict with neighbours sharing a water system.

All the countries of the region face a high degree of water scarcity. India has enormous problems with water availability, growing pressures on water resources which are fuelled by a rising population and an even faster increase in demand for water. Water availability in India has declined by 60 per cent in the last century. Bangladesh is greatly dependent on the upper riparian states for water supplies owing to its fast-growing population and large seasonal variations in availability of water resources. Pakistan faces the greatest water scarcity in the region. China of course is seeing increasing demand on account of its growing development needs.

The major conflicts in the region are:

- **India-Pakistan:** There are serious disagreements over the interpretation of the Indus Waters Treaty (IWT) of 1960 which divides the waters of the Indus system. The construction of dams by India, such as the Baglihar and Kishenganga dams, is a major cause of dispute. Pakistan has also expressed concern about India's retention of water from the Beas, Ravi and Sutlej rivers. However, there are procedures under the IWT for resolving these differences.

- **India-Bangladesh:** India and Bangladesh share 54 transboundary rivers including the Ganges, the Brahmaputra and the Meghna. The water management of the Ganges remains the most serious issue. There are problems relating to water sharing, but also mechanisms for cooperation, such as the Ganges Water Treaty of 1996.

- **India-China:** India, as a downstream riparian state, is primarily concerned about China's proposed north-south diversion of the waters of the Yarlung Zangbo River (which is known as the Brahmaputra further downstream).

- **India-Nepal:** India has concerns about Nepalese hydrology projects and there are allegations that some of the flooding affecting India might be due to deforestation in Nepal.

Session II: India-Pakistan

Chair:

Mr Yang Razali Kassim
Senior Fellow
Centre for Non-Traditional Security (NTS) Studies
S. Rajaratnam School of International Studies (RSIS)
Nanyang Technological University
Singapore

Panellists:

Professor George Verghese
Visiting Professor
Centre for Policy Research
India

and

Dr Shaheen Akhtar
Research Fellow
Institute of Regional Studies
Pakistan

This session focused on discussing water conflicts between India and Pakistan. Both sides put forth their points of view on the areas of agreement and disagreement. Ways and means to bridge gaps and foster cooperation were explored.

Professor George Verghese began by pointing out that India-Pakistan water issues really revolve around the Indus River and the IWT, which was signed in 1960 after prolonged negotiations. He termed it one of the most successful international treaties of its kind. It has worked and survived despite wars, crises and political tensions, and despite the two sides being dissatisfied with parts of the IWT. Prof. Verghese stated that he disagrees with the view that the IWT needs to be renegotiated.

The IWT led to a surgery of the river system, with the three eastern rivers – the Sutlej, Beas and Ravi – going to India and the three western rivers – the Chenab, Jhelum and Indus – to Pakistan. This essentially split the river system, giving 80 per cent to Pakistan and 20 per cent to India, which, according to Prof. Verghese, is a fair division.

In relation to the eastern rivers, he noted that India has not been utilising its full entitlement of 1–1.5 million acre-feet of water. Water from the eastern rivers continues to flow into Pakistan because India has yet to develop its irrigation system to the point that it can utilise the entire flows of the eastern rivers. So Pakistan's concerns over India's usage of the eastern rivers are mystifying.

As for the western rivers, India is allowed to use up to 3.6 million acre-feet of water (although the rivers are allocated to Pakistan under the IWT). However, India does not have the water storage capacity to take advantage of this permitted level of usage. Currently, India has about 25–30 run-of-the-river schemes (comprising small-, large- and micro-hydroelectric projects) that use pondages. A pondage differs from storage and holds water temporarily to regulate water flow. It is considerably smaller in size compared to reservoirs and large storages. Likewise, as far as irrigation is concerned, India's usage is well within its entitlement.

The IWT also set up the Indus Water Commission (IWC) to enable the two sides to monitor the arrangements and organise mutual visits, reports, inspections, emergency meetings and so on. Close monitoring was provided for and it has worked. There is provision for governmental intervention. If that does not solve an issue, the difference is referred to a neutral expert. This was done for the first time with the Baglihar project on the Chenab. The IWT also provides for international arbitration, and India's Kishenganga project on a tributary of the Jhelum has been sent for international arbitration by Pakistan.

India faces the problem of having to consult Pakistan on the utilisation of water (from the western rivers) allocated to it for Jammu and Kashmir. There are numerous queries raised on every project, resulting in delays, and in one or two cases, projects being dropped. For instance, the Tulbul Project on Jhelum River was last taken up 18 years ago and is lying dormant because of strong objections. India finds this long delay in the implementation of projects a great handicap.

The problem, as India sees it, is that, on the Pakistan side, there is a difference between rhetoric and the reality on the ground. The rhetoric is that India is 'stealing water' and there have been many demonstrations with jihadi elements threatening dire consequences. This is even though Pakistan's Foreign Minister has officially stated that India is not stealing water, and that in fact Pakistan is not able to make use of all its own water entitlement. Under the IWT, Pakistan is allocated approximately 135 million acre-feet of water. It is only able to use about 100 million acre-feet, while the rest just flows into the sea. This is partly due to ecological reasons, that is, to sustain the lower delta in the Indus to keep the river alive. However, in the main, that situation is due to Pakistan not having developed enough storage facilities for the water.

The IWT mentions optimality and future cooperation in its text. However, these have been forgotten, although they are key to addressing water issues between the two countries. Both countries are inefficient water users and need conservation and management on the supply side. The two countries could take advantage of the provisions in the IWT related to storage and conservation, as these have the potential to augment lean season flows to a fairly reasonable extent. There are no problems in joint exploration, management and construction – engineers from India and Pakistan can sit together to build dams, storage facilities and diversions – there is great potential for resolving water-related problems between India and Pakistan.

While much of the previous discussions deal with history, there is a significant new factor – climate change. The northwest part of the subcontinent – that is, the Indus basin – will be most and earliest affected, followed by the Ganges and Brahmaputra basins. The Indus basin is already experiencing the effects. For the first time in living memory, there have been excessive rainfall and tremendous floods in Pakistan. India has also had floods in Leh.

Dr Shaheen Akhtar highlighted the dilemmas and constraints faced by Pakistan as a lower riparian state. While contextualising Pakistan's perspective, the speaker stated that agriculture is the mainstay of Pakistan's economy, accounting for 24 per cent of the nation's gross domestic product (GDP), 48 per cent of its employment and 70 per cent of its exports. The alluvial plains of the Indus basin cover approximately 25 per cent of the land area of Pakistan (in contrast, the Indus basin represents only 9.8 per cent of India's geographical area). The above suggests that Pakistan is highly dependent on water resources, in particular, Indus basin resources. The combination of its position as a lower riparian state and its over-reliance on a single basin has shaped Pakistan's dilemmas. Pakistan also has very low storage (of only about 30 days) which presents additional implications.

The hard reality is that while Pakistan holds exclusive rights to three rivers under the IWT, India happens to be the upper riparian state and controls the headwaters in the upper reaches. As a lower riparian state, Pakistan is at the end of the chain – whether it be climate change or environmental degradation – which creates uncertainty and a great deal of apprehension. There has been much debate on the permissive and restrictive aspects of the IWT. India is playing the permissive part and Pakistan is apprehensive about the consequences of this as there is no limit set on how many dams or power generating schemes India can develop on the rivers.

Dr Akhtar argued that, in 1960, water rationality prevailed despite there being scarcity as well as a wider conflict. At that time, common interest was sufficient to ensure access to long-term shared water resources through the signing of the IWT. Thus, there is every reason to believe that India and Pakistan have a lot of scope and options for cooperative approaches today.

Dr Akhtar then focused on a few transboundary issues and highlighted possible cooperative approaches. She noted that a major area of disagreement is India's hydroelectric projects on the western rivers and the number of ambitious plans India has for the river system. India's projects will have environmental impacts on both countries. For example, the Kishenganga project will affect the Neelum and Gurez Valleys, both in terms of irrigation and power generation. There will be a reduction of 47 per cent in the water flow because of diversion and power generation will go down by 15–20 per cent.

Islamabad is also uncertain over whether the project designs are in line with the IWT or not – a technical issue. Inadequate data adds to the distrust. For instance, the media, farmers, etc., in Pakistan quote various figures for the number of dams being constructed in India. The controversies surrounding many of India's major projects have had a negative political effect, leading to allegations that India is 'stealing' water.

Another threat is environmental degradation and climate change in the upper reaches of the basin's catchment area. Monsoons are erratic and water in the Chenab and the Jhelum is decreasing as suggested by various reports. The reasons for this may range from global warming to shrinking mountain glaciers. Over-pumping and inefficient irrigation techniques are adding to the declining water levels. There is a transboundary effect of the depletion of aquifers on the Indian side which is creating problems for farmers on the Pakistan side (in Punjab). Pollution in the rivers of the Indus basin also has an impact on the rivers flowing into Pakistan.

Cooperation is thus necessary. In this regard, it was noted that the IWT is underexplored, underutilised and there is scope to make better use of its provisions. There should be more effort to minimise the differences between the two countries and to emphasise converging interests. The two countries do in fact have mutual vulnerabilities which could be jointly tackled.

There are several ways forward for Pakistan and India. First, the two countries need to develop a shared paradigm of cooperation on the Indus basin starting from trust building through the sharing of real-time data. The telemetry system which has been agreed on by the two countries should be evaluated. Second, they should emphasise transparency through data sharing. Third, the IWC has to be given a clear mandate and role. Its scope should be expanded in line with the new realities, and not just limited to monitoring and implementing. Fourth, the two countries should jointly perform an environmental assessment of the Himalayan glacier system, which could serve as a confidence building measure between the two sides. International management of water is very important because of it being a split basin. There is a need to shift from a technical to a sociocentric paradigm and share best practices in water conservation techniques, and agricultural, industrial and domestic usages. A change in mindset is needed in terms of water management and conservation, that is, awareness has to be created among civil society, farmers, etc. There is also a need to depoliticise the issue and bring stakeholders into a dialogue in order to craft an appropriate cooperative strategy. There are also numerous knowledge gaps with regard to the Indus basin. Forecasting and monitoring capabilities are thus needed to meet the challenges.

Discussion

A participant said that transparency is one of the most important elements of the IWT. It was noted that the IWC, a joint body, meets annually, more frequently if necessary. The IWC conducts on-site inspections. Assessments are also made on a monthly basis and about 600 pieces of information comprising gauge measurements, etc., are shared between the two countries.

Nevertheless, there is still controversy over transparency and over India's construction of a number of dams on the western rivers. However, many of these controversies are not grounded in fact. India's utilisation of water from these rivers is totally within the parameters of the IWT. India has not even reached the level of permitted utilisation. Moreover, in terms of the number of dams, there are only 33, either under construction or completed, of which as many as 20 are only small 10-megawatt facilities. As a lower riparian state, Pakistan has also had the fear that India can use or cut off supplies in times of war or conflict. This fear is baseless: the quantum of water involved in pondages is only a fraction of India's entitlement to stored water (in any case, the amount of water stored by India is currently nil). Water stress is building, but it seems that political issues are driving this.

One participant stated that it is important to appreciate that India recognises the rights of lower riparian Pakistan. It was noted that although a point was made that the allocation of 20 per cent water share to India under the IWT was fair, there is also a contrary view prevailing in India that the treaty is more beneficial and favourable to Pakistan.

Another participant was of the view that although the IWT has stood the test of time, it has enormous gaps and these will have to be reviewed. There is no harm in reviewing and developing phase II of the IWT based on current ground realities. The potential role of the South Asian Association for Regional Cooperation (SAARC) – the only regional intergovernmental grouping that can play a part here – should be explored.

Commenting on the reference to the depletion of aquifers in India causing problems for farmers in Pakistan, one participant stated that he was not aware of any causative links between usage by India and the depleting aquifers in Pakistan. In fact, regeneration takes place and there have been no complaints by Pakistan to India or to the IWC.

In terms of water-utilisation technology, there is a lot of wastage in canal systems – seepage, evaporation and so on. Studies show that 38 per cent of water is wasted between the dam gate and the field, as well as in the field, because of the inefficient flood irrigation system. Under the conventional gravitational system, which is obsolete, only about 15 per cent of the water made available to the plant is utilised.

Chemicals, including fertilisers, could also be a problem. The overuse of chemicals is doing immense harm to soil, creating mass toxicity in the food chain and this has a direct bearing on water usage. Overuse of chemicals causes water utilisation to go up by 200–300 per cent.

There was a consensus among participants that if India and Pakistan are to utilise waters effectively, the best approach is through joint management of the entire basin. The IWT split the basin, and it is now best to work within that reality. If India, Pakistan and Bangladesh were to collaborate and share their past experiences, particularly in agriculture, all stand to gain. Most of the conflicts are based on two factors and can be resolved – shortage, which is sometimes artificial, and second, mindset. The problem is not the mindset of the people, but that of politicians. Politicians seem to thrive on conflicts.

Session III: India-Bangladesh

Chair:

Dr Rita Padawangi
Research Fellow
Institute of Water Policy
Lee Kuan Yew School of Public Policy
National University of Singapore
Singapore

Panellists:

Mr Sompal
Former Union Minister of State for
Agriculture and Water Resources
India

and

Mr Tauhidul Anwar Khan
Secretary General
Bangladesh Water Partnership
Bangladesh

This session focused on a discussion of water conflicts between India and Bangladesh. Panellists from the two countries presented their points of view on the current state of water conflicts and suggested possible areas of cooperation.

Mr Sompal began by reminding the audience that India and Bangladesh have cooperated on issues related to water for quite a long time. He noted that there is a Joint India-Bangladesh River Commission headed by the water resources ministers of the two countries which is of particular importance from the point of view of flood prevention and mitigation. Mr Sompal underlined the fact that India supplies Bangladesh with data on floods without charge, especially during the monsoon season. This enables Bangladeshi authorities to take necessary measures such as evacuation to protect its population. India also provides suggestions for improving protection against floods such as by carrying out embankment works.

Mr Sompal also noted that there is cooperation with regard to drinking water supplies and that there are suggestions and options for investments by India in water-related infrastructure. There are presently discussions on water sharing and the usage of waterways. One problematic area, the issue of flows from the Farakka Barrage, was eventually resolved after discussions.

Mr Sompal presented his general observations on the water resources problems in Southern Asia. According to Mr Sompal, none of the countries concerned – India, Bangladesh and Pakistan – has worked out a national perspective plan related to water resources. For instance, in India (but not only there), agriculture and water resources do not rank high on the list of government priorities. This is not only strange, but also quite irrational, as these sectors should perhaps be among the very top priorities of any administration in countries that are predominantly agricultural. Mr Sompal reminded the audience that nearly 60 per cent of India's workforce are in agriculture, which still produces around 20 per cent of GDP and accounts for up to 16 per cent of total exports. Despite this, agriculture and allied sectors receive less than 1 per cent of the budget (even though the Minister of Finance never fails to discuss these sectors extensively). Furthermore, investment in agriculture in India accounts for only 1.3 per cent of GDP and direct intervention from government is only 0.3 per cent of the GDP. In fact, only 3.2 per cent of all the planned resources are allocated for agriculture, and irrigation works receive only a small share of this money. Even when money is allocated for water-related investments, most of it goes into flood management rather than for any kind of development.

Mr Sompal also spoke of a somewhat distorted version of modernisation occurring in India's countryside. There are significant purchases of products of modern technology, but they are mainly in such areas as communications or entertainment. It is not uncommon to see villages with good telephone connections, but no access to good water supply.

Furthermore, there are tremendous problems with water-related infrastructure. Canals are neglected and not properly managed, even though they are of great importance to water management. The speaker summed up his presentation by stating that it is clear that the state of water management in India and neighbouring countries leaves a lot to be desired and expressed the need for cooperation in order to deal with these issues.

Mr Tauhidul Anwar Khan began by drawing a general picture of the water-supply situation in Bangladesh. He reminded the audience that the Ganges and the Brahmaputra are by far the most important rivers for Bangladesh as they supply over 85 per cent of surface-water during the dry season. He further explained that the geographical location of Bangladesh is quite unfortunate from the point of view of floods and water management and noted that Bangladesh receives all the flood flows from upstream.

However, the image of water-abundant Bangladesh does not correctly reflect the reality. While it is true that per capita supply of water in Bangladesh looks very good, this data is somewhat misleading as it is presented on an annual basis. In fact, during the wet season, Bangladesh receives many times more water than it needs. However, during the dry season there are actually major problems with getting enough water. Hence, in the case of Bangladesh, a seasonal perspective is needed.

Water dominates nearly all aspects of life in Bangladesh, not least because Bangladesh has an economy based on agriculture. Such an economy is very vulnerable to the availability of water resources. Mr Khan observed that in order to improve agricultural output, three items are needed: (1) good seeds; (2) fertilisers; and (3) sufficient water supplies. The Bangladesh government can and does play a relatively active role in the provision of the first two, but the situation is more problematic when it comes to providing the third.

Due to the lack of sufficient supply of surface-water in the dry season, Bangladesh has been over-exploiting ground-water resources. This has had dramatic results. The speaker noted that in 80 per cent of Bangladesh, ground-waters are contaminated with arsenic, and hundreds of thousands of people have been affected by this. Fortunately, the arsenic has not so far entered the food chain, but Mr Khan expressed his fear that this is a real and terrifying possibility.

For these and other reasons, Bangladesh has become even more dependent on surface-waters. As noted earlier, the water flows are mainly from transboundary rivers. This makes it impossible for Bangladesh to unilaterally address its problems. In fact, Mr Khan observed that Bangladeshis often complain that Bangladesh does not get enough water from its agreement with India. He noted that India often offers rather unconvincing excuses such as climate change and other factors to explain supply problems. Even when treaties are in place, they are either not precise enough or do not offer sufficient provisions to satisfy Bangladesh's needs.

The real problem for Bangladesh is the issue of floods. Mr Khan observed that it is urgent that Bangladesh establish extensive cooperation with the upper riparian countries (especially India, but also Nepal). Data exchange must be improved and expanded. The problem in Bangladesh is indeed grave as 60–70 million people are affected by floods whenever they occur. Bangladesh, already a poor state, faces tremendous challenges when it needs to shift or displace such huge numbers of people. It has been suggested that perhaps Bangladesh should learn to live with the floods. Mr Khan, however, rejects such an option and believes that the state must intervene and find some solution. This seems especially urgent and necessary as climate change is likely to make an already serious situation much worse. Bangladesh is both aware and terrified of these prospects.

Bangladesh needs to pay attention to proper management of water resources. In this regard, it must cooperate with upper riparian countries. There is potential in storing water and using it for generating electricity. The problems of Bangladesh should not be ignored by the upper riparian countries as these could easily affect many other aspects of relations with Bangladesh. Mr Khan also noted that the countries in the region are so environmentally interconnected that the problems of one state simply cannot be ignored by its neighbour if it wants peace.

Discussion

During the discussion session, a number of valuable points were raised. Participants agreed that there is room and need for China to participate in the efforts to solve water-related problems in the region.

A participant stated that it is not really feasible to solve the problem of seasonal variations in water supply through an engineering solution. According to him, water conservation is only possible on a small scale (for drinking water, for instance), but not for such purposes as desalinisation of rivers and agriculture. He argued that this is because of the troubled geography of the country. This view was contested by some of the participants, but all agreed that cooperation and better management are in any case essential.

There was also a long debate over the controversial issue of India's National River-linking Project, which has been dropped, but could conceivably be revived. While one participant asserted that the project is absurd from an economic point of view, another participant stated that disquiet over the project was uncalled for. It was noted with concern that this issue still seems to continuously reappear in discussions.

Participants agreed that one problem is the mindset of decision-makers. It stands as an obstacle not only to better water management but also to better cooperation, which is crucial to addressing the water-related issues in the region.

Session IV: India-China

Chair:

Dr Rita Padawangi
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Lee Kuan Yew School of Public Policy
National University of Singapore
Singapore

Panellists:

Dr Uttam Kumar Sinha
Research Fellow
Institute for Defence Studies and Analyses
India

and

Dr Xiaoping Yang
Assistant Professor
Institute of Asia-Pacific Studies
Chinese Academy of Social Sciences
China

This session addressed the water conflicts between India and China. The panellists from China and India presented their views on issues and areas of concern. They also put forth suggestions on ways and means to build trust and cooperation so that limited water resources can be amicably shared.

Dr Uttam Kumar Sinha began by stating that the water issue between India and China is assuming a high level of criticality and involved fear, misconception and misperception. It is important for us to think of water critically but not in terms of war. Instead, the issue should be viewed within a cooperative framework. There is an instructive irony if you look at this planet – 97 per cent of it is water but only 3 per cent of that is freshwater for humankind. Therefore there is a need to make better use of water. While there are theories of states going to war over water in the future, historical evidence suggests that there is far greater cooperation on water than actual war. The last recorded war related to water was 4,500 years ago when two city states fought over the Tigris River.

The tension between India and China seems to be emanating from the hydrology of the Himalayas and the Tibetan Plateau. Geographically, the two areas are quite distinct. However, they have to be considered as one hydrological unit – many of the rivers flowing through the two areas come from the same source, the Himalayan glaciers (which is why geologists refer to them as the circum-Himalayan rivers).

One feature of the glacial mass in the Himalayas is that, apart from the Arctic and Antarctic, this is the largest single glacial unit. Most significantly, 2.5 billion people stretching from Afghanistan to Southeast Asia depend on the freshwater from this glacier. This enormous dependence leads to a correspondingly high level of anxiety.

When China takes, or is assumed to take, certain actions on rivers that flow from Tibet, we have to take into consideration China's own water needs and requirements. While there is an abundance of water in Tibet, there is scarcity in the northern and western part of China. This uneven distribution of water becomes a defining factor in water management, entailing the redistribution of water from one place to another. This shifting of water creates alarm and suspicion among lower riparian states.

With transboundary rivers, there is a tension between sovereign control and the notion of a common resource. The problem is compounded by the fact that although there exist certain principles for equitable distribution of water, there is no legally binding arrangement in place.















