

CORRESPONDENCE

These letters respond to the Essay 'Do nations go to war over water?' by Wendy Barnaby
(*Nature* **458**, 282–283; 2009).

The potential for water conflict is on the increase

SIR — Wendy Barnaby dispels the myth of future water wars, arguing that countries “solve their water shortages through trade and international agreements”. But water has often been the object, target or weapon of military or terrorist action, including in former conflicts between Iraq and Iran, Syria and Iraq, Israel and Syria, and South Africa and Lesotho (see Peter H. Gleick’s water conflict chronology at <http://tinyurl.com/ce776f>). These range from small-scale demonstrations and border skirmishes to the destruction of irrigation and water-supply systems and the poisoning of water supplies.

Problems can arise when humans have too little or too much water, or water that is too dirty, and countries may accuse one another of amplifying these problems. But if a pollution incident in one country kills biological life in an international river, the downstream riparian nations will collaborate to reduce damage and prevent reoccurrence; likewise, countries usually cooperate after a disastrous flood. More difficult conflicts can arise in areas of water scarcity, but nations are increasingly willing to negotiate rather than to go to war.

A handful of arid-climate countries receive nearly all their water from abroad by means of shared rivers. The water resources of Turkmenistan, Egypt, Uzbekistan, Syria and Israel depend on neighbouring countries. Several countries successfully share international rivers within the framework of river commissions, as well as lakes and aquifers through international bodies. Small-scale water disputes can lead to the development of diplomacy and help to prevent bigger water wars.

However, the potential for water conflict is on the increase, as populations in water-stressed areas continue to grow and the demand for water increases to improve living standards with better sanitation and a water-intensive diet. In arid areas, water scarcity is likely to be exacerbated by climate change (B. Bates *et al.* *Climate Change and Water* Intergovernmental Panel on Climate Change; 2008; <http://tinyurl.com/c4kd2e>). The potential for water conflict — war or no war — deserves careful attention.

Zbigniew W. Kundzewicz Institute for Agricultural and Forest Environment, Polish Academy of Sciences, Bukowska 19, 60-809 Poznań, Poland, and Potsdam Institute for Climate Impact Research, Telegrafenberg, 14412 Potsdam, Germany
e-mail: kundzewicz@yahoo.com
Piotr Kowalczyk Institute for Agricultural and Forest Environment, Polish Academy of Sciences, Bukowska 19, 60-809 Poznań, Poland

Increasing inequality is already making shortages worse

SIR — Wendy Barnaby is hasty in her conclusion that water shortages can and will be resolved through international trade and economic development. She predicts that nations will be able to adapt to water shortages as they develop, by switching to industries other than agriculture and by importing their food from elsewhere. But this assumes both that developing nations will be able to afford food and that food itself is not also a limited resource being threatened by global warming.

Barnaby’s implication that poorer nations will become wealthier in the coming decades is at odds with the global reality of an increasing gap between rich and poor (*Report on the World*

Social Situation United Nations Department of Economic and Social Affairs; 2005) and with the repeated failure of such development plans (J. Ferguson *Global Shadows* Duke Univ. Press; 2006). Evidence of the causal relationship between inequality and the failure of economic development (W. Easterly *J. Dev. Econ.* **84**, 755–776; 2007) makes it ever harder to imagine that development is going to become successful in the near future.

In addition to the increasing inequality of nations, the gap between rich and poor citizens is widening in countries around the world. This means that the belief in cooperation as the “dominant response to shared water resources” needs to be further questioned by analysing how water is distributed within nations. For instance, ‘water management devices’ (meters) are being installed in poor people’s homes in Cape Town, South Africa; in Chile, water privatization has allowed mining companies to monopolize scarce water supplies, forcing people to abandon their home towns as water dries up.

Access to water is already a serious issue for people in many parts of the world and, given recent United Nations estimates, the situation is not likely to improve. In light of this, we believe that embracing international trade and development as easy or inevitable solutions is naive. The reality of global inequality, power and poverty — and their impact on access to water — must be taken seriously in any plan for addressing future water shortages.

Thomas H. Meek Department of Biology, University of California, 900 University Avenue, Riverside, California 92521, USA
e-mail: tmeek001@ucr.edu

Laura A. Meek Women’s Studies Department, The George Washington University, 837 22nd Street NW, Washington DC 20052, USA
e-mail: Laura6@gwu.edu

Water is a source of cooperation rather than war

SIR — Water, like any scarce common resource, creates competition that can lead to conflict, but, as Wendy Barnaby concludes in her Essay, wars are not waged over water. Her message is borne out by my own experience as senior adviser to the Israeli Water Authority.

The Jordan–Israel Peace Treaty, signed in October 1994, includes a chapter on water that has been in operation for more than 14 years to the satisfaction of both parties. Jordan’s chief water negotiator, Munther J. Haddadin, in a review of the history that led up to the treaty, notes that “The claim that the June war of 1967 was a ‘water war’ is not substantiated” (M. J. Haddadin *Diplomacy on the Jordan* Kluwer; 2001).

In 1995 Israel signed the Oslo II Interim Agreement with the Palestinian Authority, in which Article 40 (‘Water and sewage’) was intended to serve for a period of five years while a permanent agreement was drawn up. Although this has not yet happened, both sides adhere to the interim agreement as a basis for coordinated management of their water resources. Despite the difficult security situation, the Joint Water Committee set up by the agreement has met and communicated regularly, and Israel has increased the water supply to the Palestinian Water Authority over and above that stipulated in the agreement, in response to Palestinian needs and requests.

Water, by its very nature, has a proven potential for engendering cooperation between nations rather than being a cause for war.
Uri Shamir, Stephen Grand, Nancy Grand Water Research Institute, Technion – Israel Institute of Technology, Haifa 32000, Israel
e-mail: shamir@technion.ac.il