



# NTS ALERT

## Water Security: Issues and Challenges in SEA

*This edition of NTS Alert examines the challenge of water security in Southeast Asia. The discussion will be based on the concept of water scarcity, and its consequences on human security and domestic and international security. In addition, we will take an in-depth look at the water management mechanisms implemented by the Greater Mekong Sub-Region and the Asia Pacific Water Forum.*

### Concept of Water Scarcity

Water is essential for all socio-economic development and for maintaining healthy ecosystems. As the world's population increases and economic development requires increased allocations of groundwater and surface water for domestic, agriculture and industrial sectors, the pressure on water resources intensifies, leading to tensions, conflicts among users and excessive pressure on the environment. The increasing stress on freshwater resources brought about by rising demand and by growing global population is of serious concern. Perhaps, in analyzing the issue of water and human consumption, it is useful to study it from the perspective of availability versus accessibility.

Availability refers to the physical presence of adequate water supplies, whereas accessibility refers to the ability of people within a particular country or region to actually receive or gain access to clean freshwater. These two distinct problems can be present in regions that are experiencing water stress or water scarcity. Availability may be more dependent on physical or environmental factors (i.e. the geography of a particular country or climate change, etc), whereas access may be more dependent on social or political factors (i.e. how much of a country's agricultural sector is dependent on irrigation, or

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how effective is a country's municipal water supply).

One concept which is central to the discourse on water security is the notion of *water scarcity*.

Water scarcity is a relative concept and can occur at any level of supply or demand. Scarcity may be a social construct (a product of affluence, expectations and customary behaviour) or the consequence of altered supply patterns stemming from climate change. Scarcity has various causes, most of which are capable of being remedied or alleviated. Scarcity often has its roots in water shortage, and it is in the arid and semi arid regions affected by droughts and wide climate variability, combined with population growth and economic development, that the problems of water scarcity are most acute.



The United Nations (UN) defines water scarcity as “the point at which the aggregate impact of all users impinges on the supply or quality of water under prevailing institutional arrangements to the extent that the demand by all sectors, including the environment, cannot be satisfied fully.”

### **The Current Water Scenario**

The world’s freshwater supply is finite. Most of the world’s water - about 98 percent - exists as salt water in the ocean and seas leaving about two percent as freshwater, of which roughly 99 percent is either trapped in glaciers and ice caps, held as soil moisture, or located in water tables too deep to access. Thus, only about one percent of the world’s total freshwater supply is readily available for consumption by humans, animals and irrigation. According to the Asian Development Bank (ADB), today, about 1 billion of the world's population lack access to improved water supply, and approximately 2 billion people lack access to improved sanitation. Recent studies predict that by 2025, two out of three people in the world will face with water shortage. Clearly, water security is a global problem which has to be tackled through international and regional forums. Water use has been growing at more than twice the rate of population increase in the last century, and although there is no global water scarcity as such, an increasing number of regions are chronically short of water.

### **Water as a Security Concern**

Thus, water or rather the accessibility and availability of water is a security concern both to states and societies. Water scarcity poses a very serious, complex and potentially wide-ranging threat to regional and international stability, and to appreciate the complexity of the issue, it has to be viewed at three levels – human, domestic and international level.

#### *Human security*

Water scarcity can become a security issue when it is seen from the human security perspective which encompasses a variety of issues that impact on human health and well-being. The UN’s *Human Development Report 1994*

introduced the idea of human security to the wider debate on development. The aim was to look beyond narrow perceptions of national security, defined in terms of military threats and the protection of strategic foreign policy goals, and towards a vision of security rooted in the lives of people. Water security is an integral part of this broader conception of human security. It is about ensuring that every person has reliable access to enough safe water at an affordable price to lead a healthy, dignified and productive life, while maintaining the ecological systems that provide water. When these conditions are not met, or when access to water is disrupted, people face acute human security risks that are transmitted through poor health and the disruption of livelihoods.

For example, almost two million children die each year due to unclean water and poor sanitation and this figure dwarfs the casualties associated with violent conflict. No act of terrorism generates economic devastation on the scale of the crisis in water and sanitation. Consider this: over one billion people worldwide lack access to safe drinking water and more than two billion people do not have basic septic or sewer systems. Water-related diseases are among the most common causes of illness and death in developing countries. In 2000, the estimated mortality rate due to water sanitation, hygiene-associated diarrhoea and other water-related diseases was more than two million. Despite the destructive impacts of water scarcity on people, the water issue barely registers on the international agenda.

#### *Internal/domestic security*

Water scarcity, often causally related with other factors such as poverty, population growth and environmental degradation, can exacerbate a human security problem into a national security issue. It can be the catalyst for large-scale migration and ethnic conflicts which ultimately, in more dire situations, can result in a decline in effective governance, potentially leading to a “failed state”. A June 2007 report by the UN Environment Programme (UNEP) suggested that the conflict in Darfur, Sudan, has in part been driven by climate change and environmental

degradation, and more precisely by water scarcity/drought. Over the past 40 years, rainfall in the region has fallen by 30 percent and the Sahara has advanced by more than a mile every year. The resulting tension between farmers and herders over disappearing pasture and declining water-holes has led to the break out of full-blown ethnic conflicts between the African tribes and the Arabs of Darfur. As a result, more than two million people are homeless and over 200,000 dead. The conflict has the potential to engulf neighbouring countries such as Chad. The UNEP report concluded that “Darfur...holds grim lessons for other countries at risk”.