Participants of the Symposium

Front row (from left to right): *Mr Pau Khan Khup Hangzo, Dr Arpita Mathur, Ms Manaswini Ramkumar, Dr Rita Padawangi, Dr Shaheen Akhtar, Mr Tauhidul Anwar Khan, Mr Sompal, Prof. Dash P.L., Mr Satish Chandra, Mr Yang Razali Kassim.*

Back row: *Mr Zbigniew Dumienski, Mr Iftekharul Bashar, Dr Xiaoping Yang, Dr Rajesh Basrur, Prof. Moonis Ahmar, Air Marshal Pramod Kumar Mehra, Dr Uttam Kumar Sinha, Prof. George Verghese, Ms Belinda Chng, Ms Devin Maeztri.*

China is probably the world's most independent country in hydrological terms. The country (including Tibet) is supremely upper riparian, that is, all its rivers flow out of China. Obviously, in common with other upper riparian nations, China does from time to time use its water and rivers as an instrument of political leverage. Turkey, for instance, has done this in its relations with countries such as Syria and Iraq.

An increasingly significant consideration is China's rising water requirements. It has a huge population to feed and there is clearly a food-energy-water connectivity. Thus, for China, Tibet is an existential issue. As early as the 1920s, Mao Zedong noted that Tibet has extensive water resources and could lend China some.

Besides, China is going through intense and increasing periods of drought. To deal with this, there are plans for the utilisation of Tibet's rivers, including their diversion. It seems quite clear now that Tibet's rivers are going to be harnessed and dammed at some stage. Indicators quite clearly suggest that China's water storage capacity is still not robust enough to meet the needs of its population. It has about 2,500 cubic metres per person, much less than the US which has about 6,000 cubic metres per person. India lags even further behind, at less than 200 cubic metres per person.

There is quite clearly a contrast between India and China. China is exclusively upper riparian. India, on the other hand, is rather boxed in as a middle riparian country. While China is not river-dependent on others, India is increasingly river-dependent on China, not just for one river but several. The Brahmaputra, Indus, Sutlej and many tributaries of the Ganges, including the Gandaki and the Kosi, flow from Tibet. India's middle riparian status needs to be articulated very carefully among its neighbours – Pakistan and Bangladesh in particular. India will first have to deal with the pressures faced by Pakistan, and this is going to be a very important aspect in regional diplomacy.

Of course, China is well aware of the possibility of lower riparian coalitions shaping up. It is diluting the possibility of such a coalition by establishing strategic partnerships with many lower riparian countries, including Bangladesh, Pakistan, Myanmar and Cambodia. Inroads are being made through investments, extending aid and building infrastructure, particularly in terms of sharing its expertise in dam building. There are projects in Pakistan and Myanmar, and Cambodia is also being courted. Obviously, then, dams are a very strong component of China's hydro-diplomacy when it engages with some of the lowest of the lower riparians. In dealing with middle riparians such as India, diversion of water becomes the political tool of choice and it plays its game very carefully. However, water cannot be viewed just from a wholly political and strategic perspective. The idea should be to understand the immense water resources in Tibet, the changes that may emerge in the future and the kinds of arrangements that will come about as a result.

One issue that has to be raised with China is the sharing of rivers. A way forward could be to approach this issue from an ecological perspective. China is not really averse to environmental preservation. It is just that the prominent strain of thought in China as of now is hydro-supremacy. China could be drawn in through awareness-raising by a strong constituency of environmentally aware people, media and civil society groups. Lower riparian states should play an active role in this effort because the rivers that flow from Tibet ultimately end up in Bangladesh and Pakistan. This would be a huge undertaking, and it would not be an easy task as China has excellent strategic relationships with all of them. Achieving this may thus require a coalition arching from Afghanistan to Southeast Asia, with India playing a central role. India has far more riparian cooperation agreements, treaties and dialogues with neighbouring countries than China. Thus, there is much more scope for India to bring together lower riparian countries, not to challenge China (it is not possible to challenge China legally as there is no binding treaty on sharing of water), but to prod it into dialogue and consequently the development of an understanding on river water sharing.

Dr Yang began by outlining her perceptions of some of the assumptions India has made about China. One, India believes that China will take full advantage of its power as an upper riparian state. In other words, there is a political trust deficit between India and China. Two, India holds the perspective that China's dam building activities are aggressive and mainly driven by national interest. Three, India fears that China may not be adhering to international rules, particularly as they pertain to Tibet, which is very rich in water resources. This apprehension stems from China's vote against the 1997 UN Convention on the Law of the Non-navigational Uses of International Watercourses.

There are, according to Dr Yang, certain reasons to re-examine these assumptions. As a rising power and a country that tries to be responsible, China has to strike a fine balance between national interest and collective interest, especially among neighbouring countries, to ensure its own domestic peaceful development. As far as suspicions regarding China's willingness to adhere to international rules are concerned, it should be observed that there have been conceptual changes among China's leaders. China has made efforts to join the international system and to try to comply with international regimes and standards. In light of these developments, there is reason to believe that China and India can focus on potential areas of cooperation (rather than differences).

As an upper riparian country, China regards transboundary rivers as a common resource. They are not only for China's use. Also, China believes in the need to protect forests and biodiversity, especially in the Tibetan region. Flood management is a potential area of cooperation. International cooperation on floods is essential. For instance, the problem of floods in Pakistan such as those in 2010 cannot be solved by Pakistan alone.

Areas of difference are of real concern. First, there is the issue of allocation. There is currently no bilateral treaty specifying how much each side should have. The second issue is data sharing and information. Although China and India have since 2005 taken some steps forward and started to sign some memorandums, this is still not enough. There is still insufficient information available. Third, the water issue is entangled with border issues. Fourth, there are issues involving hydroelectric projects being funded by international organisations such as the World Bank (WB) and the Asian Development Bank (ADB).

It is sometimes said that there is no political willingness in China and India to resolve the border issue. However, the political reality is that it is important to achieve a consensus on principles of multilateral and regional cooperation. In this regard, the two countries could learn from ASEAN and the Mekong cooperation initiative. There is need for more talks and clearing of misperceptions not only officially but also through Track II processes among scholars and research institutions. The region has to have common Conventions.

