

# Converging Global Trade-Offs

## *Water & Peace In A Rapidly Converging World*

A  
Presentation  
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**Canadian Pugwash & Science for Peace International Forum  
On Water & Peace Nov 8& 9, 2008**

# **Converging Global Trade-Offs**

*Water & Peace*

*In A Rapidly Converging World*

There are many here who will understand that there are periods in our lives when so much happens that we know that the moment we stop moving a great deal will catch up with us demanding to be addressed.

This is also true on the large scale of the life of the world. We have moved quickly and cut a wide environmental swath. But the time is coming when the world will demand it's due. And this is exactly what is happening with water.

Law makers and public policy scholars around the world are reacting to ground-breaking research that indicates that natural ecosystems may be far more important to global peace and security than many of us may have appreciated. The hydro-ecological principles at the core of this insight are breathtakingly simple:

Nature has survival value to people and much of that survival value is defined by the fact that nature is our only provider of water.

In order to provide water and other critical benefits to people, nature, however, needs water, too. We need water to prime the pump – so to speak – and the hydrological cycle is a very large pump.

It follows then – and this is the important and painfully obvious part – that, if you want it to continue to deliver valuable ecosystem services on a free basis, nature must be regarded in the context of water resources management decision-making as a legitimate water customer in its own right.

Current eco-hydrological research underscores much of what we have known intuitively for generations, especially in places like Canada. Much of what is important about where and how we live is defined by water.

As we come to realize the importance of water's role in the stabilization of natural and agricultural ecosystems, we begin to see the ways in which our numbers may be altering the very systems upon which we depend to sustain planetary conditions as we know them.

Currently, global human population growth is the highest in places where there is the least water. About 40 percent of the surface of the solid Earth receives so little precipitation that natural ecosystem function is limited by water availability.

Thus we find that globally a third of humanity is now competing directly with nature for water. More water resource development, especially in semi-arid and arid regions of the globe, will lead to greater damage to both freshwater and non-aquatic ecosystems, which will lead directly to the decline of our global life-support capacity and ultimately to diminishment of human well-being. That, however, is the direction in which we appear to be headed.

It is estimated that to meet the food demands that are projected to exist in the world in 2025, we will need to put an additional 2,000 cubic kilometres of water into irrigation. This amount is roughly equivalent to 24 times the average flow of the Nile.

Given current water-use patterns, the population that is projected to exist on the planet in 2050 will require 3,800 cubic kilometres of water per year, which is close to all the freshwater that can presently be withdrawn on Earth.

This would mean that the world would lose most of the important environmental services that aquatic ecosystems presently provide on our behalf. Clearly, that is just not going to happen. Something has to give.

We are also beginning to observe that rapidly expanding urban centres have begun to compete with agriculture for both land and water on a global basis.

Agriculture has, in turn, begun to compete with nature for land and water. We are increasingly concerned that we cannot meet both agricultural and urban needs while at the same time providing enough water to ensure the perpetuation of natural ecosystem function.

As a consequence of growing populations and increased competition for land and water, humanity is converging upon the need to make uncommonly difficult public policy trade-offs that have never had to be made on a global scale before.

If we provide to nature the water it needs to perpetuate our planetary life-support system, then much of that water will have to come at the expense of agriculture, which means that many people will have to starve to meet ecosystem protection goals.

If, on the other hand, we provide agriculture all the water it needs to have any hope of feeding the populations that are projected to exist even in 2025, then we must expect ongoing deterioration of the biodiversity-based ecosystem function that has generated Earth's conditions upon which our society depends both for its stability and sustainability.

The implications for Canada of emerging eco-hydrological pressures elsewhere are enormous. As more countries around the world become water scarce, it will become more and more necessary to import water, not in its raw liquid state, but as water embodied in food.

Global peace relies heavily on food security. Global experts have predicted that western Canadian agriculture could have a new and very prominent food security niche in the global economy — provided it is able to keep up with solutions to its own water availability and quality challenges related to agricultural and other practices.

Given that the world will likely be relying upon us more heavily than ever to meet ever more unattainable food production goals, it is clear that Canada's future economic success may well be defined by how carefully and productively we manage our water resources.

Our success in managing water, however, may well be defined by how well we protect the ecosystems and functions that generate those resources. But the door to positive change may not be open long.

