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INTERNATIONAL WATER LAW AND CHINA'S MANAGEMENT OF ITS INTERNATIONAL RIVERS

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Abstract: This Article explores China's management of its international rivers. China has various domestic pieces of legislation, including the Water Law of 2002, to regulate the uses and protection of its international rivers. It is clear that international water law influenced China inasmuch as there are similarities between the 1997 Watercourses Convention and the Water Law of 2002, and even China has recognized the influence of international law in the formation of its Water Law of 2002. This runs contrary to the widespread belief among Western commentators that China generally does not engage in these types of matters with international water law in mind. As evidence, these commentators point to China's objection to signing the 1997 Watercourses Convention and its refusal to join any river-basin commissions for any of its international rivers. This Article, however, shows how China has been strongly influenced by the international water-law regime and has engaged with other states in the management of its international rivers, albeit with a limited number of states. This Article posits that China can further benefit from engaging in international fora when trying to manage its domestic water issues.

INTRODUCTION

China has within its borders the most international rivers and lakes in the world,¹ and it lies within a staggering nineteen international water basins.²

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¹ See Simon Marsden, *Developing Approaches by Trans-Boundary Environmental Impact Assessment in China: Cooperation Through the Greater Tumen Initiative and in the Pearl River Delta Region*, 9 CHINESE J. INT'L L. 393, 393–94 (2010).

² See James E. Nickum, *The Upstream Superpower: China's International Rivers*, in *MANAGEMENT OF TRANSBOUNDARY RIVERS AND LAKES* 237, 237 (Olli Varis et al. eds., 2008). Inter-

With approximately 110 international lakes and rivers, China benefits from a rich supply of transboundary resources, which mainly are located in the northeastern, northwestern, and southwestern regions of China.³ The international rivers in the northeastern region are primarily contiguous watercourses—being border rivers that form boundaries between states—whereas the international rivers in the northwestern and southwestern regions are successive watercourses—being rivers that flow through more than one riparian state.⁴ These successive watercourses, starting from the northwest to the southwest, include the Har Us Nur River, Irtysh River, Ob River, Ili River, Tarim River, Indus River, Aral Sea, Yalung Zangbo-Brahmaputra River, Irrawaddy River, Lujiang-Salween River, Lancang-Mekong River, Beilun River, Hsi River, and Yuanjiang-Red River.⁵ To the northeast, there are the Heilong-

national water basins or international watercourses may be either contiguous (meaning forming a boundary) or successive (meaning crossing boundaries). Article 2(b) of the 1997 United Nations Convention on the Law of Non-Navigational Uses of International Watercourses (1997 Watercourses Convention) defines an international water basin as “a watercourse, parts of which are situated in different States.” Convention on the Law of the Non-Navigational Uses of International Watercourses art. 2(b), May 21, 1997, 36 I.L.M. 700 (1997) [hereinafter 1997 Watercourses Convention]. Therefore, the coverage of these definitions concerns not only the main stream of a river and streams that form or cross international boundaries, but also surface water systems and groundwater channels, as well as tributaries and lakes that connect to international watercourses. See ALISTAIR RIEU-CLARKE ET AL., UN WATERCOURSES CONVENTION USER’S GUIDE 75 (2012). The physical attributes of an international water basin mean that it is shared between the states through which the watercourse runs. Hence, “the definition calls the attention of States to the interrelationship between all parts of the [international watercourse].” See Stephen McCaffrey, *The Contribution of the UN Convention on the Law of the Non-Navigational Uses of International Watercourses*, 1 INT’L J. GLOBAL ENVTL. ISSUES 251 (2001). Activity on one part of the watercourse in one state affecting the use and protection of the same watercourse in another state requires enforcement of the principle of equitable and reasonable utilization in relation to the shared watercourse to ensure a balanced and equitable use of the watercourse. See *Gabčikovo-Nagymaros Project (Hungary v. Slovakia)*, Merits, 1997 I.C.J. Rep. 7 (Sept. 25).

³ He Daming et al., *Research Progress of International Rivers in China*, 14 J. GEOGRAPHIC SCI. 21, 21–22 (2004).

⁴ See *id.*

⁵ See Nickum, *supra* note 2, at 237; He et al., *supra* note 3, at 272; Aaron T. Wolf et al., *International River Basins of the World*, 15 INT’L J. WATER RESOURCES DEV. 387, 399–403 (1999); *Transboundary Water Management Database*, INT’L CTR. FOR WATER COOPERATION, www.internationalwatercooperation.org/tbwaters/ [https://perma.cc/ZUF9-MX53] (last visited Mar. 27, 2016) (listing the following successive rivers as shared with the countries indicated in parentheses: Har Us Nuur (China, Mongolia, and Russia); Irtysh (China, Mongolia, Russia, and Kazakhstan); Ob (China, Russia, Mongolia, and Kazakhstan); Ili (China, Kyrgyzstan, and Kazakhstan); Tarim (China, Kyrgyzstan, India, Pakistan, Tajikistan, Kazakhstan, and Afghanistan); Indus (China, Pakistan, India, Afghanistan, and Nepal); Aral Sea (China, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Afghanistan, Pakistan, and Turkmenistan); Ganges-Brahmaputra-Megha (China, India, Nepal, Bangladesh, Bhutan, and Myanmar); Irrawaddy (China, Myanmar, and India); Salween (China, Myanmar, and Thailand); Mekong (China, Myanmar, Laos, Thailand, Cambodia, and Vietnam); Beilun (China and Vietnam); Hsi (China and Vietnam); Red (China, Vietnam, and Laos); Amur (China, Russia, Mongolia, and North Korea); Suifen (China and Russia); Tumen (China, Russia, and North Korea); and Yalu (China and North Korea)).

Amur River, Suifen River, Ussuri River, Tumen River, and Yalu River.⁶ In total, China's international river basins constitute approximately 3,018,678 square kilometers in area, which is around a third of the territory of China.⁷ The presence of these international rivers in China has made this upstream riparian state the "water tower of Asia."⁸

Given its status as an important upstream riparian state and in light of the world's fresh-water crisis, China ought to focus more in its international relations with its 14 neighboring states on transboundary water issues,⁹ especially since there is a risk that water scarcity and resource inequality of use of an international watercourse may lead to conflicts with these neighboring states.¹⁰ In the interest of mitigating such risks, it would be logical to expect China to play a leading role in cooperating with its riparian neighbors within the existing international legal framework in managing its international rivers and lakes.¹¹ The current reality is the opposite, as it appears that China plays a passive role and somewhat stands apart from the international legal order when it comes to international cooperation in the management of transboundary rivers and lakes,¹² which arguably creates a greater risk of mismanagement of its international river basins that could worsen water security problems and lead to adverse environmental consequences in the region.¹³ By playing a more active role within the international water-law regime, China could mitigate these risks.¹⁴

This Article is divided into three Parts. Part I describes the international water-law regime so that the reader better understands the paradigm from which this Article is written and the realm in which this Article hopes China

⁶ See Wolf et al., *supra* note 5, at 399–403; *supra* text accompanying note 5.

⁷ See Wolf et al., *supra* note 5, at 418 (stating that the total area of China's territory is 9,338,902 square kilometers and international river-basin areas within China make up around 32.32% of its total territory).

⁸ He et al., *supra* note 3, at 22 (stating that twelve of the fifteen most important international rivers in the world originate within Chinese territory).

⁹ See Feng Yan & He Daming, *Transboundary Water Vulnerability and Its Drivers in China*, 19 J. GEOGRAPHICAL SCI. 189 (2009).

¹⁰ See Peter H. Gleick, *Water and Conflict, Fresh Water Resources and International Security*, 18 INT'L SEC. 79, 79–82 (1993).

¹¹ See *Water for Life Decade: Water Scarcity*, U.N. DEP'T OF ECON. & SOC. AFF., <http://www.un.org/waterforlifedecade/scarcity.shtml> [<https://perma.cc/3V6L-6HUU>] (last visited Mar. 27, 2016) (reporting that water use has increased at twice the rate of population growth in the last century, and if prevailing conditions continue, by 2025 1.8 billion people will be living in water-scarce regions and two-thirds of the world could live in water-stress conditions; water scarcity affects every region including China, which shows it already is facing physical water scarcity); see also Edith Brown Weiss, *The Evolution of International Water Law*, 331 RECEUIL DES COURS 177–82 (2009).

¹² See *infra* Parts II–III.

¹³ See *infra* Part III.

¹⁴ See *infra* Part IV.

will become more active in the future. Part II explores the law and practice of China's management of its international rivers and lakes, with an eye towards evaluating China's behavior in light of the international water-law regime. Part III asserts that China needs to play a greater role in international cooperation when managing its international river basins if it is to fully enjoy its rights while avoiding the risk of international disputes.

I. THE INTERNATIONAL WATER-LAW REGIME

The international water-law regime is a complex one, made up of numerous treaties and softer regulations.¹⁵ This Part sets out the basics of those legal instruments, with particular emphasis being placed on the principles that govern the management of transboundary river basins. This overview of the international water-law regime is important inasmuch as it acts as the referent against which to assess China's management of its international rivers. Moreover, it is believed that adhering to the international water-law regime's standards for promoting cooperation, among other overarching principles, can help states realize the benefits of moving past the zero-sum mentality when it comes to the protection of shared resources.

A. The Main Legal Instruments and Obligations

The codification of international laws for the protection of watercourses first emerged under the auspices of the League of Nations in the 1923 Convention Relative to the Development of Hydraulic Power Affecting More than One State, where the right to carry out hydraulic power development within the territory of any riparian state is limited by international law.¹⁶ Furthermore, Articles 3 and 4 of that Convention require riparian states to consider other riparian states' interests when developing their hydraulic power and to encourage states to enter into negotiations and conclude agreements on the execution of the riparian state's operations.¹⁷ The International Law Association (ILA) drafted the Helsinki Rules on the Uses of the Waters of International Rivers of 1966 (1966 Helsinki Rules), which codified state practice when it comes to international watercourse usage, both with regard to navigational and non-navigational uses.¹⁸ The international community generally has accepted these rules as customary international law.¹⁹

¹⁵ See *infra* Section I.A–B.

¹⁶ See Geneva Convention Relating to the Development of Hydraulic Power Affecting More than One State art. 1, Dec. 9, 1923, 36 L.N.T.S. 76 (entered into force June 30, 1925).

¹⁷ See *id.* arts. 3–4.

¹⁸ See *id.*; Int'l Law Ass'n, *The Helsinki Rules on the Uses of the Waters of International Rivers* arts. II–VIII, Report of the 52d Conf. 484 (1966) [hereinafter 1966 Helsinki Rules] (addressing international drainage basins and their waters, which include “surface and underground

The U.N. General Assembly adopted Resolution 2669 in 1970, thereby allowing the International Law Commission to study the law of non-navigational uses of international watercourses.²⁰ The study ultimately led to the adoption of the 1997 United Nations Convention on the Law of Non-Navigational Uses of International Watercourses (1997 Watercourses Convention), which entered into force on August 17, 2014.²¹ The 1997 Watercourses Convention defined a watercourse as “a system of *surface waters and groundwaters* constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus.”²² An “[i]nternational watercourse” is a shared watercourse or international river and officially is defined as “a watercourse, parts of which are situated in different States.”²³ Therefore, the scope of the 1997 Watercourses Convention concerns not only the main stream of a river and streams that form or cross international boundaries, but also surface-water systems, groundwater channels, and tributaries and lakes that connect to international watercourses, with “confined transboundary groundwater” being the only type of groundwater not covered by the Watercourses Convention.²⁴

The International Law Commission later adopted the 2008 Draft Articles on the Law of Transboundary Aquifers (2008 Draft Articles), which defines an aquifer as “a permeable water-bearing geological formation underlain by a less permeable layer and the water contained in the saturated zone of the formation.”²⁵ These articles attempted to address the issue of water pollution in an aquifer that causes groundwater management problems.²⁶ The 2008 Draft Articles also require states to “take a precautionary approach in view of un-

waters, flowing into a common terminus,” the usage of international drainage basins, and non-exhaustive list factors that govern the equitable utilization of the waters).

¹⁹ See Int'l Law Ass'n, *supra* note 18; Salman M.A. Salman, *The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law*, 23 WATER RESOURCES DEV. 625, 630–31 (2007) (indicating that the 1966 Helsinki Rules are viewed as customary international law); see also INTERNATIONAL WATER LAW: SELECTED WRITINGS OF CHARLES BOURNE 84, 124 (Patricia Wouters ed., 1996).

²⁰ G.A. Res. 2669 (XXV), at ¶ 1 (Dec. 8, 1970).

²¹ See 1997 Watercourses Convention, *supra* note 2, pmb.; G.A. Res. 2669 (XXV) (Dec. 8, 1970) (stating appreciation of the International Law Commission's work); Status of the Convention on the Law of the Non-Navigational Uses of International Watercourses, U.N. TREATY COLLECTION, https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-12&chapter=27&lang=en [<https://perma.cc/7UA2-FQHK>] (last visited Mar. 27, 2016) (listing 36 parties to the convention).

²² 1997 Watercourses Convention, *supra* note 21, art. 2(a) (emphasis added).

²³ *Id.* art. 2(b).

²⁴ See ALISTAIR RIEU-CLARKE ET AL., UN WATERCOURSES CONVENTION: USER'S GUIDE 75 (2012); STEPHEN McCAFFREY, THE LAW OF INTERNATIONAL WATERCOURSES 496–98 (2007).

²⁵ Draft Articles on the Law of Transboundary Aquifers art. 2(a), in Int'l Law Comm'n, Rep. on the Work of Its Sixtieth Session, U.N. Doc. A/63/10, at 19–79 (2008) [hereinafter 2008 Draft Articles].