#### *International security*

Water is increasingly viewed as a strategic resource, one that has to be protected and valued. Consequently when one or more countries share water resources, the potential for disputes and conflicts is always present. In a globalized world, the increasing economic and political interdependence of nations ultimately means greater potential for spill over of problems. Ethnic unrests, mass migration and declining economic and political conditions, fanned by freshwater scarcity, are not likely to be confined neatly within a country's borders. One of the ways in which water could become a regional issue is with regards to sharing.

Water has to be shared in two ways: among its different uses (energy, cities, food, environment, etc.), and between users (administrative regions or countries sharing a river basin or aquifer). Many regions, cities and countries rely on upstream users for water flow and any downstream user will be dependent on the action of the upstream users. Conversely, certain countries may be constrained by the demands of downstream countries. Equitable and sustainable management of shared water resources requires flexible, holistic institutions that are able to respond to hydrological variations, changes in socio-economic needs, societal values, and, particularly in the case of international watercourses, political regime changes. Recent thinking has focused on sharing the benefits of water, rather than the water itself.

#### **Water Security and Issues in Southeast Asia**

In Asia, the need for water is on the rise across sectors, further increasing the disparity between water demand and availability. Since 1950, water availability per capita has already decreased by 60 percent in North Asia and by 55 percent in Southeast Asia. China's urban areas typify this trend as more than 75 percent of urban river water is unsuitable for drinking or fishing, and 90 percent of urban groundwater is contaminated. But not all of the damage can be attributed to cities exclusively. According to the Food and Agriculture Organization (FAO) of the United Nations, nearly 80 percent of water withdrawal across East Asia and Southeast Asia is still used for agriculture (for both irrigation and livestock to feed growing populations). Only 14 percent goes to industry and seven percent to domestic water supplies. Agricultural overexploitation is depleting fisheries, eroding soils, and drawing down other natural capital. The economic consequences of such activities equate to reducing gross national savings by almost one-third in China, the Philippines, and Cambodia, and by almost half in Mongolia and Malaysia.

Southeast Asia (SEA) has one of the most abundant water resources in the world. The region has about 15 percent of the world's water resource. The volume of water available per person in SEA is higher than most other regions in the Asia-Pacific. In spite of this rich endowment, the region faces water shortage and the situation has become more acute in recent years. Regarded as one of the most populated region in the world with a population of 593 million people in 2004, SEA is also experiencing increasing urbanization. The sustained industrialization of its economy on the one hand and the continuing reliance on agriculture adds pressure on the demand for water.

In a globalised world, the issue of water security cannot be addressed by any single country. What is required is cooperation among various countries. The major mechanisms addressing water in the Southeast Asia region are Greater Mekong Sub-region and the Asia Pacific Water Forum.



### ***Mechanisms in the Greater Mekong Sub-region (GMS)***

The Asian Development Bank launched the Mekong Sub-region in 1992 as an initiative aimed at promoting development, trade and integration through enhanced transportation, communication, and power networks among the six countries in the region. The Mekong region covers more than 2.3 million square miles and is home to 240 million people. The 4,880 kilometre (3,032 miles) Mekong River begins in the Tibetan plateau, and makes its way through China's Yunnan province, Myanmar, Laos, Thailand, Cambodia and Vietnam, discharging into the South China Sea. Close to 70 million people depend on the river for food, water and transport; the region accounts for 20 percent of all fish caught from the world's inland waters

### **1. Strengthening protection of water resources and aquatic eco-systems**

- The classification of surface water quality and the determination of water quality criteria for river basins. The classification of groundwater quality and the determination of water quality criteria for all aquifers, firstly for those in key economic regions.
- Establishing and implementing plans for the protection of water resources and aquatic eco-systems, ensuring that water quality meets various demands for water, especially for residential use.
- Comprehensive implementation of measures for the protection and control of surface and groundwater pollution by ensuring minimal ecological flows of rivers; prevention and control of

#### ***Asia Pacific Water Forum (APWF)***

The APWF was officially launched on the 27th of September 2006 at the headquarters of the Asian Development Bank. In calling for the creation of the Asia-Pacific Water Forum (APWF), the region's water ministers sought to establish an effective mechanism to encourage more collaborative efforts on water resources management and to accelerate the process of effective integration of water resources management into the socio-economic development process of the Asian and Pacific region.