Subregional cooperation and project cooperation should be helpful in managing water issues. There could be joint flood-relief drills between China and other countries in Southern Asia. New technical knowledge could also be shared. There is also a need to improve water utilisation and water conservation, especially given the increasing need for water in China. Another potential area of cooperation is in the area of infrastructure such as dams. China would welcome such cooperation, as it has expertise in this area.

Discussion

A participant stated that it was heartening to note China's recognition of the fact that transboundary rivers are a common responsibility, in terms of climate change, the sharing of water and cooperation on subregional projects. These are precisely the kinds of issues which are of concern to lower riparian countries.

The point was made that China is entitled to use its water to take care of its population, for flood moderation and for municipal usages. One cannot object to their building dams and using water in their country, whether on the Mekong or on the Yarlung Zangbo. Of note to India, and more broadly, Southern Asia, only 30 per cent of the water is generated north of the river, with the rest generated in the south. Thus, even if China were to divert some water or utilise it, it cannot dry up the Brahmaputra.

From a hydrological perspective, it was noted that transparency is the central issue (rather than border issues). There is concern in some sections in India that too much damming activity might be taking place, which would reduce flows. India would appreciate information on the extent of the reduction. As far as diversion projects are concerned, a participant noted that there are a number of ill-informed reports. A great deal of alarm was raised in India because China built a dam on the Yarlung Zangbo to generate 450 megawatts of energy and announced the construction of the dam only towards completion. Greater transparency may have been useful in this case. However, even so, the concern is misplaced. The dam is a run-of-the-river hydroelectric project and does not entail the diversion of water. The water used to generate electricity goes back into the river. The notion that China is building hundreds of dams on the Mekong and elsewhere is also incorrect. It is thus important to, first, move away from engaging with China on non-issues as this will have a negative impact on cooperation on the issues that matter, and second, craft responses based on accurate information.

Cooperation among various states should also be pursued, to tackle common interests related to the environment, climate change and energy. For instance, glacial lake outbursts are a normal recurrent feature in the region which is being accentuated by climate change. A mountaineering exploration team is needed to examine the problem and set up automatic platforms which can be monitored via satellite (in order to obtain information in real time). China and India both have that capability and they should jointly undertake this project, not just for themselves, but also for Bangladesh, Pakistan and Nepal. The melting permafrost in Tibet is another issue requiring attention. The issue of changes in weather patterns, including the monsoons affecting the Himalayan region, would also benefit from cooperative approaches.

Apart from cooperation on climate-change-related issues, countries could also look at energy issues. For instance, the u-bend of the Yarlung Zangbo drops about 6,000–8,000 feet between where it takes off and where it comes down. The greatest drop, between Tibet and Assam, has the potential to generate up to 40,000 megawatts of energy. This potential could be realised through a joint project for the benefit of the whole region. The project could form the basis of a Southeast Asia-China electricity grid.

Session V: The Way Forward

Mr Satish Chandra
Former Deputy National Security Advisor, India
Distinguished Fellow
Vivekananda International Foundation
India

Freshwater is already a scarce resource, and it is becoming scarcer by the day. Thus, unless countries with common rivers work cooperatively on water utilisation, conflicts on this issue will inevitably multiply. Moreover, no country should be unmindful of the legitimate rights of its co-riparians, upstream or downstream. It is also essential that all countries in the region undertake the most efficient management of water possible through conservation, modern irrigation practices designed to minimise transmission and application losses, recycling, prevention of environmental degradation, etc. In doing so, each country would be contributing to its own water security as well as that of its co-riparians.

It would be helpful to develop an index of water management efficiency which could be one of the determinants for assessing the extent to which each country has a legitimate right in the sharing of the waters of common rivers, and for harnessing any available resources for water management.

The most effective management of a river demands holistic treatment across its entire basin, taking into account the need to preserve the well-being of the river system and environment, the competing requirements of the people in the area, the optimal location for construction of structures, etc. A country may have to forego one in favour of another and may be compensated accordingly. This comprehensive approach would guarantee a win-win situation not only by reducing the possibility of conflicts but by leading to much greater political and economic convergence. Thus, the optimal utilisation of river systems demands a multilateral approach involving all relevant countries. This approach would require the establishment of a regional commission for the management of an entire river system, which does not yet seem within the realm of possibility given the political differences between the concerned countries. Therefore, a bilateral-treaty-based approach would probably be the path that can be taken while aspiring towards a multilateral approach. In any case, these two approaches are not mutually exclusive.

Whether the mode is multilateral or bilateral, common norms or principles for water sharing and/or utilisation need to be established. Unfortunately, international law in this area is still at a formative stage. Some of the basic principles which need to be observed are:

- Equitable utilisation.
- Prevention of significant harm to downstream riparians.
- Obligation to notify and inform.
- Obligation to resolve disputes peacefully.

Equitable utilisation does not mean equal sharing of waters. Rather, it refers to an equitable and reasonable share in the beneficial use of common rivers. The terms ‘equitable’ and ‘reasonable’ need, however, to be determined on the basis of a variety of factors such as population, geography and the availability of alternative sources. This will serve to promote the optimal utilisation of water and penalise wastage.

Prevention of significant harm obliges watercourse states to refrain from actions in the utilisation of international watercourses in their territories that would cause significant harm to co-riparians. Where there is such harm, there is an obligation to mitigate the damage and pay compensation. This principle could be extended by suggesting that any pursuit of environmentally unsustainable development which could lead to significant harm to the waterways of its co-riparians should also be avoided.