²⁶ *Id.* art. 12.

certainty about the nature and extent of a transboundary aquifer or aquifer system and of its vulnerability to pollution.”²⁷ The requirement of states to take a precautionary approach to protect, preserve, and manage groundwater highlights the broader scope of protection of the law. This is further endorsed by the U.N. General Assembly. The General Assembly encouraged states to “make appropriate bilateral or regional arrangements for the proper management of their transboundary aquifers, taking into account the provisions of the draft articles.”²⁸

Both international instruments—the 1997 Watercourses Convention and the 2008 Draft Articles—set standards for the governance of international watercourses and include the no-harm rule, the principle of equitable and reasonable utilization, and a general obligation to cooperate, *inter alia*.²⁹ The 2008 Draft Articles and the 1997 Watercourses Convention are important reference documents, which guide the formation of regional basin-level agreements.³⁰

The regulations in the 1997 Watercourses Convention were subsequently expanded in two main ways.³¹ First, they were expanded concerning the obligation to manage the shared watercourses in an equitable and reasonable manner.³² The ILA kept in mind the developments over the previous forty years when updating the 1966 Helsinki Rules, which eventually were codified into the 2004 Berlin Rules on Water Resources (2004 Berlin Rules).³³ The 2004 Berlin Rules are based on the 1997 Watercourses Convention but are considered broader than the provisions in both the 1966 Helsinki Rules and the 1997 Watercourses Convention.³⁴ Both the 1966 Helsinki Rules and the 1997 Watercourses Convention establish the right of riparian states to equitable and reasonable utilization in relation to the shared watercourse.³⁵ The development of the 2004 Berlin Rules ensured a management regime for

²⁷ *See id.*

²⁸ G.A. Res. 66/104, ¶ 1 (Jan. 13, 2012).

²⁹ *See* 2008 Draft Articles, *supra* note 25, arts. 4–7; 1997 Watercourses Convention, *supra* note 21, arts. 5–7.

³⁰ *See* Laurence Boisson de Chazournes, *Freshwater and International Law: The Interplay Between Universal, Regional and Basin Perspectives*, The United Nations World Water Assessment Programme, UNESCO 4 (2009); *see, e.g.*, Revised Protocol on Shared Watercourses in the Southern African Development Community art. 3, ¶¶ 5, 7, 8, 10, Aug. 7, 2000, 40 I.L.M. 321 (2001); Agreement on the Cooperation for Sustainable Development of the Mekong River Basin ch. III, Apr. 5, 1995, 34 I.L.M. 864 (1995).

³¹ *See generally* 1997 Watercourses Convention, *supra* note 21; Int’l Law Ass’n, Water Resources Comm., Berlin Conference on Water Resources Law: Fourth Report (2004) [hereinafter 2004 Berlin Conference] (containing the 2004 Berlin Rules).

³² 2004 Berlin Conference, *supra* note 31, at preface, arts. 13–16.

³³ *See id.* at preface.

³⁴ *See id.* at cmts. to arts. 1, 43, 64.

³⁵ *See* 1966 Helsinki Rules, *supra* note 18, art. IV; 1997 Watercourses Convention, *supra* note 21, art. 5; *see also* Gabčíkovo-Nagymaros Project (Hung./Slovk.), Judgment, 1997 I.C.J. Rep. 7, ¶ 78 (Sept. 25) (upholding the discussed principle).

the equitable and reasonable use of international drainage basins that would not cause significant harm to other basin states.³⁶ The ILA set out requirements for joint-management arrangements in the equitable and sustainable utilization of watercourses in recognition of a change in circumstances³⁷ from when it first formulated the rule that international watercourse use must be equitable and reasonable in 1966.³⁸ The 2004 Berlin Rules define “[m]anagement of waters” to include “the development, use, protection, allocation, regulation, and control of waters.”³⁹ Such a definition gives rise to an obligation on all riparian states to equitably and reasonably manage the waters within an international drainage basin.⁴⁰

Second, the regulations in the 1997 Watercourses Convention were expanded in relation to the transboundary impact on ecosystems.⁴¹ Since coming into force in 1996, the 1992 U.N. Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992 Helsinki Convention) has emphasized the obligation not to cause significant harm, as exemplified in Article 2(1), which states, “The Parties shall take all appropriate measures to prevent, control and reduce any transboundary impact.”⁴² Notably, the scope of “transboundary impact” not only covers flora and fauna but also “climate, landscape and historical monuments or other physical structures or the interaction among these factors; [it] also include[s] effects on the cultural heritage or socio-economic conditions resulting from alterations to those factors.”⁴³ The 1992 Helsinki Convention aims to prevent transboundary water pollution and incorporates environmental principles including the obligation to carry out environmental impact assessments, sustainable water

³⁶ See 2004 Berlin Conference, *supra* note 31, art. 12.

³⁷ See *id.* at preface (reasoning that the decline in water per capita has presented new challenges to the international water-law regime since 1966 and that the expansion of international human-rights law in addressing environmental degradation has given rise to customary norms in responding to international watercourses).

³⁸ See *id.* arts. 64–65.

³⁹ *Id.* art. 3(14).

⁴⁰ See *id.* arts. 3(4), 64–65.

⁴¹ Convention on the Protection and Use of Transboundary Watercourses and International Lakes art. 2(1), Mar. 17, 1992, 1936 U.N.T.S. 269 [hereinafter 1992 Helsinki Convention].

⁴² See *id.* This treaty originally was a regional instrument, but it was amended in 2003 (and entered into force on Feb. 6, 2013) to make it an international convention that permitted countries outside the United Nations Economic Commission for Europe region to become parties, which led to 39 countries becoming parties to the convention. See *generally* Status of the Amendments to Articles 25 and 26 of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, U.N. TREATY COLLECTION, https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mdsg_no=XXVII-5-b&chapter=27&lang=en [<https://perma.cc/VX7B-5F7H>] (last visited Mar. 27, 2016).

⁴³ 1992 Helsinki Convention, *supra* note 41, art. 1(2).

use, the polluter-pays principle, and the precautionary principle.⁴⁴ All of these principles encapsulate the decision of the Council of the European Union to “strengthen international cooperation [to enforce a] high-level of protection” of the environment, while protecting human health and utilizing water resources in a rational and sustainable manner.⁴⁵ In practice, preventative action and rectifying environmental damage are crucial in adhering to the Convention. Application of the principles means the following:

- The precautionary principle requires that the release of hazardous substances must be avoided even where there is no proven harm between the substances and transboundary impact;
- The polluter-pay principle requires that the polluter bear the costs of pollution prevention, reduction, and control;
- Sustainable water use means that water utilization and management by the present generation must not interfere with the ability of future generations to meet their water needs; and
- The implementation of environmental impact assessments is a means of cooperation between riparian states that may be formulated within basin-level agreements.⁴⁶

As compared with the 1997 Watercourses Convention, the 1992 Helsinki Convention places more emphasis on the protection of water ecosystems.⁴⁷ Furthermore, the 1992 Helsinki Convention requires states to enter into “bilateral or multilateral agreements or other arrangements . . . to eliminate the contradictions with the basic principles of this Convention, in order to define their mutual relations and conduct regarding the prevention, control and reduction of transboundary impact.”⁴⁸ Such agreements are supported by the obligation to establish joint bodies in accordance with Article 9(2) of the 1992 Helsinki Convention, which should govern water quantity and quality in the stipulated manner, including collection, compilation, and evaluation of data on pollution sources, and assessment of water-waste control programs.⁴⁹

Both demand management and resource-use management need to be balanced at all levels of government. This gives rise to obligations concerning the manner of use and protection of the shared watercourse. The 1997 Watercourses Convention seeks to embody both of these balancing paradigms

⁴⁴ See *id.* arts. 2(5)(a)–(b), 3(1)(h); see also LAURENCE BOISSON DE CHAZOURNES, FRESH WATER IN INTERNATIONAL LAW 124–26 (2013) (discussing these principles).

⁴⁵ Council Decision 95/308 1995 O.J. (L 186/42).

⁴⁶ See *id.* arts. 2(5)(a)–(c), 3(1)(h).

⁴⁷ Compare 1997 Watercourses Convention, *supra* note 21, arts. 20–21, with 1992 Helsinki Convention, *supra* note 41, arts. 2–3.

⁴⁸ 1992 Helsinki Convention, *supra* note 41, art. 9(1).

⁴⁹ See *id.* art. 9(2).

through the obligation to cooperate.⁵⁰ Aside from the explicit obligation under Article 8 (General Obligation to Cooperate), the obligation also is implicit elsewhere, such as Article 5 (Equitable and Reasonable Utilization), Article 7 (Obligations Not to Cause Significant Harm), and Article 9 (Regular Exchange of Data and Information) as well as Part III (Planned Measures), Part IV (Protection, Preservation, and Management), and Part V (Harmful Conditions and Emergency Situations).⁵¹

Article 5 of the 1997 Watercourses Convention encourages watercourse states to negotiate over the uses of the shared watercourses.⁵² This provision is supported further by the prior notification and consultation mechanisms contained in Articles 8, 9, and 11.⁵³ Although the articles refer to planned projects, the language in Article 18 provides, "If a watercourse [s]tate has reasonable grounds to believe that another watercourse [s]tate is planning measures that may have a significant adverse effect upon it, the former [s]tate may request the latter to apply the provisions of article 12."⁵⁴ In other words, the latter state would still be required to consult with the former even if the measures were not planned.⁵⁵ These provisions support the requirement under the international water-law regime for riparian states to act in an equitable and reasonable manner and to take into account their use of the shared watercourse as well as their obligation not to cause significant harm to another riparian state.⁵⁶ The process of notification and consultation is meant to achieve that common goal.⁵⁷

This Section has described the basic legal instruments associated with the international water-law regime. The following Section focuses on the main principles from the international water-law regime that govern the management of transboundary river basins, as they relate to China's management of its international rivers.

B. Principles in Relation to the Management of Transboundary River Basins

Equitable utilization requires the management of an international drainage basin in an equitable and reasonable manner.⁵⁸ "Management of waters" is defined in Article 3(14) of the 2004 Berlin Rules as "the development, use,

⁵⁰ See 1997 Watercourses Convention, *supra* note 21, arts. 5, 8–9, 11.

⁵¹ See *id.* arts. 5, 9, 11, pts. III, V.

⁵² See *id.* art. 5.

⁵³ See *id.* arts. 8, 9, 11.

⁵⁴ *Id.* art. 18(1).

⁵⁵ See *id.*

⁵⁶ See *id.* art. 7.

⁵⁷ See *id.* pt. III.

⁵⁸ See 2004 Berlin Conference, *supra* note 31, art. 12.

protection, allocation, regulation, and control of waters.”⁵⁹ Such management must be careful not to harm other states, and it also needs to provide enough protection to the watercourses.⁶⁰ The ILA recognizes sustainability as a basic principle that needs to be effectively balanced as between development on the one hand and “social, environmental and ecological values” on the other.⁶¹ Looking at each of the two sides, states must take into account Articles 12 (Equitable Utilization), 13 (Determining an Equitable and Reasonable Use), and 14 (Preferences Among Uses) of the 2004 Berlin Rules when considering their right to use an international watercourse.⁶² Moreover, Article 12 (Equitable Utilization) requires the *management* of an international drainage basin in an equitable and reasonable manner.⁶³ Therefore, the balancing mechanism of Articles 12, 13, and 14 relies on the cooperation of states, as alluded to in Article 11.⁶⁴ The requirement to manage the international drainage basin in an equitable and reasonable manner—which ensures the balanced use and protection as between the states and is consistent with the need to protect the waters—should take into consideration the relevant factors listed in Article 13, including the “minimization of environmental harm.”⁶⁵ It must be emphasized that there is no preference for one use over another, although Article 14 makes explicit the requirement that equitable and reasonable use calls for the needs of humans to be given top priority.⁶⁶ The Commentary on Article 14 states that while “vital human needs” does not extend to general economic activities, such as the provision of jobs, these factors still could be weighed against the obligations of ecological integrity and sustainable development in Articles 12 and 13.⁶⁷

The attainment of the optimal and sustainable use of the international watercourse is stipulated in Article 5(1) of the 1997 Watercourses Convention and Article 12 of the 2004 Berlin Rules, which contain a balancing process supported by the duty to cooperate as well as mechanisms for notification.⁶⁸ These aspects within the two regimes complement the requirement to negotiate.⁶⁹ States should conclude that such agreements—particularly as they relate to the impact of climate change on water resources, population growth, and multiplication of uses of water—have heightened tensions over scarce

⁵⁹ *Id.* art. 3(14).

⁶⁰ *See id.* art. 12.

⁶¹ *Id.* art. 7, cmt. to art. 15.

⁶² *Id.* arts. 12–14.

⁶³ *Id.* art. 12.

⁶⁴ *See id.* arts. 11–14.

⁶⁵ *Id.* arts. 12–13.

⁶⁶ *See id.* arts. 13(3), 14.

⁶⁷ *See id.* arts. 12–14, cmt. to art. 14.

⁶⁸ *See id.* art. 12; 1997 Watercourses Convention, *supra* note 21, art. 5(1).

⁶⁹ *See* 1997 Watercourses Convention, *supra* note 21, art. 4; 2004 Berlin Conference, *supra* note 31, art. 10.

water resources.⁷⁰ Where such agreements already exist, their implementation through the exchange of information, notification of planned measures, and the pursuit of any river-basin agreements to regulate management of the transboundary aquifer between riparian states must be pursued in accordance with the international water-law regime.⁷¹

It must be noted here that China is highly dependent on fresh water resources for its own domestic needs and economic industrialization and urbanization, and it is challenged by annual water shortages of around 53.6 billion cubic meters.⁷² With groundwater depletion rates being especially high in certain parts of China, it suffers from water scarcity in its agricultural and industrial sectors, as well as with domestic consumption.⁷³

This Section provided an overview of the international water-law regime and discussed the manner in which the regime has expanded the scope of protection of river basins to enable legal regulation of activities that impact river ecosystems. This expansion has occurred in recognition of the limitations of the 1997 Watercourses Convention, which did not include the protection of groundwater or directly incorporate the management of transboundary water resources that would address water pollution issues.⁷⁴ The regulations—the 1992 Helsinki Convention, the 2004 Berlin Rules, and the 2008 Draft Articles—aimed to rectify these limitations.⁷⁵ The international water-law regime now incorporates these areas by requiring certain management practices of transboundary resources by riparian states.⁷⁶ The next Part examines China's law and policy for managing its transboundary water resources, keeping in mind the international standards discussed in this Part, which act as the referent against which to assess state behavior in this area in general.

