

INVITED ARTICLE

The Coming Water Crisis: A Common Concern of Humankind

Edith Brown Weiss*

First published online 13 March 2012

Abstract

This essay argues that fresh water, its availability and use, should now be recognized as ‘a common concern of humankind’, much as climate change was recognized as a ‘common concern of humankind’ in the 1992 United Nations Framework Convention on Climate Change, and conservation of biodiversity was recognized as a ‘common concern of humankind’ in the 1992 Convention on Biological Diversity. This would respond to the many linkages between what happens in one area with the demand for and the supply of fresh water in other areas. It would take into account the scientific characteristics of the hydrological cycle, address the growing commodification of water in the form of transboundary water markets and virtual water transfers through food production and trade, and respect the efforts to identify a human right to water.

Keywords: Fresh Water, Common Concern of Humankind, Environmental Protection, Human Rights, Biodiversity, Climate Change, Water Markets

1. INTRODUCTION

Many articles proclaim fresh water to be the new environmental crisis of this century. For some, fresh water will be a crisis because the supply needed to satisfy basic human needs of water for drinking, bathing, and sanitation will not exist, or will be too costly to afford. For others, droughts will mean that people will not have the fresh water needed to grow crops and supply food. For others, a lack of fresh water will damage, if not devastate, ecosystems, which people rely on to support fisheries and to provide other essential services. For still others, severe and frequent weather events will cause devastating floods and other water-related calamities.

In law, fresh water has been generally treated as a local issue, or one confined to specific international river basins. Over 2,000 international agreements (multilateral and bilateral) are fully or partly concerned with water. Most of these are focused on a given

* Georgetown University Law Center, Washington, DC, United States.
Email: weiss@law.georgetown.edu.

river, river basin system, or aquifer. Many states, though not all, have national and local laws dealing with the supply of fresh water and, to a lesser extent, with pollution.

In this essay, I argue that fresh water, its availability and use should now be recognized as ‘a common concern of humankind’, much as climate change was recognized as a ‘common concern of humankind’ in the 1992 United Nations (UN) Framework Convention on Climate Change (UNFCCC)¹ and conservation of biodiversity was recognized as a ‘common concern of humankind’ in the 1992 Convention on Biological Diversity (CBD).² This would recognize the many linkages between what happens in one area with the demand for and the supply of fresh water in other areas. It would take into account the scientific characteristics of the hydrological cycle, address the growing commodification of water in the form of transboundary water markets and virtual water transfers through food production and trade, and respect the efforts to identify a human right to water.

The scientific aspects of water are important for understanding how to use law to address water problems. Water is one substance that we must have to survive and for which there is no known substitute. Technically, water does not disappear; it only changes form. The hydrological cycle includes the atmosphere and clouds, fresh water, and marine water. It is influenced by land and the uses we make of land. Fresh water constitutes only about 2.5% of the water on the planet. Of this, 0.4% lies in surface waters (rivers, lakes and swamps), 8% in permafrost, 68.7% in glaciers and ice caps, and 30.1% in ground water.³

Ground water aquifers are an important source of fresh water, although they are often poorly identified and mapped. Many aquifers are theoretically rechargeable. Some of these, though, are pumped at rates in excess of their recharge rate (‘mining’ of ground water), which over time can render them essentially empty. Some major aquifers are non-rechargeable. Once these so-called fossil aquifers are depleted, those using the water must turn to other sources, and future generations are deprived of the aquifers as a source of fresh water. Over-pumping of aquifers is leading to dropping of water tables and drying up of wells, which is endangering grain production and threatening catastrophic global food shortages.⁴

Our uses of land affect both the quantity and the quality of water in rivers, lakes, estuaries, and aquifers. Denuding hills of trees in watersheds increases siltation of rivers and decreases water availability downstream. It also causes the loss of productive soils in the denuded area. In some regions, rainfall is highly variable, which makes it more difficult to maintain minimum levels of water and to protect against destructive floods. Land use is especially important over the recharge area of

¹ New York, NY (US), 9 May 1992, in force 21 Mar. 1994, available at: <http://unfccc.int>.

² Rio de Janeiro (Brazil), 5 June 1992, in force 29 Dec. 1993, available at: <http://www.cbd.int/convention/text>.

³ United Nations Environment Programme (UNEP), *Global Environment Outlook (GEO) 4: Environment for Development* (UNEP, 2007), p. 118, available at: http://www.unep.org/geo/GEO4/report/GEO-4_Report_Full_en.pdf.

⁴ L.R. Brown, ‘Growing Water Deficit Threatening Grain Harvests’, Earth Policy Institute, 20 July 2011, available at: http://www.earth-policy.org/book_bytes/2011/wotech2_ss2.

an aquifer, for it determines whether rainfall will reach the aquifer or be turned into runoff by pavement or other impenetrable cover.

The quantity of water and the quality of water are also linked. An adequate supply of water may exist, but the quality of the water may make it unusable or suitable only for certain kinds of use, such as industrial. For those pollutants that can be measured by biological oxygen demand (BOD), such as sewage, greater quantities of water dilute the level of pollution; less water increases the level of pollution. For ground water, pollution may render the aquifer essentially permanently unusable or usable only at great cost. Ground water pollution may also affect the quality of surface water if it migrates into rivers, streams, and lakes. Airborne pollutants may also contribute to pollution of lakes.

Marine water also affects the availability of fresh water. If ocean levels rise, sea water will intrude further up fresh water streams in low-lying regions, and thus more fresh water flowing downstream (in rivers that are already likely to be stressed) will be required to keep salt water intrusion to a minimum. Estuaries will also be affected, both by sea level rise and by pollution originating on land. Similarly, over-pumping of ground water aquifers in coastal regions will facilitate intrusion of saline marine water into the aquifers, thus rendering them effectively unusable in most cases.

All of this is taking place within a climate system in which the best scientific projections indicate significant harmful effects from an increase in the Earth's temperature on water supply in given regions and potentially devastating water-related effects from more frequent and severe weather events, such as droughts and floods.⁵ These events will affect both present and future generations.

2. A CRITIQUE OF EXISTING WATER LAW

In the past, water law has been fragmented and balkanized. Within countries, rules governing the allocation of rights to surface water have normally been completely separate from those governing the exploitation of ground water, with the result that pumping of ground water may defeat surface water allocations. Also, a cost imposed on using surface water may lead to over-pumping of ground water aquifers, which may be available for use almost without cost. Laws governing pollution have usually been entirely separate from those governing permits to use given quantities of water.

Within federalized countries, allocation issues may be handled at the state or provincial level, while pollution laws may be federal and implemented at the state or provincial level, as in the United States (US). Those charged with granting permits for wells to extract ground water may have no connection with those responsible for granting septic permits, with the result that wells can be put just 'downstream' of septic fields. Jurisdiction for enacting regulations governing land use is often at the county or local level, though the effects of such regulations on ground water recharge and quality

⁵ See B. Bates, Z.W. Kundzewicz, S. Wu & J. Palutikof (eds.), 'Climate Change and Water', Intergovernmental Panel on Climate Change (IPCC), Technical Paper VI, June 2008, available at: <http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf>.

may affect aquifers that extend far beyond a given locality. In the last several decades, there have been significant advances in certain countries (and in states or provinces within countries) in developing more integrated water laws and regulations. In particular, the European Union (EU) has created a comprehensive integrated regulatory framework for water resources, which focuses on river basins in its Member States.⁶

Under international law, countries once viewed the law of international rivers as encompassing only questions of navigation, boundary demarcation and the allocation of surface water between countries. This is no longer the case. The International Law Commission (ILC), in its more than 20 years of deliberations over the drafting of the 1997 UN Convention on the Law of Non-Navigational Uses of International Watercourses (Convention on International Watercourses),⁷ went through a significant metamorphosis in its treatment of water issues. Initially, neither ground water nor ecosystem issues were included within the scope of the Commission's work. As finally concluded, the Convention covers certain ground water aquifers, pollution, protection and preservation of ecosystems, introduction of alien and new species, and protection of the marine environment, including estuaries. Article 2 defines a watercourse as 'a system of surface waters and ground waters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus'. The Convention does not cover transboundary ground water aquifers that are not connected with surface waters. The ILC has subsequently produced a report of draft articles for such aquifers, which were developed in consultation with hydrologists.⁸ The Convention on International Watercourses and the Draft ILC Articles on transboundary aquifers constitute very significant developments in recognizing the integrated nature of water resources.

The Great Lakes Water Quality Agreement between Canada and the US takes the integration of the water resources issues even further, for it refers to the 'basin ecosystem' as its point of departure and later addresses issues of contamination of the lakes from ground water and from atmospheric deposition of pollutants.⁹ The UN Economic Commission for Europe (UNECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki Convention)¹⁰ also takes a forward-looking integrated approach to water resources management. The Convention does not refer, however, to a 'basin ecosystem', a concept that covers airborne deposits of pollutants.

Despite these advances in the sophistication of the international legal instruments that address water, some perspectives still need attention or further attention. These

⁶ Directive 2000/60/EC establishing a Framework for Community Action in the Field of Water Policy (Water Framework Directive) [2000] OJ L 327/1.

⁷ New York, NY (US), 21 May 1997, not yet in force, UN Doc. A/RES/51/229 (1997), available at: http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf.

⁸ ILC, Draft Articles on the Law of Transboundary Aquifers (2008), GAOR, 63rd Sess., Supp. No. 10, UN Doc. A/63/10, available at: http://untreaty.un.org/ilc/texts/instruments/english/draft%20articles/8_5_2008.pdf.

⁹ Great Lakes Water Quality Agreement, 1978, as amended by 1983 and 1987 Protocols, 22 November 1978, 30 UST 1383, TIAS 9357, as amended 16 Oct. 1987, TIAS 10798, and 18 Nov. 1987, available at: http://binational.net/glwqa_2010_e.html.

¹⁰ Helsinki (Finland), 17 Mar. 1992, in force 6 Oct. 1996, E/ECE 1267 (1992), available at: <http://www.unece.org/env/water>.

include the demand management perspective, the market perspective, and the human rights perspective. All have transnational implications.

2.1. *The Demand Perspective*

Our ability to increase global water supplies is becoming limited and, in the face of climate change, potentially severely limited. In response, those engaged in water resources management are calling for measures to reduce demand, such as by using water more efficiently, recycling it, or extracting and transporting it with less loss of water. However, international water law (and even domestic water law in many countries) has focused on the supply of water, the allocation and uses of water, and the quality of water. It has not focused on obligations to reduce the demand for water or on institutional measures or practices for doing so. These might concern, for example, reuse and recycling practices, efficiency in water use (especially in agriculture), measures to increase the efficiency of water conveyance, development and adoption of water-efficient technologies, water pricing, and other practices that would reduce demand. This perspective may become an important part of water law in the future, as a way to meet the requirements of a human right to water, to minimize transnational transfers of water to provide adequate supplies, and as alternatives to more expensive ways to provide more fresh water in given regions.

2.2. *The Market Perspective*

One of the most significant developments is the emergence of water markets within countries and, to a growing extent, between countries. Markets have arisen in order to put water to uses that have higher economic value. They have provided an incentive for those who use water to use it more efficiently so that they can market the excess of the water to which they are entitled. For markets to work, water rights must be defined clearly and information about the rights readily available. In the western part of the US, where water markets have developed, there have also been requirements aimed at protecting other appropriators from being harmed, for example, by changes in the amount of return flow and the point at which it returns to the stream.

The marketing of water is occurring largely outside international water law, by way of private contracts between supplier and consumer, or contracts between governmental entities. On the one hand, transboundary marketing of water could provide incentives to use water more efficiently and result in putting a price on water, which is often treated as having no price. On the other hand, it can have significant effects on ecosystems in the place of origin and the availability of water for other uses in the country. The international marketing of water resources raises important questions for international trade law, which are not explored here.¹¹ The virtual trade in water, explained below, also raises questions for international trade law.

¹¹ See, e.g., E. Brown Weiss, L. Boisson de Chazournes & N. Bernasconi-Osterwalder (eds.), *Fresh Water and International Economic Law* (Oxford University Press, 2005).

2.3. *The Human Rights Perspective*

In recent decades, some governments and parts of civil society have pushed to have a right to water recognized as part of international human rights law. In 2002, the UN Economic and Social Council (ECOSOC) issued a General Comment (No. 15) to the International Covenant on Economic Social and Cultural Rights, which found a right to water implicit in Articles 11 and 12.¹² Despite this Comment, however, many states did not endorse a right to water, and the core international human right agreements do not explicitly provide for one. The European Parliament stated in 2003 that the right to water is a basic human right,¹³ and a number of state constitutions now provide for a right to water or a right to water and sanitation.¹⁴

On 28 July 2010, the UN General Assembly adopted a resolution on ‘The Human Right to Water and Sanitation’, which ‘recognizes the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights’.¹⁵ Three months later, the UN Human Rights Council adopted, by consensus, a resolution that ‘affirms that the human right to safe drinking water and sanitation is derived from the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of physical and mental health, as well as the right to life and human dignity’.¹⁶ Although neither of these resolutions is by itself legally binding upon countries, the right to water is fast being recognized by many countries as becoming part of international human rights law. As such, international water law needs to heed this development.

The content of a right to water remains unclear. While there is consensus that such a right requires meeting a person’s ‘basic needs’ for water, there is no agreement yet on exactly what this would involve. Relevant issues include the components of basic needs, the litres per person per day needed to satisfy those basic needs, and the requirements of reasonable access. There is general agreement that a human right to water includes both the quantity and the quality of water, as in the case of drinking water. The 2010 Report of the Independent Expert on the Issue of Human Rights

¹² The Right to Water (Articles 11, 12), General Comment 15 on the International Covenant on Economic, Social and Cultural Rights, UN Doc. E/C.12/2002/11, 20 Jan. 2003, available at: http://www2.ohchr.org/english/issues/water/docs/cescr_gc_15.pdf.

¹³ European Parliament Resolution on the Commission Communication on Water Management in Developing Countries and Priorities for EU Development Cooperation (COM(2002)132-C5-0335/2002-2002/2179(COS))(2003).

¹⁴ E.g., Constitution of the Republic of South Africa, 4 Dec. 1996, Art. 27(1)(b) (‘Everyone has the right to have access to (b) sufficient food and water’); the Constitution of the Republic of Bolivia, 2009; and the Constitution of the Republic of Uruguay, Arts. 47 and 188.

¹⁵ The Human Right to Water and Sanitation, UNGA Res. 64/292, UN Doc. A/RES/64/292, 3 Aug. 2010, available at: <http://daccess-ods.un.org/TMP/1492654.html>.

¹⁶ Human Rights and Access to Safe Drinking Water and Sanitation, UN Human Rights Council Resolution 15/9, UN Doc. A/HRC/RES/15/9, 6 Oct. 2010, available at: <http://daccess-ods.un.org/TMP/3002171.html>.

Obligations Related to Access to Safe Drinking Water and Sanitation concluded that three criteria apply: (i) sufficient quantity, (ii) quality, and (iii) reliability/regularity.¹⁷

Implementing a human right to water may be a challenge, especially in areas that suffer from drought, that are arid, or that confront serious sanitation or other pollution problems. In the not too distant future some countries, such as Yemen, may find fresh water resources depleted. New transnational developments, as indicated below, have special relevance for implementing a human right to water and also a related right to food.

3. GLOBAL TRANSNATIONAL DEVELOPMENTS

Water has traditionally been viewed as a local or regional resource. The potential for global water scarcity and severe water events, such as droughts and floods, suggests that we should reconsider this exclusive characterization. Other recent developments globally mean that water is no longer just an aggregated sum of local events, but rather it is becoming a resource of global concern and with potentially global implications. Several developments are highlighted below.

3.1. *Hydrological Information by Satellite*

Traditionally, data about hydrological flows of fresh water and water pollution have come from local or regional monitors and other local data-gathering instruments. Data on ground water aquifers, including recharge rates and pollution, have come from modelling of aquifers and local monitors. In certain countries, government funded agencies, such as the United States Geological Survey, have assumed a leading role in developing the relevant models or in funding the relevant research. States have largely had control over information about their water resources and the right to decide whether or not to share this data.

Satellite data about the hydrological cycle, river flows, pollutant levels, glacier melting, sea level rise, and even ground water aquifers is fundamentally changing our access to water information across the globe. From satellites, we can estimate the amount of water in a given river in a given period. We may be able to determine if a river is heavily polluted. We can even begin to map the water in aquifers, through side-looking radar and gravitational satellites. The data can be gathered irrespective of national boundaries and, at least theoretically, can be disseminated across national borders.

Global access to hydrological data can facilitate cooperation in managing scarce water resources and in responding effectively to water disasters. However, it can also

¹⁷ C. de Albuquerque & M. Sepulveda, 'Joint Report of the Independent Expert on the Question of Human Rights and Extreme Poverty and the Independent Expert on the Issue of Human Rights Obligations Related to Access to Safe Drinking Water and Sanitation', 22 July 2010, UN Doc. A/HRC/15/55, available at: <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/G10/154/51/PDF/G1015451.pdf?OpenElement>. The UN Millennium Development Goals (2000), Goal No. 7, linked issues of sustained access to water with basic sanitation, and set the framework for future discussion in the UN; see <http://www.un.org/millenniumgoals>.

help those with access to the data to gain economic and other leverage over competitors for water, whether these be state or local government entities, industry, or members of civil society, unless arrangements are in place to help ensure that all have effective access. In many ways, the issues resemble those raised by the early earth resources satellites, which mapped lands across the world, irrespective of political borders, and enabled global access to the data.¹⁸ National sovereignty claims to restrict access to the data clashed with the international demand for the data in order to promote economic development and protect the environment. In the end, users could have access to extensive data about other countries, if they wished. The major constraint lay in the ability to process, understand, and use the data.

Water economist David Grey has argued that in light of the new ability of satellites to gather hydrological data globally, the data about water resources has become in effect a global public good.¹⁹ In theory, one cannot prevent the gathering of the data and everyone could access it. This raises important questions such as who pays for gathering the data and for accessing it and what measures limit access to the data. If we were to regard such data as a global public good, it could be a first step towards effectively managing water resources, both the productive and the damaging aspects of water. National sovereignty claims, though, are sure to arise, even if they can be made in name only.

3.2. *Virtual Water Transfers*

As concern about the scarcity of water grew in the early to mid-1990s, some hydrologists and economists pioneered the concept of virtual water.²⁰ Virtual water has been defined as the water that is required for the production of food commodities. Since nearly 80% of the consumptive use of fresh water is for agriculture worldwide, the trade in agricultural products and the water that they embody has become a source of concern.²¹ From the virtual water perspective, countries in which fresh water is scarce, especially for growing food, can ease the demand on their water systems by becoming net importers of water-intensive goods and services. Those countries with plentiful water supplies can profit by becoming net exporters of such goods and services. For a country with limited water, importing food reduces the use of domestic water for food production and thereby conserves it for other uses and helps to balance the water budget. This is cheaper and less ecologically destructive than transporting the water

¹⁸ See, e.g., S. Gorove, 'Earth Resources Satellites and International Law' (1973) 1 *Journal of Space Law*, pp. 80–104, and other articles in the same issue.

¹⁹ D. Grey, 'International Waters and Water Security: Positions, Interests and Experience,' Presentation, Conference on Freshwater and International Law: 'The Multiple Challenges', Geneva (Switzerland), 8 July 2011 (available from author); see also D. Grey & C. Sadoff, 'Sink or Swim? Water Security for Growth and Development', (2007) 9(6) *Water Policy*, pp. 545–71.

²⁰ H. Yang & A. Zehnder, "'Virtual Water': An Unfolding Concept in Integrated Water Resources Management' (2007) 43(4W12301) *Water Resources Research*, available at: doi:10.1029/2007WR006048; A.Y. Hoekstra, (ed.), 'Virtual Water Trade', Proceedings of the International Expert Meeting on Virtual Water Trade, IHE, Delft (The Netherlands), 12–13 Dec. 2002, Value of Water Research Report Series No. 12, Feb. 2003, available at: <http://www.waterfootprint.org/Reports/Report12.pdf>.

²¹ L.R. Brown, *World on the Edge* (Earthscan, 2011).

into the country from elsewhere to produce the same commodities locally. Virtual water transfers can thus be seen as a way to increase 'global water use efficiency'.

Konar et al. have applied complex network theory and a fine-grained hydrological model to the global trade in virtual water as embodied in five staple agricultural and three meat products (barley, corn, rice, soy beans, wheat, beef, pork, and chicken). These products amount to 60% of global calorie consumption and account for 10% of global fresh water use.²² Using UN Food and Agriculture data for the year 2000, they found that, overall, virtual water trade is concentrated among a small number of rich countries. The strongest bilateral virtual water trade is between the US and Japan, Canada, and Mexico, while the highest importers of virtual water per capita tend to be arid countries or small countries lacking in agricultural capacity. The authors point out the importance of efficiency of water use as an input to the virtual water consumption of particular products, but do not explore this in detail. The virtual trade in water is becoming a large market with important implications for food availability and for the supply of fresh water.

3.3. *Foreign Land and Water Acquisitions*

Numerous articles and reports indicate that countries with scarce water resources and large populations, or with petroleum wealth, are turning to other countries to acquire fertile land and water resources to grow crops that can then be exported back to their countries for domestic consumption.²³ China, India, Saudi Arabia and other countries in the Middle East, among others, are engaged in extensive land and water acquisitions in Africa and certain other areas to provide food security for their own people. The acquisition of foreign lands together with the water associated with them is a way to achieve water and food security and thereby also to address certain geopolitical issues. The preface to the 2011 World Bank Report, 'Rising Global Interest in Farmland', reports that:

[t]he demand for land has been enormous. Compared to an average annual expansion of global agricultural land of less than 4 million hectares before 2008, approximately 56 million hectares of large-scale farmland deals were announced even before the end of 2009. More than 70 percent of such demand has been in Africa. Countries such as Ethiopia, Mozambique, and Sudan have transferred millions of hectares to investors in recent years.²⁴

Some of these transfers are by purchase, others are by leases of 50 to 99 years. By acquiring land elsewhere and using the water associated with the land to cultivate crops for export to their own countries, these countries engage in virtual water

²² M. Konar, et al., 'Water For Food, The Global Virtual Water Trade Network', (2011) 47(W05520) *Water Resources Research*, available at: doi:10.1029/2010WR010307.

²³ See, e.g., A. Ananthaswamy, 'African Land Grab Could Lead to Future Water Conflicts', *New Scientist*, 26 May 2011; L. Cotula, S. Vermeulen, R. Leonard & J. Keeley, 'Land Grab or Development Opportunity? Agricultural Investment and International Land Deals in Africa', International Institute for Environment and Development, Food and Agriculture Organization, and International Fund for Agricultural Development, 2009, available at: <http://pubs.iied.org/pdfs/12561IIED.pdf>.

²⁴ K. Deininger & D. Byerlee, with J. Lindsay, A. Norton, H. Selod & M. Stickle, *Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits?* (World Bank, 2011).

transfers that are insulated from market variability. This new phenomenon addresses the concerns of these countries about water security and may let them conserve their own water resources for purposes other than agriculture. Increasingly, hedge funds and other private institutions have also reportedly invested in these activities, in anticipation that their value will increase as food and water globally become more scarce.

In one sense the issues raised by these acquisitions are not new. Water is used to produce a variety of goods that are exported for profit. But in the new land-acquisition-for-food foray, it is foreign countries that are buying or securing long-term leasing of land in other countries to ensure that they have water to grow vital food crops for their own internal consumption, or it is investors who are seeking a profit by marketing to foreign consumers, often at the expense of local people. This can have profound implications for the well-being of the local people in the countries in which the investments are made.

From the purely economic point of view, this may result in global water use efficiency. To the extent that we need to use water more efficiently to meet rising demand and to adapt to climate change, this can produce a win-win situation. On the other hand, it can also raise profound issues of social justice. The prices paid for the land and water may be low relative to its value. The country may need the water resources for its own development now or in the future, but foregoes access to it. Importantly, local people may see the land they have farmed for years taken to enrich or feed people in foreign lands. It may be taken without their consent or without benefits to them, especially in the many cases in which land titles are not well defined. Most importantly, in the face of potential or actual droughts, as may be exacerbated by climate change, local people may find that the water they need for feeding themselves and for maintaining the ecosystems, including potential fisheries, may be going to feed people in distant lands because of foreign purchases, leases and investments. The water necessary to sustain their environment and associated ecosystems may be diverted elsewhere.²⁵

Looking to the future, these land and water acquisitions may generate considerable conflict. In a sense, other natural resource exploitations (such as for timber in tropical forests) raise some similar issues. One can foresee that with political changes or droughts in a country, expropriation of land, water and/or agricultural products could occur. This could lead to disputes about the legality of the expropriation, the basis of compensation, etc. These are familiar issues in other contexts, such as oil, minerals, and timber. Water is different, because it is essential to the sustainability of our environment and because human access to water is vital to life and to human welfare. Dislodging foreign rights could be difficult and costly, and for the expropriated party also costly. As acquisitions of agricultural land and associated water increase, they may raise difficult issues about how to reconcile them with meeting the

²⁵ For remarks on certain environmental and social issues associated with such acquisitions, see E. Hey, Presentation, Conference on Freshwater and International Law: 'The Multiple Challenges', Geneva (Switzerland), 8 July 2011 (available from the author).

needs of local people for water, protecting the environmental integrity of ecosystems, and ensuring that the country has the capacity to feed its own people.

4. FRESH WATER RESOURCES AS A COMMON CONCERN OF HUMANKIND

The projections of fresh water scarcity, the increasing depletion of non-rechargeable aquifers, the virtual trade in water and the transboundary land and water acquisitions for food indicate that fresh water is increasingly taking on the characteristics of a transnational resource, which is not limited to a local or regional setting. In this context, water – which is essential for human survival, for food production, and for ecosystems – may be considered to be a ‘common concern of humankind’. The recognition of the availability and use of fresh water as a ‘common concern of humankind’ could provide a basis for future legal instruments, guidelines, and best practices to address the growing range of transnational issues.

The concept of a common concern of humankind in international law was first developed in connection with the preparations for the UNFCCC²⁶ and the CBD.²⁷ Negotiations for both conventions took place in parallel with preparations for the 1992 UN Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, which celebrated the 20th anniversary of the 1972 UN Conference on the Human Environment, held in Stockholm, Sweden. The Preamble to the UNFCCC ‘acknowledges’ that ‘change in the earth’s climate and its adverse effects are a common concern of humankind’. The CBD ‘affirms’ in its Preamble that ‘the conservation of biological diversity is a common concern of humankind’.

The reference to the ‘common concern of humankind’ was intended to distinguish the concept from the ‘common heritage of mankind’. Common heritage of mankind dates to the early part of the 20th century. It was invoked most memorably in a UN General Assembly (UNGA) resolution on the seabed²⁸ and during negotiations for the UN Law of the Sea Convention (UNCLOS).²⁹ Traditionally, it has been associated with elements of property in the sense that all may have a property interest in the resource designated as common heritage of mankind. It is also noteworthy that, for the first time in 1992, international legal agreements refer to ‘humankind’ rather than ‘mankind’, which is gender neutral and includes all human beings on Earth.

The ILC’s Draft Articles on the Law of Transboundary Aquifers of 2008 lean toward this concept of the common concern of humankind. The Preamble begins, ‘[c]onscious

²⁶ N. 1 above.

²⁷ N. 2 above.

²⁸ UNGA Resolution 2574-D, UN GAOR, Supp. No. 30 at 11, UN Doc. A/7630 (1969). The Resolution provided for a moratorium on mining the mineral resources of the deep seabed and called for exploitation of the resources only under an international authority operating on behalf of all countries.

²⁹ Montego Bay (Jamaica), 10 Dec. 1982, in force 16 Nov. 1994, available at: http://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm. Art. 136 states: ‘The Area and its resources are common heritage of mankind.’

of the importance for humankind of life supporting groundwater resources in all regions of the world'.³⁰ The Preamble frames the context for the Draft Articles.

4.1. *Defining the Common Concern of Humankind*

The concept of common concern of humankind has never been fully defined. In 1991 a group of experts met under the auspices of the UN Environment Programme (UNEP) to examine the concept of the 'common concern of mankind' (the concept was renamed the 'common concern of humankind' during negotiations for the 1992 UNFCCC and CBD). The UNEP experts' report stressed that the concept was not meant to be a substitute for the concept of the common heritage of mankind and should 'not infringe on the sovereign rights of states'.³¹ There has been some scholarly attention to the 'common concern of humankind' concept.³²

As indicated earlier, the concept of the common concern of humankind was first invoked formally in 1992 in two international agreements that refer to climate change and to biodiversity as being of the common concern of humankind. These two agreements point to different categories of development that are of common concern. The first refers to changes in climate and its adverse effects, which are by nature a global problem. Climate is a global system, in which our actions in one place combine with those of others elsewhere to produce impacts on all of us and on future generations. Measures to mitigate climate change must in aggregate be global in scope. Biodiversity is different, in that diversity of species occurs within countries or regions and may be localized in nature. Conservation of biological diversity at the local level, separate from other countries, raises a different kind of concern that is common in the sense that other countries have a similar problem. It is also transnational in that international trade in endangered species and other indirect actions that a country takes in relation to another may affect levels of biodiversity.

While both of these perspectives are relevant to the concept of the common concern of humankind, it is the overall status of biodiversity – the global rate of extinction of species – that is of special concern to the international community. All people have an interest in preventing the acceleration of the extinction of species and in preserving the overall biodiversity of the planet. This raises the status of the need to conserve biological diversity to that of common concern of humankind, as articulated in the CBD. Biodiversity is critical for preserving the robustness and integrity of ecosystems, for conserving options for future generations for new medicines, foods,

³⁰ N. 8 above.

³¹ UNEP, Report of Meeting of Group of Legal Experts to Examine the Concept of the 'Common Concern of Mankind in Relation to Global Environmental Issues', 20–22 Mar. 1991, available at: <http://www.juridicas.unam.mx/publica/librev/rev/iidh/cont/13/doc/doc29.pdf>.

³² See, e.g., F. Bierman, 'Common Concern of Humankind: The Emergence of a New Concept of International Environmental Law', (1996) 34(4) *Archiv des Völkerrechts*, pp. 426–81; J. Brunnée, 'Common Areas, Common Heritage, and Common Concern', in D. Bodansky, J. Brunnée & E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007), pp. 550–72; S. Murase, 'Climate Change and Beyond: Protection of the Atmosphere', Presentation, Asian Society of International Law Meeting, Beijing (China), 28 Aug. 2011 (available from author).

industrial products etc., and for protecting the living conditions of indigenous and traditional peoples. In the two Conventions, all people share a common interest in mitigating climate change and in conserving overall biodiversity.

The concept of 'common concern of humankind', as used in the UNFCCC and the CBD, does not necessarily require global solutions, though the negotiation of the Conventions is a global action. In the CBD, the predominant foci are on national strategies, plans or programmes, national in-situ conservation, and similar efforts. This is a useful clarification in considering the application of the concept to the allocation and use of fresh water resources, in which claims of national sovereignty over the resources remain strong.

States and other actors have viewed fresh water resources as being of domestic or regional concern. But the coming water crisis and the developments outlined above indicate that all peoples have a growing common concern in the availability and use of fresh water. The interest is in ensuring robust fresh water resources, which can be used for present and future generations to satisfy basic needs, to grow food, to satisfy industrial needs, to conserve ecosystems, and to meet other purposes. Water resources are similar to biological diversity, in the sense that they are locally and regionally based. But increasingly they also share important characteristics with climate change: actions in one region have significant effects in other regions; data about the resources is fast becoming at least theoretically available to all; and their exploitation and use affect future generations and long-term environmental robustness.

Since states have already included reference to 'common concern of humankind' in two international agreements, to which nearly all countries of the world are party (with a few notable exceptions), the concept could now usefully be explored for fresh water and perhaps even for other resources.

4.2. *Implementing the Concept for Fresh Water Resources*

In 1991, the UNEP group of experts did not attribute legal consequences in terms of obligations and rights to the concept of the common concern of humankind. According to the UNEP Experts Report, there was 'a general understanding that at the current stage, the common concern of mankind may serve as a guiding principle rather than a legal rule. The responsibility and cooperation aspects of the concept were further emphasized'.³³ The report further notes that '[p]rovision of a life of dignity for all in a clean, safe and healthy environment should be a matter of common concern of mankind' and that 'an equitable and fair burden sharing is an important implication of the common concern concept'.

The Earth Charter, which was developed by the Earth Charter Commission in consultation with civil society as a follow-up to the 1992 UNCED, noted in its Preamble that '[t]he global environment with its finite resources is a common concern of all peoples'.³⁴ With regard to water, it provided that there was 'a responsibility to manage

³³ UNEP Experts Report, n. 31 above.

³⁴ Earth Charter (2000), available at: <http://www.EarthCharterinaction.org>. The Charter has been endorsed by thousands of organizations worldwide.

the use of renewable resources such as water ... in ways that do not exceed rates of regeneration and that protect the health of ecosystems' (Principle 5c). The Draft International Covenant on Environment and Development, also prepared after the UNCED by the International Union for the Conservation of Nature (IUCN) and the World Conservation Union, recognized a responsibility to maintain and restore the quality of water in order to 'ensure the availability of a sufficient quantity of water to satisfy basic human needs and to maintain aquatic systems' (Article 19).³⁵

If we were to recognize the availability and use of water resources as being a common concern of humankind, it would provide a normative basis for all members of the international community to address the multitude of water-related problems. Members include not only states, but international organizations, non-governmental organizations, private sector networks, commercial actors, and individuals. Scarcity of fresh water resources offers both a path to conflict and an opportunity for cooperation.

We explore briefly what recognizing fresh water resources as a common concern of humankind could mean in relation to four issues: (i) data on fresh water; (ii) the virtual water trade and demand management; (iii) foreign land and water acquisitions to ensure food supply; and (iv) mining of rechargeable aquifers and fossil aquifers. These issues are targeted because they are critical and have received less coverage in legal literature.

Data on fresh water

As described above, satellites can now gather extensive data on the quantity and quality of fresh water in rivers and lakes and, to a lesser extent, in ground water aquifers. While some data – such as stream flow rates or movement of pollutants in ground water aquifers – may not be accessible yet by satellite, or may not be publicly available, the overall direction points to ever more comprehensive worldwide data on fresh water resources. This could be an important tool in determining whether we are facing worldwide, regional, or even local scarcity in fresh water supplies. Ground truth will continue, though, to be important in certain areas and for certain measurements. If we are to manage water resources effectively at even the most local level and promote cooperation rather than conflict, effective access to satellite data will be essential. By regarding the availability and use of fresh water as a common concern of humankind, we provide a general normative basis for treating data about the resources as a global public good. This will become more important as our concerns with fresh water move from concerns that reflect problems common to countries, or that focus on how actions in one country affect fresh water problems in another, to concerns about the global availability and quality of fresh water, much as the concern about the global climate system.

³⁵ IUCN Commission on Environmental Law & World Conservation Union, in cooperation with the International Council of Environmental Law, *Draft International Covenant on Environment and Development*, 2nd edn., updated (2000), available at: <http://data.iucn.org/dbtw-wpd/edocs/EPLP-031-rev.pdf>. The Draft Covenant recognizes a broad global interest in the environment and provides that '[t]he global environment is a common concern of humanity' (Art. 3).

Trade in virtual water and demand management

Since water generally has no price, crops that are water intensive, such as melons, are often grown in a country with limited water supplies for export abroad for profit. If water had a price, it would encourage agricultural production that is less water intensive in dry areas. The subsidies that countries provide for water used in agricultural production, which currently are not subject to the World Trade Organization (WTO) Agreements on Agriculture or Subsidies and Countervailing Measures,³⁶ also distort demand for fresh water and increase the virtual trade in water. If fresh water resources were regarded as a common concern of humankind, it would provide a general basis upon which countries could address individually, but in common, ways to use water more efficiently, especially in agricultural production, and potentially to have the price of water reflect its scarcity and the cost of its production.

Foreign land and water acquisitions for food

In the face of projected food and water shortages, foreign investments in agricultural lands for crop exports have dramatically increased, as noted previously. In the absence of constraints, local people and ecosystems may suffer. This commodification of water may conflict with the right of local people to food and to water for their own basic needs, as raised by international human rights law and by some national constitutions. If fresh water is a common concern of humankind, it should provide a general normative basis for developing transnational guidelines and best practices to apply to or to limit such transactions. The multilateral development banks and private sector investment funds could participate in this effort. Such efforts could lessen future conflicts over water and could also help to implement a human right to water.

Mining of rechargeable aquifers and depletion of fossil aquifers

To sustain the supply of ground water, it is necessary to limit the pumping of ground water to the aquifer's recharge rate. While this may be provided for in some local legislation, it is not common in many regions. Moreover, local land use may make the aquifer's recharge area impenetrable, thereby resulting in the depletion of the aquifer. If fresh water is a common concern of humankind, it could provide a normative basis, independent of any existing agreement, for protecting the recharge area of aquifers and for limiting withdrawals in excess of recharge rates.

For fossil aquifers, which may be thousands of years old and not rechargeable, any withdrawal of water constitutes a depletion of the aquifer. This raises inter-generational equity issues between present and future generations as to the appropriate rate of withdrawal of the fossil water and the conditions for withdrawal. Depletion of such aquifers is likely to raise the real price of water resources for future

³⁶ Agreement on Agriculture and Agreement on Countervailing Measures, 15 April 1994, available at: <http://www.wto.org>.

generations, who may not have alternative supplies available, or at least not at acceptable costs. It may also make a region unproductive and largely uninhabitable, which may have broad economic and political implications for the region and the international community. If fresh water is a common concern of humankind, it lays a normative basis for cooperation to address ground water depletion, as well as ground water quality.

5. CONCLUSION

Transnational environmental law in the next few decades must address many urgent problems. By recognizing that the quantity and quality of fresh water and access to it has become a common concern of humankind, we facilitate awareness of its importance to everyone and provide a normative basis on which to promote transnational cooperation, rather than conflict, in managing the resource and in addressing the impending water crisis.