The obligation to notify and inform co-riparians of any activities on watercourses is meant to build trust and confidence, while also enabling them to evaluate the consequences, and if necessary, seek modifications of the proposed activities. This principle is aimed at ensuring that such activities are undertaken with transparency and in a harmonious fashion.

In summary, water conflicts in Southern Asia can be prevented by ensuring the following:

- Efficient water management in all its aspects.
- Respect for the legitimate rights of co-riparians to the use of international rivers.
- Working towards the optimal utilisation of river systems on a multilateral basis.
- Development of bilateral-treaty-based arrangements between co-riparians for water sharing, irrigation, power generation, etc.
- Appropriate development of international law.
- Broad acceptance of the principles of international law already in existence, with appropriate modifications.

Closing Remarks

Dr Arpita Mathur
Research Fellow
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Singapore

Dr Arpita Mathur expressed gratitude to all participants for sharing their views on water conflicts in Southern Asia, and more importantly, for trying to find ways to engage in cooperation and move ahead on various issues. She noted that the Symposium had been very fruitful, with forthright discussions.

Some main points that could be taken forward from the discussions are:

- There seems to be a general consensus that there is much potential for regional cooperation on water and on the need to engage China in all the dialogues held in this regard.
- There is a need for the constituent countries of the region to work out a national strategy on water.
- There is definitely a trust deficit within Southern Asia, and there is thus a need for more information and data exchanges as well as greater transparency among the various countries.
- There is also acknowledgment that problems and conflicts related to water are largely political problems; and there is a need to change the mindset of political leaders and build political will to work towards cooperation and consensus on all issues.
- The possibility of setting up regional commissions and expanding the role of organisations such as the SAARC should also be discussed further.
- It would be helpful to develop a water management and usage index.

Programme

18 February (Friday)

Stamford Room
Level 4, Parkroyal on Beach Road Hotel

09:30 – 10:00 **Registration**

10:00 – 10:15 **Opening Remarks**

Associate Professor Ralf Emmers
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Dr Rajesh Basrur
Coordinator
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10:15 – 10:45 **Session I: Inter-State Water Conflicts: An Overview**

Panellists:

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Dr Arpita Mathur
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11:00 – 12:15 **Session II: India-Pakistan**

Chair:

Mr Yang Razali Kassim
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Panellists:

Professor George Verghese
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India

Dr Shaheen Akhtar
Research Fellow
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Pakistan

Discussion

12:15 – 13:30 **Photo-taking & Lunch**

13:30 – 14:45 **Session III: India-Bangladesh**

Chair:

Dr Rita Padawangi
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Lee Kuan Yew School of Public Policy
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Panellists:

Mr Sompal
Former Union Minister of State for Agriculture and
Water Resources
India

Mr Tauhidul Anwar Khan
Secretary General
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Discussion

15:00 – 16:30 **Session IV: India-China**

Chair:

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Panellists:

Dr Uttam Kumar Sinha
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India

and

Dr Xiaoping Yang
Assistant Professor
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Chinese Academy of Social Sciences
China

Discussion

16:30 – 16:50 **Session V: The Way Forward**

Mr Satish Chandra
Former Deputy National Security Advisor, India
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16:50 – 17:00 **Closing Remarks**

Dr Arpita Mathur
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- End of Symposium -

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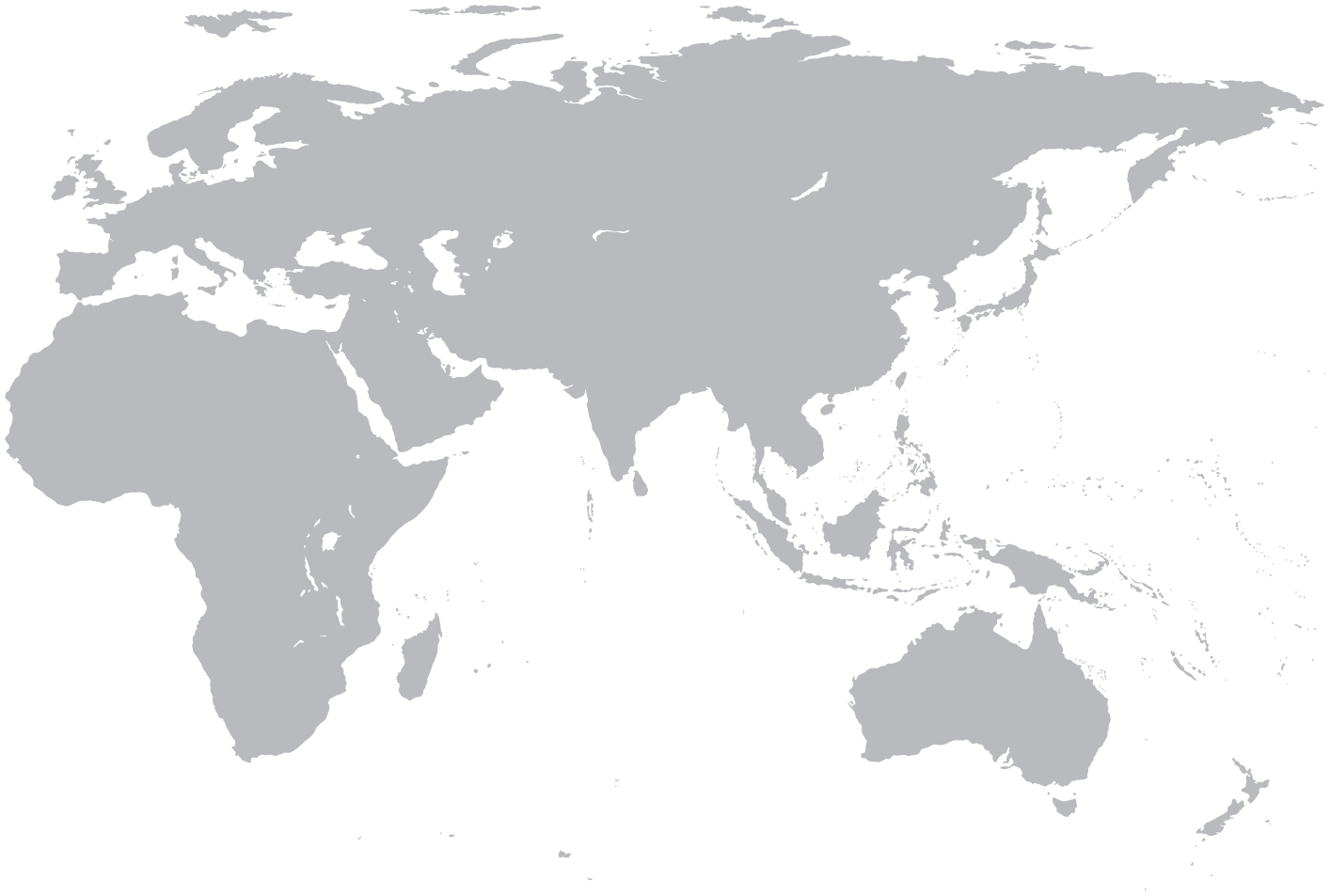
About the South Asia Programme of the RSIS Institute for Defence and Strategic Studies (IDSS)

RSIS initiated the South Asia Programme in 2007 following its recognition of the growing importance of the region in Asian and global affairs. The Programme, which is a component of the IDSS, focuses on academic and policy debates on pressing concerns in the region, such as India-Pakistan tensions, the integration of South Asia into the global nuclear order, and the relationship between terrorism/insurgency and regional stability. It also focuses on a range of broader issues, including South Asia's changing relations with the great powers, deepening trends in regionalism, non-traditional security issues such as water disputes and ethnic conflict, and the impact of a rising India on the Asian and global political landscapes.



About the RSIS Centre for Non-Traditional Security (NTS) Studies

The **RSIS Centre for Non-Traditional Security (NTS) Studies** conducts research and produces 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 policymakers 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 policymakers on the importance of NTS in guiding political responses to NTS emergencies and develop strategies to mitigate the risks to state and human security.

- 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:

1) Internal and Cross-Border Conflict
   - Dynamics of Internal Conflicts
   - Multi-level and Multilateral Approaches to Internal Conflict
   - Responsibility to Protect (RtoP) in Asia
   - Peacebuilding

2) Climate Change, Environmental Security and Natural Disasters
   - Mitigation and Adaptation Policy Studies
   - The Politics and Diplomacy of Climate Change

3) Energy and Human Security
   - Security and Safety of Energy Infrastructure
   - Stability of Energy Markets
   - Energy Sustainability
   - Nuclear Energy and Security

4) Food Security
   - Regional Cooperation
   - Food Security Indicators
   - Food Production and Human Security

5) Health and Human Security
- 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.*

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 facilitate advanced education on NTS. These are aimed at, but not limited to, academics, analysts, policymakers and non-governmental organisations (NGOs).

Networking and Outreach

The Centre serves as a networking hub for researchers, policy analysts, policymakers, 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 20 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

** 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.*

About the S. Rajaratnam School of International Studies, Nanyang Technological University

The **S. Rajaratnam School of International Studies (RSIS)** was established in January 2007 as an autonomous School within the Nanyang Technological University (NTU). RSIS' mission is to be a leading research and graduate teaching institution in strategic and international affairs in the Asia-Pacific.

To accomplish this mission, **RSIS** will:

- Provide a rigorous professional graduate education in international affairs with a strong practical and area emphasis
- Conduct policy-relevant research in national security, defence and strategic studies, diplomacy and international relations
- Collaborate with like-minded schools of international affairs to form a global network of excellence

Graduate Training in International Affairs

RSIS offers an exacting graduate education in international affairs, taught by an international faculty of leading thinkers and practitioners. The teaching programme consists of the Master of Science (MSc) degrees in Strategic Studies, International Relations, International Political Economy and Asian Studies. Through partnerships with the University of Warwick and NTU's Nanyang Business School, **RSIS** also offers the NTU-Warwick Double Masters Programme as well as The Nanyang MBA (International Studies). The graduate teaching is distinguished by their focus on the Asia-Pacific region, the professional practice of international affairs and the cultivation of academic depth. Over 200 students, the majority from abroad, are enrolled with the School. A small and select PhD programme caters to students whose interests match those of specific faculty members.

Research

Research at **RSIS** is conducted by five constituent Institutes and Centres: the Institute of Defence and Strategic Studies (IDSS), the International Centre for Political Violence and Terrorism Research (ICPVTR), the Centre of Excellence for National Security (CENS), the Centre for Non-Traditional Security (NTS) Studies, and the Temasek Foundation Centre for Trade & Negotiations (TFCTN). The focus of research is on issues relating to the security and stability of the Asia-Pacific region and their implications for Singapore and other countries in the region. The School has three professorships that bring distinguished scholars and practitioners to teach and do research at the School. They are the S. Rajaratnam Professorship in Strategic Studies, the Ngee Ann Kongsi Professorship in International Relations, and the NTUC Professorship in International Economic Relations.

International Collaboration

Collaboration with other Professional Schools of international affairs to form a global network of excellence is a **RSIS** priority. **RSIS** will initiate links with other like-minded schools so as to enrich its research and teaching activities as well as adopt the best practices of successful schools.

For more information on the School, visit www.rsis.edu.sg

CENTRE FOR
NON-TRADITIONAL
SECURITY STUDIES

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A Graduate School of Nanyang Technological University

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