⁷⁰ See, e.g., *Lies, Dams, and Statistics*, *ECONOMIST* (July 26, 2012), <http://economist.com/blogs/banyan/2012/07/mekong-river> [<https://perma.cc/DD3W-HSY9>] (highlighting a conflict of interests between Laos, Cambodia, Vietnam, and Thailand, all of which are members of the Mekong River Commission, caused by Laos's proposed construction of the Xayaburi Dam).

⁷¹ See, e.g., Kirk Herbertson, *Xayaburi Dam: How Laos Violated the 1995 Mekong Agreement*, *INT'L RIVERS* (Jan. 28, 2013), <http://www.internationalrivers.org/resources/xayaburi-dam-how-laos-violated-the-1995-mekong-agreement-7810> [<https://perma.cc/YY5A-9LXT>].

⁷² See Global Water Partnership, *China's Water Resources Management Challenge: The Three Red Lines*, Technical Focus Paper, 7–8 (2015), http://www.gwp.org/Global/ToolBox/Publications/Technical%20Focus%20Papers/TFPChina_2015.pdf [<https://perma.cc/G42E-XDTS>] (estimating that two-thirds of China's cities are faced with water shortages).

⁷³ See Heather Cooley et al., *Global Water Governance in the Twenty First Century*, in *THE WORLD'S WATER VOL. 8*, at 2 (Peter H. Gleick ed., 2014).

⁷⁴ Compare 1997 Watercourses Convention, *supra* note 21, with 2004 Berlin Conference, *supra* note 31, arts. 27, 33, 41, and 1992 Helsinki Convention, *supra* note 41, arts. 2, 3(1)(b).

⁷⁵ See, e.g., 1992 Helsinki Convention, *supra* note 41, arts. 2, 3(1)(b); 2004 Berlin Conference, *supra* note 31, arts. 27, 33, 41; 2008 Draft Articles, *supra* note 25, at pmb., art. 12.

⁷⁶ See, e.g., 2004 Berlin Conference, *supra* note 31, arts. 27, 41.

II. LAW AND POLICY OF CHINA'S WATER-LAW MANAGEMENT

This Part provides an overview of China's practice for managing its international rivers and lakes. First, it summarizes China's domestic legislation for managing its water resources, and then it compares this legislation to what the 1997 Watercourses Convention requires, while keeping in mind the challenges arising from China's domestic water security. Second, this Part explores China's participation in international fora that deal with international water law.

A. China's Domestic Law and Policy

In terms of domestic water policies and laws, China has enacted five comprehensive pieces of legislation: the Water Law of China of 2002, the Environmental Protection Law of China of 1989, the Law on the Prevention and Control of Water Pollution of 1984, the Flood Control Law of 1997, and the Law on Water and Soil Conservation of 1991.⁷⁷ For the purposes of this Article, the Law on the Prevention and Control of Water Pollution of 1984 and the Water Law of China of 2002 represent the most relevant laws, and for reasons of time and space, this Article focuses on these two laws. In particular, this Section analyzes the Water Law of China of 2002, as it is the main legislative vehicle China uses to manage its international rivers.

By way of background, the National People's Congress (NPC) enacts such laws while the Ministry of Water Resources is the responsible supervisory body for water administration.⁷⁸ Historically, the ministry was formed from the merging of the Ministry of Water Resources and Ministry of Electric Power, and after its reorganization in July 1988, its renewed function became to "rationally develop[], utiliz[e], conserv[e] and protect[] water resources, prevent[] and control[] water disasters, bring[] about sustainable utilization of water resources, and meet[] the need[s] of national economic and social development."⁷⁹ Therefore, the ministry has a function not only to ensure that

⁷⁷ SALMAN M.A. SALMAN & DANIEL D. BRADLOW, REGULATORY FRAMEWORKS FOR WATER RESOURCES MANAGEMENT: A COMPARATIVE STUDY 36–37 (2006).

⁷⁸ See *id.* at 36–45 (providing background information on China's legal and regulatory water-resources framework); *Overview*, MINISTRY OF WATER RESOURCES OF CHINA, <http://www.mwr.gov.cn/english/aboutmwr.html> [<https://perma.cc/289C-B5ED>] (last visited Mar. 27, 2016) (providing information on the supervisory authority of water affairs in China).

⁷⁹ Water Law of China (promulgated by the Standing Comm. Nat'l People's Cong., Aug. 29, 2002, effective Oct. 1, 2002) (amending [Chinese Water Law] (promulgated by the Standing Comm. Nat'l People's Cong., Jan. 1, 1988), arts. 1–2, <http://www.mwr.gov.cn/english/01.pdf> [<https://perma.cc/J4JD-WBAW>] (China) [hereinafter Water Law of China]; see *Overview*, MINISTRY OF WATER RESOURCES OF CHINA, *supra* note 78. The translation uses the word "rationally," although the Chinese term "合理" is better translated as reasonably or equitably. See Zhonghua Renmin Gongheguo Shui Fa (中花人民共和国水法) [Water Law of China], (promulgated by the Standing Comm. Nat'l People's Cong., Aug. 29, 2002, effective Oct. 1, 2002) (amending [Chinese

water resources are reasonably utilized, conserved, and protected, but also to develop water resources and to ensure their sustainable usage.⁸⁰

Shortly after the ministry's reorganization, the Twenty-Fourth Meeting of the Standing Committee of the Sixth National People's Congress adopted the Water Law on January 21, 1988, with revisions to this law adopted at the Twenty-Ninth Meeting of the Standing Committee of the Ninth National People's Congress on August 29, 2002, which took effect on October 1, 2002.⁸¹ The law only covers the territory of China, although it addresses international treaties and agreements on international rivers to which China has acceded.⁸² In cases where international treaties contain different provisions from those provided in the Water Law of China of 2002, China can apply an exception through a reservation to the treaty.⁸³

Water resources under the Water Law of China of 2002 include surface water and groundwater,⁸⁴ which are owned by the state with the exception of ponds belonging to rural economic collectives.⁸⁵ Significantly, the State Council has charged individual administrative regions with some local management of water resources, and it has charged the Ministry of Water Resources with the task of overseeing the overall supervision of the state's water resources.⁸⁶ In addition, Article 12 of the Water Law of China of 2002 authorizes the ministry to establish river-basin authorities within China for the "unified management of and supervision over [the] water resources."⁸⁷ Such "unified" management obviously requires cooperation between regions.⁸⁸ The requirement to establish river-basin authorities and joint bodies and the requirement to cooperate across regions reflect the general obligation to coop-

Water Law] (promulgated by the Standing Comm. Nat'l People's Cong., Jan. 1, 1988) arts. 1–2; Water Law of China, arts. 1–2.

⁸⁰ See *Overview*, MINISTRY OF WATER RESOURCES OF CHINA, *supra* note 78. The language in the legislation implies a broader responsibility for long-term environmental protection of water ecosystems. See Water Law of China. Article 9 of the Water Law of China indicates the scope of protection is not confined to rivers alone, but includes "vegetation, planting of trees and grass, conservation of water sources, prevention and control of soil erosion and water-body pollution, and improvement of [the] ecological environment." *Id.* art. 9. Such subjects of protection indicate that water laws should be read in conjunction with the other four main legislative regimes mentioned above. See *id.*; 2008 Draft Articles, *supra* note 25.

⁸¹ See *Overview*, MINISTRY OF WATER RESOURCES OF CHINA, *supra* note 78; Water Law of China.

⁸² See Water Law of China, arts. 2, 78.

⁸³ See *id.* art. 78.

⁸⁴ See *id.* art. 2. The inclusion of surface water and groundwater reflects the international standard in the 1997 Watercourses Convention. See 1997 Watercourses Convention, *supra* note 21, art. 2(a).

⁸⁵ See Water Law of China, art. 3.

⁸⁶ See *id.* art. 12.

⁸⁷ *Id.*

⁸⁸ See *id.*

erate within international water law, which can be found in Article 8 of the 1997 Watercourses Convention. In particular, Article 8(2) of the 1997 Watercourses Convention stipulates that the manner of cooperation between the riparian parties may be through the establishment of joint mechanisms.⁸⁹ As the World Bank has noted, however, Article 12 of the Water Law of China of 2002 is ambiguous because it does not clearly stipulate which authority ought to establish a river-basin authority, creating a vacuum within the system and frustrating effective enforcement efforts.⁹⁰

Utilization of water resources under the Water Law of China of 2002 must comply with the regulations and provisions on Planning for Water Resources (Chapter II), Protection of Water Resources, Water Areas, and Waterworks (Chapter III), Allocation and Economical Use of Water Resources (Chapter IV), Resolution of Disputes and Supervision (Chapter V), and Legal Liabilities (Chapter VI) under the Water Law of China.⁹¹ Like the 1997 Watercourses Convention, utilization is subject to conditions and regulations.⁹² For example, Article 14 of the Water Law of China of 2002 provides that unified plans for the entire river basin must be made for the purposes of “development, utilization, conservation and protection of water resources.”⁹³ These aspects are reflected in the 1997 Watercourses Convention, which regulates activities affecting utilization and development (Articles 5 and 6), as well as conservation and protection (Articles 20, 21, and 23).⁹⁴ It is important, however, to keep in mind that when it comes to the unified supervision and management of water resources (provided in Article 12 of the Water Law of China of 2002) and the unified plan to develop, utilize, conserve, and protect water resources (provided in Article 14), the “unifying” element is not the same as cooperation between the different internal regions, but rather cooperation with the central government.⁹⁵ Indeed, the central government must formulate the unifying plans and direct the unified management and supervision of the shared water resources.⁹⁶ These two aspects fall within the same meaning of “management” as in Article 24 of the 1997 Watercourses Convention.⁹⁷ The

⁸⁹ Compare Water Law of China, art. 12, with 1997 Watercourses Convention, *supra* note 21, art. 8.

⁹⁰ See JIAN XIE ET AL., ADDRESSING CHINA’S WATER SCARCITY: RECOMMENDATIONS FOR SELECTED WATER RESOURCE MANAGEMENT ISSUES, at xxii (2009).

⁹¹ See Water Law of China, chs. II–VI.

⁹² See 1997 Watercourses Convention, *supra* note 21, arts. 5–6.

⁹³ Water Law of China, art. 14.

⁹⁴ See 1997 Watercourses Convention, *supra* note 21, arts. 5, 6, 20, 21, 23.

⁹⁵ See Water Law of China, arts. 12, 14.

⁹⁶ See *id.*

⁹⁷ 1997 Watercourses Convention, *supra* note 21, art. 24(1)–(2) (stating in Article 24(1) that watercourse states may establish a joint-management mechanism and defining in Article 24(2) “management” as (a) making or implementing plans, and (b) “[o]therwise promoting the rational and optimal utilization, protection and control of the watercourse”).

“joint” aspect is lacking, however, and it cannot be said that China adopts any joint-management mechanism internally through the Water Law of China of 2002.⁹⁸

Article 16 of the Water Law of China of 2002 also sets out the requirement for state administrative departments and river-basin authorities to establish hydrological data systems to conduct surveys and assessments for the purposes of monitoring water resources.⁹⁹ This complements any plans to divert water because such diversion would require hydrological data to support a needs assessment of the river basins from which the water is being diverted.¹⁰⁰ Undoubtedly the law would be more effective if there were a procedural mechanism as provided in the 1997 Watercourses Convention, where parties with planned measures are to enter a notification and consultation process.¹⁰¹

In sum, the Water Law of China of 2002, in combination with the Law on the Prevention and Control of Water Pollution (2008 amended),¹⁰² possesses some elements of international water law in relation to the management of water resources.¹⁰³ Such elements are clear in Article 14, which provides for unified plans for the entire river for the purposes of developing and protecting water resources.¹⁰⁴ Although the language generally reflects the 1997 Watercourses Convention, the language that the riparian parties must come together to exchange data and devise joint-management plans reflects the unifying aspect of the Chinese central government.¹⁰⁵ However, the law does not provide for any joint-management mechanisms or cooperation between the regions.¹⁰⁶ Likewise, Article 12 of the Water Law of China of 2002 requires the establishment of joint river-basin authorities, but it fails to speci-

⁹⁸ See Water Law of China, arts. 12, 14.

⁹⁹ See *id.* art. 16.

¹⁰⁰ See *id.* arts. 16, 22.

¹⁰¹ Compare *id.* with 1997 Watercourses Convention, *supra* note 21, art. 24.

¹⁰² See *China: Water Quality Management—Policy and Institutional Considerations*, WORLD BANK, 24 (Sept. 2006), http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/10/18/000310607_20061018111318/Rendered/PDF/377520CHA01Wat1management001PUBLIC1.pdf [<https://perma.cc/YM4U-WGKW>].

¹⁰³ See *supra* notes 84–101 and accompanying text. The similarities between the 1997 Watercourses Convention and the Water Law of 2002 can be explained by the fact that the Water Law of 2002 was drafted based on foreign laws and experiences, including international law such as the 1997 Watercourses Convention, along with national laws. See Wang Shucheng, Minister of Water Resources, *Guanyu Zhonghua Renmin Gongheguo Zhongguo Shui Fa (Xiuding Cao'an)* (关于中华人民共和国水法 (修订草案)) [Notice of the State Council Regarding the Water Law of China (Amended)] (Dec. 24, 2001), www.npc.gov.cn/wxzl/gongbao/2002-10/18/content_5300890.htm [<https://perma.cc/4Y8N-G6F9>].

¹⁰⁴ See Water Law of China, art. 14.

¹⁰⁵ See *id.* arts. 12, 14, 16, 22; 1997 Watercourses Convention, *supra* note 21, art. 24.

¹⁰⁶ See Water Law of China, arts. 12, 14, 16, 22.

fy which authority ought to take up such a role.¹⁰⁷ The Water Law of China of 2002, in combination with the Law on the Prevention and Control of Water Pollution (2008 amended),¹⁰⁸ has the beginnings of a modern type of river-governance scheme based on cooperation and consensus between members of the river-basin authority or the local water-administrative authorities.¹⁰⁹ The lack of authority of these bodies, however, prevents this from being fully implemented.¹¹⁰ What remains is a centralized system of water resource allocation and governance, which is supported by weak water-related institutions.¹¹¹ The amended Law on the Prevention and Control of Water Pollution attempts to reform China's weak water governance mechanism by addressing the discrepancies and overlaps in supervision and management by government departments contained in the legislation of the former Law on the Prevention and Control of Water Pollution and Water Law.¹¹² The legal reforms took place in tandem with the bureaucratic changes that took place in 2008—with the former State Environmental Protection Administration being elevated to the ministerial level and renamed the Ministry of Environmental Protection.¹¹³ In support of these reforms, the NPC attempted to improve enforcement of the law by imposing stricter penalties for polluters (even allowing for the first time in law public action against polluters) and environmental protection control targets to be monitored with reference to local officials' professional performance.¹¹⁴

With these laws and policies in mind, the following Section elaborates on the challenges posed by China's water-security situation regarding the realization of the international standards provided in the 1997 Watercourses Convention and elsewhere.

B. Challenges to Water Security in China

The Water Law of China of 2002 and other pieces of legislation need to meet the challenges of China's water-security situation.¹¹⁵ This Section highlights some of those challenges and analyzes the manner in which these challenges are being addressed.

¹⁰⁷ *Id.* art. 12.

¹⁰⁸ See China: *Water Quality Management—Policy and Institutional Considerations*, *supra* note 102, at 24.

¹⁰⁹ See Water Law of China, arts. 12, 14, 16, 22.

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ See QIN TIANBAO, RESEARCH HANDBOOK ON CHINESE ENVIRONMENTAL LAW 46 (2015).

¹¹⁴ See Dawn Winalski, Note, *Cleaner Water in China? The Implications of the Amendments to China's Law on the Prevention and Control of Water Pollution*, 24 WASH. & LEE J. ENVTL. L. & LITIG. 181, 186 (2009).

¹¹⁵ See *infra* Sections II.B–D.

China's water supply has three main features.¹¹⁶ First, the total volume of water resources per annum amounts to approximately 2840 billion cubic meters, which gives China the sixth-highest volume of water supply in the world.¹¹⁷ However, the amount of exploitable water resources, which includes water that cannot be accessed for use, is more like 814 billion cubic meters, with present water supplies at 607 billion cubic meters per capita—roughly the average level of water consumption in the world.¹¹⁸ When it comes to demand, population growth exerts significant pressure on current water supplies.¹¹⁹ Therefore, better planning is needed in order for China's limited water supply to meet the growing needs of an increasing population.¹²⁰

Second, there is an uneven concentration of water resources in China, with “[m]ore than 80% of water resources . . . in South [China and] less than 20% in the North.”¹²¹ Such irregularity in distribution of water resources is exacerbated by an uneven distribution of population throughout the country, with relatively low population density in the abundantly water-resourced northwest and southwest of China and higher population density (and hence higher water needs) along the length of the eastern seaboard and into the industrialized northeast.¹²² The results of these imbalances place many parts of northern China (particularly the Yellow-Hai-Huai river basins) as well as certain areas of southern China (for example, the Pearl River Basin) under water stress.¹²³ As a result, water-transfer activities need to take into account the growth of local economies and populations of each region.¹²⁴

Third, in spite of China's abundance of river basins, most supplies come from small- and medium-sized rivers; of China's 45,000 rivers with a basin area of greater than 50 square kilometers, 95 percent have a basin area of under 1000 square kilometers, while 80 percent of China's 1600 lakes have an area of under 10 square kilometers.¹²⁵ Water supplies are vulnerable to natural

¹¹⁶ See Jiao Tong, Vice-Minister, Water Resources of China, Water Security in China's Modernization Process, (Nov. 6, 2015) (available at http://www.mwr.gov.cn/english/speechesandarticles/jiaoyong/201511/t20151106_725196.html [<https://perma.cc/G8Q8-9WM5>]).

¹¹⁷ *Id.*

¹¹⁸ *Id.* The difference between these two figures reflects the difference between exploitable resources and present supplies. “Exploitable water resources” includes water that cannot be accessed for use, such as floodwater behind dams and the minimum flow needed for navigation. See *Review of World Water Resources by Country*, FOOD & AGRIC. ORG. OF THE U.N., at xi–xii (2003), <ftp://ftp.fao.org/agl/aglw/docs/wr23e.pdf>.

¹¹⁹ See Tong, *supra* note 116.

¹²⁰ See *China's Water Resources Management Challenge: The Three Red Lines*, *supra* note 72, at 8–12.

¹²¹ *Id.*

¹²² See *id.*

¹²³ See *id.*; Yong Jiang, *China's Water Scarcity*, 90 J. ENVTL. MGMT. 3185, 3187, 3189 (2009).

¹²⁴ See Jiang, *supra* note 123, at 3193; Tong, *supra* note 116.

¹²⁵ See Tong, *supra* note 116. In other words, if China—as the “water tower of Asia”—is in a difficult position, its neighbors are in a far worse position. See *id.*

climate conditions, including precipitation and drought.¹²⁶ Runoff from rivers during the winter accounts for only 3 percent of a river's annual runoff in northern China and 10 percent of its annual run-off in southern China.¹²⁷ In order to meet the challenges of population growth and urbanization within the constraints of China's water supply, management activities must focus on adjusting local economy structures to the region's water conditions (otherwise known as "optimizing zones"), enforcing utilization caps, enacting water-conservation measures in tandem with water-tariff reforms, and promoting water-saving industries.¹²⁸

Other management efforts have focused on mega-engineering projects such as the Three Gorges Dam and the current South-North Transfer Project.¹²⁹ The South-North Transfer Project is an enormous water-diversion scheme that will transfer approximately 44.8 billion cubic meters of water per annum from the Yangtze River along three routes—the east, middle, and west—up to the dry north by 2050.¹³⁰ The scheme is not without its controversies because diversion of such large amounts of water has a significant impact on the aquifer environment in the Yangtze River Delta and surrounding rivers, including the Yellow River and the Han River.¹³¹ Further controversy arises from the forced relocation of people living in the area.¹³² In addition, the Ministry of Environmental Protection recently closed down local aquaculture industries that have been causing pollution in order to maintain water-quality levels with the water involved in the diversion project.¹³³

¹²⁶ See *id.*

¹²⁷ See *id.*

¹²⁸ See *id.*

¹²⁹ See *id.*; *Three Gorges Dam: The World's Largest Hydroelectric Plant*, U.S. GEOLOGICAL SURVEY, <http://water.usgs.gov/edu/hybiggest.html> [<https://perma.cc/S3DX-U83Q>] (last visited Mar. 28, 2016). In 2012, it was the largest hydroelectric power facility in the world, with a generating capacity of 22,500 megawatts. See *Three Gorges Dam: The World's Largest Hydroelectric Plant*, *supra*. See also Zhang Quanfa, *The South-to-North Transfer Project of China: Environmental Implications and Monitoring Strategy*, 45 J. AM. WATER RESOURCES ASS'N 1238, 1238–39 (2009).

¹³⁰ See Zhang, *supra* note 129, at 1238–39.

¹³¹ See *id.*

¹³² See Wang Yue, *South-North Water Transfer Project Not Sustainable, Says Chinese Official*, CHINA DIALOGUE (Feb. 20, 2014), <http://www.chinadialogue.net/blog/6737-South-North-water-transfer-project-not-sustainable-says-Chinese-official/en> [<https://perma.cc/YE8J-8W5C>].

¹³³ See generally Alexandra E.V. Evans et al., *Water Quality: Assessment of the Current Situation in Asia*, 28 WATER RESOURCES DEV. 195, 204–06 (2012); Huw Pohlner, *Can South-North Water Transfer Project and Industry Co-Exist?*, CHINA DIALOGUE (Oct. 14, 2015), <http://www.chinadialogue.net/article/show/single/en/8236-Can-South-North-water-transfer-project-and-industry-co-exist> [<https://perma.cc/NNH2-PV56>] (reporting on aquaculture facilities that have been dumping untreated waste into the Danjiangkou Reservoir in Hubei province); Christine Larson, *Pollution Threatens China's Ambitious Water-Transfer Project*, BLOOMBERG (Nov. 27, 2013), <http://www.bloomberg.com/bw/articles/2013-11-27/pollution-threatens-china-s-ambitious-water-transfer-project> [<https://perma.cc/99LH-TDPM>].

China's economic growth poses further challenges to its water resource management policies in the form of its insatiable appetite for energy.¹³⁴ The utilization of water to generate energy—in particular in coal-fired power stations—is exhausting China's limited water supplies and causing environmental damage as well.¹³⁵ For example, around 5 cubic meters of groundwater is required to remove and wash one ton of coal, with a further 7.6 cubic meters required for converting one ton of coal into electricity; the energy-generation process for one ton of coal uses up to 15 cubic meters of water—although for larger coal-fired electricity generation plants, up to 3050 cubic meters of water are used every hour.¹³⁶ Such water-usage numbers do not reflect the discharge of waste by coal chemical plants—one plant in Shanxi released in excess of 6.1 million tons of polluted water per annum.¹³⁷ China's Twelfth Five-Year Plan established coal-fired electricity generation plants in northern China in Shanxi, Shaanxi, Inner Mongolia, Xinjiang, Ningxia, and Heilongjiang.¹³⁸ These localities account for 79 percent of China's total coal reserves, yet they are faced with the challenge of having only 9.98 percent of China's total water resources.¹³⁹ This places huge pressure on aquifer withdrawals, which are estimated to be between 15 to 20 percent of China's water supplies.¹⁴⁰

China plans to slow the depletion of its water supplies through direct measures, such as the enforcement of water-withdrawal caps—reported at 700 billion cubic meters per year until 2030—or indirect measures, such as reducing the dependency on coal-fired electricity through encouraging the renewable energy and nuclear power industries.¹⁴¹ Notwithstanding such plans, there does not seem to be any prospect that these industries will radically take over the energy-generation burden from coal-fired plants.¹⁴² On the contrary, the Chinese government plans to expand its coal-fired plants to generate 453 gigawatts

¹³⁴ See *Coal Sector Will Use Quarter of Yellow River Water by 2015*, CHINA DIALOGUE (Jan. 29, 2013), <http://www.chinadialogue.net/blog/5650-Coal-sector-will-use-quarter-of-Yellow-River-water-by-2-15/en> [https://perma.cc/9ACR-SXLM]; Chan Wai Shin, *Does China Have Enough Water to Keep Building Three Power Stations a Week?*, CHINA DIALOGUE (Oct. 5, 2012), <http://www.chinadialogue.net/article/show/single/en/5198-Does-China-have-enough-water-to-keep-building-three-power-stations-a-week> [https://perma.cc/555N-2B86].

¹³⁵ *Coal Sector Will Use Quarter of Yellow River Water by 2015*, *supra* note 134.

¹³⁶ *See id.*

¹³⁷ *See id.*

¹³⁸ *See id.*

¹³⁹ *See id.*

¹⁴⁰ See Isabel Hilton, *China's Coal-Fired Power Industry Running Out of Water*, CHINA DIALOGUE (Apr. 3, 2013), <http://www.chinadialogue.net/blog/5857-China-s-coal-fired-power-industry-running-out-of-water/en> [https://perma.cc/KR9T-G3RP].

¹⁴¹ *See id.*

¹⁴² *See id.* (stating that water scarcity might encourage interest in renewables); Shin, *supra* note 134 (stating that coal power will dominate energy production in China in the near future).

of energy by 2020.¹⁴³ This begs the question whether China would be able to continue with its power-generation plans while protecting its water supplies.¹⁴⁴ Since power generation and water supply are inversely proportional, it would appear that water supply would be affected where plans for power generation go ahead—especially with the kinds of power-generation that depend on water utilization.¹⁴⁵ Water scarcity will continue to be a significant problem for China. Therefore, a stronger and more effective water management and governance system may be needed to address these issues.¹⁴⁶

C. Hydropower Projects and Downstream Riparians

China already has the largest number of dams in the world (approximately 25,000), and it also has the world's largest group of electricity consumers.¹⁴⁷ These numbers inevitably will increase as a result of the Twelfth Five-Year Plan.¹⁴⁸ The State Council announced in its Twelfth Five-Year Plan for 2010–15 that China would expand its hydropower capacity from 220 gigawatts in 2010 to 290 gigawatts in 2015, which constitutes an average annual growth of 5.7 percent.¹⁴⁹ Reports have even suggested that China plans to increase significantly its hydropower capacity to 568 gigawatts by 2030.¹⁵⁰ Notwithstanding such ambitions, commentators previously had suggested that China may struggle to meet its 2015 target to construct new hydropower plants due to enforced requirements of construction developers to complete feasibility studies and environmental-impact assessments.¹⁵¹ In fact, it seems

¹⁴³ See Shin, *supra* note 134.

¹⁴⁴ See *id.*

¹⁴⁵ See *id.*; *Coal Sector Will Use Quarter of Yellow River Water by 2015*, *supra* note 134; Hilton, *supra* note 140.

¹⁴⁶ See *Coal Sector Will Use Quarter of Yellow River Water by 2015*, *supra* note 134; Hilton, *supra* note 140; Shin, *supra* note 134.

¹⁴⁷ See Sebastian Biba, *China's Continuous Dam-Building on the Mekong River*, 42 J. CONTEMP. ASIA 603, 607 (2012).

