

THE WATER-ENERGY-CLIMATE NEXUS UNDER INTERNATIONAL LAW: A CENTRAL ASIAN PERSPECTIVE

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ABSTRACT

Water, energy, and climate change are intrinsically related to each other but are nonetheless subject to different international legal regimes. The fragmented nature of water, energy, and climate governance represents a challenge for the sustainable management of resources in the energy and water landscape of the 21st century. Regulatory choices in one field can potentially undermine the policy objectives pursued in the other fields. Promoting conventional and unconventional energy production for energy security purposes increases pressure on the availability of fresh water resources and contributes to climate change. Climate change exacerbates the scarcity of water resources, which leads to increasing tensions relating to water access and energy supply in certain regions of the world.

Water- and energy-related tensions are particularly acute in Central Asia. Because of its large energy reserves and strategic location in the heart of Eurasia, the Central Asian region is of significant importance for world energy markets. In addition to fossil energy, Central Asia holds large water resources. However, energy and water resources are unevenly distributed in the region, which creates a need for close transboundary cooperation in order to ensure equitable and sustainable access to these vital resources. Despite the mutual benefits of cooperation in Central Asia, governments are reluctant to rely on their neighbors for their water and energy security. States' refusal to cooperate generates high energy, social, economic, and environmental costs, and poses a serious threat to peace and stability in a region of particular geopolitical relevance. External legal mechanisms are needed to overcome the present political obstacles to transboundary cooperation in resources management.

In an effort to overcome the fragmented nature of water, energy, and climate law, this Article examines how international law—in particular the principle of transboundary cooperation—can contribute to addressing the resource management challenges in Central Asia. Additionally, this analysis aims to contribute to the development of international law on transboundary resources man-

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agement. Based on the Central Asian case study, this Article argues in favor of an integrated approach to water-energy-climate regulation in order to achieve water-energy-climate security in a mutually reinforcing way.

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INTRODUCTION

Water and energy are intrinsically related to each other.¹ This relationship is illustrated by the increasing controversy surrounding the impact of shale energy and tar sands on aquifers,² water use for cooling of thermal power plants,³ hydropower generation,⁴ and the energy cost of desalinization.⁵ These examples highlight the fact that, in the energy and water landscape of the 21st century, energy security and water security can and do conflict with each other. Increasing energy supply, for example, by exploiting unconventional fossil fuels or generating more thermal power, can create a negative impact on the availability of clean water resources because of the water intensity of conventional and unconventional energy exploita-

1. On official national and international reports highlighting the pressing challenges characterizing the water-energy nexus, see, for example, U.S. DEP'T OF ENERGY, *THE WATER-ENERGY NEXUS: CHALLENGES AND OPPORTUNITIES* 1 (2014), <http://energy.gov/downloads/water-energy-nexus-challenges-and-opportunities>; Letter and Concept Note from the President of the G.A. to all Permanent Missions and Permanent Observer Missions to the U.N. (Mar. 21, 2013), http://www.un.org/en/ga/president/67/letters/pdf/Thematic%20Debate_Sust.Development%20and%20Climate%20Change%20-%202012%20March%202013.pdf (announcing the convening of a thematic debate entitled "Sustainable Development and Climate Change: Practical Solutions in the Energy-Water Nexus," held at the U.N. Headquarters on May 16, 2013); WORLD ECON. FORUM WATER INITIATIVE, *WATER SECURITY: THE WATER-FOOD-ENERGY-CLIMATE NEXUS* 44–67 (Dominic Waughray ed., 2011), <http://www.weforum.org/reports/water-security-water-energy-food-climate-nexus>. For examples of recent scholarly publications on the topic, see Ana Cascão et al., *The Role of Energy in Transboundary Water Governance*, 3 INT'L J. WATER GOVERNANCE 1, 1–4 (2015) and Jeremy Allouche, Carl Middleton & Dipak Gyawali, *Technical Veil, Hidden Politics: Interrogating the Power Linkages Behind the Nexus*, 8 WATER ALTERNATIVES 610, 610–11 (2015).

2. See, e.g., Resolution on the Environmental Impacts of Shale Gas and Shale Oil Extraction Activities, EUR. PARL. DOC. P7_TA(2012)0443 (2012).

3. See, e.g., *Vattenfall AB v. Germany*, ICSID Case No. ARB/12/12, Request for Arbitration, ¶¶ 13–14, 17 (Mar. 30, 2009), <http://www.italaw.com/documents/VattenfallRequestforArbitration.pdf> (exemplifying a controversy over the impact of coal-fired electricity production on water quality). For a discussion of this claim, see Nathalie Bernasconi, Int'l Inst. for Sustainable Dev., *Background Paper on Vattenfall v. Germany Arbitration* (July 2009), http://www.iisd.org/pdf/2009/background_vattenfall_vs_germany.pdf.

4. Anur Kumar et al., *Hydropower*, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC), *SPECIAL REPORT ON RENEWABLE ENERGY SOURCES AND CLIMATE CHANGE MITIGATION* 437, 462 (Ottmar Edenhofer et al. eds., 2011), <http://srren.ipcc-wg3.de/report>.

5. Menachem Elimelech & William A. Phillip, *The Future of Seawater Desalination: Energy, Technology, and the Environment*, 333 SCIENCE 712, 712 (2011).

tion.⁶ Increasing water supply, such as through sanitation or desalinization processes, can negatively affect energy security because of the higher energy intensity of new water production techniques.⁷

In the context of climate change, the challenges relating to energy and water security are becoming more acute. Global warming intensifies relative water scarcity and increases water needs (e.g., for agricultural irrigation), thus exacerbating the tensions between energy and water supply.⁸ Droughts affect the operational flexibility and productivity of thermal and hydro-power plants.⁹ Increasingly, lower water levels make it politically, socially, and environmentally unacceptable to divert scarce water resources for the exploitation of unconventional fossil fuels. At the same time, the necessary and urgent action to mitigate climate change and adapt to global warming represents an opportunity to reorganize our energy systems towards becoming more sustainable and water-friendly. Promotion of energy efficiency and clean energy contributes to reducing the water footprint of the energy sector.¹⁰ Likewise, climate change adaptation—through more efficient water use—reduces the energy footprint of the water sector.¹¹

Given the transboundary nature of climate change, water supply, and energy exchanges, international law has a crucial role to play in facilitating the transition towards sustainable and secure energy and water systems. As recognized by the United Nations Framework Convention on Climate Change (UNFCCC),¹² the UN Watercourses Convention,¹³ and the Energy Charter Treaty (ECT),¹⁴ cooperation between states is vital to achieve the

6. See, e.g., Resolution on the Environmental Impacts of Shale Gas, *supra* note 2, ¶¶ 18–49.

7. See Elimelech & Phillip, *supra* note 5.

8. Blanca E. Jiménez Cisneros et al., *Freshwater Resources*, in WORKING GROUP II, INTER-GOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC), CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY 229, 248 (Christopher B. Field et al. eds., 2014), https://ipcc-wg2.gov/AR5/images/uploads/WGIAR5-Chap3_FINAL.pdf.

9. C. B. HARTO & Y. E. YAN, ENVIL. SCI. DIV., ARGONNE NAT'L LAB., ANL/EVS/R-11/14, ANALYSIS OF DROUGHT IMPACTS ON ELECTRICITY PRODUCTION IN THE WESTERN AND TEXAS INTERCONNECTIONS OF THE UNITED STATES 1, 10, 40 (2011), <http://energy.sandia.gov/wp/wp-content/gallery/uploads/Drought-Analysis-Report-Final.pdf>.

10. See U.S. DEP'T OF ENERGY, *supra* note 1, at 2.

11. BEVAN GRIFFITHS-SATTENSPIEL & WENDY WILSON, RIVER NETWORK, THE CARBON FOOTPRINT OF WATER 25 (2009), <http://www.rivernetwork.org/resource-library/carbon-footprint-water>.

12. United Nations Framework Convention on Climate Change, May 9, 1992, S. TREATY DOC. NO. 102-38, 1771 U.N.T.S. 107, 166 [hereinafter UNFCCC].

13. G.A. Res. 51/229, annex, United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, pmbl., art. 8, U.N. Doc. A/51/49 (May 21, 1997), *reprinted in* 36 I.L.M. 700 [hereinafter U.N. Watercourses Convention].

14. Energy Charter Treaty art. 2, Dec. 17, 1994, 2080 U.N.T.S. 95 [hereinafter ECT].

objectives of climate, water, and energy security. Joint action contributes to states' mutual benefits and interests in the sustainable management of transboundary resources. Moreover, the interrelated nature of the water, energy, and climate challenges calls for an integrated approach to their international regulation.¹⁵

Despite its central relevance for the management of transboundary resources,¹⁶ cooperation—as a principle of law—has received relatively less attention in academic literature than other principles of international law.¹⁷ Although studies on cooperation exist in the field of water law,¹⁸ few scholars have examined this principle in the fields of energy¹⁹ and climate²⁰ law. More importantly, climate change, water, and energy have been studied as separate fields of law, following the fragmentation of international law around the UNFCCC, the UN Watercourses Convention, and the ECT.²¹ Some scholars have examined the interrelation between international water and climate law,²² building on the reference in the UNFCCC to water management.²³ Moreover, studies exist on the synergies and contradictions between international climate law and energy law, including on the climate

15. See U.S. DEP'T OF ENERGY, *supra* note 1, at v (discussing the importance of an “integrated strategic approach” to address water-energy issues).

16. See, e.g., EYAL BENVENISTI, *SHARING TRANSBOUNDARY RESOURCES* (James R. Crawford & John S. Bell eds., 2002) (discussing the relevance and international regulation of collective action in the management of transboundary resources or “international common pool resources”).

17. CHRISTINA LEB, *COOPERATION IN THE LAW OF TRANSBOUNDARY WATER RESOURCES* 3 (James Crawford & John S. Bell eds., 2013) (highlighting the limited scholarly attention on the duty to cooperate under international water law).

18. See, e.g., *id.*

19. See Anatole Boute, *The Good Neighborliness Principle in EU External Energy Relations: The Case of Energy Transit*, in *GOOD NEIGHBORLINESS IN THE EUROPEAN LEGAL CONTEXT* 354 (Dimitry Kochenov et al. eds., 2015).

20. See Int'l Law Ass'n [ILA], Res. 2/2014, *Declaration of Legal Principles Relating to Climate Change* draft art. 8, at 6 (Apr. 11, 2014), <http://www.ila-hq.org/en/committees/index.cfm/cid/1029>.

21. On “policy fragmentation” in the field of water, energy, and climate management, see Karen Hussey & Jamie Pittock, *The Energy-Water Nexus: Managing the Links Between Energy and Water for a Sustainable Future*, 17 *ECOLOGY & SOC'Y* 31 (2012). On the “fragmented body” of international law governing climate change, see Cinnamon Carlarne, *Delinking International Environmental Law & Climate Change*, 4 *MICH. J. ENVTL. & ADMIN. L.* 1, 10, 18 (2014); Margaret Young, *Climate Change Law and Regime Interaction*, 5 *CARBON & CLIMATE L. REV.* 147 (2011).

22. See, e.g., Flavia Rocha Loures et al., *Convention on Climate Change*, in *THE UN WATERCOURSES CONVENTION IN FORCE: STRENGTHENING INTERNATIONAL LAW FOR TRANSBOUNDARY WATER MANAGEMENT* 207–20 (Flavia Rocha Loures & Alistair Rieu-Clarke eds., 2013).

23. See UNFCCC, *supra* note 12, at art. 4, ¶ 1(e), 1771 U.N.T.S. at 171.

change-related provisions of the ECT.²⁴ However, the interaction between the fields of international energy and water law—and to an even greater extent, the relation between the fields of international climate, water, and energy law—has been largely ignored in the literature.

The fragmented approach to the study of water, energy, and climate law must be criticized because it fails to capture the high degree of interdependence between these legal regimes.²⁵ Regulatory choices in one of these fields of law can reinforce the objectives pursued by the other fields.²⁶ If poorly managed, however, regime interaction can result in contradictions (i.e., conflicts of laws).²⁷ In particular, the fragmented analysis of water, energy, and climate law does not make it possible to fully “[e]xploit the productive synergies among water and energy systems.”²⁸ Similarly, limited focus on transboundary cooperation fails to capture the high degree of interdependence resulting from the uneven distribution of water and energy resources between countries. Given the increasing challenges that climate change poses for energy and water systems,²⁹ it is necessary to reflect on the creation of legal mechanisms that attempt to achieve the synergies presented by the integrated management of resources.

This Article aims to contribute to the international law literature by proposing a legal analysis of transboundary cooperation in the field of water, energy, and climate management. The objective is to test the extent to which existing treaties governing international water, energy, and climate regimes offer adequate solutions to address the obstacles to transboundary cooperation. Does international water, energy, and climate law facilitate the achievement of the mutual environmental, social, and economic benefits that characterize the integrated and transboundary management of water and energy resources?

24. Adrian Bradbrook, *Significance of the Energy Charter Treaty*, 64 APPLIED ENERGY 251 (1999). *But see* PETER D. CAMERON, INTERNATIONAL ENERGY INVESTMENT LAW: THE PURSUIT OF STABILITY 203 (2010) (arguing that “[t]he ECT is . . . almost explicitly not an environmental treaty”).

25. Margaret Young, *Introduction: The Productive Friction Between Regimes*, in REGIME INTERACTION IN INTERNATIONAL LAW: FACING FRAGMENTATION 1 (Margaret A. Young ed., 2015) (“[T]here is an urgent need for international lawyers to understand how different branches of norms and institutions overlap on issues of global concern.”).

26. *See* Young, *supra* note 21, at 153 (highlighting that “[r]egime interaction across the various stages of law-making, implementation and adjudication is mutually reinforcing”).

27. *See* JOOST PAUWELYN, CONFLICT OF NORMS IN PUBLIC INTERNATIONAL LAW: HOW WTO LAW RELATES TO OTHER RULES OF INTERNATIONAL LAW (2003).

28. U.S. DEP’T OF ENERGY, *supra* note 1, at 4.

29. *See, e.g.*, WORLD ECON. FORUM WATER INITIATIVE, *supra* note 1; Jiménez Cisneros et al., *supra* note 8.

To answer this question, this Article will restrict itself to a case study of Central Asia, which is a region of high strategic importance for world energy markets³⁰ that faces huge challenges regarding the management of water resources in the context of climate change.³¹ The upper riparian (or upstream) countries of Tajikistan and Kyrgyzstan³² are endowed with large water resources, but have limited access to reserves of oil, gas, and other natural resources.³³ The lower riparian (or downstream) countries of Uzbekistan, Kazakhstan, and Turkmenistan are endowed with considerable fossil fuel reserves but are dependent on water supply from the upper riparian countries.³⁴ During Soviet times, water and energy supply in Central Asia was organized in a centralized way to overcome the uneven distribution of resources in the region.³⁵ Following the collapse of the Soviet Union, in a climate of increasing mutual distrust, the Central Asian states started to

30. See, e.g., Onur Cobanlı, *Central Asian Gas in Eurasian Power Game*, 68 ENERGY POL'Y 348 (2014); ALEXANDROS PETERSEN & KATINKA BARYSCH, CENTRE FOR EUROPEAN REFORM, RUSSIA, CHINA AND THE GEOPOLITICS OF ENERGY IN CENTRAL ASIA (2011), <http://www.cer.org.uk/publications/archive/report/2011/russia-china-and-geopolitics-energy-central-asia>.

31. See, e.g., Bakhtiyor Mukhammadiev, *Challenges of Transboundary Water Resources Management in Central Asia*, in THE ARAL SEA: THE DEVASTATION AND PARTIAL REHABILITATION OF A GREAT LAKE 233 (Philip Micklin et al. eds., 2014); Muhammad Mizanur Rahaman, *Principles of Transboundary Water Resources Management and Water-Related Agreements in Central Asia: An Analysis*, 28 INT'L J. WATER RESOURCES DEV. 475 (2012); Philip Micklin, *Water in the Aral Sea Basin of Central Asia: Cause of Conflict or Cooperation?*, 43 EURASIAN GEOGRAPHY & ECON. 505, 522–23 (2002); Int'l Crisis Grp. [ICG], *Central Asia: Water and Conflict*, at ii, ICG Asia Rep. No. 34 (May 30, 2002), <http://www.crisisgroup.org/en/regions/asia/central-asia/034-central-asia-water-and-conflict> [hereinafter ICG, *Central Asia*]; ICG, *Water Pressures in Central Asia*, ICG Europe and Central Asia Rep. No. 233 (2014), <http://www.crisisgroup.org/~media/Files/europe/central-asia/233-water-pressures-in-central-asia.pdf>.

32. Afghanistan equally is an upstream riparian of the Amu Darya, but not considered here because the focus of this article is on former Soviet Central Asia. See *infra* Section I.A.

33. Murodbek Laldjebaev, *The Water-Energy Puzzle in Central Asia: The Tajikistan Perspective*, 26 INT'L J. WATER RESOURCES DEV. 25 (2010). See generally Shavkat Ismailov, *Energeticheskoe Zakonodatel'stvo Tadjikistana i osnovnye napravleniia ego sovershenstvovaniia*, [Energy Legislation of Tajikistan and the Main Directions of its Improvement], ENERGETICHESKOE PRAVO (2009).

34. Sanat Kushkumbayev & Azina Kushkumbayeva, *Water and Energy Issues in the Context of International and Political Disputes in Central Asia*, 12 CHINESE J. INT'L L. 211 (2013). See generally H.O. Arifov & P.Kh. Arifova, *Osvoenie gidroenergeticheskikh resursov Tadjikistana i nekotorye pravovye voprosy vodopol'zovaniia v baseyne Arala* [The Development of Hydropower Resources of Tajikistan and Some of the Legal Issues of Water Use in the Basin of the Aral Sea], ENERGETICHESKOE PRAVO (2009); Shavkat Ismailov, *Ratsional'noe ispol'zovanie vodno-energeticheskikh resursov regiona: Pravovye aspekty* [Rational Use of Water and Energy Resources of the Region: The Legal Aspects], ENERGETICHESKOE PRAVO (2011).

35. *Energetika Rossii 1920–2020*, at 5 (Vladimir Bushuev ed., 2006).

prioritize national water and energy independence.³⁶ National-centered (or state-centered) approaches to the organization of water and energy management generated acute challenges for water and energy security and increased the carbon intensity of the Central Asian energy system.³⁷ Energy and water policy experts generally agree that regional cooperation and integrated management of resources is necessary to ensure the effective use of energy and water resources in Central Asia.³⁸ More specifically, the sustainable management of resources in the region depends on the supply of fossil fuels by the lower riparian countries to the upper riparian countries to compensate for the storage and supply of water for agricultural purposes.³⁹

Taking into account the explicit benefits of water-energy cooperation in the region and the obstacles to the realization of this approach, Central Asia provides a particularly relevant case study to assess the effectiveness of international law in facilitating the transboundary and integrated management of resources. Can international water, energy, and climate law help overcome obstacles to inter-state cooperation in Central Asia and so ensure the sustainable management of resources in the region?

36. See World Bank, *Water Energy Nexus in Central Asia: Improving Regional Cooperation in the Syr Darya Basin*, at 19, World Bank Rep. No. 33878 (2004), http://siteresources.worldbank.org/INTUZBEKISTAN/Resources/Water_Energy_Nexus_final.pdf.

37. Siegfried Grunwald, Asian Dev. Bank, *Central Asia Regional Economic Cooperation: Power Sector Regional Master Plan*, at 2-6, 2-7, ADB Doc. 4864P14/FICHT-8865248-v9 (2012), <http://www.adb.org/projects/documents/central-asia-regional-economic-cooperation-power-sector-regional-master-plan-tacr>.

38. See Protocol of the Workshop for the Representatives of Water and Energy Authorities of the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and the Republic of Uzbekistan Related to Water and Energy Use Issues in the Forthcoming 1998/9 Fall-Winter Season and 1999 Vegetation Period, Aug. 24–26, 1998, <http://www.ce.utexas.edu/prof/mckinney/papers/ara/agreements/Annual-Protocol-99.pdf> [hereinafter Protocol of the Workshop]; Makhmud Kh. Khamidov, *Characteristic Features of Integrated Water Resources Management in the Syrdarya River Basin*, in IMPLEMENTING INTEGRATED WATER RESOURCES MANAGEMENT IN CENTRAL ASIA 28–29 (Patricia Wouters et al. eds., 2007); Daene McKinney, *Cooperative Management of Transboundary Water Resources in Central Asia*, in IN THE TRACKS OF TAMERLANE: CENTRAL ASIA'S PATH INTO THE 21ST CENTURY 205 (Dan Burghart & Theresa Sabonis-Helf eds., 2003); Pöyry Energy Ltd., *ESLA Report (Final) Volume I: Text*, at 321, Ref. No. 9A000304.01 (2013), <http://www.worldbank.org/en/country/tajikistan/brief/final-reports-related-to-the-proposed-rogun-hpp>. See generally Shavkat Ismailov, *Nekotorye osobennosti energeticheskogo prava v Tadjikistany* [Some Features of the Energy Law in Tajikistan], 2 ENERGETICHESKOE PRAVO (2009) (discussing the need for Tajikistan's cooperation with other states and international organizations); G.B. Koshlakov & B.S. Sirodzhev, *Energeticheskaiia programma Tadjikistana v sisteme energoobespecheniia stran Tsentral'noi Asii* [Energy Program in Tajikistan in the Energy Supply of Central Asian Countries], ENERGETICHESKOE PRAVO (2009) (discussing the importance of cooperation between Central Asian states on managing resources).

39. Protocol of the Workshop, *supra* note 38; Khamidov, *supra* note 38, at 29; McKinney, *supra* note 38, at 20.

Because “cooperation as such has no inherent value,”⁴⁰ the analysis of joint water, energy, and climate management under international law depends on a clear understanding of the goals that can be achieved with this approach.⁴¹ Similarly, it is necessary to clearly understand the obstacles that prevent cooperation in order to examine the possible contribution that international law could make to facilitate the transboundary management of resources. On this basis, this Article begins by introducing the benefits of integrated water, energy, and climate management in Central Asia (Part I) and outlining the obstacles that currently hinder their realization (Part II). Building upon this analysis of the water-energy-climate nexus in Central Asia, the subsequent sections of this Article look at the duty to cooperate under general international law (Part III) before turning to cooperation—more precisely transboundary resource management—under international water law, climate law, and energy law (Part IV).

This Article argues that international law imposes on states a clear obligation to cooperate in good faith in the resolution of water-energy disputes. The principle of “good neighborly relations” requires states to exercise a particular duty of care when deciding to reduce or interrupt the cross-border supply of energy and water. International water law reinforces the general duty to cooperate and avoid harm by requiring states to ensure the optimal utilization of transboundary water resources. Contrary to the general assumption in current water law literature,⁴² this case study of Central Asia demonstrates that the optimal utilization of transboundary water resources does not depend solely on the actions of the water-rich nations. In Central Asia, the energy-rich lower riparian countries can avoid the unsustainable use of hydropower by supplying fossil fuel or thermal power to the upper riparian countries.⁴³

The international climate, energy, and water regimes are still actively being developed, thus providing opportunities for the integration of new principles and obligations. Analyzing the interaction⁴⁴ of climate, energy,

40. Rüdiger Wolfrum, *International Law of Cooperation*, in 9 *ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW* 193 (Rudolf Bernhardt ed., 1986); see also Rüdiger Wolfrum, *International Law of Cooperation*, in *THE MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW* 783 (2012).

41. See Jost Delbrück, *The International Obligation to Cooperate – An Empty Shell or a Hard Law Principle of International Law? – A Critical Look at a Much Debated Paradigm of Modern International Law*, in 1 *COEXISTENCE, COOPERATION AND SOLIDARITY* 5, 9 (Holger Hestermeyer et al. eds., 2012) (arguing that “the meaning of the concept of cooperation depends on the goals that cooperation is to achieve”).

42. But see STEPHEN McCaffrey, *THE LAW OF INTERNATIONAL WATERCOURSES* 278 (2007).

43. Protocol of the Workshop, *supra* note 38; Khamidov, *supra* note 38, at 29; McKinney, *supra* note 38, at 20.

44. See Margaret Young, *Regime Interaction in Creating, Implementing and Enforcing International Law*, in *REGIME INTERACTION IN INTERNATIONAL LAW: FACING FRAGMENTATION* 85 (Mar-

and water law in relation to the specific resource management challenges in Central Asia offers useful lessons on the gaps and mutually reinforcing nature of these fields of law. As will be argued below, cooperation under international climate and energy law, for example, is much weaker—i.e., less legally binding—than under international water law.⁴⁵ At the same time, international climate and energy law provides stronger tools to ensure the implementation and enforcement of transboundary resource management mechanisms.⁴⁶ This Article argues that international climate and energy law would benefit from stronger cooperation requirements, such as by incorporating similar cooperation clauses to international water law. International water law would benefit from a stronger enforcement regime by reflecting the verification regime under international climate law and the investment protection regime under international energy law.

An important limitation of the present Article is that it does not examine international law relating to the agricultural sector, despite the obvious water-energy-climate-agriculture (food) nexus.⁴⁷ Agriculture is the largest water-consuming sector in Central Asia and thus one of the main contributing factors to current water tensions in the region.⁴⁸ These agriculture-related tensions are likely to increase in the context of climate change.⁴⁹ In addition to the clear links to water management and climate change, agriculture is closely related to the energy sector. Water releases for hydropower generation in the winter influence the availability of water resources for agricultural irrigation in the summer. Moreover, subsidized electricity prices stimulate the increased use of irrigation pumping, thereby exacerbating the problem of water scarcity in the region.⁵⁰ By excluding the international law relating to the agricultural sector from the scope of this analysis, this Article thus omits an important part of the water-energy-climate interaction. However, international legal questions relating to the agricultural sector include a wide range of issues such as the legality of

garet Young ed., 2015) (arguing that the study of regime interaction can help create, implement, and enforce international law).

45. See *infra* Sections IV.B.-C

46. See *id.*

47. On the “energy-water-land” nexus, see U.S. DEP’T OF ENERGY, *supra* note 1, at 2. On the “water-food-energy-climate” nexus, see WORLD ECON. FORUM WATER INITIATIVE, *supra* note 1.

48. Olli Varis, *Curb Vast Water Use in Central Asia*, 514 NATURE 27 (2014).

49. *Id.* at 27–28.

50. Shanta Devarajan et al., World Bank, *MENA Economic Monitor: Corrosive Subsidies*, at 18, World Bank Rep. No. 91210 (2014), <http://documents.worldbank.org/curated/en/2014/10/20272046/mena-economic-monitor-corrosive-subsidies>; see also Adel Al-Weshali, *Diesel Subsidies and Yemen Politics: Post-2011 Crises and Their Impact on Groundwater Use and Agriculture*, 8 WATER ALTERNATIVES 215 (2015).

agricultural subsidies under international trade law⁵¹ that cannot realistically be treated within the scope of this work.

I. BENEFITS OF TRANSBOUNDARY WATER-ENERGY-CLIMATE MANAGEMENT

A. *The Origins of Transboundary and Integrated Resources Management in Central Asia*

Transboundary and integrated water and energy management in Central Asia stems from Soviet times. According to the Soviet principle of centralized planning,⁵² energy (electricity) and water supply in Central Asia was organized in the 1960s on a unified basis, in an effort to optimize exploitation of natural resources.⁵³ The centralized approach meant that the region's electricity system—the Central Asian Power System—was organized without regard to the borders that now separate the different states in Central Asia.⁵⁴ Instead, regional electricity supply was based on the availability of natural resources during the different periods of the year.⁵⁵ Hydro-power plants were built in what now corresponds to Kyrgyzstan and Tajikistan.⁵⁶ Kyrgyzstan and Tajikistan are the upper riparian countries to the Syr Darya and Amu Darya rivers—the two main transboundary water-courses in Central Asia—and thus have a very large potential for hydro-power generation.⁵⁷ Thermal power plants were built in what is now

51. See, e.g., Edith Brown Weiss & Lydia Slobodian, *Virtual Water, Water Scarcity, and International Trade Law*, 17 J. INT'L ECON. L. 717 (2014) (discussing the water-agriculture nexus under international trade law).

52. See NICOLAS SPULBER, *RUSSIA'S ECONOMIC TRANSITIONS: FROM LATE TSARISM TO THE NEW MILLENNIUM* 201 (2003); ANATOLE BOUTE, *RUSSIAN ELECTRICITY AND ENERGY INVESTMENT LAW* 74–111 (2015); Anatole Boute, *Modernizing the Russian District Heating Sector: Financing Energy Efficiency and Renewable Energy Investments Under the New Federal Heat Law*, 29 PACE ENVTL. L. REV. 746 (2012).

53. The centralized approach to the organization of the electricity system was first established in the 1920 plan for the electrification of Russia developed by the State Commission for the Electrification of Russia and adopted at the VIII All Russian Convention of the Soviets of Dec. 1920. On this so-called “GOELRO plan,” see *Energetika Rossii*, *supra* note 35, at 5.

54. Mercados EMI, World Bank, *Load Dispatch and System Operation Study for Central Asian Power System*, at 5 (2010), <http://www.carecprogram.org/uploads/events/2010/SOM-Oct/Diagnostic-Study-CAREC-Energy-Strategy-Pillar2-Full-Report.pdf>.

55. Vladimir Yasinskiy et al., *Energy Security and Water Resources Management in Transboundary River Basins in Central Asia*, 2013 EDB EURASIAN INTEGRATION Y.B. 168, 177 (2013), http://www.eabr.org/general/upload/CII%20-%20izdania/YearBook-2013/a_n6_2013_full%20version.pdf.

56. Grunwald, *supra* note 37, at 2-6, 2-7; see also Arifov & Arifova, *supra* note 34.

57. World Bank, *Central Asia Energy-Water Development Program*, EUROPE AND CENTRAL ASIA, <http://www.worldbank.org/en/region/eca/brief/caewdp> (last visited Jan. 31, 2016).

Uzbekistan, (South) Kazakhstan, and Turkmenistan as a result of the large fossil fuel reserves that these countries possess (gas in Uzbekistan and Turkmenistan, and coal in Kazakhstan).⁵⁸

The unified approach to energy and water supply provided the benefit of making the best use of the hydropower potential of the upper riparian countries and the coal and natural gas resource base of the lower riparian countries.⁵⁹ The complementarity of the Central Asian fuel mix could be exploited through the construction of a high voltage (500 kilovolt) transmission network interconnecting the different Central Asian states to each other.⁶⁰ In the absence of consideration of national borders, the regional energy network created a situation of particularly high energy interdependence between the Central Asian countries.

Besides energy supply benefits, the centralized approach to electricity supply in Central Asia played an important role in relation to the management of water resources in the Syr Darya and Amu Darya river basins. In particular, the development of the Kyrgyz and Tajik hydropower potential was closely related to the intensive development of the predominantly cotton agricultural sector in the lower riparian countries—agricultural development that eventually led to the well-publicized environmental disaster of the Aral Sea.⁶¹ Large hydro dams and reservoirs, the Toktogul in Kyrgyzstan and Nurek in Tajikistan, were designed during Soviet times primarily

58. Grunwald, *supra* note 37, at 2-6, 2-7; Artur Kochnakyan et al., World Bank, *Uzbekistan Energy/Power Sector Issues Note*, at 37, World Bank Rep. No. ACS4146 (2013), http://www-wds.worldbank.org/external/default/WDSContentServer/WDS/IB/2014/01/31/000333037_20140131162043/Rendered/PDF/ACS41460WP0Box0Issues0Note00PUBLIC0.pdf.

59. See, e.g., Yasinskiy et al., *supra* note 55, at 177 (highlighting the technical and economic benefits that the proper functioning of the Central Asia Power System represents for all Central Asian countries).

60. Sergei Rokotian, *Osnovnye problemy sozdaniia elektricheskikh setei 500 kV v SSSR* [Main problems with developing 500kV electricity networks in the USSR], in ENERGOSET'PROEKT [ENERGY NETWORK PROJECT]—40 LET ESP 1962–2002, at 7 (Igor' Iakimtets ed., 2002).

61. On the environmental problems affecting the Aral Sea, see, for example, *THE ARAL SEA: THE DEVASTATION AND PARTIAL REHABILITATION OF A GREAT LAKE* (Philip Micklin et al. eds., 2014). The water intensity of this agricultural development—more than the construction of the hydropower plants—caused the destruction of the Aral Sea by using the water destined to the Sea. *Id.* at 171. In contrast to hydropower plants, irrigation is a consumptive use of water, with limited return flow: only a small fraction of the water pumped from the river will return to it. See *id.* at 111, 171. However, it is essential to note that the operation of hydropower plants in the winter can have an important distortive impact on the equilibrium of the river basins. Because of ice, water released in the winter often does not reach the Aral Sea—a phenomenon that became particularly problematic in the post-Soviet context of the nationally-centered organization of electricity supply. See *id.* at 234–35, 237.

for irrigation purposes.⁶² The main purpose of this infrastructure was to store water during the non-growing period (October–April) and thereby secure water availability during the growing period (April–October).⁶³ Besides this seasonal flow regulation, the reservoirs were needed for multi-year regulation of the river basin, particularly to secure the availability of water during dry years by accumulating water during wet years.⁶⁴

Given the primary focus on irrigation, water releases from the large reservoirs during Soviet times were coordinated with the agricultural cycle, i.e., the vegetation or growing period.⁶⁵ Hydropower generation was thus a by-product of the release of water for agricultural (irrigation) purposes.⁶⁶ Hydropower generation also played a role in ensuring regional energy security. It enabled the Soviet planners to save fossil fuels by reducing the need for thermal energy production in the lower riparian countries in the summer.⁶⁷ Although not a priority for the Soviet planners, the reduced use of thermal energy also limited the greenhouse gas emissions of the Central Asian energy sector.

The centralized management of water and energy resources in Central Asia depended on close cooperation between the upper and lower riparian parts of the Syr Darya and Amu Darya river basins. In order to secure sufficient water levels in the upstream reservoirs for summer irrigation purposes, Kyrgyzstan and Tajikistan had to refrain from producing electricity from hydropower in the winter—when energy is most needed in these cold climates.⁶⁸ Following a barter-type arrangement, Uzbekistan, Kazakhstan, and Turkmenistan supplied thermal energy and fossil fuels to Kyrgyzstan and Tajikistan in compensation for not using hydropower in the winter.⁶⁹ Refraining from hydropower generation in the winter positively impacted the management of water resources in Central Asia. It not only improved water availability when it was most needed (i.e., in the summer for irriga-

62. World Bank, *supra* note 36, at 1–2; Mavlon Kazakov, *History of Rogun and Water and Energy Relations in Central Asia*, AVESTA Tj (Nov. 25, 2011), <http://www.avesta.tj/eng/rogun/1142-history-of-rogun-and-water-and-energy-relations-in-central-asia.html>.

63. Dushen M. Mamatkanov, *Mechanisms for Improvement of Transboundary Water Resources Management in Central Asia*, in *TRANSBOUNDARY WATER RESOURCES: A FOUNDATION FOR REGIONAL STABILITY IN CENTRAL ASIA* 151 (John E. Moerlins et al. eds., 2008); Laldjebaev, *supra* note 33, at 24.

64. World Bank, *supra* note 36, at 2.

65. Mamatkanov, *supra* note 63.

66. World Bank, *supra* note 36, at 1–4.

67. Kochnakyan et al., *supra* note 58.

68. Khamidov, *supra* note 38, at 26.

69. Laldjebaev, *supra* note 33, at 23–25.

tion purposes), but also limited the damage that would have been caused by floods in case of water releases during the winter.⁷⁰

B. Energy Independence in the Post-Soviet Context

The newly-gained independence of the Central Asian countries following the collapse of the Soviet Union represented an important challenge for the continued implementation of this barter scheme. In order to maintain the transboundary and integrated management of energy and water supply in the region, Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, and Kyrgyzstan⁷¹ concluded regional agreements⁷² that formalized the barter-based scheme that existed during Soviet times.⁷³ According to these arrangements, the lower riparian countries committed to purchasing the hydropower associated with the release of water.⁷⁴ Moreover, in exchange for summer water releases, the lower riparian countries agreed to compensate the upper riparian countries with an “equivalent amount” of exports of thermal power and fossil fuels in the winter.⁷⁵

For the Syr Darya river basin, this meant in practice that Uzbekistan and Kazakhstan covered Kyrgyzstan’s winter energy deficit in exchange for its agreement to keep a certain volume of water in the Toktogul reservoir for water consumption and hydropower in the summer.⁷⁶ The scheme depended on the determination of specific water and energy volumes on a

70. Mukhammadiev, *supra* note 31, at 237.

71. Afghanistan—although a riparian country of the Amu Darya—is not a party to these agreements.

72. See CAWaterinfo, *Intergovernmental Agreements of Central Asia States*, LIBRARY, http://www.cawater-info.net/library/ca_e.htm (last visited Dec. 18, 2015); see also Univ. Austin Tex., *Framework Agreements*, CENTRAL ASIA REGIONAL WATER, ENVIRONMENT AND ENERGY AGREEMENTS, http://www.cae.utexas.edu/prof/mckinney/papers/aryl/central_asia_regional_water.htm (last visited Nov. 4, 2015). On water regulation in the region, see for example Laurence Boisson de Chazournes, *The Aral Sea Basin: Legal and Institutional Aspects of Governance*, in *THE MULTI-GOVERNANCE OF WATER: FOUR CASE STUDIES* (Mathias Finger et al. eds., 2006).

73. See World Bank, *supra* note 36, app. 4 at 29 (reciting article IV from the 1998 Agreement on the Use of Water and Energy Resources of the Syr Darya Basin: “The Naryn-Syr Darya excess power emanating from the release mode utilized on the Naryn-Syr Darya during the growing season, and the Toktogul multi-year regulated flows that exceed the needs of the Kyrgyz Republic, will be transferred to the republics of Kazakhstan and Uzbekistan in equal portions. Compensation shall be made in equivalent amounts of energy resources, such as coal, gas, electricity and fuel oil, and the rendering of other types of products (labor, services), or in monetary terms as agreed upon, for annual and multi-year water irrigation storage in the reservoirs. A single tariff policy for all types of energy resources and their transportation shall be applied for mutual settlements.”).

74. *Id.*

75. *Id.*

76. World Bank, *supra* note 36, at 8–11.

yearly basis by the parties.⁷⁷ To facilitate this politically sensitive water allocation process, the Central Asian countries created an international body in charge of water management in the region: the Interstate Commission for Water Coordination of Central Asia.⁷⁸ With technical assistance from the Amu Darya⁷⁹ and Syr Darya⁸⁰ Basin Water Associations, the Interstate Commission for Water Coordination now determines limits for the use of water by each country.⁸¹

In practice, the implementation of the water and energy agreements proved to be problematic. Central Asia gradually moved from a centralized, regional electricity market approach to a national-centered approach, with national energy independence forming a key political objective.⁸² Regional energy trade has dropped ninety percent since the early 2000s.⁸³ This has led to inefficiencies (higher energy and thus carbon intensity, resulting in

77. See, e.g., Agreement Between the Government of the Republic of Kazakhstan, the Government of the Kyrgyz Republic and the Government of the Republic of Uzbekistan on Joint and Complex Use Water and Energy Resources of the Naryn Syr Darya Cascade Reservoirs, Mar. 17, 1998, <http://www.ce.utexas.edu/prof/mckinney/papers/aryl/agreements/Annual-Operation-98.pdf> [hereinafter Joint and Complex Use of Naryn Syr Darya Cascade Reservoirs Agreement]; see also Agreement Between the Government of the Republic of Kazakhstan and the Government of the Kyrgyz Republic on Comprehensive Use of Water and Energy Resources of the Naryn Syr Darya Cascade Reservoirs, May 23, 2000, <http://www.ce.utexas.edu/prof/mckinney/papers/aryl/agreements/Annual-KzKg-00.pdf>; Agreement Between the Government of the Republic of Uzbekistan and the Government of the Republic of Tajikistan on Cooperation in the Area of Rational Water and Energy Uses, Jan. 14, 2000, <http://www.ce.utexas.edu/prof/mckinney/papers/aryl/agreements/Kayrakum-00.pdf>.

78. See Agreement Between the Republic of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Uzbekistan, the Republic of Tajikistan and Turkmenistan On Cooperation in the Field of Joint Water Resources Management and Conservation of Interstate Sources arts. 7, 9, Feb. 18, 1992, <http://www.ce.utexas.edu/prof/mckinney/papers/aryl/agreements/icwc-Feb18-1992.pdf>.

79. See Statute of the Basin Water Association “Amudarya,” Apr. 1992, <http://www.icwc-aryl.uz/statute9.htm>.

80. See Statute of the Basin Water Association “Syrdarya,” Apr. 1992, <http://www.icwc-aryl.uz/statute10.htm>.

81. See Statute of the Interstate Commission for Water Coordination of Central Asia, Sept. 18, 2008, <http://www.icwc-aryl.uz/statute4.htm>.

82. See Anatole Boute, Energy Charter Secretariat, *Towards Secure and Sustainable Energy Supply in Central Asia: Electricity Market Reform and Investment Protection* 9 (2015), <http://www.energycharter.org/what-we-do/investment/investment-thematic-reports/towards-secure-and-sustainable-energy-supply-in-central-asia-electricity-market-reform-and-investment-protection/>; see also Shavkat Ismailov, *Ekonomiko-pravovoe obespechenie razvitiia energetiki v Tadjikistane* [Economic and Legal Security of Energy Development in Tajikistan], ENERGETICHESKOE PRAVO (2009); N.K. Kaiumov, *Energeticheskaja bezopasnost' Tadjikistana v usloviiakh novykh vyzovov i ugroz* [Energy Security of Tajikistan in the Face of New Challenges and Threats], ENERGETICHESKOE PRAVO (2009).

83. World Bank, *supra* note 36, at 4–5.

higher cost of supply) and threats to the security and reliability of electricity supply, in particular in the upper riparian countries.

The 2009 Tajik winter energy crisis highlighted the gravity of the situation.⁸⁴ During the particularly harsh conditions of the 2008–2009 winter, the Central Asian countries had to disconnect from the centralized network to maintain the stability of the system following excessive offtake (demand) from the centralized grid.⁸⁵ As a result, Tajikistan was forced to expose its populations to significant interruptions in energy supply.⁸⁶ Following the stabilization of electricity supply, Kazakhstan, Uzbekistan, and Kyrgyzstan decided to re-join the centralized system.⁸⁷ Turkmenistan and Tajikistan remained disconnected from the Central Asia Power System, creating acute energy challenges for Tajikistan.⁸⁸ In addition to internal energy supply issues, disconnection seriously affected the management of water resources. Tajikistan, for instance, was forced to release water from its reservoirs without producing electricity.⁸⁹ According to the World Bank, this waste—of spillage—of water in Tajikistan was equivalent to a loss of about “3 terawatt hour of electricity . . . at Nurek in summer.”⁹⁰

The energy and water security challenges witnessed in the post-Soviet context largely relate to obstacles in regional cooperation.⁹¹ In contrast to the centralized and integrated approach to energy and water supply during Soviet times, the lower and upper riparian countries now struggle to agree on the terms of winter-summer energy exchanges.⁹² This seriously affects the capacity of the upper riparian countries to meet their winter energy

84. See Daryl Fields et al., World Bank, *Tajikistan's Winter Energy Crisis: Electricity Supply and Demand Alternatives*, at 4 (2013), http://siteresources.worldbank.org/ECAEXT/Resources/TAJ_winter_energy_27112012_Eng.pdf.

85. *Id.* at 70 (“[I]n the context of an unusually cold winter it was reported that TAJ [Tajikistan], KYR [Kyrgyzstan] and UZB [Uzbekistan] drew excessive power from the regional grid far beyond what they were entitled to draw, jeopardizing the stability of the North-South 500 kV Kazakh link and creating serious supply shortages in South Kazakhstan. KAZ [Kazakhstan] immediately withdrew from CAPS [Central Asia Power System], followed by UZB which also withdrew from CAPS. Subsequently KAZ and KYR and UZB re-joined CAPS, largely because of the intricate water energy linkages in the Syr Darya basin and practically interwoven nature of the KYR and UZB systems. But TAJ became fully isolated from CAPS and its import from TRK [Turkmenistan] could no longer take place.”).

86. *See id.*

87. *Id.*

88. *Id.*

89. *Id.*

90. *Id.*

91. See Aigul Absametova, *Integration Processes in the Electric Power Sectors of the EDB Member States*, 2013 EDB EURASIAN INTEGRATION Y.B. 186, 209 (2012); Yasinskiy et al., *supra* note 55, at 177.

92. *See* Yasinskiy et al., *supra* note 55, at 177.

deficit, and contributes to severe energy security crises in the importing countries. Kazakhstan still supplies thermal power and fossil fuels to Kyrgyzstan, and a certain amount of Uzbek power still flows through the interconnected Kyrgyz grid.⁹³ However, over the last five years, Uzbekistan interrupted the supply of natural gas to Kyrgyzstan and Tajikistan.⁹⁴ Moreover, in 2009, Uzbekistan interrupted and refused to reauthorize the transit of Turkmen power to Tajikistan and Kyrgyzstan through its electricity network.⁹⁵

The absence of cooperation results in the inefficient use of fossil fuels in the lower riparian countries: in the summer, Uzbekistan, Kazakhstan, and Turkmenistan burn natural gas and coal for electricity production—fossil fuels that could be saved through importations of hydropower from Kyrgyzstan and Tajikistan.⁹⁶ The absence of cooperation also negatively impacts water use in the region: in order to meet peak winter electricity demand, Kyrgyzstan and Tajikistan increasingly rely on hydropower generation instead of using thermal power or combined heat and power.⁹⁷ Maximizing the production of hydroelectricity generation became the priority over securing the availability of water for irrigation.⁹⁸ This created tensions in the region due to the crucial importance of agriculture (particularly cotton) for the lower riparian countries (principally Uzbekistan).⁹⁹

C. Mutual Benefits of Cooperation

Most studies on water and energy policy in Central Asia agree that it is essential for the Central Asian states to reinitiate transboundary water-en-

93. The Kazakh, Uzbek, and Kyrgyz grids remain interconnected to each other. Fields et al., *supra* note 84, at 70.

94. Bruce Pannier, *Gazprom Works to Advance Russia's Interests in Central Asia*, EUROPEAN ENERGY REV. (Ned.) (Oct. 20, 2008), <http://europeanenergyreview.com/site/pagina.php?id=355>; Ashley Cleek, *Uzbekistan to Cut Tajikistan-Bound Gas*, EURASIANET.ORG (Mar. 26, 2012), <http://www.eurasianet.org/node/65180>; David Trilling, *Two Months Since Gas Cut, Kyrgyz Losing Patience with Gazprom*, EURASIANET.ORG (June 9, 2014), <http://www.eurasianet.org/node/68481>.

95. On negotiations between Turkmenistan and Kyrgyzstan on the export of Turkmen power to address the Kyrgyz winter energy deficit and transit obstacles to this deal, see Tavus Rejepova, *Kyrgyzstan Expects Electricity Import from Turkmenistan to Address Its Power Deficit*, THE CENT. ASIA-CAUCASUS ANALYST (Dec. 10, 2014), <http://www.cacianalyst.org/publications/field-reports/item/13106-kyrgyzstan-expects-electricity-import-from-turkmenistan-to-address-its-power-deficit.html>; see also *Kyrgyzstan Pins Hopes on Cheap Turkmen Power*, EURASIANET.ORG (2015), <http://www.eurasianet.org/node/74531>.

96. Kochnakyan et al., *supra* note 58, at 37.

97. Maksud Bekchanov et al., *How Would the Rogun Dam Affect Water and Energy Scarcity in Central Asia?*, 40 WATER INT'L 856 (2015).

98. See World Bank, *supra* note 36, at 4–5.

99. See ICG, *Central Asia*, *supra* note 31, at 14.

ergy cooperation in order to ensure the sustainable management of resources in the region.¹⁰⁰ Studies commissioned by the Asian Development Bank (ADB), for example, highlight how regional cooperation can generate primary energy savings, reduce greenhouse gas emissions, and improve access to water in the region.¹⁰¹

First, cooperation limits the consumption of fossil fuels—mainly natural gas and coal—in the Central Asian electricity sector.¹⁰² By importing hydropower during the summer, the lower riparian countries can reduce the production of electricity from thermal sources. According to ADB studies, this approach could enable the lower riparian countries to take low-efficiency power plants out of service and postpone the construction of additional thermal capacity.¹⁰³ Exchanging fossil fuels for hydropower would also improve the efficiency of the energy system of the upper riparian countries. In particular, compensatory supplies of fossil fuels could be used to produce heat (combined heat and power generation) during the winter. This would enable Kyrgyzstan and Tajikistan to reduce their current reliance on electricity for heat supply—a highly energy-inefficient method of generating heat.¹⁰⁴

Paradoxically, Uzbekistan, the Central Asian country that most harshly opposes regional cooperation in the energy and water sectors, would benefit the most from summer hydropower imports from Kyrgyzstan and Tajikistan. In its 2013 analysis of the Uzbek power sector, the World Bank confirmed the benefits of regional cooperation for the Uzbek electricity system by highlighting that “coordinated and optimized seasonal power trade with hydro-rich neighbors could avoid the need for the construction of 500 megawatts of generation capacity in Uzbekistan,” generating cost savings of around \$700 million.¹⁰⁵ More generally, coordinating electricity supply with neighboring countries generates cost savings because the participating countries can share backup capacity, thereby reducing the need for reserve capacity in the individual systems.¹⁰⁶

100. See sources cited *supra* note 37; see also Koshlakov & Sirodzhev, *supra* note 38.

101. Grunwald, *supra* note 37, at 2-6, 2-7.

102. *Id.* at 2-21.

103. *Id.*

104. *Id.*

105. Kochnakyan et al., *supra* note 58, at 37; see also World Bank, *Project Appraisal Document on Proposed Grants for a Central Asia South Asia Electricity Transmission and Trade Project 2 (CASA-1000)*, World Bank Rep. No. 83250-SAS (Mar. 7, 2014), http://www-wds.worldbank.org/external/default/WDSContentServer/WDSF/IB/2014/03/12/000442464_20140312095302/Rendered/INDEX/832500PAD0P145010Box382156B00OOU090.txt.

106. See, e.g., Grunwald, *supra* note 37, at 2-6.

Besides energy- and cost-saving benefits, regional energy and water cooperation can reduce the carbon intensity of the Central-Asian energy sector. By reducing the use of the most inefficient thermal plants in the summer, imports of hydropower have the potential to generate important greenhouse gas emission savings in the lower riparian countries.¹⁰⁷ Similarly, by making it possible for the upper riparian countries to replace inefficient electric heating with district heating and combined heat and power generation, hydropower-fossil fuel swaps will contribute to climate change mitigation.¹⁰⁸ Because of the complementarity of summer hydropower generation and winter thermal energy production, transboundary electricity management in Central Asia represents a “low hanging fruit” in terms of greenhouse gas emission reductions.

Third, cooperation can reduce water spillage (water losses) resulting from winter hydropower generation in the upper riparian countries. This will help conserve water resources in Central Asia, an issue of increasing importance in the context of climate change and its impact on water security. The Intergovernmental Panel on Climate Change (IPCC) predicts “with high confidence” that melting glaciers will intensify water scarcity during the dry season.¹⁰⁹ In Central Asia, melting glaciers will negatively affect water levels of upstream multi-year reservoirs.¹¹⁰ At the same time, the IPCC predicts that climate change will increase water demand in the agricultural sector.¹¹¹ In the context of climate change, high interdependence between the riparian countries exacerbates the impact of individual water management decisions and the resulting uncertainty for the availability of water resources in the Amu Darya and Syr Darya basins.¹¹² By optimizing the utilization of shared water resources in the two river basins, transboundary electricity management can improve the ability of the Central Asian countries to respond and adapt to the impact of climate change on future water availability.¹¹³ Electricity cooperation in Central Asia thus

107. See World Bank, *supra* note 36.

108. Grunwald, *supra* note 37, at 2-21.

109. See, e.g., Jiménez Cisneros et al., *supra* note 8, at 235.

110. Pöyry Energy Ltd., *supra* note 38, at 67.

111. Jiménez Cisneros et al., *supra* note 8, at 251.

112. More generally, on the increased challenges that climate change represents for riparian states, see Rocha Loures et al., *supra* note 22, at 210.

113. According to LEB, *supra* note 17, at 223, in transboundary water systems, regional cooperation in preparing for adaptation to the impacts of climate change is essential because “unilateral adaptation measures of individual States may not be of adequate scale or may give rise to transboundary harm and aggravation of impacts on others (e.g., when upstream States respond to a basin-wide drought with increased water abstraction instead of demand management).”

does not only qualify as a climate change mitigation measure, but also as a climate change adaptation measure.

II. OBSTACLES TO REGIONAL WATER-ENERGY-CLIMATE COOPERATION

The Central Asian states have repeatedly confirmed their commitment to regional cooperation in the water and energy sectors. The March 17, 1998 Agreement Between the Governments of Kazakhstan, Kyrgyzstan, and Uzbekistan on the Use of Water and Energy Resources of the Syr Darya Basin explicitly acknowledged the “benefits derived from the joint operation of the reservoirs of the Naryn-Syr Darya Cascade, through a multi-year flow regulation and flood control measures, including the use of water for irrigation and power generation,” and noted that “a joint and comprehensive use of the water and energy resources of the Syr Darya basin must be implemented with regards to the environmental safety of the region.”¹¹⁴ Similarly, the June 17, 1999 Agreement between the Governments of Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan on the Parallel Operation of the Energy Systems of Central Asia explicitly recognized that “strengthening friendly and good neighborly relations, establishing cooperation and mutual support between the Parties meet the traditional interests of the Central Asian nations” and considered it “important to set favorable conditions for the development of market relations between the economic entities, and create an integrated electricity market in the future.”¹¹⁵

However, in practice, the cooperation principles underlying the regional energy and water agreements in Central Asia have largely remained dead letters. In the post-Soviet context, cooperation has been affected by important obstacles preventing the Central Asian countries from jointly exploiting the energy and water resources of the region to the mutual benefits of all countries. Disputes about energy and water exchanges have demonstrated the difficulty that Central Asian states have in reaching agreement on and, more importantly, implementing regional cooperation mechanisms. It is necessary to carefully identify these obstacles in order to examine the contribution that international law could make in solving these disputes and in facilitating the achievement of the energy, water, and climate benefits of regional cooperation in this field. The following discussion introduces some

114. World Bank, *supra* note 36, app. 4 at 28 (reciting the preamble from the 1998 Agreement on the Use of Water and Energy Resources of the Syr Darya Basin).

115. Agreement Between the Governments of the Republics of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, and the Republic of Uzbekistan on the Parallel Operation of the Energy Systems of Central Asia, June 17, 1999, <http://www.ce.utexas.edu/prof/mckinney/papers/aral/agreements/Parallel-Agreement.pdf>

of the main barriers that currently hinder the transboundary and integrated management of water and energy resources following the collapse of the Soviet Union.

A. *Non-Implementation of Agreements*

Regional cooperation in Central Asia suffers due to the lack of trust between the Central Asian countries. In the water and energy sector, lack of trust results from the states' failure to respect their supply obligations under regional energy and water agreements.¹¹⁶ The barter principle according to which winter energy exports compensated for summer hydropower imports created a time gap that proved to be very challenging to manage.¹¹⁷ Given the quid pro quo nature of the barter scheme,¹¹⁸ non-implementation by one of the parties of its supply obligations resulted in non-implementation by the other.¹¹⁹ Following this vicious circle,¹²⁰ lower water releases and reduced supply of hydropower by Kyrgyzstan and Tajikistan in the summer resulted in decreased exports of thermal energy and fossil fuels by Kazakhstan and Uzbekistan.¹²¹ In turn, the limited availability of thermal energy in Kyrgyzstan and Tajikistan increased their reliance on hydropower in the winter, therefore exacerbating the original barter imbalance.¹²²

116. See, e.g., Reshenie Ekonomicheskogo Soveta Sodruzhestva Nezavisimykh Gosudarstv "O Khode Vypolneniia Resheniia Ekonomicheskogo Soveta SNG ot 3 dekabria 2004 goda "O Polozhenii v Hidroenergetike Respubliki Tadzhiikistan" [2008 Decision of the Economic Council of the Commonwealth of Independent States on the State of Hydropower in Tajikistan] Dec. 12, 2008, at 1; Thomas Bernauer & Tobias Siegfried, *Compliance and Performance in International Water Agreements: The Case of the Naryn/Syr Darya Basin*, 14 GLOBAL GOV. 479 (2008). For an overview of the disputes relating to the implementation of the water-energy agreements in Central Asia, see ARIEL DINAR ET AL., BRIDGES OVER WATER: UNDERSTANDING TRANSBOUNDARY WATER CONFLICT, NEGOTIATION AND COOPERATION 344–45 (2013).

117. World Bank, *supra* note 36, at 10–11; Shlomi Dinar, *Treaty Principles and Patterns: Selected International Water Agreements as Lessons for the Resolution of the Syr Darya and Amu Darya Water Dispute*, in TRANSBOUNDARY WATER RESOURCES: STRATEGIES FOR REGIONAL SECURITY AND ECOLOGICAL STABILITY 147, 151 (Hartmut Vogtmann & Nikolay Dobretsov eds., 2005).

118. See, e.g., Joint and Complex Use of Naryn Syr Darya Cascade Reservoirs Agreement, *supra* note 77, at art. 4 (establishing the right of the parties to adjust the schedule of their mutual deliveries depending on water availability in the Syrdarya River Basin).

119. See, e.g., Protocol of the Workshop, *supra* note 38.

120. See Grunwald, *supra* note 37, at 2–13; ICG, *Central Asia*, *supra* note 31, at 14; see also Leila Zakhirova, *The International Politics of Water Security in Central Asia*, 65 EUR-ASIA STUDIES 1994, 1995 (2013) (discussing "retaliatory threats" made by Kyrgyzstan to use its water reserves for hydropower generation following disruptions of Uzbek gas supplies).

121. See McKinney, *supra* note 38, at 211–12; see also DINAR ET AL., *supra* note 116, at 151.

122. World Bank, *supra* note 36, at 10–11.

Problems of reciprocity¹²³ (or *quid pro quo*) in the exchange of energy and water thus undermined regional cooperation in Central Asia, eventually leading to the discontinuation of electricity exchanges and the withdrawal of Turkmenistan and Tajikistan from the Central Asian Power System.¹²⁴ The risk that parties would refuse to reciprocate on their resource supply obligations is exacerbated by the absence of a clear enforcement regime in the Central Asian energy and water agreements.¹²⁵ In the absence of a clear enforcement procedure, states cannot be certain that the other parties will respect their obligations, which creates an incentive to exceed the agreed-upon limits.¹²⁶

B. *The Value of Fossil Energy, Electricity, and Water*

In line with world energy markets, the price of fossil fuels in Central Asia increased considerably towards the end of the 1990s, causing the lower riparian countries to request better prices for the energy exported in exchange for hydropower.¹²⁷ Disputes over the cost of fossil fuel energy and thermal power led to reductions and even interruption in the energy supply to Tajikistan and Kyrgyzstan, resulting in the increased use of hydropower to compensate for these energy import deficits.¹²⁸ In turn, this led to reduced water releases and reduced electricity exports to the lower riparian states, which as introduced above exacerbated the vicious circle that characterized barter exchanges in Central Asia.¹²⁹

The countries also disagreed upon whether upper riparian states should be compensated for water storage services that support downstream sum-

123. Reciprocity is generally considered to be a decisive vector of cooperation in the field of shared resources. According to LEB, *supra* note 17, at 29, "if reciprocity does not take place as a response to concessions, good faith is frustrated and cooperation is unlikely to continue or to occur at all."

124. World Bank, *supra* note 36, at 4.

125. See ICG, *Central Asia*, *supra* note 31, at 13; World Bank, *supra* note 36, at v, 19; Dinara Ziganshina, *International Water Law in Central Asia: Commitments, Compliance and Beyond*, 20 WATER L. 96, 101 (2009).

126. Yuldosh Kh. Khudaiberganov, *Particular Characteristics of Integrated Water Resources Management (IWRM) in the Amudarya River Basin*, in IMPLEMENTING WATER RESOURCES MANAGEMENT IN CENTRAL ASIA 35, 40–41 (Patricia Wouters et al. eds., 2007); see also Eric Sievers, *Water, Conflict, and Regional Security in Central Asia*, 10 N.Y.U. ENVTL. L.J. 356, 400 (2002).

127. See, e.g., ICG, *Central Asia*, *supra* note 31, at 13; McCaffrey, *supra* note 42; World Bank, *supra* note 36, at iii; Ziganshina, *supra* note 125, at 97; Christine Bichsel, *Liquid Challenges: Contested Water in Central Asia*, 12 SUST. DEV. L. & POLY, 24, 25–26 (2011); Dinara Kemelova & Gennady Zhalkubaev, *Central Asian Water: Conflict, and Regional Security Revisited*, 11 N.Y.U. ENVTL. L.J. 479 (2003).

128. Khamidov, *supra* note 38, at 29; Bichsel, *supra* note 127, at 25–26.

129. World Bank, *supra* note 36, at 10–11.

mer irrigation.¹³⁰ On the one hand, the upper riparian countries insisted that the lower riparian countries should contribute to covering the costs of maintaining water storage facilities (upstream regulation reservoirs).¹³¹ On the other hand, the lower riparian countries invoked the “common-pool” nature of basin water resources to oppose the commodification of water services.¹³²

C. National Energy Independence Versus Regional Cooperation

The drive towards national energy independence in Central Asia is a crucial element in explaining states’ reluctance to continue to jointly organize their energy systems, despite the mutual benefits of cooperation for all states concerned. Following the collapse of the Soviet Union, the Central Asian countries aimed to reduce their dependency on neighboring states. Energy independence (energy self-sufficiency or autonomy) is explicitly recognized as a policy priority in the national energy strategies of all Central Asian countries.¹³³ Paradoxically, these strategies recognize the benefits of regional cooperation but focus mainly on the economic opportunities that

130. See, e.g., Mukhammadiev, *supra* note 31, at 235; see also Arifov & Arifova, *supra* note 34.

131. Kyrgyzstan’s 2001 Law on Inter-State Use of Water Resources, for instance, requires the payment by downstream countries for the services associated with water supply through the Kyrgyz territory. Zakon Kyrgyzskoi Respubliki “O Mezghosudarstvennom Ispol’zovanii Vodnykh Obektov, Vodnykh Resursov i Vodokhoziaistvennykh SooruzheniiaKh Kyrgyzskoi Respubliki” art. 3 [The Law of the Kyrgyz Republic from July 23, 2001 No. 76 “About Interstate Use of Water Objects, Water Resources and Aquicultural Constructions of the Kyrgyz Republic”] 55 ERKIN-TOO Aug. 1, 2001, No. 76. On this issue see, for example, McKinney, *supra* note 38, at 204; Mukhammadiev, *supra* note 31, at 242. It must be noted that international water law does not support the claim of “ownership” by a particular state over the water resources of a transboundary watercourse flowing through its territory. McCaffrey, *supra* note 42, at 284.

132. See Zakhirova, *supra* note 120, at 2003.

133. See, e.g., Kontsepsiia Razvitiia Otrasei Toplivno-Energeticheskogo Kompleksa Respubliki Tadzhikistan Na Period 2003–2015 Godov [The 2003–2015 Concept of Development of the Fuel-Energy Complex of Tajikistan], http://tajhydro.tj/files/conception_of_development.pdf; Kontspetsiia Razvitiia Toplivno-Energeticheskogo Kompleksa Respubliki Kazakhstan do 2030 Goda, Postanovlenie Pravitel’stva Respubliki Kazakhstan [The Concept for the Development of the Fuel-Energy Complex of Kazakhstan by 2030] June 28, 2014, No. 724, <http://www.nomad.su/?a=3-201407230031>; Postanovlenie Prezidenta Respubliki Uzbekistan o Prioritetakh Razvitiia Promyshlennosti Respubliki Uzbekistan v 2011–2015 Godakh [2010 Presidential Decree on the Priority Developments of the Industrial Policy of Uzbekistan] Mar. 12, 2009, No. PP-1072; Sobranie Zakonodatel’stva Respubliki Uzbekistan 2010 [Collection of Legislation of the Republic of Uzbekistan], No. 50, Item 472, http://lex.uz/Pages/GetAct.aspx?lact_id=1712436; 2008–2012 Natsional’naia Energeticheskaiia Programma Kyrgyzskoi Respubliki na 2008–2010 Gody i Strategiia Razvitiia Toplivno-Energeticheskogo Kompleksa do 2025 Goda, Odobrena postanovleniem Zhogorku Kenesha Kyrgyzskoi Respubliki [National Energy Program of Kyrgyzstan from 2008–2010

this cooperation represents in terms of revenues from electricity exports.¹³⁴ The strategic energy policy documents largely ignore the possibility of achieving energy savings by importing electricity from neighboring states.

D. *Geopolitics of Large Hydropower Generation*

To maximize national energy independence and develop their energy export potential, the upper riparian countries aim to build large hydropower plants, including the infamous 3,200 megawatt Rogun project in Tajikistan and the 2,000 megawatt Kambarata-1 project in Kyrgyzstan.¹³⁵ These highly controversial projects exacerbated the concerns of the lower riparian countries, in particular Uzbekistan, regarding access to water, resulting in acute geopolitical tensions in the region.¹³⁶ Uzbekistan emphasized the destructive impact that these investments will have on water, food, and environmental safety of the downstream countries.¹³⁷ More importantly, Uzbekistan has expressed concerns about the control that these large hydropower dams will give the higher riparian countries over regional water resources.¹³⁸ The fear is that Kyrgyzstan and Tajikistan would be in a position to “dictate unilaterally the harsh terms of water discharge to downstream countries, especially during vegetation of agricultural crops.”¹³⁹ This would lead to an “escalation of tensions and of conflict potential in the region of Central Asia.”¹⁴⁰ The perceived risk of “blackmail” by the lower riparian countries is of great sensitivity for Uzbekistan and Turkmenistan, taking

and the Strategy for Fuel and Energy Complex Development Until 2025] Apr. 24, 2008, No. 346-IV, <http://www.nomad.su/?a=3-201407230031>.

134. Boute, *supra* note 82.

135. See Pöyry Energy Ltd., *supra* note 38. For both projects, initial construction works were started. Work on the Kambarata-1 project was interrupted in December 2015 following the decision by the Kyrgyz Government to cancel the intergovernmental agreement governing this investment.

136. Iskandar Abdullayev et al., *Water and Geopolitics in Central Asia*, in *WATER, ENVIRONMENTAL SECURITY AND SUSTAINABLE RURAL DEVELOPMENT: CONFLICT AND COOPERATION IN CENTRAL EURASIA* 125–43 (Murat Arsel & Max Spoor eds., 2009).

137. Letter from Rustam Azimov, First Deputy Prime Minister and Minister of Finance, Republic of Uzbekistan, to Jim Yong Kim, President, World Bank Group (July 7, 2014), <http://www.worldbank.org/content/dam/Worldbank/document/eca/central-asia/140808-gou-wbg-en.pdf>.

138. ICG, *Central Asia*, *supra* note 31, at 23.

139. Rustam Azimov, First Deputy Prime-Minister and Minister of Finance of the Republic of Uzbekistan, Statement at the Proceedings of the High-Level Meeting on Regional Riparian Issues in the Context of the “World Bank Note on Key Issues for Consideration on the Proposed Rogun Hydropower Project” (July 18, 2014) (*in* Press Release, Ministry of Foreign Affairs of the Republic of Uzbekistan (Aug. 4, 2014), <http://www.mfa.uz/en/press/release/2014/08/2115/>).

140. *Id.* at 20.

into account the fact that “water security is at the heart of their perceived national security interests” due to the strategic importance of the agricultural (cotton) sector.¹⁴¹ Uzbekistan has therefore threatened military intervention should Tajikistan continue pursuing the Rogun project.¹⁴²

The Environmental and Social Impact Assessment of the Rogun project, financed by the World Bank, confirms that Uzbekistan’s concerns are justified.¹⁴³ If Tajikistan decides to maximize the winter energy output of the Rogun hydropower plant, the lower riparian countries would, according to the World Bank’s assessment, experience “very serious consequences.”¹⁴⁴ In particular, maximizing winter production from hydropower plants would expose the lower riparian countries to reductions in the existing water release patterns for summer irrigation,¹⁴⁵ thus threatening the strategically important agricultural sector in these countries.¹⁴⁶

E. *Transit*

Transboundary energy management depends on the extent to which energy resources can freely flow from the supplying to the consuming country, including transit through third countries. Obstacles to free transit of electricity and natural gas—mainly through Uzbekistan—currently hinder regional energy exchanges in Central Asia.¹⁴⁷

Given its central location within the regional system and its interconnection to all national Central Asian electricity networks, Uzbekistan is a key transit country in the region and an essential link to the supply of

141. ICG, *Central Asia*, *supra* note 31, at 3.

142. *Id.* at 1; *see also* Stuart Horsman, *Water in Central Asia*, in *CENTRAL ASIAN SECURITY: THE NEW INTERNATIONAL CONTEXT* 76 (Roy Allison & Lena Jonson eds., 2001).

143. Pöyry Energy Ltd., *supra* note 38, at 15.

144. *Id.* at 304; World Bank, *supra* note 36, at 16. On the possible negative impact of the Rogun hydropower plant on Uzbekistan, *see also* Shokhrukh-Mirzo Jalilov et al., *Impact of Rogun Dam on Downstream Uzbekistan Agriculture*, 3 *INT’L J. WATER RESOURCES & ENVTL. ENGINEERING* 161 (2011).

145. *See also* MAKSUD BEKCHANOV ET AL., CENTER FOR INT’L DEV. & ENVTL. RES., *IS ROGUN A SILVER BULLET FOR WATER SCARCITY IN CENTRAL ASIA?* (2013), <http://ageconsearch.umn.edu/bitstream/159075/2/Bekchanovetal2013aRogunimpactfinal.pdf> (paper presented at the Young Researchers’ Forum of the International Conference-Natural Resource Use in Central Asia: Institutional Challenges and the Contribution of Capacity Building).

146. Food & Agric. Org. of the U.N. [FAO], *Irrigation in Central Asia in Figures*, at 47–48, FAO Water Rep. No. 39 (2013), <http://www.fao.org/docrep/018/i3289e/i3289e.pdf>.

147. *See* Evgeny Vinokurov, *Obshchii elektroenergeticheskii rynek SNG kak instrument ekonomicheskogo razvitiia i regional’noi integratsii [Communal Electro-Powered Market CIS as an Instrument of Economic Development and Regional Integration]*, in 1 *EVRAZIISKAIA EKONOMICHESKAIA INTEGRATSIIA* 54, 67–69 (2008), http://www.eabr.org/general/upload/docs/EDB_Mag_1.pdf; *see also* Arifov & Arifova, *supra* note 34.

thermal power to the upper riparian countries in the winter.¹⁴⁸ Turkmenistan exported a substantial amount of electricity to Kazakhstan and Tajikistan by means of the Uzbek electricity network until Uzbekistan interrupted these transit flows in January 2009.¹⁴⁹ This interruption in the transmission of Turkmen thermal power increased the electricity deficit in Tajikistan, ultimately exacerbating the acute energy crisis affecting the country.¹⁵⁰ Uzbekistan has so far refused to reauthorize the transit of Turkmen electricity to the upper riparian countries, despite repeated requests from and negotiations between Turkmenistan, Tajikistan, and Kyrgyzstan.¹⁵¹

F. *The Tragedy of the Commons and the Prisoner's Dilemma*

The failure of regional energy and water cooperation in Central Asia could partly be explained on the basis of “rational choice” institutionalist theories, in particular the theory of the supply of public goods (“tragedy of the commons”) and game theory (“prisoner’s dilemma”).

Transboundary water management¹⁵² and regional electricity security,¹⁵³ to an important extent, meet the criteria of a public good or “common-pool” resource. According to the tragedy of the commons theory, public goods tend to be over-exploited, leading to the depletion of these resources.¹⁵⁴ Uzbekistan invokes the fact that water is a common resource to justify its refusal to pay for water supply, including the maintenance of

148. Yasinskiy, *supra* note 55, at 171 (emphasizing Uzbekistan’s “important role in ensuring a reliable power supply to consumers in the region by facilitating the transit flow of electricity exports to other countries”).

149. Fields et al., *supra* note 84, at 69.

150. Natalia Maqsimchuk, *Chronicle of Eurasian Regional Integration 2009*, 2010 EDB EURASIAN INTEGRATION Y.B. 77 (highlighting based on press releases that “[f]rom January 1, 2009 Uzbekistan halted transit of Turkmen electric power to Tajikistan and aggravated the country’s crisis situation even further”).

151. See Rejepova, *supra* note 95.

152. See, e.g., Anders Jägerskog et al., Stockholm Int’l Water Inst., *Transboundary Water Management as a Regional Public Good: Financing Development – An Example from the Nile Basin*, SIWI Rep. No. 20, at 7 (2001), <http://www.osce.org/eea/25306?download=true>; Overseas Dev. Inst., *Transboundary Water Management as an International Public Good*, Study 2001:1, at 4 (2001), <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/3870.pdf>.

153. See Malcolm Abbott, *Is the Security of Electricity Supply a Public Good?*, 14 ELECTRICITY J. 31 (2001); see also EURELECTRIC, SECURITY OF ELECTRICITY SUPPLY – ROLES, RESPONSIBILITIES AND EXPERIENCES WITHIN THE EU 31 (2006); Enese Lieb-Dóczy et al., *Who Secures the Security of Supply? European Perspectives on Security, Competition, and Liability*, 16 ELECTRICITY J. 10 (2003). But see Henrik K. Jacobsen & Stine G. Jensen, *Security of Supply in Electricity Markets: Improving Cost Efficiency of Supplying Security and Possible Welfare Gains*, 43 INT’L J. ELECTRICAL POWER & ENERGY SYS. 680 (2012); Cliff Rochlin, *Resource Adequacy Requirement, Reserve Margin, and the Public Goods Argument*, 17 ELECTRICITY J. 52 (2004).

154. Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968).

water storage infrastructure.¹⁵⁵ Similarly, the 2009 winter supply crisis in Central Asia illustrates states' temptation (*in casu* Tajikistan) to free-ride on the investments of neighboring countries by exceeding their quota of electricity offtake in periods of scarce supply.¹⁵⁶

Following the prisoner's dilemma theory, states have a short-term interest in acting unilaterally, even if the overall benefits of cooperation exceed the respective gains from individual action.¹⁵⁷ In Central Asia, regional agreements on water-energy cooperation were signed, but the lower and upper riparian countries failed to honor their obligations.¹⁵⁸ Kazakhstan and Uzbekistan did not supply the agreed volume of fossil fuel and thermal energy, and Kyrgyzstan and Tajikistan did not refrain from maximizing winter hydro-energy production.¹⁵⁹ This, arguably, could be explained by the prisoner's dilemma: countries try to avoid the cost of unilateral cooperation and, at the same time, try to benefit from the joint efforts made by others in the rational management of shared resources.

G. *Overcoming the Obstacles to Transboundary Water-Energy-Climate Management*

The absence of cooperation in the organization of energy and water supply in Central Asia results in the inefficient use of resources, presenting a threat for energy and water security and possibly for peace in the region.¹⁶⁰ Increasing winter hydropower generation in Kyrgyzstan—because of its energy independence policy and disputes with Uzbekistan on energy supply and transit—exposes the lower riparian countries to the risk of water shortages in the summer and to floods in the winter.¹⁶¹ In addition to the damage that flooding causes in Uzbekistan and Kazakhstan, winter energy production causes irreversible water losses that affect the Aral Sea.¹⁶² More-

155. See, e.g., Mukhammadiev, *supra* note 31, at 235.

156. Fields et al., *supra* note 84.

157. For an application of the "prisoner's dilemma" theory to international environmental cooperation see, for example, SIMONE SCHIELE, *EVOLUTION OF INTERNATIONAL ENVIRONMENTAL REGIMES: THE CASE OF CLIMATE CHANGE* 14 (2014).

158. See *supra* Section II.A.

159. *Id.*

160. Daene C. McKinney & Ximing Cai, *Multiobjective Water Resource Allocation Model for Toktogul Reservoir* 29 (June 9, 1997) (working paper), <http://www.caee.utexas.edu/prof/mckinney/papers/arak/Model-Rpt.PDF>.

161. Bichsel, *supra* note 127, at 25–26; LEB, *supra* note 17, at 19; see also LARS C. MOLLER, CENTRE FOR RESEARCH IN ECON. DEV. & INT'L TRADE (CREDIT), UNIV. OF NOTTINGHAM, CREDIT RESEARCH PAPER NO. 05/09, *TRANSBOUNDARY WATER CONFLICTS OVER HYDROPOWER AND IRRIGATION: CAN MULTILATERAL DEVELOPMENT BANKS HELP?* 23–28 (2005), <http://www.nottingham.ac.uk/credit/documents/papers/05-09.pdf>.

162. Khamidov, *supra* note 38, at 26; Mukhammadiev, *supra* note 31, at 237.

over, by negatively impacting the efficiency of energy supply in the region, energy independence in Central Asia increases the carbon intensity of the region and therefore its overall contribution to global warming.¹⁶³

The economic, social, and environmental benefits of regional cooperation far exceed the total gains that the Central Asian countries generate from individual, national-centered actions. Game theory and principles of public goods call for the creation of regional cooperation mechanisms to overcome the incentives that Central Asian states have to free-ride on the water and energy management efforts of their neighbors.¹⁶⁴ The continuous involvement of Central Asian countries with each other provides a strong practical reason for these states to work together to achieve the higher benefits of cooperation.

Given increasing mutual distrust between the countries, cooperation requires the establishment of a sufficiently strong institutional framework to ensure that the parties comply with their reciprocal energy and water management obligations. Most analysts agree that, to ensure sustainable water and energy supply, the lower riparian countries must ensure proper compensatory energy supplies—on a barter-like basis—to the upper riparian countries.¹⁶⁵ On one hand, the upper riparian countries must rely on a clear and enforceable commitment by the lower riparian countries to supply fossil energy at reasonable conditions (volume and price) in compensation for winter storage of water for summer irrigation release.¹⁶⁶ On the other, the lower riparian countries must rely on clear guarantees that the upper riparian countries will not abuse their control over upstream water resources by maximizing winter hydropower generation and so reduce water levels for irrigation in the summer.

III. THE DUTY TO COOPERATE UNDER GENERAL INTERNATIONAL LAW

In light of the current regional political deadlock (or “unwillingness of the states to cooperate”),¹⁶⁷ it is essential to examine whether external legal mechanisms are available to force—or at least guide—Central Asian countries in forming effective water-energy-climate cooperation mechanisms. In-

163. Grunwald, *supra* note 37, at 2-6, 2-7; World Bank, *supra* note 36, at 29, 52.

164. SCHIELE, *supra* note 157, at 18 (“[G]ame theory and the theory of the provision of public goods, illustrate that the only possible solution for international environmental issues is the collective management of common goods, aiming at coordinated action of all actors and shaping their expectations on the actions of other actors.”).

165. See Protocol of the Workshop, *supra* note 38; Khamidov, *supra* note 38, at 29; Pöyry Energy Ltd., *supra* note 38, at 321; McKinney, *supra* note 38, at 205.

166. World Bank, *supra* note 36, at 21.

167. ICG, *Central Asia*, *supra* note 31, at ii.

ternational law has an important role to play in the design, implementation, and enforcement of mechanisms addressing the short-term free-rider barrier to transboundary resource management. Before looking at cooperation requirements under international water, climate, and energy law, it is necessary to examine states' rights and obligations under the principle of national sovereignty over natural resources and the general good-faith duty to cooperate.

A. Limits to National Sovereignty over Natural Resources

In accordance with the international law principle of national sovereignty over natural resources,¹⁶⁸ states are free to develop and export their domestic energy resources.¹⁶⁹ The decision to export energy is the sovereign prerogative of the state controlling the energy resources.¹⁷⁰ On this basis, the energy-rich states in Central Asia (i.e., Kazakhstan, Uzbekistan, and Turkmenistan) have no obligation to develop their resources and supply the energy-poor states (i.e., Kyrgyzstan and Tajikistan).

Similarly, regarding the ambitious hydropower projects of the upper riparian countries (i.e., Tajikistan and Kyrgyzstan), international law recognizes states' sovereign rights to develop the infrastructure that is necessary for the exploitation of water resources in their territories.¹⁷¹ The states affected by infrastructure projects have the right to be consulted and their interests must be taken into account. However, unless provided otherwise by treaties, this does not entail a right to veto these plans.¹⁷² The lower riparian countries (i.e., Uzbekistan, Kazakhstan, and Turkmenistan) thus do not have the right under international water law to block the realization of the controversial Rogun and Kambarata hydropower plants in Tajikistan and Kyrgyzstan.

The *Lac Lanoux* arbitration case provides interesting insight into on a similar situation: the realization by France of construction works on Lake

168. G.A. Res. 1803 (XVII), Declaration on Permanent Sovereignty over Natural Resources (Dec. 14, 1962); G.A. Res. 3281 (XXIX), Charter of Economic Rights and Duties (Dec. 12, 1974).

169. See NICO SCHRIJVER, SOVEREIGNTY OVER NATURAL RESOURCES: BALANCING RIGHTS AND DUTIES 264–65 (2008).

170. *But see* Appellate Body Report, *China—Measures Related to the Exportation of Rare Earths, Tungsten and Molybdenum*, WTO Doc. WT/DS431/AB/R (adopted Aug. 7, 2014), http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds431_e.htm (where various restrictions on the export of natural resources imposed by China were found to be inconsistent with China's WTO obligations).

171. See LEB, *supra* note 17, at 142.

172. *Id.*; see also Alistair Rieu-Clarke, *Notification and Consultation on Planned Measures Concerning International Watercourses: Learning Lessons from the Pulp Mills and Kishenganga Cases*, 24 Y.B. INT'L ENVTL. L. 102 (2014).

Lanoux, a lake shared with Spain.¹⁷³ The starting point of the arbitration decision in the *Lac Lanoux* case was that states have the sovereign right to implement works that affect the flow of water to third countries.¹⁷⁴ The arbitration panel did “not find . . . in international common law [] any rule that forbids one State, acting to safeguard its legitimate interests, to put itself in a situation which would in fact permit it, in violation of its international pledges, seriously to injure a neighboring State.”¹⁷⁵ The tribunal rejected Spain’s claim that the realization by France of the planned works required “the previous agreement of both Governments, in the absence of which the country making the proposal is not at liberty to undertake the works.”¹⁷⁶ According to the *Lac Lanoux* arbitration decision, requiring a previous agreement of both states would introduce a “right of assent” or “right of veto” which in fact could paralyze the exercise by the state of its territorial jurisdiction.¹⁷⁷

Nevertheless, the exercise of national sovereignty of states over their natural resources is not unlimited. Every state has a duty not to “allow knowingly its territory to be used for acts contrary to the rights of other states.”¹⁷⁸ Although states do not have an obligation to grant advantages to another states, states must not cause injury,¹⁷⁹ or must at least take preventive measures to avoid harm or minimize unavoidable damage.¹⁸⁰ In the *Lac Lanoux* case, the arbitral tribunal noted that although “France [*in casu* the upper riparian state] is entitled to exercise her rights[,] she cannot ignore the Spanish interests. Spain [the lower riparian state] is entitled to demand that her rights be respected and that her interests be taken into consideration.”¹⁸¹ Applied to the construction of large hydropower plants in Central Asia, Kyrgyzstan and Tajikistan are bound by the duty to avoid significant harm to their downstream neighbors and thus cannot ignore the interests of

173. Lake Lanoux Arbitration (Fr. v. Spain), 24 I.L.R. 101 (Perm. Ct. Arb. 1957).

174. *Id.* at 126.

175. *Id.* Similarly, the ICJ determined that “the State initiating the plan may, at the end of the negotiation period, proceed with construction at its own risk. . . . Uruguay did not bear any ‘no construction obligation’ after the negotiation period” Pulp Mills on the River Uruguay (Arg. v. Uru.), Judgment, 2010 I.C.J. Rep. 18, ¶¶ 154, 157 (Apr. 20).

176. Lake Lanoux, 24 I.L.R. at 127.

177. *Id.* at 128.

178. Corfu Channel (U.K. v. Alb.), Judgment, 1949 I.C.J. 4, 22 (Apr. 9).

179. Max Huber, *Ein Beitrag zur Lehre von der Gebietshoheit an Grenzflüssen* [A CONTRIBUTION TO THE TEACHING OF TERRITORIAL SOVEREIGNTY OVER BOUNDARY RIVERS] 1 ZEITSCHRIFT FÜR VÖLKERRECHT UND BUNDESSTAATSRECHT [J. INT’L & FED. L.] 29, 163, 214 (1907).

180. PHILIPPE SANDS, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW 246 (2d ed. 2003).

181. Lake Lanoux, 24 I.L.R. at 124; *see also* Pulp Mills on the River Uruguay (Arg. v. Uru.), Judgment, 2010 I.C.J. Rep. 18, ¶¶ 154, 157 (Apr. 20); SANDS, *supra* note 180, at 242–43.

the lower riparian countries when implementing these projects. In particular, Kyrgyzstan and Tajikistan must avoid maximizing winter hydropower generation given the potential harm¹⁸² that this operational mode can have on the availability of water for irrigation in Uzbekistan, Kazakhstan, and Turkmenistan.¹⁸³

To trigger the responsibility of states under international law, countries that are exposed to serious harm cannot have willfully contributed to the injury.¹⁸⁴ In Central Asia, the only reasonable alternative to winter hydro-power generation in Kyrgyzstan and Tajikistan is the supply of compensatory thermal power or fossil fuels by Uzbekistan, Kazakhstan, and Turkmenistan.¹⁸⁵ By suddenly reducing or interrupting the supply of thermal power and fossil fuel exports to the upper riparian countries, the energy-rich lower riparian countries in Central Asia contribute to the injury that they are enduring—thus undermining their protection under the law of international responsibility.

B. *The Principle of “Good Neighborly Relations”*

The international law duty to avoid harm is part of the principle of “good neighborly relations between states.”¹⁸⁶ The regional agreements governing energy and water supply in Central Asia recognize the importance of “strengthening friendly and good neighborly relations” and “establishing cooperation and mutual support” between the Central Asian countries.¹⁸⁷

182. See Pöyry Energy Ltd., *supra* note 38, at 304, 309 (referring to “potentially serious effects” and “very serious consequences”).

183. *Id.*

184. On the question of the contribution of the victim state to the injury, see Anaïs Moutier-Lopet, *Contribution to the Injury*, in *THE LAW OF INTERNATIONAL RESPONSIBILITY* 641 (James Crawford et al. eds., 2010).

185. See Protocol of the Workshop, *supra* note 38; Khamidov, *supra* note 38, at 29–30; McKinney, *supra* note 38, at 205; Pöyry Energy Ltd., *supra* note 38, at 321.

186. According to Judge Weeramantry, the ICJ “from the very commencement of its jurisprudence, has supported [the principle of good neighborliness] by spelling out the duty of every State not to ‘allow knowingly its territory to be used for acts contrary to the rights of other States.’” *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 1996 I.C.J. Rep. 3, 506 (July 8) (Weeramantry, J., dissenting) (citing *Corfu Channel* (U.K. v. Alb.), Judgment, 1949 I.C.J. Rep. 4, 22 (Apr. 9)).

187. See Agreement Between the Governments of the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, and the Republic of Uzbekistan on the Parallel Operation of the Energy Systems of Central Asia, pmbl, June 17, 1999 (“Recognizing that strengthening friendly and good neighborly relations, establishing cooperation and mutual support between the Parties meet the traditional interests of the Central Asian nations . . .”), <http://www.ce.utexas.edu/prof/mckinney/papers/aral/agreements/Parallel-Agreement.pdf>; see also Agreement Between the Governments of the Republic of Kazakhstan and the Kyrgyz Republic on the Use of Water Management Facilities of Intergovernmental Status on the Chu and Talas Rivers, pmbl., Jan. 21, 2000, <http://www.unece.org/fileadmin/DAM/env/>

However, the agreements do not define what is meant by these principles and objectives. An analysis of the concept of “good neighborliness” under international law can help contextualize the obligations that the Central Asian countries have in relation to each other regarding energy and water management.

States’ responsibilities not to cause damage above a certain threshold is particularly prominent in the field of environmental protection, including water resources management.¹⁸⁸ The principle of “good neighborliness” also applies to interstate economic and social harm¹⁸⁹—and is therefore relevant to cross-border energy transactions. For example, states could invoke a duty to avoid harm caused by the sudden reduction or interruption of energy flows to neighboring countries that depend on these imports for their energy security. As demonstrated by the 2009 Tajik winter energy crisis, the interruption of energy flows and the refusal to cooperate can have drastic economic and social consequences for energy-importing countries¹⁹⁰—possibly leading to loss of life or inhuman treatment of individuals in these countries.¹⁹¹ The duty to avoid harm to third countries requires exporting and

water/Chu-Talas/ChuTalas_Agreement_ENG.pdf [hereinafter Chu and Talas Rivers Agreement] (“respecting the principles of neighborliness, equality, and mutual assistance”); World Bank, *supra* note 36, app. 4 at 28 (reciting the preamble from the 1998 Agreement on the Use of Water and Energy Resources of the Syr Darya Basin: “Guided by sincere spirits of good-neighborliness and cooperation”).

188. See SANDS, *supra* note 180, at 241–42. According to the famous Trail Smelter arbitral decision, “Under the principles of international law . . . no state has the right to use or permit the use of territory in such a manner as to cause injury by fumes in or to the territory of another of the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.” Trail Smelter (U.S. v. Can.), 3 R.I.A.A. 1905, 1965 (Mar. 11, 1941).

189. Article 74 of the U.N. Charter recognizes non-environmental interests within the concept of good neighborliness:

Members of the United Nations also agree that their policy in respect of the territories to which this Chapter applies, no less than in respect of their metropolitan areas, must be based on the general principle of good-neighborliness, due account being taken of the interests and well-being of the rest of the world, in social, economic, and commercial matters.

U.N. Charter art. 74. Along the same line, the Resolution of the UN General Assembly of 14 December 1979 on Development and Strengthening of Good Neighborliness between States recognizes “new dimensions” to good neighborliness, given “great changes of a political, economic and social nature.” G.A. Res. 34/99, U.N. Doc. A/RES/34/99, ¶ 4 (Dec. 14, 1979), <http://www.un.org/documents/ga/res/34/a34res99.pdf>.

190. Fields et al., *supra* note 84.

191. See DANAE AZARIA, TREATIES ON TRANSIT OF ENERGY VIA PIPELINES AND COUNTERMEASURES 232 (2015) (“[I]f individuals are deprived of sufficient heating, water, lighting, sanitation, and medical assistance or the use of medical equipment in hospitals or at home due to interruptions of electricity, oil, and gas, there may be loss of life, or individuals may be subject to inhuman treatment or their health may be put at risk.”).

transit countries to take these economic and, more importantly, social consequences into account when deciding whether to reduce energy flows or interrupt energy supply to other nations. Indeed, according to Resolution 2849 of the UN General Assembly, states must “[r]espect fully the exercise of permanent sovereignty over natural resources, as well as the right of each country to exploit its own resources in accordance with its own priorities and needs *and in such a manner as to avoid producing harmful effects on other countries.*”¹⁹²

The obligation to avoid harm due to energy supply interruptions is stronger for states located in close geographic proximity to one another. According to the Resolution of the UN General Assembly of 14 December 1979 on Development and Strengthening of Good Neighborliness between States, the “geographic proximity” of neighboring states creates “particularly favorable” opportunities for cooperation.¹⁹³ In contrast to exports taking place on the international energy markets, energy exchanges through network infrastructure generate a specific relationship of dependency.¹⁹⁴ Exporting and importing countries are therefore most directly affected by the interruption of energy supply or reduction of transit flows through this infrastructure. The particularly high interdependency and proximity of Central Asian countries in the energy and water sectors hence calls for a higher degree of care.

C. Duty to Cooperate in Good Faith

Similar to states’ obligation to avoid harm, the duty to cooperate—and negotiate—in good faith to settle inter-state disputes is a principle of international law.¹⁹⁵ It is of particular relevance to energy, water, and environmental protection,¹⁹⁶ as highlighted by the following declarations.

192. G.A. Res. 2849 (XXVI), U.N. Doc. A.RES/2849, art. 4(a) (Dec. 20, 1971) (emphasis added).

193. G.A. Res. 34/99, *supra* note 189, ¶ 4.

194. See AZARIA, *supra* note 191, at 114 (arguing that “the main feature of transit (and transportation) of energy via pipelines is physical interdependence”).

195. See U.N. Charter art. 1, ¶ 3; see, e.g., Pierre-Marie Dupuy, *The Place and Role of Unilateralism in Contemporary International Law*, 11 EUROPEAN J. INT’L L. 19, 22 (2000). Although Delbrück argues that a general obligation to cooperate does not exist under international law, he recognizes that there is a duty for states to cooperate in good faith in order to settle inter-state disputes. Delbrück, *supra* note 41, at 12, 15.

196. See SANDS, *supra* note 180, at 250 (“[T]he obligation to co-operate is affirmed in virtually all international environmental agreements of bilateral and regional application and global instruments.”); see also PATRICIA BIRNIE ET AL., INTERNATIONAL LAW AND THE ENVIRONMENT 175–76 (3d ed. 2009); Peter Sand, *Principle 27: Cooperation in a Spirit of Global Partnership, in THE RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT – A COMMENTARY* 617–18 (Jorge Vinuales ed., 2015).

According to Principle 7 of the 1978 United Nations Environment Programme (UNEP) Draft Principles of Conduct for the Guidance of States in the Conservation and Harmonious Exploitation of Natural Resources Shared by Two or More States, “Exchange of information, notification, consultation and other forms of cooperation regarding shared natural resources are carried out on the basis of the principle of good faith and in the spirit of good neighbourliness.”¹⁹⁷ In the same vein, Principle 24 of the Stockholm Declaration on Human Environment provides that “[i]nternational matters concerning the protection and improvement of the environment should be handled in a cooperative spirit by all countries, big or small, on an equal footing.”¹⁹⁸ According to Principle 27 of the Rio Declaration, “States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.”¹⁹⁹

In addition to notification and sharing of information,²⁰⁰ the duty to cooperate under international law requires consultation, negotiation, and participation rights in certain decisionmaking.²⁰¹ Although states are bound by an obligation to negotiate agreements in good faith, states are not required to subordinate the exercise of their sovereign rights in favor of con-

197. Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States princ. 7, May 19, 1978, *reprinted in* 17 I.L.M. 1097 (1978); *see also* SANDS, *supra* note 180, at 250.

198. U.N. Conference on the Human Environment, *Declaration of the United Nations Conference on the Human Environment*, princs. 6, 7, 15, 18, 24, U.N. Doc. A/CONF.48/14/Rev.1 (June 16, 1972), *reprinted in* 11 I.L.M. 1416.

199. U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, princ. 27, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I), annex I (Aug. 12, 1992), *reprinted in* 31 I.L.M. 874 [hereinafter Rio Declaration].

200. Different international treaties establish an obligation for states to provide information on activities conducted on their territory that can seriously affect neighboring states. *See* United Nations Convention on the Law of the Sea art. 198, Dec. 10, 1982, 1833 U.N.T.S. 397; Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal art. 13, Mar. 22, 1989, 1673 U.N.T.S. 126.

201. *See* Philippe Sands, *Environmental Protection in the Twenty-First Century: Sustainable Development and International Law*, in ENVIRONMENTAL LAW, THE ECONOMY AND SUSTAINABLE DEVELOPMENT 369, 374 (Richard Revesz et al. eds., 2004). According to the ICJ in *Pulp Mills on the River Uruguay*, “the obligation to notify is intended to create the conditions for successful co-operation between the parties . . . [T]he obligation to notify is therefore an essential part of the process leading the parties to consult in order to assess the risks of the plan and to negotiate possible changes which may eliminate those risks or minimize their effects.” (Arg. v. Uru.), Judgment, 2010 I.C.J. Rep. 18, ¶¶ 113, 115 (Apr. 20).

cluding such an agreement.²⁰² According to the tribunal in the *Lac Lanoux* case,

the reality of the obligations thus undertaken is incontestable and sanctions can be applied in the event, for example, of an unjustified breaking off of the discussions, abnormal delay, disregard of the agreed procedures, systematic refusals to take into consideration adverse proposals or interests, and, more generally, in cases of violation of the rules of good faith.²⁰³

Good faith, as a principle of international law,²⁰⁴ is important for water and energy cooperation in Central Asia because it relates directly to the central weaknesses of state relations in this sector: limited trust regarding the reciprocal implementation of regional agreements and the absence of any real attempt to make concessions to accommodate the interests of the other parties. As mentioned in Part II, *supra*, cooperation between Uzbekistan, Tajikistan, and Kyrgyzstan in the electricity and water sector is at a historically low point—with Uzbekistan reiterating its opposition to the development of large hydropower projects in Kyrgyzstan and Tajikistan and the latter nations insisting on their right to develop their potential in hydro resources.

Although “not in itself a source of obligation where none would otherwise exist,”²⁰⁵ the principle of good faith is crucial in the Central Asian context because it requires from states a certain balance in the exercise of their rights. In case of conflict on the exercise of their respective rights, states must, according to the International Court of Justice (ICJ) in the 1974 *Fisheries Jurisdiction* case, “conduct their negotiations on the basis that each must in good faith pay reasonable regard to the legal rights of the other.”²⁰⁶ Moreover, although states are not under a strict obligation to reach agreement, they must consider modifications to their positions in

202. Lake Lanoux Arbitration (Fr. v. Spain), 24 I.L.R. 101, 128 (Perm. Ct. Arb. 1957).

203. *Id.* (citing Tacna-Arica Question (Chile v. Peru), 2 R.I.A.A. 921 (1925); Railway Traffic Between Lithuania and Poland, Advisory Opinion, 1931 P.C.I.J. (ser. A/B) No. 42, at 108 (Oct. 15)).

204. See, e.g., Land and Maritime Boundary between Cameroon and Nigeria, Preliminary Objections, 1998 I.C.J. Rep. 275, ¶ 38 (June 11).

205. Border and Transborder Armed Actions (Nicar. v. Hond.), Judgment, 1988 I.C.J. Rep. 69, ¶ 94 (Dec. 20).

206. Fisheries Jurisdiction (F.R.G. v. Ice.), Judgment, 1974 I.C.J. Rep. 175, ¶ 69 (July 25). On the requirement of “equitable balancing” of transboundary environmental risk, see also BIRNIE ET AL., *supra* note 196, at 180–81.

view of achieving a compromise.²⁰⁷ According to the ICJ in the North Sea Continental Shelf case, the parties to a dispute are

under an obligation to enter into negotiations with a view to arriving at an agreement and not merely to go through a formal process of negotiation. . . . [T]hey are under an obligation so to conduct themselves that the negotiations are meaningful, which will not be the case when either of them insists upon its own position without contemplating any modification of it.²⁰⁸

In the *Gabčíkovo-Nagymaros* case concerning the negative transboundary impact of a hydropower plant project, the ICJ ruled that states (Hungary and Slovakia) “must negotiate in good faith in the light of the prevailing situation, and must take all necessary measures to ensure the achievement of the objectives of the Treaty (governing the project) in accordance with such modalities as they may agree upon.”²⁰⁹ Following this approach, states have an obligation under international law to carry out cooperative acts “in good faith and with a view to achieving mutual benefits.”²¹⁰

The high political sensitivity of hydropower projects in Central Asia and threat of armed conflict surrounding Tajikistan’s proposed Rogun project²¹¹ may also trigger the application of Article 33 of the UN Charter.²¹² This provision establishes the obligation for states to seek a solution to international disputes by negotiation and other peaceful means, including disputes about the utilization of transboundary water resources that compromise international peace and security.²¹³ In Central Asia, peaceful coexistence and positive cooperation in the water and energy sectors are interrelated. With looming climate change and increasing scarcity of water

207. See North Sea Continental Shelf Cases (F.R.G. v. Den.; F.R.G. v. Neth.), Judgment, 1969 I.C.J. Rep. 47, ¶¶ 85–87 (Feb. 20).

208. *Id.* ¶ 85.

209. Gabčíkovo-Nagymaros Project (Hung. v. Slov.), 1997 I.C.J. Rep. 41, ¶ 155 (Sept. 25).

210. LEB, *supra* note 17, at 109.

211. ICG, *Central Asia*, *supra* note 31, at 3.

212. U.N. Charter art. 33.

213. LEB, *supra* note 17, at 147; see, also McCaffrey, *supra* note 42, at 433 (providing an overview of disputes over shared water resources that threatened, and in some cases even breached, international peace and security); Gabriel Eckstein, *Water Scarcity, Conflict, and Security in a Climate Change World: Challenges and Opportunities for International Law and Policy*, 27 *WIS. INT’L L.J.* 409 (2010). More generally, it must be noted that according to Principle 25 of the Rio Declaration on Environment and Development, “Peace, development and environmental protection are interdependent and indivisible.” Rio Declaration, *supra* note 199, at princ. 25.

resources, not working together in the management of water and energy resources will increase the probability of conflicts regarding the availability of these resources.²¹⁴

IV. COOPERATION UNDER INTERNATIONAL WATER, CLIMATE, AND ENERGY LAW

International law imposes on the Central Asian states a duty to cooperate in good faith so as to minimize the harm and risk of conflict that unilateral decisions regarding energy and water supply could generate in the region. However, the duties to avoid harm and to cooperate in good faith are broad requirements that must be further defined in their application to the challenges characterizing the transboundary management of water and energy resources. International water, climate, and energy law recognize the importance of interstate cooperation and establish more specific mechanisms to facilitate joint actions in their respective fields.

This Part critically examines how the cooperation mechanisms under international water, climate, and energy law could help the Central Asian countries in addressing the obstacles to water and energy cooperation in the region.²¹⁵ The following analysis focuses on the legal nature of these sector-specific cooperation requirements and questions the extent to which these legal disciplines relate to each other in a mutually reinforcing way. As introduced above,²¹⁶ synergies are needed to achieve water, energy, and climate security in the most effective way.

This study of international water, climate, and energy law is not limited to the definition of a duty of cooperation *stricto sensu*. It covers a broad range of cooperation mechanisms, including river basin management schemes, energy trade, transit and investment, and carbon finance. As will be argued, these mechanisms can play a role in facilitating the integrated management of transboundary resources in Central Asia by addressing the existing obstacles of lack of trust, transit restrictions, and non-enforcement of agreements.²¹⁷

214. According to Mukhammadiev, *supra* note 31, at 246, “A failure to take all relevant factors affecting the evolution of water relations in the basin into account will certainly contribute to regional insecurity and increase the risk of raising potential conflicts over water among the Central Asian states.” More generally, on the increased risks of water disputes in a context of climate change, see CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES, GUIDANCE ON WATER AND ADAPTATION TO CLIMATE CHANGE, U.N. Doc. ECE/MP.WAT/30, U.N. Sales No. 09.II.E.14 (2009), www.unece.org/index.php?id=11658.

215. See *supra* Part II.

216. See *supra* Introduction.

217. See *supra* Part II.

A. Transboundary Resources Management Under International Water Law

1. The Principle: Cooperation for Optimal Water Utilization

International water law provides guidance on how the general duty to cooperate can—and in certain cases must—be operationalized in relation to integrated water and energy management in Central Asia. The principle of cooperation is reflected in the UN Watercourses Convention²¹⁸ and the United Nations Economic Commission for Europe (UNECE) Water Convention,²¹⁹ the two foundational treaties in the field of transboundary water management.

“Affirming the importance of international cooperation and good-neighborliness in this field,”²²⁰ the UN Watercourses Convention imposes an “obligation not to cause significant harm”²²¹ in utilizing an international watercourse and a “general obligation to cooperate”²²² in the management of transboundary water resources.²²³ Recognizing that “cooperation among riparian States on transboundary watercourses and international lakes contributes to peace and security and to sustainable water management, and is to everyone’s benefit,”²²⁴ the UNECE Water Convention requires riparian

218. U.N. Watercourses Convention, *supra* note 13.

219. Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 1936 U.N.T.S. 269 (entered into force Oct. 6, 1996) [hereinafter Water Convention].

220. U.N. Watercourses Convention, *supra* note 13, at pmbl.

221. *Id.* at art. 7.

222. *Id.* at art. 8.

223. LEB, *supra* note 17, at 80. It must be noted that, in practice, water cooperation cannot be regarded separately from the duty to avoid harm given the interdependency between the riparian states. Interpreting the Statute of the River Uruguay, Arg.-Uru., Feb. 26, 1975, 1295 U.N.T.S. 340 (1982), the ICJ considered in *Pulp Mills on the River Uruguay* that “it is by co-operating that the States concerned can jointly manage the risks of damage to the environment that might be created by the plans initiated by one or other of them, so as to prevent the damage in question.” *Pulp Mills on the River Uruguay (Arg. v. Uru.)*, Judgment, 2010 I.C.J. Rep. 18, ¶ 77 (Apr. 20). In the same vein, Herbert Smith argued,

The first principle is that every river system is naturally an indivisible physical unit, and that as such it should be so developed as to render the greatest possible service to the whole human community which it serves, whether or not that community is divided into two or more political jurisdictions. It is the positive duty of every government concerned to cooperate to the extent of its power in promoting this development

McCaffrey, *supra* note 42, at 466 (quoting HERBERT SMITH, *THE ECONOMIC USES OF INTERNATIONAL RIVERS* 150–51 (1931)).

224. Meeting of the Parties to the Convention on Environmental Impact Assessment in a Transboundary Context, *Report of the Meeting of the Parties on its Sixth Session, Decision VI/3*

states to enter into bilateral or multilateral agreements “in order to define their mutual relations and conduct regarding the prevention, control and reduction of transboundary impact.”²²⁵ The Contracting Parties to the UNECE Water Convention “shall take all appropriate measures to prevent, control and reduce any transboundary impact”—and in particular ensure ecologically sound, reasonable, and equitable water use by taking into account the transboundary nature of the shared water resources.²²⁶

All lower riparian countries in the Amu Darya and Syr Darya river basins—Kazakhstan, Uzbekistan, and Turkmenistan—have ratified the UNECE Water Convention.²²⁷ Among the Central Asian states, only Uzbekistan ratified the UN Watercourses Convention.²²⁸ Despite limited participation in Central Asia, the UN Watercourses Convention is of great relevance for the transboundary management of water and energy resources in the region²²⁹ because its most fundamental obligations reflect customary norms.²³⁰ An additional value of the UN Watercourses Convention is that it

on *Accession by non-U.N. Economic Council for Europe Countries*, at 4, U.N. Doc. ECE/MP.WAT/37/Add.2, IV/1 (Sept. 19, 2013), http://www.unece.org/fileadmin/DAM/env/water/mop_6_Rome/Official_documents/ECE_MP.WAT_37_Add.2_ENG.PDF.

225. Water Convention, *supra* note 219, at art. 9, ¶ 1.

226. *Id.* at art. 4, ¶¶ 1–2.

227. *Ratification Status of the Water Convention*, UNITED NATIONS TREATY COLLECTION, <http://www.unece.org/env/water/status/legal1.html> (last visited Dec. 19, 2015) (follow link for “Parties and Signatories to the Water Convention”). On the contribution of the UNECE Water Convention to water cooperation in Central Asia, see Econ. Comm’n for Eur., *Strengthening Water Management and Transboundary Water Cooperation in Central Asia: The Role of UNECE Environmental Conventions*, U.N. Doc. ECE/MP.WAT/35 (2011), http://www.unece.org/fileadmin/DAM/env/water/publications/documents/Water_Management_En.pdf.

228. Uzbekistan acceded to the U.N. Watercourses Convention on September 4, 2007. *Ratification Status of the Water Convention*, *supra* note 227. See generally Alistair Rieu-Clarke & Alexander López, *Why Have States Joined the UN Watercourses Convention?*, in *THE U.N. WATERCOURSES CONVENTION IN FORCE: STRENGTHENING INTERNATIONAL LAW FOR TRANSBOUNDARY WATER MANAGEMENT* 36–45 (Flavia Rocha Loures & Alistair Rieu-Clarke eds., 2013) (providing an analysis of the rationale behind states’ ratification—and lack of ratification—of the U.N. Watercourses Convention).

229. On the relevance of the U.N. Watercourses Convention for water management in Central Asia, see Ziganshina, *supra* note 125, at 177–222 and Dinara Ziganshina, UNESCO Ctr. for Water Law, Policy & Sci. & World Wildlife Fund, *The Role and Relevance of the U.N. Watercourses Convention to the Countries of Central Asia and Afghanistan in the Aral Sea Basin* (2011).

230. According to McCaffrey, *supra* note 42, at 376, “it seems clear that the most important elements of the Convention—equitable utilization, prevention of harm, prior notification, protection of ecosystems—are, in large measure, codifications of norms that either exist or, in the case of ecosystem protection, are at least emerging.” See also Gabčíkovo-Nagymaros Project (Hung. v. Slov.), 1997 I.C.J. Rep. 41, ¶¶ 85, 155 (Sept. 25); Flavia Rocha Loures et al., *The Authority and Function of the UN Watercourses Convention*, in *THE UN WATERCOURSES CONVENTION IN FORCE: STRENGTHENING INTERNATIONAL LAW FOR TRANSBOUNDARY WATER MANAGEMENT* 49, 52–53 (Flavia Rocha Loures & Alistair Rieu-Clarke eds., 2013);

can act as a “legal roadmap” for negotiations of regional water and water-energy management agreements.²³¹

According to the UN Watercourses Convention, cooperation between watercourse states can only be meaningful if it takes place on the basis of “sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of an international watercourse.”²³² The mutual benefits of cooperation on the utilization of shared water resources relate to the “community of interests” that characterizes international watercourses and water basins.²³³ Because of this community of interests, cooperation should be directed at achieving the “maximum possible benefits for all watercourse States and achieving the greatest possible satisfaction of all their needs, while minimizing the detriment, or unmet needs of each.”²³⁴ This implies a duty to utilize transboundary waters in an “equitable and reasonable” way,²³⁵ by considering the legitimate interests of other watercourse states²³⁶ and taking all appropriate measures to avoid significant harm to other watercourse states.²³⁷ Equitable and reasonable utilization of transboundary water resources, among others, depends on “the availability of alternatives, of comparable value, to a particular planned or existing use.”²³⁸

Stephen McCaffrey, *The Contribution of the U.N. Convention on the Law of the Non-Navigational Uses of International Watercourses*, 1 INT'L J. GLOBAL ENVTL. ISSUES 250, 259 (2001).

231. LAURENCE BOISSON DE CHAZOURNES, FRESH WATER IN INTERNATIONAL LAW 27–28, 65 (2013).

232. U.N. Watercourses Convention, *supra* note 13, at art. 8, ¶ 1.

233. See Territorial Jurisdiction of the International Commission of the River Oder (U.K., Czech Solvk., Den., Fr., Ger., & Swed./Pol.), 1929 P.C.I.J. (ser. A) No. 23, at 27 (explaining the notion of “community of interests” of riparian states); Gabčíkovo-Nagymaros Project, 1997 I.C.J. Rep. ¶ 85.

234. *Report of the International Law Commission on the Work of its Forty-Sixth Session*, 49 U.N. GAOR Supp. No. 10, at 89, 97, U.N. Doc. A/49/10 (1994), reprinted in [1994] 2 Y.B. INT'L L. COMM'N 89, 97, U.N. Doc. A/CN.4/SER.A/1994/Add.1 (Part 2) [hereinafter *Report of the International Law Commission*].

235. See U.N. Watercourses Convention, *supra* note 13, at arts. 5–6; see also Water Convention, *supra* note 219, at art. 2, ¶ 2; McCAFFREY, *supra* note 42, at 384–85; IBRAHIM KAYA, EQUITABLE UTILIZATION: THE LAW OF NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES 81 (2003); EDITH BROWN WEISS, INTERNATIONAL LAW FOR A WATER-SCARCE WORLD 25 (2013) (explaining the customary international law nature of this principle).

236. See Lake Lanoux Arbitration (Fr. v. Spain), 24 I.L.R. 101, 116 (Perm. Ct. Arb. 1957).

237. U.N. Watercourses Convention, *supra* note 13, at art. 7; see McCAFFREY, *supra* note 42, at 431–36 (discussing the threshold at which harm “becomes wrongful under general international law”).

238. U.N. Watercourses Convention, *supra* note 13, at art. 6, ¶ 1.

2. Putting the Principle to the Test: Integrated Water-Energy Cooperation in Central Asia

International principles of transboundary water management²³⁹ apply principally to the upper riparian countries but are not limited to such states. Depending on the particular geographic conditions characterizing river basins, the lower riparian countries can also play a role in the mitigation of harm and the achievement of community interests in the river basin.²⁴⁰

Applied to Central Asia, the cooperation principle under international water law relates to the interests of both lower and upper riparian countries. On the one hand, international water law protects the legitimate interests of Kazakhstan, Uzbekistan, and Turkmenistan regarding access to water—a particularly important issue in the context of the planned construction of the Rogun and Kambarata hydropower plants. On the other hand, international water law provides a strong legal basis to stimulate direct Kazakh, Uzbek, and Turkmen participation in securing the supply of energy during the winter to compensate Tajikistan and Kyrgyzstan for reduced hydropower generation.

Although Kazakhstan, Uzbekistan, and Turkmenistan do not have the right to veto the planned hydropower plants, Kyrgyzstan and Tajikistan must take their downstream water interests into account when developing these hydropower projects. Moreover, Kyrgyzstan and Tajikistan must take all necessary measures to prevent, eliminate, and mitigate “significant harm” to the lower riparian states. The planned large hydropower projects in Tajikistan and Kyrgyzstan are most likely to meet the threshold of “significant harm” under international water law. As explained above, the Environmental and Social Impact Assessment of the controversial 3,200 megawatt Rogun project in Tajikistan highlighted the “very serious consequences” that this hydropower plant could have on the lower riparian countries in case of maximization of winter energy generation.²⁴¹

Tajikistan, with the support of the World Bank, conducted consultations with all riparian countries to assess the impact of the project on the lower riparian countries.²⁴² The World Bank positively assessed the economic feasibility and environmental impact of the project, provided there

239. See McCaffrey, *supra* note 42, at 437–45 (describing the “required standard of conduct” in the field of transboundary water management).

240. The U.N. Watercourses Convention itself does not make any distinction between upstream and downstream countries—but geography makes certain rules more pertinent for upstream and downstream states in practice. *See id.* at 412–13.

241. See Pöyry Energy Ltd., *supra* note 38, at 304, 309.

242. World Bank, *The Final Reports Related to the Proposed Rogun HPP*, TAJIKISTAN (Nov. 3, 2015, 5:24 PM), <http://www.worldbank.org/en/country/tajikistan/brief/final-reports-related-to-the-proposed-rogun-hpp>; *see also* World Bank, *supra* note 36.

were adequate guarantees to avoid maximization of winter hydropower production.²⁴³ However, Uzbekistan continues to oppose the implementation of the Rogun project based on the control that it could give to Tajikistan on water flows to the lower riparian countries.²⁴⁴

Blocking Uzbekistan's, Kazakhstan's, or Turkmenistan's access to water—or threatening to block this access—for purely political, geopolitical, or commercial purposes would constitute a breach of international water law. Harm to downstream interests from the operation of Rogun and Kambarata would violate the UN Watercourses Convention and the UNECE Water Convention unless Tajikistan and Kyrgyzstan ensure “equitable and reasonable utilization” of upstream water resources and take “all appropriate measures” to prevent, eliminate, or mitigate this harm.²⁴⁵ Using or abusing control over upstream reservoirs to influence the price of hydropower sales or the conditions of fossil fuel purchases does not qualify as a reasonable utilization of an international watercourse. This behavior would contradict the “required standard of conduct”²⁴⁶ (“due diligence”)²⁴⁷ in the field of transboundary water management, and thus amount to a breach of these international agreements.

Based on the criteria of the UN Watercourses Convention, maximizing winter energy production could be an equitable and reasonable utilization of transboundary water resources in the absence of “alternatives, of comparable value.”²⁴⁸ Thermal energy is an alternative to hydropower but requires the availability of fossil fuels. Tajikistan and Kyrgyzstan have limited access to domestic sources of fossil fuels. The supply of fossil fuels and thermal energy from non-Central Asian countries is complicated by the competition for resources in the region (e.g., from China, India, and Pakistan) and internationally, resulting in higher costs. Uzbekistan, Kazakhstan, and Turkmen-

243. See World Bank, *supra* note 36, at 16 (concluding that the Rogun project “could be built and operated at the Rogun site within international safety norms [and] recommend[ing] mitigation and monitoring measures to manage the environmental and social impacts, particularly regarding resettlement and potential changes in downstream hydrology”).

244. It must be noted that Uzbekistan contests the independence and objectivity of the World Bank's assessment based on the fact that the study was commissioned by Tajikistan. *Id.* at 7.

245. U.N. Watercourses Convention, *supra* note 13, at art. 31, provides an exception to the obligation to share information for national defense and security matters. However, this exception is unlikely to apply to the control over water resources as “weapon.”

246. See McCaffrey, *supra* note 42, at 437–45.

247. See *Pulp Mills on the River Uruguay (Arg. v. Uru.)*, Judgment, 2010 I.C.J. Rep. 18, ¶ 197 (Apr. 20) (on the obligation to “act with due diligence” (with “a certain level of vigilance”) in respect to the utilization of transboundary water resources); see also Leslie-Anne Duvic-Paoli & Jorge Vinales, *Principle 2 – Prevention*, in *THE RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT – A COMMENTARY* 128, 134 (Jorge Vinales ed., 2015).

248. U.N. Watercourses Convention, *supra* note 13, at art. 6, ¶ g.

istan are endowed with considerable fossil fuel reserves in direct geographic proximity to Tajikistan and Kyrgyzstan. Taking into account the historic interdependence between the lower and upper riparian countries and existing interconnections, the reasonableness of winter hydropower production largely depends on energy supply from the lower riparian countries.²⁴⁹ According to Stanislav Zhukov, head of the Center for Energy Studies in the Institute of World Economy and International Relations at the Russian Academy of Sciences, “Central Asian gas trade can be described as ‘forced’, inasmuch as a range of economic and infrastructure interdependencies make the central Asian republics ‘brothers in gas.’”²⁵⁰ The capacity of Tajikistan and Kyrgyzstan to prevent harm on the lower riparian countries²⁵¹ is thus related to the extent to which the latter nations are ready to provide access, on reasonable terms, to their fossil energy.

On this basis, the lower riparian countries have a responsibility to facilitate the reasonable and equitable utilization of water resources in Tajikistan and Kyrgyzstan. By guaranteeing adequate supplies of thermal energy at affordable prices, the lower riparian countries contribute to the availability of alternative modes of energy production to winter hydropower generation, *de facto* securing their downstream water interests. *A contrario*, by failing to secure winter energy supplies to the upper riparian countries, the lower riparian countries contribute to justifying the reasonable and equitable nature of winter hydropower generation. The extent to which the upper and lower riparian countries are able to successfully cooperate on the supply of winter energy supplies thus influences the application of the principles of “no harm” and “equitable and reasonable utilization” in Central Asia.²⁵²

249. See, e.g., Khamidov, *supra* note 38, at 29; McKinney, *supra* note 38, at 205; Pöyry Energy Ltd., *supra* note 38, at 321.

250. Stanislav Zhukov, *Uzbekistan: A Domestically Oriented Gas Producer, in RUSSIAN AND CIS GAS MARKETS AND THEIR MARKET ON EUROPE* 370 (Simon Pirani ed., 2009).

251. According to McCaffrey, *supra* note 42, at 444–45,

[F]or the “no-harm” obligation to be breached . . . significant harm must result in one state from activities in another state; the latter must not only have failed to prevent the harm by its conduct but must also have been capable of preventing it by different conduct; and the conduct or use resulting in the harm must be unreasonable (inequitable) under the circumstances.

Id.

252. According to McCaffrey, the principle of “no harm” “seems to impose most of the obligations on the upstream state and give most of the rights to the one downstream.” *Id.* at 410. However, at the same time, McCaffrey recognizes the importance of the specific circumstances governing a potentially harmful and unreasonable use of water resources. As demonstrated, in Central Asia, the particular geologic, physical (infrastructure) and historic characteristics of water-energy cooperation in Central Asia call for context-specific interpretation of the international water law principles of “no harm” and “equitable and reasonable utilization.” *Id.* at 436.

A similar conclusion applies regarding cooperation to achieve the “mutual benefits” of transboundary water management. As recognized by the regional agreements governing water and energy cooperation in Central Asia, the transboundary management of water and energy resources presents “mutual benefits” for the watercourse states in the region.²⁵³ The duty to cooperate under international water law enjoins the Central Asian countries to work together to achieve these benefits, such as by pursuing negotiations in good faith on the management of these resources. Hydropower generation to cover the Kyrgyz and Tajik winter energy deficit contradicts the “optimal utilization and adequate protection”²⁵⁴ of water resources in the Syr Darya and Amu Darya River Basins. In this context, Uzbekistan, together with the other lower riparian countries, must facilitate thermal energy supply to Kyrgyzstan and Tajikistan in order to minimize water spillage in the winter. Uzbekistan’s unfounded opposition to energy exchanges with the upper riparian countries, including its refusal to authorize transit of Turkmen power, is therefore at odds with international water law.

Under international water law, the deep-rooted political tensions between Uzbekistan, Tajikistan, and Kyrgyzstan cannot justify the absence of cooperation between these states regarding the management of joint water resources, and thus the absence of cooperation regarding electricity supply. Indeed, according to Article 30 of the UN Watercourses Convention, states shall fulfill their obligations of cooperation—including consultations and negotiations—even “in cases where there are serious obstacles to direct contacts between watercourse states,” such as those due to the breakdown of diplomatic relations.²⁵⁵ Indirect cooperation procedures should be developed to overcome the barriers to direct relations. Uzbekistan, as a Contracting Party to the UN Watercourses Convention, can therefore not invoke the breakdown of diplomatic relations with Tajikistan and its opposition to the Rogun project to refuse engaging in good faith negotiations on efficient water-energy management in the region.

International water law also provides support to Kyrgyzstan’s and Tajikistan’s claim that the lower riparian countries should participate in covering the costs of winter water storage, including lost opportunities to produce electricity from hydropower during the winter. This principle is particularly important given Uzbekistan’s opposition to the idea of compen-

253. See *supra* Section I.C on Mutual Benefits of Cooperation.

254. U.N. Watercourses Convention, *supra* note 13, at art. 8, ¶ 1; see also *Report of the International Law Commission*, *supra* note 234, at 97 (highlighting the necessity to cooperate to achieve the “maximum possible benefits for all watercourse states”).

255. LEB, *supra* note 17, at 80.

sating upper riparian countries for the provision of water storage services. According to Article 25, paragraph 2 of the UN Watercourses Convention, “Unless otherwise agreed, watercourse States shall participate on an equitable basis in the construction and maintenance or defrayal of the costs of such regulation works as they may have agreed to undertake.”²⁵⁶ Many water cooperation agreements around the world recognize the commitment by lower riparian countries to remunerate upper riparian countries for the use of water storage facilities.²⁵⁷ In Central Asia, Kazakhstan agreed to compensate Kyrgyzstan for the water storage services in the rivers Chu and Talas.²⁵⁸ Storage services can be remunerated on the basis of financial payments or through alternative barter contributions, such as the supply of fossil energy in the winter to compensate for lower hydropower generation. Interestingly, Uzbekistan, which opposes the payment of water storage services to Kyrgyzstan, remunerates Turkmenistan for pump stations located in Turkmenistan but used for water supply to Uzbekistan.²⁵⁹ The lower riparian countries, including Uzbekistan, have therefore in principle accepted the idea of compensating costs relating to the provision of water storage and pumping services by neighboring countries.

3. Proposing Transboundary Water-Energy Management Mechanisms

The post-Soviet experience highlights the challenges of barter-based cooperation regarding water and energy management in Central Asia. To avoid the obstacles relating to the seasonality of energy and water exchanges, the Central Asian countries can opt to provide water storage services and sell thermal or fossil energy under commercial terms. The feasibility of this approach depends on the parties’ readiness to agree on economically reasonable conditions governing these exchanges and on their

256. U.N. Watercourses Convention, *supra* note 13, at art. 25, ¶ 2. On the financing of maintenance works of hydro reservoirs and dams, see Boisson de Chazournes, *supra* note 72.

257. For an overview of water agreements containing compensation clauses, see DINARET AL., *supra* note 116, at 155.

258. The Chu and Talas Rivers Agreement, *supra* note 187, at art. 3, provides that “The Owning Party that possess water management facilities of intergovernmental status has the right to compensation from the Utilizing Party that uses these facilities. The compensation shall cover necessary expenses to ensure their reliable and safe operation.” See also DINARET AL., *supra* note 116, at 155; World Bank, *supra* note 36, at 19; Mukhammadiev, *supra* note 31, at 238.

259. Annual payments cover land rent and the cost of operation and maintenance of the pump stations. See Kai Wegerich, *Water Resources in Central Asia: Regional Stability or Patchy Make-up?*, 30 CENT. ASIAN SURV. 275, 282 (2011); Kai Wegerich, *Hydro-hegemony in the Amu Darya Basin*, 10 WATERPOLY (SUPPLEMENT 2) 71 (2008).

ability to secure access to foreign currency.²⁶⁰ Independent from the level of difficulty in reaching such agreements, international water law enjoins the Central Asian countries to negotiate in good faith in order to overcome the obstacles to optimal utilization of water resources in the region.²⁶¹

To facilitate the negotiation of mutually acceptable conditions of energy supply, the Central Asian countries could delegate to a joint commission or body of international experts the task of providing independent advice on the most sensitive questions of water and energy cooperation,²⁶² including the price, volume, and reliability of thermal energy and hydropower. The creation of a common institutional framework governing water, hydropower, and thermal energy exchanges could advance regional integration and the “optimal utilization” of shared water resources, within the meaning of international water law.²⁶³

According to the UN Watercourses Convention, “Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism.”²⁶⁴ International experience, such as that of the Senegal River, demonstrates how the creation of independent bodies and a common institutional framework can overcome state-centric decisionmaking,²⁶⁵ contribute to equitable and rational water use,²⁶⁶ give confidence about the management of transboundary water sources, and consequently avoid conflicts.²⁶⁷ The riparian states of the Senegal River established one of the most elaborate and progressive regimes of interstate cooperation in the water and energy sectors.²⁶⁸ This regime included a com-

260. Fields et al., *supra* note 84.

261. See U.N. Watercourses Convention, *supra* note 13, at art. 8, ¶ 1 (“Watercourse States shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of an international watercourse.”).

262. Mechanisms used to facilitate multilateral consultations and negotiations regarding the management of shared water resource could include either a joint commission or dialogue platforms. See LEB, *supra* note 17, at 140.

263. U.N. Watercourses Convention, *supra* note 13, at art. 8, ¶ 1.

264. *Id.* at art. 24, ¶ 1.

265. “Institutionalization of cooperation can overcome State-centric water management practices.” LEB, *supra* note 17, at 177. Given the close link between water and electricity supply in Central Asia, the same reasoning can be applied to the management of electricity resources.

266. Brazil and Paraguay established joint (independent) mechanisms in order to improve the management of the Paraná River. See Treaty of Itaipú annex A, Braz.-Para., Apr. 26, 1973, 923 U.N.T.S. 92.

267. See, BROWN WEISS, *supra* note 235, at 158–59.

268. LEB, *supra* note 17, at 67; see also Abdul S. Ba & Makane M. Mbengue, *Le Régime Juridique du Fleuve Sénégal: Aspects du Droit des Cours d'eau dans un Context Régional* [The

mon institutional and regulatory regime governing the management of transboundary water flows, joint investments in hydropower generation, and a harmonized framework of tariffs and market rules for the supply of energy in the region.²⁶⁹ The Senegal River provides a unique example of transboundary water-energy management that gradually achieved mutual benefits that characterize cooperation in this sector while avoiding the harm that would result from state-centered water-energy policies.

Following this approach, joint investments in Central Asian electricity supply infrastructure—particularly in hydropower plants—could be a further step in the direction of reinforced water-energy cooperation. By jointly investing in new hydropower projects in Kyrgyzstan and Tajikistan, the lower riparian countries would participate in the management of these projects. Kazakhstan has in the past proposed to participate in the Kambarata project in Kyrgyzstan, on the condition of having a Kazakh representative in the board of the Toktogul hydropower plan.²⁷⁰ Kyrgyzstan allegedly rejected this proposal, invoking the fact that “it does not wish to surrender its sovereign control over its facilities.”²⁷¹ The Kyrgyz position can be explained by the strategic regional importance of the Toktogul plant and its relevance to the national economy.²⁷² In Tajikistan, the Law on the Privatization of State Property excludes the Nurek and Rogun sites from privatization.²⁷³ However, refusing to cooperate in joint electricity investments constrains solutions to the downstream risks associated with the construction of reservoirs and hydropower plants. As examined above, the obligation to negotiate in good faith under international water law requires states to compromise on their position to the benefit of equitable and reasonable use of transboundary water resources.

Senegal River Legal Regime: Aspects of Waterway Law in a Regional Context], 12 AFR. Y.B. INT'L L. 345 (2004); Margaret Vick, *The Senegal River Basin: A Retrospective and Prospective Look at the Legal Regime*, 46 NAT. RESOURCES J. 211 (2006); Makane M. Mbengue, *The Senegal River Legal Regime and Its Contribution to the Development of the Law of International Watercourses in Africa*, in INTERNATIONAL LAW AND FRESHWATER: THE MULTIPLE CHALLENGES 217 (Laurence Boisson de Chazournes et al. eds., 2013).

269. See *Energie – Les choix stratégiques de l'OMVS* [Energy – The strategic choices of the OMVS], ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SENEGAL [ORGANIZATION FOR THE DEVELOPMENT OF THE SENEGAL RIVER], <http://www.portail-omvs.org/domaines-d'intervention/secteurs-cle/energie-choix-strategiques-lomvs> (last visited February 20, 2016).

270. MOLLER, *supra* note 161, at 25; ICG, *Central Asia*, *supra* note 31, at 9; see also McKinney, *supra* note 38, at 216.

271. Mukhammadiev, *supra* note 31, at 238.

272. *Id.*

273. Zakon Respubliki Tajikistana O Privatizatsii gosudarstvennoi sobstvennosti [Law of the Republic of Tajikistan on the Privatization of State Property], No. 464, art. 9, May 17, 1997.

The experience accumulated with the joint management of the Senegal River demonstrates that the participation of all riparian countries in hydro-power projects can be an efficient mechanism to enhance trust in the operation of this potentially harmful infrastructure.²⁷⁴ Downstream-upstream cooperation in the development of hydropower projects can align the interests of the riparian countries regarding the management of shared water resources. It can also set the foundations for the creation of a common water-energy policy in the region.²⁷⁵ Joint electricity investments—e.g., in the form of a consortium between Uzbek, Kazakh, Kyrgyz, and Tajik companies—could thus contribute to mitigating the political sensitivity of hydropower generation in Central Asia. Strategic partners in the region, in particular Russia²⁷⁶ and China,²⁷⁷ could participate as co-investors or act as external guarantors to the implementation of the agreements governing the operation of these investments. Although this involvement could be geopolitically sensitive from the perspective of the Central Asian states concerned, the participation of external actors would contribute to the foreign policy objective of political stability in Central Asia pursued by Russia and China in Central Asia.²⁷⁸ In its assessment of the Rogun project, the World Bank confirms the benefits of an international consortium approach to the implementation of the contentious hydropower project, including the improved management of downstream risks and the financing of the particularly high cost of the project.²⁷⁹

However, the creation of a hydropower consortium in Central Asia and common operation of the transboundary water infrastructure will not be sufficient to address the water-energy challenges in the region, in particular taking into account the seasonality of hydropower generation. As demonstrated by the failure of the post-Soviet water-energy exchange system, the

274. Makane M. Mbengue, *A Model for African Shared Water Resources: The Senegal River Legal System*, 23 REV. EUR. COMMUNITY & INT'L ENVTL. L. 59, 61 (2014); see Kabine Komara, *Setting the Example of Cooperative Management of Transboundary Water Resources in West Africa*, WORLD BANK BLOGS (June 27, 2014), <http://blogs.worldbank.org/nasikiliza/setting-example-co-operative-management-transboundary-water-resources-west-africa>.

275. See *Energie*, *supra* note 269.

276. Russia—via the state-owned company Inter RAO UES—already participates in the Kambarata project. See Chris Rickelton, *Kyrgyzstan: Bishkek's Hydropower Hopes Hinge on Putin's Commitment*, EURASIANET.ORG (Apr. 25, 2013), <http://www.eurasianet.org/node/66883>.

277. For a slightly outdated but still relevant analysis of China's investment policy in hydropower generation in Central Asia, see Sebastien Peyrouse, *The Hydroelectric Sector in Central Asia and the Growing Role of China*, 5 CHINA & EURASIA F.Q. 131 (2007).

278. See, e.g., MARLENE LAURELLE & SEBASTIEN PEYROUSE, *THE CHINESE QUESTION IN CENTRAL ASIA: DOMESTIC ORDER, SOCIAL CHANGE AND THE CHINESE FACTOR* (2012).

279. World Bank, *supra* note 36, at 20; see also Arifov & Arifova, *supra* note 34; Ismailov, *supra* note 34.

upper riparian countries must have clear guarantees regarding the supply of compensatory winter energy. Joint investments in hydropower generation will contribute to the protection of the lower riparian countries against the risk of maximizing winter energy production, but this alone will not protect the upper riparian countries against the risks of reduction or interruption of thermal energy and fossil fuel supplies. External commitment structures must be established to ensure the enforcement of winter supply arrangements. The following sections examine whether international climate law and international energy law provide guidance regarding the achievement of these integration objectives.

B. *Transboundary Resources Management Under International Climate Law*

Cooperative resource management in Central Asia may also be framed as a climate change mitigation and adaptation measure within the scope of international climate law. As introduced above, by importing the Kyrgyz and Tajik summer hydropower surplus, Uzbekistan and Kazakhstan can reduce part of their thermal energy production and ultimately mitigate the carbon emissions associated with this power generation. At the same time, by optimizing the utilization of shared water resources, transboundary water and energy management can improve the ability of the Central Asian countries to respond and adapt to climate change impacts on future water availability.

In line with the general principle of cooperation in international environmental law,²⁸⁰ the international climate change regime promotes cooperation between states as a fundamental element of climate change mitigation and adaptation.²⁸¹ Given the global nature of climate change, the preamble to the UNFCCC—to which all Central Asian countries are contracting parties—calls “for the widest possible cooperation by all countries.”²⁸² In the same vein, the 2010 Cancun agreements affirm that “[a]ll Parties should cooperate, consistent with the principles of the Convention, through effective mechanisms, enhanced means and appropriate enabling environments.”²⁸³ More recently, at the 2015 Paris Conference of the Parties to the UNFCCC, states agreed to “uphold and promote regional and international

280. See BIRNIE ET AL., *supra* note 196, at 175–76; SANDS, *supra* note 180, at 250.

281. See ILA Res. 2/2014, *supra* note 20, at draft art. 8.

282. UNFCCC, *supra* note 12, at pmb., 1771 U.N.T.S. at 166.

283. See Conference of the Parties, UNFCCC, *Report of the Conference of the Parties on its Sixteenth Session, held in Cancun 29 Nov. to 10 Dec., 2010*, Decision 1/CP.16, U.N. Doc. FCCC/CP/2010/7/Add.1, at 3 (Mar. 15, 2011), <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf> [hereinafter Cancun Agreements].

cooperation in order to mobilize stronger and more ambitious climate action by all Parties and non-Party stakeholders” and requested “Parties to strengthen regional cooperation on adaptation where appropriate.”²⁸⁴ According to the ILA Legal Principles Relating to Climate Change, “States shall cooperate with each other and competent international organizations in good faith to address climate change and its adverse effects.”²⁸⁵ The principle of good faith, according to the ILA Legal Principles Relating to Climate Change, commits States in negotiations on further legal instruments on climate change and its adverse effects not to insist on their own position without contemplating any modification of it. A State shall faithfully execute unilateral statements declarative of that State’s climate policies and measures that generate legitimate expectations among other States.²⁸⁶

Taking into account the climate change mitigation and adaptation dimension of water-energy exchanges in Central Asia, the principle of good faith cooperation requires states in the region to contemplate changes to their position on water-energy management. Following the ILA Legal Principles Relating to Climate Change, the principle of climate cooperation would also support the faithful implementation by the Central Asian countries of their regional water-energy commitments. However, the following limitations affect the direct and practical relevance of the principle of cooperation under international climate law.

First, cooperation, within the meaning of international climate law, primarily aims at the general objective of climate change mitigation as a “common concern of mankind.”²⁸⁷ The priority is to develop “an equitable and effective climate change regime that is applicable to all, and to work towards the multilaterally agreed global goal.”²⁸⁸ The focus on this global, multilateral objective has, to an important extent, taken attention away from the necessity to offer international legal answers to regional barriers to cooperative climate change mitigation and adaptation.²⁸⁹

Second, the UNFCCC subjects its general cooperation requirement to an important limitation: cooperation shall take into account the “specific national and regional development priorities, objectives and circumstances”

284. Conference of the Parties, UNFCCC, *Adoption of the Paris Agreement: Proposal by the President*, U.N. Doc. FCCC/CP/2015/L.9/Rev.1, at pmb., ¶ 45 (Dec. 12, 2015), <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>.

285. ILA Res. 2/2014, *supra* note 20, at draft art. 8, ¶ 1.

286. *Id.* at draft art. 9, ¶ 2.

287. UNFCCC, *supra* note 12, at pmb., 1771 U.N.T.S. at 165.

288. ILA Res. 2/2014, *supra* note 20, at draft art. 5, ¶ 2.

289. Most of the literature in the field of international climate law focuses on the development of a global regime for climate change mitigation and adaptation. *See, e.g.*, SCHELE, *supra* note 157.

of the contracting parties.²⁹⁰ National energy policies, such as energy independence policies, could thus justify states' refusal to cooperate in the implementation of joint climate change mitigation and adaptation projects.

Third, international climate law falls short of directly imposing on developing countries (i.e., non-Annex I countries to the UNFCCC) specific obligations to cooperate with other developing countries to achieve greenhouse gas emission reductions. Following the principle of "common but differentiated responsibilities," international climate law primarily regulates cooperation between developed (Annex I) and developing (non-Annex I) countries.²⁹¹ The main objective of this cooperation is to help developed countries to reach their quantified emission reduction obligations and to implement mitigation and adaptation actions in developing countries.²⁹² According to Rajamani, "developing countries are responsible for co-operating in efforts to mitigate climate change"—but only in order to help developed countries to reach their emission reduction targets.²⁹³

The Central Asian countries are not included in Annex I to the UNFCCC and thus qualify as developing countries within the meaning of international climate law.²⁹⁴ In the absence of cooperation requirements between developing countries themselves, the Central Asian countries have no obligations under international climate law to achieve the "low hanging fruit" characterizing carbon reductions in a jointly managed electricity sector. Kazakhstan is one exception. Although it remains a non-Annex I country, Kazakhstan committed to quantified emission reduction obligations under Annex B of the Kyoto Protocol,²⁹⁵ making it eligible to participate in

290. Kyoto Protocol to the U.N. Framework Convention on Climate Change art. 10, Dec. 11, 1997, 2303 U.N.T.S. 162, annex A (entered into force Feb. 16, 2005) [hereinafter Kyoto Protocol]; UNFCCC, *supra* note 11, at art. 4, ¶ 1, at 1771 U.N.T.S. at 170; Rocha Loures et al., *supra* note 22, at 210, 219 ("[T]he UNFCCC fails to provide for a duty on basin states to cooperate in the prevention and minimization of transboundary harm potentially arising from activities they undertake to mitigate or adapt to climate change. . . . [T]he UNFCCC does not offer specific guidance on transboundary cooperation at the basin level.").

291. See Lavanya Rajamani, *The Principle of Common but Differentiated Responsibility and the Balance of Commitments Under the Climate Regime*, 9 REV. EUR. COMMUNITY & INT'L ENVIL. L. 120, 125–26 (2000).

292. See Kyoto Protocol, *supra* note 290, at art. 12, ¶ 2 ("The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments . . .").

293. Rajamani, *supra* note 291, at 126–27.

294. See UNFCCC, *supra* note 12, 1771 U.N.T.S. at 166, 171.

295. Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, *Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol*

the cooperation mechanisms of the Kyoto Protocol.²⁹⁶ On this basis, Kazakhstan could achieve part of its emission reduction commitment by replacing thermal energy production in the summer with imports of hydropower from Kyrgyzstan and/or Tajikistan. Following the principle of cooperation under international climate law, the upper riparian countries would have a central role to play in helping Kazakhstan reach these emission reduction targets. However, the upper riparian countries could easily derogate from this requirement by invoking national development priorities, including the development of hydropower generation for national energy independence purposes. The objective of national energy independence that characterizes the energy and water strategies in Central Asia can justify the absence of climate cooperation—effectively undermining the contribution of international climate law to transboundary water and energy management in the area.

The largely non-binding formulation of the cooperation provisions of the UNFCCC and the Kyoto Protocol limits the potential contributions of international climate law to water and energy cooperation in Central Asia. Achieving cooperation will be largely left to the discretionary choices of the Central Asian states.

However, this does not mean that international climate law has no role to play in addressing the carbon costs resulting from the current state-centric approach to Central Asian electricity supply. Instead of imposing mandatory cooperative requirements, the international climate regime—in particular carbon finance—provides possible incentives to the Central Asian states to reduce carbon emissions in the electricity sector.²⁹⁷ The new carbon finance mechanisms being developed under the international climate regime provide an alternative source of financial support for transboundary water and energy management in Central Asia.

In particular, developing countries can receive financial assistance from developed countries to facilitate the implementation of “Nationally Appropriate Mitigation Actions”—i.e., voluntary actions (policies or projects) taken by developing countries to reduce carbon emissions to levels below

*on its eighth session, held in Doha from 26 November to 8 December 2012, Decision 1/CMP.8: Amendment to the Kyoto Protocol Pursuant to its Article 3, Paragraph 9 (the Doha Amendment), annex 1, U.N. Doc. FCCC/KP/CMP/2012/13/Add.1, at 7 (Feb. 28, 2013) (where Kazakhstan committed to a quantified emission reduction target of 95 percent by 2020 over base year 1990); see also Karl Upston-Hooper & Jeff Swartz, *Emissions Trading in Kazakhstan: Challenges and Issues of Developing an Emissions Trading Scheme*, 7 CARBON & CLIMATE L. REV. 71 (2013).*

296. See Kyoto Protocol, *supra* note 290, at art. 12, 2303 U.N.T.S. annex A at 224.

297. World Bank, *supra* note 36, at 29, 52.

those of “business as usual.”²⁹⁸ Moreover, developing countries can benefit from financing from developed countries for the implementation of “National Adaptation Plans.”²⁹⁹ Although, as the name indicates, Nationally Appropriate Mitigation Actions and National Adaptation Plans are nationally-centered,³⁰⁰ these mechanisms have a broad scope of application and do not exclude regional programs and policies.³⁰¹ States have flexibility in determining the emission reduction and adaptation actions that they propose under the international climate regime. According to the UNFCCC Secretariat, policy-based Nationally Appropriate Mitigation Actions can include the development of new energy security strategies that aim at reducing greenhouse gas emissions in relation to business as usual.³⁰² On this basis, regional agreements in Central Asia³⁰³ aimed at partly replacing thermal energy generation in the summer with imports of hydropower could be eligible for international support.

An essential requirement for the provision of international financial support to Nationally Appropriate Mitigation Actions is the independent Measurement, Reporting, and Verification of greenhouse gas emission reductions resulting from these programs.³⁰⁴ The Measurement, Reporting, and Verification of carbon reductions generated by joint electricity management projects in Central Asia has the potential to address one of the main obstacles affecting electricity cooperation in the region: the lack of compliance by the Central Asian countries with their legal and contractual obligations. Through independent Measurement, Reporting, and Verification, the implementation of regional electricity cooperation programs under the in-

298. Cancun Agreements, *supra* note 283, at item 52; SØREN E. LÜTKEN ET AL., UNFCCC ET AL., GUIDANCE FOR NAMA DESIGN: BUILDING ON COUNTRY EXPERIENCES 3 (2013), [http://unfccc.int/files/cooperation_support/nama/application/pdf/guidance_for_nama_design_\(2013\)_final.pdf](http://unfccc.int/files/cooperation_support/nama/application/pdf/guidance_for_nama_design_(2013)_final.pdf).

299. Cancun Agreements, *supra* note 283, at items 15–16.

300. *Id.* at item 30 (inviting Parties “to facilitate and enhance national and regional adaptation actions, in a manner that is *country-driven*”) (emphasis added).

301. On the broad nature of the NAMA concept, see LÜTKEN ET AL., *supra* note 298, at 3–12, observing that “[t]he emerging NAMA regime makes it the prerogative of each developing country to interpret the NAMA Concept.” *But see* Rocha Loures et al., *supra* note 22, at 209 (arguing that “NAPAs focus on local level adaptation strategies, rather than on long-term policy reform and enforcement mechanisms, even less so on joint or coordinated inter-state action”).

302. LÜTKEN ET AL., *supra* note 298, at 9.

303. It must be noted that despite the opportunities that this scheme offers in terms of access to international carbon finance, the Central Asian countries have not been very active in the development of Nationally Appropriate Mitigation Actions. *See* UNFCCC, *Country Pages*, PUBLIC NAMA, http://unfccc.int/cooperation_support/nama/items/7476.php (last visited Feb. 7, 2016).

304. *See* LÜTKEN ET AL., *supra* note 298, at 3–12.

ternational climate architecture would contribute to improving the mutual trust between the parties. It would reinforce the credibility of the regulatory framework governing regional electricity exchanges by providing an external and neutral assessment of the parties' compliance with their regional electricity supply obligations.

C. *Transboundary Resources Management Under International Energy Law*

Improving energy cooperation between states by building upon mutual benefits and complementarities in the energy sector is the main objective pursued by the Energy Charter Treaty (ECT)³⁰⁵—to which all Central Asian countries are Contracting Parties. By participating in the ECT, states provide guarantees of protection to foreign investments and commit to respect energy trade and transit disciplines. This, according to the Energy Charter Secretariat, “represents a strategic opportunity for a state to signal its readiness for improved international cooperation; stimulate investor interest in its energy sector; and build confidence and energy security with and among its neighbouring states.”³⁰⁶ Cooperation under the ECT could, in this view, be considered as a way for states to contribute to improved relations with neighboring states. Moreover, by adhering to the ECT Protocol on Energy Efficiency and Related Environmental Matters, the Contracting Parties have committed to cooperate in the development and implementation of energy efficiency policies.³⁰⁷

Although the ECT was initially directed at facilitating “mutually beneficial cooperation between East and West”³⁰⁸ (i.e., between the former Soviet Union and the European Union), it has evolved as a multilateral treaty that applies equally to all its Contracting Parties, including to energy relations between “Eastern” (i.e. former Soviet Union) states themselves.³⁰⁹ Taking into account that all Central Asian countries have committed to the trade, transit, investment, and energy-efficiency disciplines of the ECT, it is necessary to examine to what extent these disciplines could contribute to

305. ECT, *supra* note 14, at art. 2 (“establish[ing] a legal framework in order to promote long-term co-operation in the energy field, based on complementarities and mutual benefits”).

306. See ENERGY CHARTER SECRETARIAT, *THE ENERGY CHARTER TREATY AND RELATED DOCUMENTS – A LEGAL FRAMEWORK FOR INTERNATIONAL ENERGY COOPERATION* 19–20 (2004).

307. *Id.* at 16.

308. *Id.* at 13.

309. On the importance of a truly reciprocal application of the ECT to energy investments, see Anatole Boute, *The Protection of Russian Investments in the EU Energy Market: A Case in Support of Russia's Ratification of the Energy Charter Treaty*, 29 ICSID FOREIGN INV. L.J. 525 (2014).

addressing the obstacles preventing water and energy cooperation in the region.

1. Energy Efficiency Cooperation

The objective of the ECT Protocol on Energy Efficiency is to “provide a framework for the development of cooperative and coordinated action” in the field of energy efficiency.³¹⁰ In principle, this Protocol is relevant to regional cooperation in Central Asia, given the potential for energy and carbon savings that the joint management of water and energy represents in the region. Article 3, paragraph 1 of the Protocol requires a certain degree of cooperation between the Central Asian countries in this field: “Contracting Parties shall co-operate and, as appropriate, assist each other in developing and implementing energy efficiency policies, laws and regulations.”³¹¹

However, in practice, the broad formulation of this provision strongly reduces its binding nature and thus its relevance in addressing the obstacles hindering electricity cooperation in Central Asia. According to Bradbrook, “[a]dherence by states contracting parties [to the energy efficiency disciplines of the ECT] can be regarded as purely discretionary, and the obligations are no more than hortatory.”³¹²

2. Cooperation in Energy Trade and Transit

In contrast to the Protocol on Energy Efficiency, the trade and transit provisions of the ECT impose binding cooperation requirements on its Contracting Parties. In accordance with the ECT energy transit regime, Contracting Parties shall encourage relevant entities to cooperate in modernizing and developing transit infrastructure and facilitating the interconnection of transit networks.³¹³ Moreover, Contracting Parties shall encourage cooperation in designing measures to mitigate the effects of interruptions in the supply of energy.³¹⁴ More specifically, the ECT requires Contracting Parties to “take the necessary measures to facilitate Transit of

310. See Energy Charter Treaty Protocol on Energy Efficiency and Related Environmental Matters, pmbl, art. 1, ¶ 1, Apr. 16, 1998, [http://www.italaw.com/sites/default/files/laws/italaw6101\(34\).pdf](http://www.italaw.com/sites/default/files/laws/italaw6101(34).pdf).

311. *Id.* at art. 3, ¶ 1; see also *id.* annex, at 121 (establishing an “Illustrative and Non-Exhaustive List of Possible Areas of Cooperation Pursuant to Article 9 of the Protocol on Energy Efficiency”).

312. Bradbrook, *supra* note 24, at 254.

313. ECT, *supra* note 14, at art. 7, ¶ 2.

314. See generally Andrey A. Konoplyanik, *Gas Transit in Eurasia: Transit Issues Between Russia and the European Union and the Role of the Energy Charter*, 27 J. ENERGY & NAT. RESOURCES L. 445 (2009).

Energy Materials and Products consistent with the principle of freedom of transit.”³¹⁵

The ECT does not define the principle of freedom of transit. This definition can be found in the General Agreement on Trade and Tariffs (GATT), taking into account that the trade regime of the ECT is based on the rules and practice of the World Trade Organization (WTO).³¹⁶ Only Kyrgyzstan and Tajikistan are part of the WTO, but all Central Asian countries have committed to the ECT and its transit disciplines.³¹⁷ According to the GATT, there “shall be freedom of transit through the territory of each contracting party, via the routes most convenient for international transit, for traffic in transit to or from the territory of other contracting parties.”³¹⁸ Moreover, the GATT imposes an obligation of non-discrimination on the basis of origin, destination or ownership of goods, and means of transportation.³¹⁹ The ECT repeats the prohibition of discriminatory measures and adds a positive component (“to facilitate transit”) to this passive requirement (prohibitions) under GATT.³²⁰ The ECT also regulates transit in case of dispute on the terms and conditions of energy flows through the territory of a third state.³²¹ The main principle of the ECT transit dispute resolution procedure is that the parties must avoid the interruption or reduction of transit.³²²

The requirement “to facilitate transit”³²³ and refrain from interruption or reduction of transit flows in situations of dispute is of great relevance for water-energy-climate cooperation in Central Asia. In principle, it provides strong legal arguments to Tajikistan and Kyrgyzstan against Uzbekistan’s reluctance to authorize the transit of Turkmen electricity through its net-

315. ECT, *supra* note 14, at art. 7, ¶ 1.

316. The ECT’s trade provisions were initially based on the trading regime of the General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194, https://www.wto.org/english/docs_e/legal_e/gatt47_e.pdf [hereinafter GATT]. See ENERGY CHARTER SECRETARIAT, *supra* note 306, at 15. For a recent and in-depth study of energy transit under the ECT, the GATT and general international law, see Vitaliy Pogoretskyy, *Freedom of Transit and the Principles of Effective Right and Economic Cooperation: Can Systematic Interpretation of GATT Article V Promote Energy Security and the Development of an International Gas Market?*, 16 J. INT’L ECON. L. 313 (2013).

317. ECT Participating Countries, 2080 U.N.T.S. 96–97.

318. GATT, *supra* note 316, at art. V, § 2, 55 U.N.T.S. at 210.

319. *Id.*

320. On different interpretations of ECT article 7, paragraph 1, see Lothar Ehring & Yulia Selivanova, *Energy Transit, in REGULATION OF ENERGY IN INTERNATIONAL TRADE LAW – WTO, NAFTA AND ENERGY CHARTER 83–84* (Yulia Selivanova ed., 2012).

321. ECT, *supra* note 14, at art. 7, ¶ 6.

322. *See id.*

323. On this positive requirement, see Thomas Wälde & Andreas Gunst, *International Energy Trade and Access to Energy Networks*, 36 J. WORLD TRADE 191, 213 (2002).

work. As highlighted above, the transit of Turkmen power to the upper riparian countries could enable the latter nations to reduce the unsustainable use of hydropower plants for electricity production in the winter.

The fact that the ECT transit regime was not used in practice³²⁴ to address electricity transit disputes in Central Asia could be explained by the gaps affecting the ECT transit dispute resolution regime, such as the requirement to exhaust all other remedies before conciliation may start.³²⁵ Nevertheless, confronted with the persistent refusal of Uzbekistan to authorize transit flows from Turkmenistan to Kyrgyzstan and Tajikistan, this issue could be brought for resolution under the general state-to-state (i.e., not the specific transit) dispute resolution procedure of the ECT.³²⁶ Although this mechanism remains untested, it provides Kyrgyzstan and Tajikistan with a legal instrument to activate the international cooperation obligations of the ECT.

3. Energy Investment Law

Investment protection is the fourth pillar of the ECT. As argued by the Energy Charter Secretariat, the investment regime of the ECT “signal[s] [a state’s] readiness for improved international cooperation” by facilitating foreign investments from partner countries.³²⁷ According to institutional economic theory, international investment protection reduces regulatory risks and thereby stimulates the flow of capital and technology between countries, leading to reinforced international economic cooperation.³²⁸ Investment law enhances the credibility of regulatory frameworks and of

324. It must be noted that states in general—not just in Central Asia—have been reluctant to make use of the ECT transit dispute resolution mechanism. However, in contrast to Central Asia, in most other cases, the parties managed to find a political solution to the transit dispute. See AZARIA, *supra* note 191, at 4, 21, 134 (“[D]espite these widespread effects of interruptions of transit of energy via pipelines in violation of transit obligations, affected states are often silent about international law and international responsibility.”). Azaria does not provide an explanation for states’ reluctance to invoke the international responsibility of transit states for breaches of transit obligations. *Id.*

325. On the ECT transit dispute resolution procedure, see Ehring & Selivanova, *supra* note 320, at 91–95.

326. See ECT, *supra* note 14, at art. 27, 2080 U.N.T.S. at 106.

327. See ENERGY CHARTER SECRETARIAT, *supra* note 306, at 13.

328. See generally U.N. CONFERENCE ON TRADE AND DEVELOPMENT, THE ROLE OF INTERNATIONAL INVESTMENT AGREEMENTS IN ATTRACTING FOREIGN DIRECT INVESTMENT TO DEVELOPING COUNTRIES, U.N. Doc. UNCTAD/DIAE/IA/2009/5, U.N. Sales No. E.09.II.D.20 (2009); Jeswald Salacuse & Nicholas Sullivan, *Do BITs Really Work? An Evaluation of Bilateral Investment Treaties and their Grand Bargain*, 46 HARV. INT’L L.J. 67 (2005); Jennifer Tobin & Susan Rose-Ackerman, *Foreign Direct Investment and the Business Environment in Developing Countries: The Impact of Bilateral Investment Treaties* (Yale Law & Econ. