

ESSAY

Do nations go to war over water?

Wendy Barnaby was asked to write a book about water wars — then the facts got in the way of her story.

The United Nations warned as recently as last week that climate change harbours the potential for serious conflicts over water. In its World Water Development Report¹ of March 2009, it quotes UN Secretary-General Ban Ki-moon noting the risk of water scarcity “transforming peaceful competition into violence”. It is statements such as this that gave birth to popular notions of ‘water wars’. It is time we dispelled this myth. Countries do not go to war over water, they solve their water shortages through trade and international agreements.

Cooperation, in fact, is the dominant response to shared water resources. There are 263 cross-boundary waterways in the world. Between 1948 and 1999, cooperation over water, including the signing of treaties, far outweighed conflict over water and violent conflict in particular. Of 1,831 instances of interactions over international freshwater resources tallied over that time period (including everything from unofficial verbal exchanges to economic agreements or military action), 67% were cooperative, only 28% were conflictive, and the remaining 5% were neutral or insignificant. In those five decades, there were no formal declarations of war over water².

I learned this the hard way. A few years ago, I had just written a book about biological warfare³ and the publishers were keen for me to write another. “How about one on water wars?” they asked. It seemed a good idea. The 1990s had seen cataclysmic forecasts, such as former World Bank vice-president Ismail Serageldin’s often-quoted 1995 prophecy that, although “the wars of this century were fought over oil, the wars of the next century will be fought over water”.

This and similar warnings entered the zeitgeist. Tony Allan, a social scientist at King’s College London and the School of Oriental and African Studies (SOAS) in London, summarized⁴ the not-so-subtle argument as “if you run out of water you reach for a Kalashnikov or summon the air strike”.

I had no difficulty finding sources to back up this argument, and I set about writing chapters on the Jordan, the Nile and the Tigris–Euphrates river systems. My chapter choice relied on what seemed a perfectly reasonable assumption: that water scarcity was governed by the presence or absence of flowing water.

Allan had made the same assumption a few decades earlier when he set out to study the water situation in Libya. By the mid-1980s, water stress in North Africa and the Middle East had worsened; but Allan began to question his assumptions when he found no sign of the widely predicted water wars. Instead, the burgeoning populations of the Middle Eastern economies had no apparent difficulties in meeting their food and water needs. Allan had been forced to grapple with a situation in which people who are short of water do not necessarily fight over it.

Invisible water

Allan’s earlier thinking about water wars began to change after meeting the late Gideon Fishelson, an agricultural economist at Tel Aviv University, Israel. Fishelson argued that it is foolish for Israel, a water-short country, to grow and then export products such as oranges and avocados, which require a lot of water to cultivate. Fishelson’s work prompted Allan to realize that water ‘embedded’ in traded products could be important in explaining the absence of conflict over water in the region.

As a global average, people typically drink one cubic metre of water each per year, and use 100 cubic metres per year for washing and cleaning. Each of us also accounts for 1,000 cubic metres per year to grow the food we eat. In temperate climates, the water needed to produce this food is generally taken for granted. In arid regions, Allan described how people depend on irrigation and imported food to fulfill these needs. Imported food, in particular, saves on the water required to cultivate crops.

The relationship of food trade to water sustainability is often not obvious, and often remains invisible: no political leader will gain any popularity by acknowledging that their country makes up the water budget only by importing food. Allan saw through this to document how the water budgets of the Middle East were accounted for without conflict.

Allan wrote about embedded water for a few years without it exciting any comment. Then, on a dark Monday afternoon in November 1992, during a routine SOAS seminar, somebody used the term ‘virtual’ water to describe the same concept. Allan realized this attention-grabbing word, in vogue with the computer-

literate younger generation, would catch on better than his own term. And he was right: “From there on it flew,” he says.

Allan’s work explained how, as poor countries diversify their economies, they turn away from agriculture and create wealth from industries that use less water. As a country becomes richer, it may require more water overall to sustain its booming population, but it can afford to import food to make up the shortfall⁵.

Areas seemingly desperate for water arrive at sustainable solutions thanks to the import of food, reducing the demand for water and giving an invisible boost to domestic supplies. Political leaders can threaten hostile action if their visible water supplies are threatened (a potentially useful political bluff), while not needing to wage war thanks to the benefits of trade.

Sources of war

Israel ran out of water in the 1950s: it has not since then produced enough water to meet all of its needs, including food production. Jordan has been in the same situation since the 1960s; Egypt since the 1970s. Although it is true that these countries have fought wars with each other, they have not fought over water. Instead they all import grain. As Allan points out, more ‘virtual’ water flows into the Middle East each year embedded in grain than flows down the Nile to Egyptian farmers.

Perhaps the most often quoted example of a water war is the situation in the West Bank between Palestinians and Israel. But as Mark Zeitoun, senior lecturer in development studies at the University of East Anglia in Norwich, UK, has explained, contrary to what both the mass media and some academic literature say on the subject, while there is conflict and tension — as well as cooperation — there is no ‘water war’ here either⁶.

Ten million people now live between the Jordan River and the Mediterranean Sea. If they were to be self-sufficient in food, they would need ten billion cubic metres of water per year. As it is, they have only about one-third of that: enough to grow 15–20% of their food. They import the rest in the form of food. When it comes to water for domestic and industrial use, the rainfall and geology of the West Bank alone should provide enough water for the population there: Ramallah has a higher annual average rainfall than Berlin. But today, water for even these needs is scarce.

“In five decades, there were no formal declarations of war over water.”



ILLUSTRATION BY J. FIELD

Power struggles and politics have led to overt and institutionalized conflict over water — but no armed conflict, as there is over borders and statehood. Instead, Palestinian and Israeli water professionals interact on a Joint Water Committee, established by the Oslo-II Accords in 1995. It is not an equal partnership: Israel has de facto veto power on the committee. But they continue to meet, and issue official expressions of cooperation, even in the face of military action. Inequitable access to water resources is a result of the broader conflict and power dynamics: it does not itself cause war.

The Nile Basin Initiative, launched in 1999 and encompassing nine nations, is another example of the way in which wider geopolitical and economic factors help to balance water allocation. Historically, vast differences in the political clout of nations across which, or along which, a river flows have resulted in unequal water division. Under the 1959 Nile Waters Agreement between Egypt and Sudan, Egypt has had rights to 87% of the Nile's water, with Sudan having rights to the rest. Ethiopia, whose highlands supply 86% of Nile water, does not even figure in the agreement: continuing conflicts weakened the agreement to a point where Ethiopia has been unable to press a claim. But Egypt's desire to consolidate its economic development necessitates that it now come to better terms with its neighbours, improving prospects for local trade. So Egypt is willing to

engage in the multilateral initiative to cooperate more on matters such as hydroelectric power development, power-sharing cooperatives, river regulation and water-resources management.

Likewise, although India and Pakistan have fought three wars and frequently find themselves in eyeball-to-eyeball confrontation, the 1960 Indus Waters Treaty, arbitrated by the World Bank, has more than once helped to defuse tensions over water.

Oil and water don't mix

Yet the myth of water wars persists. Climate change, we are told, will cause water shortages. The Intergovernmental Panel on Climate Change estimates that up to 2 billion people may be at risk from increasing water stress by the 2050s, and that this number could rise to 3.2 billion by the 2080s⁷.

Water management will need to adapt. But the mechanisms of trade, international agreements and economic development that currently ease water shortages will persist. Researchers, such as Aaron Wolf at Oregon State University, Corvallis, and Nils Petter Gleditsch at the International Peace Research Institute in Oslo, point out that predictions of armed conflict come from the media and from popular, non-peer-reviewed work.

There is something other than water for which shortages, or even the perceived threat

of future shortages, does cause war — oil. But the strategic significance of oil is immeasurably higher than that of water. Serious interruptions of oil supplies would stop highly developed economies in their tracks. Oil is necessary for a developed economy, and a developed economy provides for all the needs of its citizens, including water. People in developed economies do not die of thirst.

My encounter with Allan's work killed my book. I offered to revise its thesis, but my publishers pointed out that predicting an absence of war over water would not sell.

Book or no book, it is still important that the popular myth of water wars somehow be dispelled once and for all. This will not

only stop unsettling and incorrect predictions of international conflict over water. It will also discourage a certain public resignation that climate change will bring war, and focus attention instead on what politicians can do to avoid it: most importantly, improve the conditions of trade for developing countries to strengthen their economies. And it would help to convince water engineers and managers, who still tend to see water shortages in terms of local supply and demand, that the solutions to water scarcity and security lie outside the water sector in the water/food/trade/economic development nexus. It would be great if we could unclog our stream of thought about the misleading notions of 'water wars'.

Wendy Barnaby is editor of *People & Science*, the magazine published by the British Science Association.

e-mail: w.barnaby@btinternet.com

1. *Water in a Changing World* United Nations World Water Development Rep. 3; available online at www.unesco-wwap.org/wwdr3/media-kit/documents/WWDR3%20low%20res.pdf (2009).
2. Yoffe, S., Wolf, A. T. & Giordano, M. J. *Am. Wat. Resour. Assoc.* **39**, 1109–1126 (2003).
3. Barnaby, W. *The Plague Makers: The Secret World of Biological Warfare* (Continuum, 2002).
4. Allan, J. A. *Government and Opposition* **40**, 615–617 (2005).
5. Allan, A. J. *The Middle East Water Question* (I. B. Tauris, 2000).
6. Zeitoun, M. *Wat. Int.* **32**, 105–120 (2007).
7. *Climate Change and Water Intergovernmental Panel on Climate Change*; available online at www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf (2008).