The goal of the APWF is to contribute to sustainable water management in order to achieve the targets of the Millennium Development Goals in Asia and the Pacific by capitalizing on the region's diversity and rich history of experience in dealing with water as a fundamental part of the human existence. Specifically, the APWF shall champion efforts aimed at boosting investments, building capacity, and enhancing cooperation in the water sector at the regional level and beyond. It has identified three *Priority Themes* namely:

- *Water Financing and Capacity Development*: To increase targeted investments for water and sanitation infrastructure and for human resources development.
- *Water-related disaster management*: To drastically reduce the vulnerability of human populations to water-related disasters.
- *Water for development and ecosystem*: To conserve and restore land-water interfaces for the improvement of water productivity.
- Achieving progress under each of the *Priority Themes* will be the driving force behind APWF's activities. APWF will monitor and report regularly the progress made towards each of the *Targets*, along with a roadmap for the way forward.

world.

The mission of the GMS with respect to water security are summed up as follows:

excessive water resources exploitation that cause degradation and depletion of water sources; and ensuring the integrity

of aquatic eco-systems, wetlands, estuaries and coastal areas.

- Establishment and implementation of plans for the protection and recovery of water quality for rivers and aquifers to meet the water quality criteria for socio-economic development and national defence and security objectives for each period of development.
- Strict and effective control of groundwater exploration activities; limiting and progressively prohibiting the application of toxic and polluting chemicals in agricultural production and aquaculture.

## 2. Ensuring sustainability and effectiveness in exploitation and use of water resources

- Establishment of river basin plans and water resources plans for all regions and managing the implementation of these plans. Plan the water resources of river basins, in a manner that would ensure appropriate and fair allocation and sharing of water resources among sectors, industries and localities.
- Materialising the policy of priority for domestic water use in management of water supply and in the building and operation of water resources exploitation and use facilities.
- Enhancing the controls of water resources exploitation and uses. Strengthening coordination in the building and operation of integrated and multipurpose water exploitation facilities with priority being given to domestic use, securing water to meet demands for drought control, power generation and navigation, and realignment of the operation regulations of major reservoirs.
- Combining efficient surface and groundwater exploitation and use; protecting and preserving groundwater resources by minimising groundwater exploitation wherever surface water can be exploited.

- Management of water demands, whereby incentives should be given for water saving and recycling.
- Establishment of a legal framework for the provision of a water service and for transfer and exchange of water resources licences.

## 3. Sustainable development of water resources

- Enhancing the protection and development of forests, with the first priority given to watershed forests.
- Maintaining and protecting water generation sources of rivers and reservoirs; increase the structural safety and maximize the storage capacity of existing reservoirs.
- Enhancing water resource development planning for river basins and ensuring integration of these with land use plans, forest development plans and socio-economic development plans, for the whole country and for each region and locality.
- Development of water resources as a basis for enhancing its value through construction of dams and water reservoirs so as to increase water flow regulation capacity, with priority given to development of integrated and multipurpose water extraction and use facilities.
- Strengthening measures for artificial recharge of groundwater sources with the focus on areas of water shortage.
- Implementing water transfers between river basins to alleviate water shortages.

## 4. Improvement of institutional arrangements

- Review, amendment and supplementation of the Law on Water Resources and other related legal documents to satisfy the requirements of integrated and uniform water resources management; transforming water management from a subsidised, supply-focused approach into a demand-focused approach that recognises the commercial





nature of water service products; putting in place specific legal tools to regulate the water resource elements such as river beds and banks, alluvial floodplain lands and estuary wetlands; implementation of river basin-based management for the protection of aquatic eco-systems and wetlands.

- Enhancing the use of economic tools in preventing and handling water resources pollution to ensure efficient water resources exploitation and use, as well as in the provision and use of water services.
- Promulgating fees, duties and tax policies and regulations on unit pricing and cost recovery norms in the field of water resources. To ensure that all water service providers are operating on the basis of financial self-sufficiency and are proactively responsible for O&M costs of their water service infrastructure. Encouraging communities, organisations and individuals to participate in the provision of water services - while ensuring integrated, multi-purpose and efficient water use, and water security and environmental protection.
- Enhancing administration reforms in the field of water resources with a focus on amendments and supplementation of functions and duties of state water resources management agencies from the central government level to localities, and ensuring clear assignment of duties and powers to the concerned ministries and sectors as well as improving the decentralisation process to assign to localities more functions and duties in the field of water resources management.

#### 5. Extension and improvement of international cooperation

- Enhancing international cooperation with the member countries of the Mekong River Commission in the framework of the Mekong River Cooperation Treaty (1995). Strengthen cooperation on water

resources among the Greater Mekong Sub-region countries, international organisations such as UNDP, ADB, WB, etc., and with governmental and non-government organisations so as to make full use of international support for the water resources sector, with particular attention to cooperation in education, training and studies in water resources.

As the supply of freshwater diminishes throughout the world, many experts see the need for a “blue revolution” (similar to what the “green revolution” is for food). Such a revolution is necessary in order to arrest the continued trend of dwindling freshwater resources and its consequences. There needs to be recognition that water insecurity (in the form of water scarcity) is not an isolated problem. Its effects can extend to human, national, regional and international security. As such, water should be recognized as a public good and this thinking should be the driving force behind any efforts taken to address the issue of water security. The establishment of a regional framework like the Greater Mekong Sub-region is a move towards this direction which provides a holistic approach towards addressing issues of sustainable development, environmental protection and most notably, water management in Southeast Asia.

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