¹⁴⁸ See *China's 12th Five-Year Plan: Energy*, KPMG CHINA 1–2 (Apr. 2011), <https://www.kpmg.com/CN/en/IssuesAndInsights/ArticlesPublications/Documents/China-12th-Five-Year-Plan-Energy-201104.pdf> [<https://perma.cc/H2JE-Y576>].

¹⁴⁹ See *Energy Development Plan of the 12th Five Year Plan*, INST. FOR INDUS. PRODUCTIVITY, <http://iepd.iipnetwork.org/policy/energy-development-plan-12th-five-year-plan> [<https://perma.cc/Z75L-57M6>] (last visited June 8, 2016); Sylvie Cornot-Gandolphe, *China's Coal Market: Can Beijing Tame 'King Coal'?*, OXFORD INST. ENERGY STUD. (Dec. 2014), <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2014/12/CL-1.pdf> [<https://perma.cc/X5FG-XZZH>].

¹⁵⁰ See *China's 12th Five-Year Plan: Energy*, *supra* note 148, at 1–2; see also Deborah Tan, *China Hydro: Tough Weather Ahead*, CHINA WATER RISK (Aug. 7, 2013), <http://chinawaterrisk.org/opinions/china-hydro-tough-weather-ahead/> [<https://perma.cc/YUV6-4ZQG>].

¹⁵¹ See David Stanway, *China Falling Behind on 2020 Hydro Goals as Premier Urges New Dam Building*, REUTERS (Mar. 10, 2014), <http://www.reuters.com/article/2014/03/10/china-parliament-hydropower-idUSL3N0M70VN20140310#z1IxHXvrcAxAVFrz.97> [<https://perma.cc/445G-8NRW>].

that China may have met its 2015 goal a year early.¹⁵² In 2015, China's hydropower capacity reached 320 gigawatts.¹⁵³

The thirteen-dam cascade construction on the Salween (or Nu) River will produce a total hydroelectricity capacity of approximately twenty-one gigawatts.¹⁵⁴ For three of these dams located in the Lower Salween River region, the Electricity Generating Authority of Thailand is a co-partner with China in the construction, with Thailand being the primary consumer of the electricity the dams generate.¹⁵⁵ The dams at Songta, Maji, Yabiluo, Liuku, and Saige are situated in a UNESCO World Heritage Site, the Three Parallel Rivers of Yunnan Protected Areas.¹⁵⁶ In addition, these five dams, which received State Council priority listing as dams constructed in the Twelfth Five-Year Plan, sit in a high-risk seismic-activity zone that may cause them to collapse—either during an earthquake or during severe flooding, which may potentially cause further damage downstream.¹⁵⁷

In the Mekong River Basin—which is shared with Myanmar and the downstream states Laos, Cambodia, Thailand, and Vietnam—one major dam construction project is the Mekong Dam Cascade, which is to be completed by 2025 and will have an electricity capacity of 15,000 megawatts or approximately 80 percent of the capacity of the Three Gorges Dam.¹⁵⁸ Somewhat surprisingly, the lower-riparian states have not challenged China's actions, nor have they aggressively encouraged China to join the river-basin authority.¹⁵⁹ One reason for this may be that Chinese dam construction already is

¹⁵² Debra Tan et al., *Towards a Water & Energy Secure China: Tough Choices Ahead in Power Expansion with Limited Water Resources* 130 (Apr. 2015), <http://chinawaterrisk.org/wp-content/uploads/2015/04/Towards-A-Water-Energy-Secure-China-CWR0415.pdf> [<https://perma.cc/RU2U-MMMR>]; David Stanway, *China's Environment Ministry Blocks Hydro Project*, Reuters (Apr. 9, 2015), <http://www.reuters.com/article/us-china-hydropower-idUSKBN0N00GO20150409> [<https://perma.cc/7RXF-DM7P>].

¹⁵³ See REPORT ON THE IMPLEMENTATION OF THE 2015 PLAN FOR THE NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT AND ON THE 2016 DRAFT PLAN FOR THE NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT, NATIONAL DEVELOPMENT AND REFORM COMMISSION, DELIVERED AT THE FOURTH SESSION OF THE TWELFTH NATIONAL PEOPLE'S CONGRESS ON MARCH 5, 2016, at 10, http://online.wsj.com/public/resources/documents/NPC2016_NDRC_English.pdf [<https://perma.cc/8PY3-BY5T>].

¹⁵⁴ See D.J. ALLEN ET AL., *THE STATUS AND DISTRIBUTION OF FRESHWATER BIODIVERSITY IN INDO-BURMA* 19 (2008), https://cmsdata.iucn.org/downloads/indo_burma_report_complete_low_res_28_aug.pdf [<https://perma.cc/TY9C-GKAK>].

¹⁵⁵ See *id.*

¹⁵⁶ See *China Moves to Dam the Nu, Ignoring Seismic, Ecological and Social Risks*, INT'L RIVERS (Jan. 25, 2013), <http://www.internationalrivers.org/resources/china-moves-to-dam-the-nu-ignoring-seismic-ecological-and-social-risks-7807> [<https://perma.cc/PU2Y-UMHB>] [hereinafter *China Moves to Dam the Nu*]; *State of Conservation: Three Parallel Rivers of Yunnan Protected Areas*, UNESCO (last visited Apr. 18, 2016), <http://whc.unesco.org/en/soc/371> [<https://perma.cc/6XNL-VEPQ>].

¹⁵⁷ See *China Moves to Dam the Nu*, *supra* note 156.

¹⁵⁸ See Biba, *supra* note 147, at 607.

¹⁵⁹ See *id.* at 604–05.

taking place in these lower-riparian states, and so they might already enjoy similar benefits as those of China.¹⁶⁰

China has financed and constructed 46 percent of the hydroelectric capacity in Cambodia, Laos, and Myanmar in the period from 2006 to 2011.¹⁶¹ In turn, all three riparian states plan to export this electricity to China.¹⁶² Laos reportedly has called itself “the battery of Asia” because almost all of Laos’s electricity (as of 2007) came from hydropower, of which a third was exported—approximately 678 million kilowatts per hour.¹⁶³ Moreover, hydropower generation represents approximately a third of Laos’s total exports, making hydropower generation an extremely significant export industry for Laos.¹⁶⁴

In Myanmar, it is estimated that almost all of the riparian state’s electricity needs will be supplied by hydropower by 2030.¹⁶⁵ Chinese and Thai investments have greatly helped with the mega-construction of the Myistone facility, which has a generation capacity of 6000 megawatts and which taps into Myanmar’s Irrawaddy River Basin.¹⁶⁶ Much of this electricity is exported to China and Thailand.¹⁶⁷

Even though Cambodia does not share a border with China, China has supported the financing and construction of several dams in Cambodia, including the Kamchay Dam (in Kampot province) and the Lower Sesan 2 Dam (in Stung Treng province).¹⁶⁸ Both projects have had their own controversies. For the Kamchay Dam, there were environmental problems because the dam was located in a national park and the environmental impact assessment came through only after the dam was almost completed.¹⁶⁹ In addition, local inhabitants complained that they did not have access to electricity be-

¹⁶⁰ See *Chinese Investments Play Large Role in Southeast Asia Hydroelectric Growth*, U.S. ENERGY INFO. ADMIN. (Aug. 16, 2013), www.eia.gov/todayinenergy/detail.cfm?id=12571 [<https://perma.cc/A8KW-7CYH>].

¹⁶¹ See *id.*

¹⁶² See Frauke Urban & Johan Nordensvard, *China Dams the World: The Environmental and Social Impacts of Chinese Dams*, E-INTERNATIONAL RELATIONS (Jan. 30, 2014), www.e-ir.info/2014/01/30/china-dams-the-world-the-environmental-and-social-impacts-of-chinese-dams/ [<https://perma.cc/NLR9-T9DS>].

¹⁶³ *Id.*; see *Chinese Investments Play Large Role in Southeast Asia Hydroelectric Growth*, *supra* note 160.

¹⁶⁴ *Chinese Investments Play Large Role in Southeast Asia Hydroelectric Growth*, *supra* note 160.

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ See Urban & Nordensvard, *supra* note 162; *Comments to CF Carbon Fund II Limited Regarding the Kamchay Hydropower Project (Cambodia)*, INT’L RIVERS (Jan. 20, 2012), www.internationalrivers.org/files/attached-files/kamchaycdm_intlivers.pdf [<https://perma.cc/6H3T-K3K3>].

¹⁶⁹ See *Comments to CF Carbon Fund II Limited Regarding the Kamchay Hydropower Project (Cambodia)*, *supra* note 168.

cause the majority of it was transmitted to the state's capital.¹⁷⁰ The Lower Sesan 2 Dam also had the issue of an inadequate environmental impact assessment, and the dam construction company was not transparent in its relocation plans for the people living in the area.¹⁷¹

The cases above show economic cooperation between China and its Southeast Asian neighbors with regard to its shared transboundary water resources.¹⁷² It is estimated that there are a total of 304 Chinese dams overseas, with 38 percent located in Southeast Asia and 27 percent in Africa.¹⁷³ As can be seen in this Section, however, the environmental and social impact of China's construction of dams overseas complicates the cooperation between the states to the extent that, other than complying with environmental assessments during the construction, the riparian states do not share a joint-management mechanism that can deal with all of the economic, environmental, and sustainable development issues of associated with surface waters.¹⁷⁴

Missed targets for dam construction in China under the Twelfth Five-Year Plan may be the reason for refocusing the Thirteenth Five-Year policies on environmental protection.¹⁷⁵ The theme behind the Thirteenth Five-Year Plan—to build a “Beautiful China”—emphasizes improving environmental governance.¹⁷⁶ Such environmental governance initiatives include pollution control and environmental protection.¹⁷⁷ In particular, there are planned measures to “improve the water environment in river basin areas.”¹⁷⁸ There is no explicit mention of whether such planned measures include hydropower construction as of yet, or whether the promulgated stricter enforcements of the Environmental Protection Law of China under the Thirteenth Five-Year Plan will result in a different policy emphasis with regard to dam construction. This could represent an opportunity for China to reassess its planned hydropower projects, especially in the Mekong and Irrawaddy, among others, in terms of the manner in which it manages its relations with its downstream

¹⁷⁰ See Urban & Nordensvard, *supra* note 162.

¹⁷¹ See *Lower Sesan 2 Dam*, INT'L RIVERS, www.internationalrivers.org/campaigns/lower-sesan-2-dam [https://perma.cc/UVG9-KRXX] (last visited Mar. 28, 2016).

¹⁷² See Urban & Nordensvard, *supra* note 162.

¹⁷³ *Id.*

¹⁷⁴ See *id.* at 3.

¹⁷⁵ See Owen Haacke, *NDRC Prepares for Next Five-Year Plan, Focuses on Quality over Quantity*, US-CHINA BUSINESS COUNCIL, www.uschina.org/ndrc-prepares-next-five-year-plan-focuses-quality-over-quantity [https://perma.cc/4FQQ-JLAC] (last visited Mar. 29, 2016).

¹⁷⁶ See *Interpreting China's Proposed 13th Five-Year Plan*, Beijing Review, www.bjreview.com/ceshi/ceshi/201602/t20160226_800050125.html [https://perma.cc/2EZM-LYJQ] (last visited June 9, 2016).

¹⁷⁷ See Li Keqiang, Premier of the State Council, Report on the Work of the Government Delivered at the Fourth Session of the 12th National People's Congress of the People's Republic of China on Mar. 5, 2016, at 29, <https://assets.documentcloud.org/documents/2748106/LiKeqiang-Report.pdf> [https://perma.cc/7RLC-9F8B].

¹⁷⁸ *Id.* at 30.

riparian neighbors so that they can comprehensively address the economic, environmental, and sustainable development issues of their international watercourses.

D. Factors Affecting the Risk of Disputes

China's relationship with neighboring aquifer states affects the manner in which China chooses to manage transboundary water resources.¹⁷⁹ For example, China has long enjoyed close relations with North Korea, and as a result there is considerable cooperation between the two states on the management of the Yalu River and the Tumen River.¹⁸⁰ Taking the example of the Tumen River first, China entered into an agreement (with North Korea and Russia) and a supplementary agreement (with North Korea, Russia, South Korea, and Mongolia) to establish a coordination and consultative commission—both of which provide that the parties will cooperate on development of the Great Tumen area in a way that does not harm the region's environment.¹⁸¹ The Yalu River is a successful example of river-basin cooperation between China and North Korea.¹⁸² Both states entered into an agreement to set up the China-Korea Hydropower Corporation, which was jointly responsible for establishing and managing three hydropower plants along the Yalu River; all electricity power generated was equally shared between the two states.¹⁸³ In these examples, the risk of dispute is low due to the high degree of cooperation between the states.¹⁸⁴

By contrast, China enjoys less affectionate relations with Kazakhstan, Kyrgyzstan, and Tajikistan, and therefore, there are fewer examples of cooperation between these riparian states with respect to the management of the Ili River and the Itrysh River.¹⁸⁵ China began a large water-diversion project in the Itrysh River, which already was heavily polluted from untreated waste being discharged by coal smelters and factories, to send water to Xinjiang's oil fields as well as to western China to aid in its industrial and commercial development as part of China's Tenth Five-Year Plan.¹⁸⁶ Kazakhstan has not yet challenged China over its water diversions, but the likelihood may in-

¹⁷⁹ See *infra* notes 180–197 and accompanying text.

¹⁸⁰ See Nickum, *supra* note 2, at 237–38. The Tumen River “forms the border[s]” between China, North Korea, and Russia and flows through a resource-rich region possessing oil, minerals, and gas. Marsden, *supra* note 1, at 400.

¹⁸¹ See Marsden, *supra* note 1, at 400–02.

¹⁸² See Nickum, *supra* note 2, at 237.

