

Water Security in the 21st Century

Written by Patrick MacQuarrie

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PATRICK MACQUARRIE, APR 2 2008

Human populations and economies are continuing to grow as the amount of freshwater in the world remains the same, threatening water security for many around the globe. The total quantity of water in the world is immense, but over 97.5 percent, is either saltwater or locked in ice caps (1.75%). The amount economically available for human use is only 0.007 percent of the total water available on earth, or about 13,500 cubic kilometres. While this seems like a massive amount, it only accounts to about 2300 cubic meters per person per year [?] a 37 percent drop since 1970.[1] This increasing scarcity is more complex because almost half the globe's land surface lies within international watersheds, land that contributes to the world's 277 plus international transboundary waterways.[2] Both water quantity, quality, and distribution have been neglected to the point of nearing a worldwide catastrophe.[3]

The world-wide water situation seems on a rapidly approaching collision course with human survival. More than a billion people lack access to safe water supplies. Almost three billion do not have access to adequate sanitation. Five to ten million people die each year from water-related diseases or inadequate sanitation. And twenty percent of the world's irrigated lands are salt laden, reducing effective crop production. Given these conditions, it is no wonder many are speculating there will be wars over water. The situation does indeed seem dire. However, are water wars really possible? As desperate as things may seem, looking at history, our collective experience indicates that water wars are highly unlikely. So if water wars are not manifest, what is the all the fuss about? Why worry about water, when in the past technology and human ingenuity and resilience have prevailed?

Unlike challenges facing the human population in other areas, many of the problems relating to water are not solely due to technical issues. From a developmental point of view, much of the world's water resources are allocated, and in many cases, over-allocated. Water resources in the Middle East and American southwest have been over-allocated since the 1950s. Consequently there has been focused efforts at keeping water demands per capita at even levels, California being on the cutting edge of implementing water reuse and water conservation initiatives. However, even if water demands are stabilized, population growth and development in developing and

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underdeveloped countries are pushing the limits of water availability toward unsustainable levels. Combined with unsustainable farming practises, disease, political instability, and increased climate variation, more than techno-fixes are needed to find the realistic answers.

In fact, most of the pressures over water resources and development come from social, political, cultural, and environmental concerns, often leading to intense political pressures. Hence the common use of the terms 'water stress'[4] and 'water poverty'.[5] Given the present scenario, another term can be added to the water security vocabulary, the 'water divide' describes the combination of increasing populations and fixed water supplies creating a larger and wider gap among those without sufficient access to fresh, affordable, water. Peter Gleick predicts that by 2025 over 30 countries will be unable to provide at least 1,000 cubic meters per person per year, a figure regarded as a minimum amount necessary for an adequate quality of life in a moderately developed country. Even more, 19 countries will be unable to provide even 500 cubic meters per person per capita by 2025.[6] Many talk of access to water as a human right. If everyone needs water to survive, but do not have access to it, how can we close the gap on what is a human right and what is economically feasible?

What makes water special compared with other so-called 'commodities' is that water ignores political boundaries, evades institutional classification, and mocks legal generalizations. To put water on the market might make some sense from an economic perspective. However, if access to water is deemed a human right, it might be dangerous to trade it on the world's markets. This is analogous to Tony Allan's virtual water concept, except now we are trading rights to human health, prosperity, and development. We have seen other scare commodities managed like this, such as oil, fall into the securitization trap, concentrating their holdings and exacerbating resource scarcity. On the other side of the argument, if we are to ensure equitable and reasonable use, as is codified in the 1997 UN/ILC Non-Navigational Watercourses treaty, how can water keep out of the market economy? We must find methods to not only provide and use water in an equitable and reasonable manner, but also in a way that is cost effective. Merging these two world views will not only *protect* human rights with respect to water, but also *provide* water to those who do not have adequate access to it. The answers are not easy or simple to construct. However, South Africa is making progress towards this balance, guaranteeing a minimum amount of water to its citizens as part of its human rights agenda, and using a block pricing scheme for water use above this mark.

The protection of a resource carries with it a herculean responsibility. The traditionalists claim that water, and more broadly, the environment, have no place in the security debate and that the state should bear the burden to only protect its own citizens. However, there is substantial movement in the international community to treat the

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environment and water as central security issue. This may or may not have benefits to people without access to water. Movement towards securitization of water resources, as has been done in many Middle Eastern countries, is problematic. Once states move water within its security agenda, many marginalized groups get left out of the security net. Experience on the upper Nile, Tigris-Euphrates, the Indus, and the Colorado in the United States abundantly illustrate this fact.