Even though the limits of our water supply are on the horizon we find ourselves in a situation where the momentum of our own economy and the weight of established precedent are hounding us relentlessly in the direction of difficult trade-offs.

To assure our own future and to be useful to others elsewhere we have to get our own house in order. By setting our house in order, I mean making room for emerging eco-hydrological considerations in the way we manage water.

There are at least three major problem areas that need to be addressed in Canada if we are to achieve anything close to a level of sustainable water resource management that will allow us to help the world.

The first challenge we need to address relates to self-perception. We have to dispel the myth of limitless wilderness and unlimited water abundance in Canada or we will continue to make public policy choices based on false assumptions that will have undesirable ecological, social, and political consequences in the future.

Canada is not as wild as it once was; it is not as wild as think it is; and it certainly not as wild as we tell others it is.

Nor do we have as much water where and when we need it as we would like to think. We are also not as effective at managing at as we would like to think.

Before we even consider new approaches such as continental water strategies, Canada should solve its own very real problems associated with jurisdictional fragmentation, weak regulatory strictures, the absence of proper monitoring, and widespread aquatic ecosystem decline.

The second challenge we face relates to our appreciation of the role that aquatic ecosystem health must ultimately play in sustainability.

We have adopted a consensus view of what we would like sustainability to mean that does not reflect reality. We think that because we can afford to engineer our way out of short-term water availability and quality issues that we are creating a sustainable water management future. There is no guarantee that this is so.

It is important to remember that natural and aquatic ecosystems do not exist just to supply and purify water for human use.

Natural systems perform many other functions, and when natural ecosystems are diminished or disappear these functions have to be reproduced or enhanced elsewhere if our planetary life-support system is to continue functioning in the manner in which we have come to rely. If eco-hydrological research tells us anything it is that that is clearly not happening.

All over the world, complex natural systems are being simplified in order to concentrate specific benefits in human hands. The cumulative effects of our global engineering efforts on our planet's life support function are becoming increasingly measurable.

But please do not misunderstand me. The point that evolving eco-hydrological perspectives put into relief is not that we should stop relying on engineering solutions. We can't go back now. If anything we need solid engineering solutions more than ever.

The point is that we need to improve our understanding not just of fundamental eco-hydrological function, but of the expanded services that our natural, agricultural and urban ecosystems might be able to provide in the future and engineer toward the realization of that potential. But here's the kicker. We then have to reserve enough water through our management mechanisms to make sure these ecosystems have the water they need to perform these functions under current circumstances and in the altered circumstances in which we may have to live as a consequence of higher mean global temperatures.

The third big challenge we face relates to governance. There is a growing sense here that our water management problems will go away if we simply let the marketplace do its magic. While one cannot object to markets as a means for managing increasingly scarce water resources, we know from international example that even carefully developed water markets cannot make up for failures of government to offer appropriate oversight that can only emerge through strong regulatory frameworks.



As we have seen abundantly recently in the United States, the market serves itself first and does not serve the common good unless government demands that it do so.

In trying to confront well-identified future challenges such as sectoral and regional conflicts over shrinking water supplies, increased demand related to growth and development, climate change, and demands for water from new energy developments such as biofuels, we need to aim for far more than just market efficiency.

As we contemplate the need for better water policy in this country we must ask ourselves some fundamental questions. What is our water policy really about? Is it about market efficiency? Is it about equity, decentralization and local participation in water resource decision-making? Or is it about sustainability? Or should it be about all of these things together?

Global example warns us that achieving part of the goal is not enough. Examples from elsewhere also suggest that regardless of the party in power, only a very strong government committed to achieving all of these goals and not just one end of the spectrum will be able to implement a comprehensive program of policy transition capable of achieving anything close to long-term sustainability.

Examples elsewhere suggest that with cooperation, multiple water management goals can be achieved.

What we need is a new Canadian water ethic that harmonizes federal and provincial water resource management aspirations. Under the aegis of that ethic we need to ensure formal representation for the environment itself and ways to advocate for nature's own need for water so as to perpetuate bio-diversity based ecosystem productivity central to long term perpetuation of favourable to hydrological circumstances in the Canadian West.

If we can balance the water availability and quality needs of nature, agriculture, and our cities, everything else we need to do, including addressing climate change and achieving sustainability, may very well fall into line.

If we do this for ourselves first then we will have something new and very useful to share with the rest of the world.

Thank you.

## **Bob Sandford**

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