¹⁸³ See *id.*

¹⁸⁴ See *id.*

¹⁸⁵ See *id.* at 239–40; Eric Sievers, *Water, Conflict, and Regional Security in Central Asia*, 10 N.Y.U. ENVTL. L.J. 356, 377, 380–81 (2002).

¹⁸⁶ See Sievers, *supra* note 185, at 378.

crease as water resources gradually diminish.¹⁸⁷ Similarly, China also is diverting water resources in the Ili River to supply water to the western region of China.¹⁸⁸ These cases illustrate a higher risk of dispute as a function of a low degree of cooperation between these states.¹⁸⁹

In the Amur River, which borders China and Russia, the two states managed in 2004 to delimit their border and settle their claims regarding the territorial sovereignty of disputed islands.¹⁹⁰ Russia allowed the sovereignty of half of the Bolshoi Ussuriski Island and all of Tarabarov Island (located on the Amur River) to be given to China.¹⁹¹ In the course of the transfer, both states signed a joint-use agreement that would allow joint economic use by Russia and China of the disputed islands being transferred to China.¹⁹² The joint-use agreement also invalidated the unilateral regulations imposed by the regional authorities in Khabarovsk that had previously excluded China.¹⁹³ The joint-use agreement overrode such exclusions and allowed Chinese vessels the right to sail around the islands that China has claimed, with Russia also being allowed to continue to use the islands in the manner it always had done.¹⁹⁴ This enabled a smooth transfer of sovereignty of the islands to China on the part of Russia.¹⁹⁵ It also illustrates a successful example of joint utilization and management of transboundary water resources in avoiding conflict between states.¹⁹⁶ Both states subsequently have started planning hydropower plants along the Amur River in addition to establishing a free-trade zone along the Suifen River.¹⁹⁷

The examples provided in this Section illustrate that the conclusion of water-resource agreements may assist in the joint management of shared water resources and greater cooperation within a legal framework.¹⁹⁸ Without such agreements, the risks that accompany territorial disputes remain, along with weaker cooperation on water resource management.¹⁹⁹ The following

¹⁸⁷ *See id.* at 380.

¹⁸⁸ *See id.* at 379.

¹⁸⁹ *See id.* at 378–81.

¹⁹⁰ *See* Ajay Kamalakaran, *Using the Russia-China Border Agreement as a Model*, RUSSIA AND INDIA REPORT (Sept. 16, 2014), http://in.rbth.com/blogs/2014/09/16/using_the_russia-china_border_agreement_as_a_model_38329 [<https://perma.cc/LF94-GALH>].

¹⁹¹ *See id.*

¹⁹² Alexander Lukin, *Session I: National Identity and Domestic Legitimacy*, in 7TH BERLIN CONFERENCE ON ASIAN SECURITY (BCAS): TERRITORIAL ISSUES IN ASIA: DRIVERS, INSTRUMENTS, WAYS FORWARD 10 (Jul. 1–2, 2013), www.swp-berlin.org/fileadmin/contents/products/projekt_papierre/BCAS2013_Alexander_Lukin.pdf [<https://perma.cc/RVX3-8BCS>].

¹⁹³ *See id.* at 9–10.

¹⁹⁴ *See id.*

¹⁹⁵ *See id.*

¹⁹⁶ *See id.*

¹⁹⁷ *See* Nickum, *supra* note 2, at 236.

¹⁹⁸ *See id.*; Lukin, *supra* note 192, at 9–10; Marsden, *supra* note 1, at 400–02.

¹⁹⁹ *See* Nickum, *supra* note 2, at 239–40; Sievers, *supra* note 185, at 380–81.

Section discusses China's participation in international fora, with the goal being to show how China is an active participant in international fora in the area of environment and natural resources.

E. China's Participation in International Fora

China generally has shown its support for the betterment of the environment through its ratification of a number of environment-related treaties.²⁰⁰ For example, China has ratified the U.N. Framework Convention on Climate Change,²⁰¹ the Convention on Biological Diversity,²⁰² the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade,²⁰³ the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,²⁰⁴ and the U.N. Convention to Combat Desertification in those

²⁰⁰ See *infra* notes 201–206 and accompanying text.

²⁰¹ United Nations Framework Convention on Climate Change, May 9, 1992, S. Treaty Doc. No. 102-38, 1771 U.N.T.S. 107; *Status of Ratification of the Convention*, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php [<https://perma.cc/YC4B-XFP6>] (last visited Mar. 31, 2016). In connection with this convention, China has signed the Kyoto Protocol to the U.N. Framework Convention on Climate Change. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, U.N. Doc. FCCC/CP/1997/7/Add.1, 37 I.L.M. 22 (1998); *Status of Ratification of the Kyoto Protocol*, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php [<https://perma.cc/554H-H75B>] (last visited Mar. 31, 2016). China also declared that both conventions apply to Macau and Hong Kong. *Status of Ratification of the Convention*, *supra*, nn.2–3; *Status of Ratification of the Kyoto Protocol*, *supra*, n.2.

²⁰² Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79; *List of Parties*, CONVENTION ON BIOLOGICAL DIVERSITY, <https://www.cbd.int/information/parties.shtml> [<https://perma.cc/SZG6-5AQH>] (last visited Apr. 1, 2016). China also declared that the convention shall apply to Macau and Hong Kong. See *Other IP Treaties, Territorial Information*, WORLD INTELLECTUAL PROP. ORG. (last visited Apr. 18, 2016), http://www.wipo.int/wipolex/en/other_treaties/remarks.jsp?cnty_id=3313C [<https://perma.cc/56BB-FPFZ>]. In connection with this convention, China also has accepted the Cartagena Protocol on Biosafety to the Convention on Biological Diversity. See *Cartagena Protocol on Biosafety to the Convention on Biological Diversity*, Jan. 29, 2000, 2226 U.N.T.S. 208; *List of Parties*, CONVENTION ON BIOLOGICAL DIVERSITY, <https://www.cbd.int/information/parties.shtml#tab=1> [<https://perma.cc/UKB7-PRFV>] (last visited Apr. 1, 2016).

²⁰³ Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Sept. 10, 1998, 2244 U.N.T.S. 337; *Status of Ratifications*, ROTTERDAM CONVENTION, <http://www.pic.int/Countries/Statusofratifications/tabid/1072/language/en-US/Default.aspx> [<https://perma.cc/EE7M-UVVR>] (last visited Apr. 1, 2016).

²⁰⁴ Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Mar. 22, 1989, 1673 U.N.T.S. 57; *Status of Basel Convention*, U.N. TREATY COLLECTION, <https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&msgid=XXVII-3&chapter=27&lang=en> [<https://perma.cc/252B-ZLSL>] (last visited Apr. 1, 2016). In connection with this convention, China also has ratified the Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Sept. 22, 1995, U.N. Doc. UNEP/CHW.3/35 (not yet in force); *Status of Ratification*, BASEL CONVENTION, <http://www>.

Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa.²⁰⁵ China also has joined the Montreal Protocol on Substances that Deplete the Ozone Layer and the Vienna Convention for the Protection of the Ozone Layer.²⁰⁶ However, China has neither signed nor ratified the 1992 Helsinki Convention or the 1997 Watercourses Convention.²⁰⁷ China voted against the 1997 Watercourses Convention, in the words of China's representative Gao Feng, on the basis that: "A watercourse State enjoys indisputable territorial sovereignty over those parts of international watercourses that flow through its territory. It is incomprehensible and regrettable that the draft Convention does not affirm this principle."²⁰⁸ In line with its position on territorial sovereignty, China has invoked its sovereign right over natural resources and economic rights and duties of a state.²⁰⁹ China has supported the

basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx, [https://perma.cc/Z29F-AWYF] (last visited Apr. 1, 2016).

²⁰⁵ U.N. Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification Particularly in Africa, Oct. 14, 1994, 1954 U.N.T.S. 3; *Status of U.N. Convention to Combat Desertification*, U.N. TREATY COLLECTION, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-10&chapter=27&lang=en [https://perma.cc/796B-H32J] (last visited Apr. 1, 2016).

²⁰⁶ Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 152 U.N.T.S. 3; Vienna Convention for the Protection of the Ozone Layer, Mar. 22, 1985, T.I.A.S. No. 11,097; *Status of the Montreal Protocol*, U.N. TREATY COLLECTION, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-2-a&chapter=27&lang=en [https://perma.cc/3CZA-WTB7] (last visited Apr. 1, 2016); *Status of the Vienna Convention*, U.N. TREATY COLLECTION, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-2&chapter=27&lang=en [https://perma.cc/P9K9-MX8J] (last visited Apr. 1, 2016). In connection with the Montreal Protocol on Substances that Deplete the Ozone Layer, China also has acceded to the four amendments to the Montreal Protocol. See *Status of Amendment*, U.N. TREATY COLLECTION, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-2-e&chapter=27&lang=en [https://perma.cc/EJB4-5JUX] (last visited Apr. 2, 2016) (1999 Beijing Amendment); *Status of Amendment*, U.N. TREATY COLLECTION, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-2-d&chapter=27&lang=en [https://perma.cc/29AX-YNFA] (last visited Apr. 2, 2016) (1997 Montreal Amendment); *Status of Amendment*, U.N. TREATY COLLECTION, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-2-c&chapter=27&lang=en [https://perma.cc/2FXW-SEZF] (last visited Apr. 2, 2016) (1992 Copenhagen Amendment); *Status of Amendment*, U.N. TREATY COLLECTION, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-2-b&chapter=27&lang=en [https://perma.cc/K48L-B7MA] (last visited Apr. 2, 2016) (1990 London Amendment).

²⁰⁷ *Status of the Helsinki Convention*, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-5&chapter=27&lang=en [https://perma.cc/B3QA-RUFH] (last visited Apr. 2, 2016); *Status of the Watercourses Convention*, INT'L WATER L. PROJECT, http://internationalwaterlaw.org/documents/intldocs/watercourse_status.html [https://perma.cc/4ZUP-ZH6M] (last visited Apr. 14, 2016); see 1997 Watercourses Convention, *supra* note 21; 1992 Helsinki Convention, *supra* note 41.

²⁰⁸ U.N. GAOR 51st Sess., 99th plen. mtg. at 6, U.N. Doc. A/51/PV.99 (May 21, 1997).

²⁰⁹ See Ben Saul, *China, Natural Resources, Sovereignty and International Law*, 37 ASIAN STUD. REV. 196, 205 (2013), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1954180 [https://perma.cc/8L7S-Z8VG] (citing Bing Bing Jia, *A Synthesis of the Notion of Sovereignty and the Ideal of the Rule of Law: Reflections on the Contemporary Chinese Approach to International*

U.N. General Assembly Resolution on Permanent Sovereignty over Natural Resources and the Charter of Economic Rights and Duties of States, which complement China's socialist and development mandate and track record of utilizing its natural resources to build its economy and eradicate poverty permanently from society.²¹⁰

The U.N. General Assembly Resolution on Permanent Sovereignty over Natural Resources was passed at the 1194th U.N. General Assembly Plenary Meeting on December 14, 1962, which emphasized economic development and independence in developing countries and human rights *vis-à-vis* the right to self-determination.²¹¹ This resolution was the basis for enabling former colonized states to achieve economic independence and wealth through the exploitation of their natural resources for the good of their people.²¹² In particular, the resolution recognized "the inalienable right of all States freely to dispose of their natural wealth and resources in accordance with their national interests, and on respect for the economic independence of States."²¹³ Notwithstanding such respect of a state's permanent sovereignty over natural resources, it is subject to a number of provisos.²¹⁴ First, a state's "free and beneficial" use of permanent sovereignty over its natural resources must be accompanied by "mutual respect" of another state's permanent sovereignty over its natural resources on the basis of the principle of "sovereign equality."²¹⁵ Second, a violation of another state's permanent sovereignty over its natural resources negatively affects the rights of individuals and would be "contrary to the spirit" of the U.N. Charter.²¹⁶

These two points are crucial to understanding that China's invocation of the principle of permanent sovereignty over its natural resources is not an absolute right.²¹⁷ Indeed, Principle 2 of the Rio Declaration on Environment and Development makes clear that states have the "sovereign right to exploit their own resources pursuant to their own environmental and developmental policies," but this right is limited by "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environ-

Law, 53 GER. Y.B. INT'L L. 11, 18–21 (2010)). See generally G.A. Res. 3281 (XXIX) (Dec. 12, 1974) (Charter of Economic Rights and Duties of States); G.A. Res. 1803 (XVIII) (Dec. 14, 1962) (Permanent Sovereignty over Natural Resources).

²¹⁰ Saul, *supra* note 209, at 205. See generally G.A. Res. 3281, *supra* note 209 (Charter of Economic Rights and Duties of States); G.A. Res. 1803, *supra* note 209 (Permanent Sovereignty over Natural Resources).

²¹¹ G.A. Res. 1803, *supra* note 209, pmb.

²¹² See *id.*

²¹³ *Id.*

²¹⁴ See *id.* art. I.

²¹⁵ *Id.* art. I, ¶ 5.

²¹⁶ *Id.* art. I, ¶ 7.

²¹⁷ See *id.* art. I, ¶¶ 5, 7.

ment of other States or areas beyond the limits of national jurisdiction.”²¹⁸ Accordingly, when applied to the management of shared natural resources and transboundary aquifers, China cannot act unilaterally and utilize a shared watercourse, aquifer, or aquifer system without respecting another state’s right to its permanent sovereignty over the same shared water resources inasmuch as it might cause damage to the other state’s use of that shared watercourse.²¹⁹ Hence, the statement made by China’s representative, Gao Feng, objecting to the vote on the 1997 Watercourses Convention is only accurate to the extent that the above two points are respected.²²⁰ To be clear, the case for China to use its natural resources to develop its economy is overwhelmingly legitimate.²²¹ In spite of its recent economic successes, China remains a developing country because income levels remain at a much lower level than developed countries.²²² In addition, even though the proportion of the Chinese population living in poverty in 2001 dramatically fell to only 8 percent from 53 percent in 1981, the World Bank has pointed out that the progress cannot be viewed in isolation because the rate of income inequality has risen steadily, which essentially slows poverty reduction.²²³ In short, China has not eradicated poverty, despite its poverty-reduction programs.²²⁴ Of course, this is not an indicator of developed-country status, inasmuch as even the most developed countries still struggle with poverty eradication. Regardless, the challenge for China going forward is to continue to enforce its right to permanent sovereignty over its natural resources while at the same time complying with those same rights of its riparian neighbors.²²⁵ The following Part explains how more active participation by China in the international water-law regime could help protect its rights to permanent sovereignty over its natural resources.

²¹⁸ U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), Principle 2 (Aug. 12, 1992).

²¹⁹ See G.A. Res. 1803, *supra* note 209, art. I, ¶¶ 5, 7.

²²⁰ See *id.*; U.N. GOAR 51/99, *supra* note 208, at 6–7.

²²¹ See G.A. Res. 1803, *supra* note 208, pmb., art. I.

²²² See *Overview: China*, WORLD BANK, www.worldbank.org/en/country/china/overview [<https://perma.cc/2PRW-ET5Y>] (last visited Apr. 5, 2016).

²²³ See Martin Ravallion & Shaohua Chen, *Understanding China's (Uneven) Progress Against Poverty*, 82 J. DEV. ECON. 1, 2 (2007).

²²⁴ See TERRY SINCLAIR, *THE CHALLENGE OF HIGH INEQUALITY IN CHINA 1* (Aug. 2013), <http://www.worldbank.org/content/dam/Worldbank/document/Poverty%20documents/Inequality-In-Focus-0813.pdf> [<https://perma.cc/S4EY-67J3>].

²²⁵ G.A. Res. 1803, *supra* note 209, pmb., art. I.

III. TOWARDS GREATER PARTICIPATION IN THE INTERNATIONAL WATER-LAW REGIME

This Part explores the reasons why China needs to play a greater role within the international legal framework in managing its international river basins. First, it provides a brief overview of the 2008 Draft Articles on the Law on Transboundary Aquifers, which attempts to address the inadequacies of the 1997 Watercourses Convention. The 1997 Watercourses Convention did not cover confined transboundary groundwater and did not sufficiently address protection of the river ecosystems. The fact that the 2008 Draft Articles exist shows the evolving international law in this area. As China has signed up to various environmental treaties, as emphasized in the previous Part, one positive way of interpreting that would be that China is trying to show it cares about the environment. Therefore, the analysis of the 2008 Draft Articles provided in this Part shows that they would be a good model for China to aim towards for its international river governance. Second, this Part sets out the main elements of the obligation to cooperate with regard to the management of international river basins under international law. Third, it analyzes the obstacles to greater cooperation by China. Fourth, this Part concludes with suggestions for reform.

A. Management of Aquifers

International water law has evolved significantly in recent years, and its scope of protection not only covers transboundary rivers, lakes, and watercourses (known as surface waters), but also transboundary aquifers and aquifer systems that include groundwaters.²²⁶ Previously, the 1997 Watercourses Convention covered surface waters not connected to confined transboundary groundwaters, with the result that the regime lacked adequate sustainability and legal protection for such confined transboundary groundwaters, which is particularly problematic because they arguably are most vulnerable to overconsumption and depletion.²²⁷ The 2008 Draft Articles on the Law on Transboundary Aquifers of the International Law Commission were drafted to rec-

²²⁶ Gabriel E. Eckstein, *Commentary on the UN International Law Commission's Draft Articles on the Law of Transboundary Aquifers*, 18 COLO. J. INT'L ENVTL. L. & POL'Y 537, 538, 541–42 (2007).

²²⁷ See *id.* at 537, 546. Groundwater is essential for fresh water supply; it provides drinking water for over half of the world's population and forty-three percent of all of the world's irrigation needs. The world's groundwater supplies are declining rapidly, particularly in the urban areas, and it is estimated that twenty percent of the world's aquifers are overexploited. U.N. EDUC., SCI. AND CULTURAL ORG., THE UNITED NATIONS WORLD WATER DEVELOPMENT REPORT 2015: WATER FOR A SUSTAINABLE WORLD 13 (2015), <http://unesdoc.unesco.org/images/0023/002318/231823E.pdf> [<https://perma.cc/2STE-PCXP>]; Eckstein, *supra* note 226, at 537–39, 555 (providing the case of the Nubian Sandstone Aquifer as one example of overexploitation of groundwater).

tify this flaw.²²⁸ Whereas in the 1997 Watercourses Convention the scope of regulation covered surface waters not connected to confined transboundary groundwaters, the 2008 Draft Articles expanded that scope to protect such groundwaters.²²⁹ As a result, there is a greater burden on aquifer states to adhere to the requirements to protect these aquifers or aquifer systems.²³⁰ The legislation, however, protects the ecosystem of river basins for the purposes of securing fresh water supplies for human consumption.²³¹ This legal development is crucial because it reflects an evolving international legal regime and the codification of customary international water law.²³²

The following Sections on the principles of international water law refer to the 2008 Draft Articles. Even though these articles have not yet become a convention, the principles arguably are binding on states as custom.²³³ Discussion of the principles contained in the 2008 Draft Articles is important to the extent that they provide an insight into how customary international water law has developed.²³⁴ Moreover, an agreement has been formed for one river basin based on the 2008 Draft Articles, and it presumably is only a matter of time before more follow suit.²³⁵ Although valid, these Articles do not address the other sets of regulations under international water law. In any case, the guiding principles of the 2008 Draft Articles reflect the 1997 Watercourses Convention, so duplicate analysis is not required.²³⁶ The following Sections provide an explanation of the manner in which the principles of the framework conventions operate and complement one another. This should provide the reader with a better understanding of the mechanics associated with the duty to cooperate contained in the 2008 Draft Articles.

B. Contours of the Obligation to Cooperate

The principles of international water law that underline how to manage transboundary river basins complement each other, providing a framework with which the management practice of transboundary river basins ought to comply.²³⁷ International water law has evolved in recent times to expand the

²²⁸ See Eckstein, *supra* note 226, at 546.

²²⁹ *Id.*

²³⁰ See *id.* at 555.

²³¹ See *id.* at 538–39, 546.

²³² See *id.* at 538, 569.

²³³ See *id.* at 543, 569.

²³⁴ See *id.* at 538, 542–43, 551, 569.

²³⁵ See Lilian del Castillo Laborde, *The Guarani Aquifer Framework Agreement*, in INTERNATIONAL LAW AND FRESHWATER: THE MULTIPLE CHALLENGES 196, 206 (Laurence Boisson de Chazournes et al. eds., 2013) (discussing how Argentina, Brazil, Paraguay, and Uruguay entered into the 2010 Guarani Aquifer Framework Agreement, which was based on the 2008 Draft Articles).

²³⁶ See Eckstein, *supra* note 226, at 558.

²³⁷ See *id.* at 542–43.

scope of protection to cover aquifer and aquifer systems so that activities affecting both surface waters and groundwaters may be regulated.²³⁸

A transboundary river basin that flows through several basin states accrues benefits to its users.²³⁹ Therefore, the international water-law regime, which contains substantive and procedural rules and governs the management of transboundary river basins, has origins in the principle of limited sovereignty and community of interests.²⁴⁰ The management practice must comply with both substantive and procedural rules of international water law.²⁴¹

The 2008 Draft Articles do not restrict the scope of use or explicitly prohibit any kind of use or activity when it comes to transboundary aquifers.²⁴² Any use or activity involving the transboundary aquifer, however, is subject to certain conditions or limitations.²⁴³ These are expressed as the guiding principles of the 2008 Draft Articles.²⁴⁴ Draft Article 4 contains the principle of equitable and reasonable utilization, which governs use of the aquifer or aquifer system.²⁴⁵ Even though this is the predominant guiding principle governing use, interpretation of Draft Article 4 must take into account the other guiding principles of the 2008 Draft Articles.²⁴⁶ These include the principle not to cause significant harm (Draft Article 6), the obligation to cooperate (Draft Article 7), the obligation to exchange data (Draft Article 8), the obligation to monitor (Draft Article 13), and the obligation to establish joint-management mechanisms (Draft Article 14).²⁴⁷ The basis for this approach is provided in Article 3.²⁴⁸ Although Article 3 recognizes the sovereign rights of aquifer states to their portion of a transboundary aquifer (although they do not possess absolute sovereignty over the transboundary aquifer), it also sets out the limitations of aquifer states in exercising their sovereign rights over the transboundary aquifer to the extent that they do comply with the Draft Articles.²⁴⁹ The nature of a transboundary aquifer or aquifer system requires regulation that goes beyond national borders, and international law has recognized this kind of regulation in relation to shared natural resources.²⁵⁰ Instead, regu-

²³⁸ See *id.* at 546, 548–53.

²³⁹ See Weiss, *supra* note 11, at 194.

²⁴⁰ See *id.*

²⁴¹ See *id.*

²⁴² See 2008 Draft Articles, *supra* note 25, arts. 4–6.

²⁴³ See *id.*

²⁴⁴ See *id.*

²⁴⁵ See *id.* art. 4.

²⁴⁶ See *id.*; Weiss, *supra* note 11, at 206.

²⁴⁷ See 2008 Draft Articles, *supra* note 25, arts. 6–8, 13, 14.

²⁴⁸ See *id.* art. 3.

²⁴⁹ See Eckstein, *supra* note 226, at 561.

²⁵⁰ See *id.* at 539, 541–43. See, e.g., Gabčikovo-Nagymaros Project (Hung./Slov.), Judgment, 1997 I.C.J. Rep. 7, ¶ 78 (Sept. 25). See generally Stephen McCaffrey, *The Harmon Doctrine One Hundred Years Later: Buried Not Praised*, 36 NAT. RESOURCES J. 449, 449 (1996).

lation is required to take place through collective management and cooperation.²⁵¹ In effect, this limits the exercise of sovereignty over transboundary aquifers to what is permitted in the Draft Articles.²⁵² Having established that aquifer states possess limited sovereignty over transboundary aquifers through the requirement of aquifer states to comply with the restrictions and obligations contained in the Draft Articles, the basic limitation of the principle of equitable and reasonable utilization has been drawn.²⁵³ It is upon this basis that the other conditions and limitations of use are considered.²⁵⁴

Draft Article 4 stipulates four main conditions on utilization in accordance with the principle of equitable and reasonable utilization.²⁵⁵ First, use of the transboundary aquifer or aquifer system must be “in a manner that is consistent with the equitable and reasonable accrual of benefits therefrom to the aquifer States concerned.”²⁵⁶ Equitable and reasonable utilization is a balancing exercise that considers the non-exhaustive list of factors stipulated in Draft Article 5 (Factors Relevant to the Equitable and Reasonable Utilization).²⁵⁷ These factors include the size of the “population dependent on the aquifer,” the types of demands (social and economic, for example) of the aquifer states, and the measures needed to form or recharge the aquifer or aquifer system, among others.²⁵⁸ Second, use of the transboundary aquifer or aquifer system depends on sustainable utilization because aquifer states are required to consider the long-term benefits of the utilization.²⁵⁹ Third, use of the transboundary aquifer or aquifer system depends on the environmental costs to the aquifer where states are required to refrain from utilization while the aquifer is recharging or in a way that would stop it from functioning effectively.²⁶⁰ This paragraph pays particular attention to the special characteristics of aquifers—notably their vulnerability to overexploitation and inability to replenish if the recharge is not sufficient.²⁶¹ Therefore, equitable utilization not only needs to be sensitive to sustainability of the aquifer but also to the natural course of recharge and replenishment of the aquifer system.²⁶² Finally, use of the transboundary aquifer or aquifer system depends on the establish-

²⁵¹ See 2008 Draft Articles, *supra* note 25, arts. 7, 14; Eckstein, *supra* note 226, at 577, 592–93.

²⁵² See Eckstein, *supra* note 226, at 561.

²⁵³ See 2008 Draft Articles, *supra* note 25, arts. 3, 4; Eckstein, *supra* note 217, at 577, 592–93.

²⁵⁴ See 2008 Draft Articles, *supra* note 25, arts. 3, 4; Eckstein, *supra* note 217, at 577, 592–93.

²⁵⁵ See 2008 Draft Articles, *supra* note 25, art. 4

²⁵⁶ *Id.*

²⁵⁷ See *id.* art. 5.

²⁵⁸ *Id.*

²⁵⁹ See *id.* art. 4.

²⁶⁰ See *id.*

²⁶¹ See *id.*; Eckstein, *supra* note 226, at 568.

²⁶² See 2008 Draft Articles, *supra* note 25, art. 4.

ment of individual or joint-utilization plans, which encourage the planning of an aquifer state's needs from the aquifer.²⁶³

Collectively, these paragraphs encourage careful planning and monitoring of aquifer states' use of aquifers. These tie in with the obligation to cooperate (Draft Article 7), the obligation to exchange data (Draft Article 8), the obligation to monitor (Draft Article 13), and the obligation to establish joint-management mechanisms (Draft Article 14).²⁶⁴ This pre-planning and monitoring approach also dovetails nicely with the precautionary approach recommended in Draft Article 12 to "prevent, reduce and control pollution" where it may cause significant harm.²⁶⁵ More fundamentally, these articles and the practice they encourage comport nicely with Draft Article 6, which contains the notion that significant harm cannot be caused.²⁶⁶ The principle not to cause significant harm does not only complement preventative action—namely, the preventing or controlling of pollution—but also supports positive action such as maintaining the quantity and quality of water as well as appropriate discharge zones to ensure sufficient preservation and protection of the transboundary aquifer ecosystem (Draft Article 10).²⁶⁷ Draft Article 11 regulates the recharge and discharge zones that require special measures to ensure that the demarcated recharge and discharge zones are maintained and protected to maintain the proper functioning of the aquifer.²⁶⁸ Such measures may include restricting agricultural or industrial activities that would affect water quantity or flow, thereby affecting the overall recharge or discharge process of the aquifer.²⁶⁹

C. Obstacles to Greater Cooperation

There are advantages to an "integrated water resource management (IWRM) and a basin-wide approach to river management," which is based on the idea that water utilization ought to bring economic benefits to people without losing "social Equity and Environmental sustainability."²⁷⁰ This is already reflected in the international water-law regime discussed above by way of the 1997 Watercourses Convention and the 2008 Draft Articles.²⁷¹ With respect to the management of transboundary water resources, the obsta-

²⁶³ See *id.*

²⁶⁴ See *id.* arts. 4, 7–8, 13, 14.

²⁶⁵ *Id.* arts. 4, 12.

²⁶⁶ See *id.* arts. 4, 6.

²⁶⁷ See *id.* arts. 6, 10–12.

²⁶⁸ See *id.* art. 11.

²⁶⁹ See *id.*

²⁷⁰ Katri Mehtonen et al., *The Mekong: IWRM and Institutions*, in *MANAGEMENT OF TRANSBOUNDARY RIVERS AND LAKES* 207, 207–26 (Olli Varis et al. eds., 2008).

²⁷¹ See Eckstein, *supra* note 217, at 538–43.

cles to greater cooperation between the Chinese government and its riparian neighbors include an emphasis on absolute territorial sovereignty, and the preference for bilateralism over multilateralism.²⁷² The following Sections address each obstacle in turn.

1. Disputed Territory

China remains in dispute with a number of states over territorial sovereignty. For example, India and China dispute around 83,000 square kilometers of territory within the Ganges-Brahmaputra river basin and 25,900 square kilometers in the Indus River Basin.²⁷³ China and India have yet to settle their disputes with respect to areas in the Indus, Brahmaputra, and Ganges river basins.²⁷⁴ Unsettled territorial claims mean that the disputed area may not be protected by a legal regime on water-resource management.²⁷⁵ Since water-resource management requires coordination of uses and cooperation, both coordination and cooperation would be less forthcoming if two states had a territorial dispute. For example, water resources would not be monitored for water quality and quantity. Individually, India and China have each shown a willingness—even eagerness—to improve the quality of water in their own rivers, lakes, and canals by instituting water-improvement programs within their respective legal frameworks, the Water Law of China and India's Environmental Protection Act.²⁷⁶ The disputed areas would benefit from these management initiatives, but instead these disputes hinder both states from cooperating in trying to manage their common water resources.

2. Territorial Sovereignty and Sovereignty over Natural Resources

This Section emphasizes how China is an upstream state and so it ought to act responsibly with these natural resources. In other words, if China uses unilateralism when choosing to do whatever it wants, simply because it is an upstream state, this mentality presumably will act as an obstacle to greater cooperation with its neighbors.

China voted against the 1997 Watercourses Convention, claiming that the convention affects its territorial sovereignty and sovereignty over natural resources.²⁷⁷ As the 1997 Watercourses Convention is an opportunity for Chi-

²⁷² See U.N. GOAR 51/99, *supra* note 208, at 6; U.N. ENV'T PROGRAMME, HYDROLOGICAL VULNERABILITY AND RESILIENCE ALONG INTERNATIONAL WATERS 39–45 (2009), www.unep.org/pdf/hydrological_AS.pdf [<https://perma.cc/UT9R-BKK7>].

²⁷³ See Aaron T. Wolf et al., *supra* note 5, at 401, 414.

²⁷⁴ See U.N. ENV'T PROGRAMME, *supra* note 272, at 39–45.

²⁷⁵ See *id.* at xi.

²⁷⁶ See Evans et al., *supra* note 133, at 210–11.

²⁷⁷ See U.N. GOAR 51/99, *supra* note 208, at 6.

na to engage and cooperate with its regional neighbors on shared water-resource management, China's refusal to commit to the convention is seen as China acting as an upstream hegemon with little or no regard for its riparian neighbors.²⁷⁸ Unilateralism runs contrary to the manner in which transboundary water resources ought to be managed, recognizing the principle of "sovereign equality" of states.²⁷⁹ The management of shared water resources is based on the principles of limited sovereignty and community of interests.²⁸⁰ The international water-law regime may enable China to better protect its rights and interests in a shared water resource at the international level.²⁸¹

The 1997 Watercourses Convention—even though it is an international legal instrument that governs the management of international watercourses—has had a significant influence on domestic regimes.²⁸² For example, international water law recognizes that activities applying the principle of equitable and reasonable utilization are restricted to the extent that the principle not to cause significant harm is complied with; the interaction between these principles has even found its way into U.S. domestic water law.²⁸³ For example, such principles are considered together in deciding whether water utilization is reasonable or to determine the manner in which water-utilization activities ought to be reasonably apportioned.²⁸⁴ The case of U.S. domestic water law may be an example of an upstream riparian state engaging with the international water regime through its domestic law.²⁸⁵

3. Bilateralism over Multilateralism

Allocation of shared water resources is based on economic considerations as well as political bargaining power.²⁸⁶ In the case of the Mekong River Basin, China—as an upstream state—enjoys "greater political and hydrological power" as compared with its downstream riparian neighbors.²⁸⁷ Hence, China's upstream position makes it more interested in engaging at the bilateral level and less motivated to engage at a multilateral level so that it may maintain its influence.²⁸⁸ The World Bank and the Asian Development Bank have discussed China's joining the management of the Mekong River Basin

²⁷⁸ See Nickum, *supra* note 2, at 230.

²⁷⁹ 2008 Draft Articles, *supra* note 25, art. 7; see Weiss, *supra* note 11, at 194.

²⁸⁰ See Weiss, *supra* note 11, at 194.

²⁸¹ See *id.* at 206.

²⁸² See *id.*

²⁸³ See *id.*

²⁸⁴ *Id.*

²⁸⁵ See *id.*

²⁸⁶ See Harold Houba et al., *Saving a River: A Joint Management Approach to the Mekong River Basin*, 18 ENV'T & DEV. ECON. 93, 94 (2012).

²⁸⁷ *Id.*

²⁸⁸ See *id.*

for decades, but such efforts have not succeeded.²⁸⁹ China, in the case of the management of the Mekong River Basin, prefers to engage as a partner to the Mekong River Commission.²⁹⁰ As a partner, China regularly exchanges data on water quality and quantity levels.²⁹¹ It has been suggested that this is not sufficient because without China's being part of the Mekong River Commission and subjecting its activity decisions to the regime's regulations, effective governance of the entire river basin is obstructed.²⁹² In turn, this may affect the preservation and the sustainability of the shared water resources in which China ought to be interested.²⁹³ Notwithstanding the Mekong example, China has shown good cooperation with a riparian neighbor by way of the Agreement between Kazakhstan and China on Water Quality signed in February 2011 to establish cooperation to protect all transboundary rivers the two states share against water pollution.²⁹⁴ This bilateral agreement is listed as a good lesson by the United Nations Economic Commission for Europe and International Network of Basin Organizations, inasmuch as the two states agreed to conduct further research on water quality and pollution prevention, as well as exchange relevant information.²⁹⁵ The states also agreed to establish a joint commission and joint working groups to implement the treaty.²⁹⁶

To date, China has only three transboundary water treaties that specifically focus on non-navigational uses of shared water resources with its neighbors.²⁹⁷ They are with Kazakhstan, Mongolia, and Russia.²⁹⁸ Notwithstanding such agreements, China has border treaties with 12 of its 14 riparian neighbors,²⁹⁹ in which there are provisions for the utilization and protection of shared water resources.³⁰⁰ It is hoped that China's policy direction towards

²⁸⁹ See *id.* at 99.

²⁹⁰ See *id.* at 96.

²⁹¹ See *Mekong River Commission and China Boost Water Data Exchange*, MEKONG RIVER COMM'N (Aug. 30, 2013), www.mrcmekong.org/news-and-events/news/mekong-river-commission-and-china-boost-water-data-exchange/ [<https://perma.cc/V669-WYNY>]. China renewed its water-data exchange cooperation with the Mekong River Commission in 2013, and as part of this renewal pledged to increase its data-exchange frequency with the commission from once a day to twice a day. *Id.*

²⁹² See Houba et al., *supra* note 286, at 98–99.

²⁹³ See *id.*

²⁹⁴ See U.N. Economic Comm'n for Eur. Int'l Network of Basin Orgs., *Water and Climate Change Adaptation in Transboundary Basins: Lessons Learned and Good Practices* 27 (2015), http://www.uncece.org:8080/fileadmin/DAM/env/water/publications/WAT_Good_practices/ece.m.p.wat.45.pdf [<https://perma.cc/ZY3Y-V4ES>].

²⁹⁵ See *id.*

²⁹⁶ See *id.*

²⁹⁷ See Chen Huiping, *The 1997 UNWC and China's Treaty Practice on Transboundary Waters*, UNWC Global Symposium, University of Dundee, June 10–14, 2012, at 20.

²⁹⁸ See *id.* at 41.

²⁹⁹ China does not have border agreements with Bhutan or India. See Chen, *supra* note 297, at 3.

³⁰⁰ See *id.*

environmental protection of its water resources may influence the adoption of more protection initiatives such as those with Kazakhstan.

Multilateralism, on the other hand, encourages compliance with international and regional laws and regulations.³⁰¹ As discussed above, the evolution of international water law has ensured that the “utilization, protection, . . . preservation” and sustainable development of transboundary water resources are addressed.³⁰² Therefore, the legal regime provides useful guidance for the management of water resources that would incorporate all these aspects of governance.³⁰³ A management approach that complies with the international water-law regime would help individual states in the conclusion of basin-level agreements and the establishment of river-basin authorities to manage effectively the entire basin they share through joint-management mechanisms and cooperation.³⁰⁴ China has signed and ratified many of the major international environment treaties, showing that it can engage multilaterally.³⁰⁵ Its current domestic policy favors environmental concerns with respect to the utilization of its water resources, which can be seen in the various suspensions of dam construction projects that do not comply with environmental regulations.³⁰⁶ The Thirteenth Five-Year Plan will address climate change and the development of green technologies.³⁰⁷ China shows every sign of being aware of the negative environmental impact on its water resources from the lack of effective water governance.³⁰⁸ China’s commitment to improving water governance through domestic law and policy may encourage it to cooperate further with its neighbors on transboundary water resources.³⁰⁹ Practices such as China’s participation in a climate change adaption pilot project may encourage multilateralism. Such a pilot project was supported by the UN Economic Commission of Europe to protect the Dauria International Protected Area on the Amur/Argun/Daursky Biosphere Reserve, which is shared by Russia, Mongolia, and China.³¹⁰ China cooperated with Mongolia and Russia to create this protected zone in order to conserve the wetland and to implement measures that would ensure environmental flow and quality of water.³¹¹

³⁰¹ See Houba et al., *supra* note 286, at 94.

³⁰² See Weiss, *supra* note 11, at 217.

³⁰³ See *id.*

³⁰⁴ See Houba et al., *supra* note 286, at 94.

³⁰⁵ See *supra* notes 201–208.

³⁰⁶ See Li, *supra* note 177.

³⁰⁷ See *id.*

³⁰⁸ Michal Nachmany et al., *Climate Change Legislation in China, An Excerpt from the 2015 Global Climate Legislation Study, a Review of Climate Change Legislation in 99 Countries*, Grantham Research Institute on Climate Change and the Environment, LSE, 2015, at 6–7.

³⁰⁹ See *id.*; *supra* notes 201–206 and accompanying text.

³¹⁰ See U.N. Economic Comm’n for Eur. Int’l Network of Basin Orgs., *supra* note 294, at 100.

³¹¹ See *id.* at 16.

Such efforts resulted in an area of 700,000 hectares of wetland being protected and a reduction in vulnerability to climate change.³¹² Such examples of multilateral success should not be forgotten.

CONCLUSION

In light of China's rapid depletion of freshwater resources and the growing pressure of an expanding population and further urbanization, China needs to pay particular attention to effective management of this limited resource. The features of China's water-supply system and the challenges that it faces mean that reforms will need to address or avoid the causes underlying water scarcity. Given the challenges facing China's water resources, international cooperation is essential to effective water-resource management. Indeed, China does not own other states' water resources. The best way to manage shared water resources is through cooperation, and cooperation does not necessarily mean China will have fewer water resources. China should remember these points when figuring out how to proceed in the future. China has participated in international fora with respect to water management, and it has reflected the principles of the 1997 Watercourses Convention in its domestic legal and policy framework for water management. More active engagement within the international legal framework would provide the best means for achieving the goal of reducing water scarcity.

However, there remain significant obstacles to greater cooperation, and further reforms are needed in order to increase China's degree of cooperation. Reforms may focus on the following three areas. First, legal and policy frameworks can be used to address some of the challenges to China's water security on the demand side. For example, domestic coal-fired power plants make huge demands on water resources. A focus on alternative energy sources—encouraged with appropriate legal and policy incentives and a supportive regulatory framework—would reduce this particular source of demand for limited water resources.

Second, China should focus on building stronger water-management institutions. China's Water Law of 2002 already provides for river-basin organizations. However, the process for establishing such institutions remains unclear. The central government retains a primary planning role, while knowledge of local water needs and constraints lie at the local level. Therefore, further cooperation at the domestic level within an institutional framework within China would enable stronger governance of water resources.

Finally, China should engage to a greater degree with neighboring riparian states—both to ensure adequate water-resource management and to avoid

³¹² *See id.*

the risk of disputes arising, particularly as water withdrawals grow. China clearly has shown its capability to cooperate on the international level with effective outcomes. A clear example is the Agreement between Kazakhstan and China on Water Quality signed in February 2011 to establish cooperation to protect from water pollution all the transboundary rivers the two states share. International participation also can inform the development of domestic law and policy: the mechanisms for managing competing interests for limited water resources are similar whether between states, between provinces, or between other regions within a state. The international legal framework for joint-management mechanisms provides a helpful framework for this purpose, and China would be wise to increase its reliance on this framework.