Several respected and widely read reports such as Kofi Annan's *In Larger Freedom* (2005), the UN High-level Panel on Threats, Challenges, and Change's *A More Secure World* (2004), the UNDP's *Human Development Report 2006* focusing on power, poverty, and the global water crisis, and Worldwatch Institute's *State of the World – Redefining Global Security*, have linked environmental concerns and water to broader security issues such as economic development, foreign policy, and traditional state security.[7] To underscore the importance water and the environment plays in securing our future, one of the six clusters of threats listed in *A More Secure World* is environmental degradation. Degradation of the environment is inextricably linked to the quality, quantity, and availability of water for human and ecological use. So instead of firmly placing water in the hands the state security apparatus, it may be better managed on a local level, while interacting with regional, national, and international actors. The World Bank has recently completed a study measuring the effectiveness of decentralization of water institutions, their results suggesting that river basin institutions may function more effectively as decentralized social management units.

It is clear that humans are having a serious effect on the environment. China is facing catastrophic environmental issues with respect to water. Over 400 of China's 600 cities are experiencing severe water shortages, forcing the Chinese government to take drastic moves toward water conservation and integrated water management.[8] The Chinese are even diverting from the Yellow River to provide drinking water for the 2008 Olympics, an indication of the enormous developmental challenges confronting China in the 21st century. Bangladeshis are continuing to suffer from massive flooding from the Ganges, contaminating freshwater wells, spreading disease and displacing thousands as the southern Himalayas continue to erratically drain the increasingly intense monsoonal storms. The disappearing Aral Sea has aggravated relations between Kazakhstan, Kyrgyzstan, and Uzbekistan, forcing shortage in gas, oil, and fuel that are linked to water supplies. The American southwest is continuing to experience serious drought. Lake Mead down over 30 meters at only 50 percent storage capacity, increasing political tension with the Northwest states on whether or not to transfer water from the Columbia River Basin already suffering from severe ecological stress and dwindling wild salmon populations.[9] The current crisis in Darfur is worsened by lack of water supplies for fleeing refugees, with tens of thousands of Sudanese unable to find and secure fresh water and security within their

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own state.

Water security at the human and worldwide levels will continue to challenge our greatest minds and test our mightiest wills. States will certainly continue to play a vital role. But to greater extent, water governance is shifting toward water basin organizations, regional networks, and local communities in hopes to better manage water allocations, transfers, and environmental flows. It may be too soon to know if these trends will have positive outcomes. However, research suggests that cooperation is evident where these institutions are prevalent. The vectors point toward decentralization, multi-scalar cooperative institutions, and sustainable environmental stewardship. Certainly greater understanding is required to prevent conflicts over water in the future, ensuring water security for future generations. Sometimes even our most trusted and enlightened leaders need to accept they are not always on the right path.

“Fierce competition for fresh water may well become a source of conflict and wars in the future.”

Kofi Annan, Mar 2001

“But the water problems of our world need not be only a cause of tension; they can also be a catalyst for cooperation.”

Kofi Annan, Feb 2002

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[1] United Nations. 1997. *Water in the 21st Century: Comprehensive Assessment of the Freshwater Resources of the World*. Geneva: WMO/Stockholm Environmental Institute.

[2] See the Transboundary Freshwater Dispute Database (TFDD), 2008, directed by Aaron T. Wolf, Department of Geosciences, Oregon State University, (<http://www.transboundarywaters.orst.edu/>).

[3] Gleick, Peter H. 1996. ‘Basic water requirements for human activities: meeting basic needs’, *Water International* 21(2):83–92.

[4] Falkenmark M. 1986. ‘Fresh waters as a factor in strategic policy and action’. In *Global Resources and International Conflict: Environmental Factors in Strategic Policy and Action*, ed. AH Westing, pp. 85–113. New York: Oxford Univ. Press.

[5] Feitelson E, Chenoweth J. 2002. ‘Water poverty: towards a meaningful indicator,’ *Water Policy* 4:263–81

[6] Gleick, Peter H. (ed). 1993. *Water in Crisis: A Guide to the World’s Fresh Water Systems*. New York: Oxford University Press.

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[7] Annan, Kofi. 2005. *In Larger Freedom: Towards development, security and human rights for all*. Report of the Secretary General A/59/2005, New York: United Nations; United Nations. 2004. *A More Secure World: Our shared responsibility*, Report of the Secretary General's High-level Panel on Threats, Challenges, and Change, New York: United Nations; UNDP. 2006. 'Human Development Report 2006. Beyond Scarcity: Power, poverty and the global water crisis', United Nations Development Program. New York: UNDP/Palgrave Macmillan, <http://hdr.undp.org>; Worldwatch Institute (ed.) 2005. *State of the World 2005: Redefining Global Security*, Washington, DC: Worldwatch Institute.

[8] BBC News. 07 February 2007. 'Water woes plague China's economy', Nils Blythe, Chongqing, China, <http://news.bbc.co.uk>; Associated Press Worldstream. August 2006. "China to spend \$125US billion to improve water facilities, combat pollution." International News. Gillian Wong. <http://sunzi1.lib.hku.hk/ER/detail/2156307>.

[9] Bureau of Reclamation. <http://www.usbr.gov/lc/region/g4000/hourly/hourly.html>, accessed 25 March 2008.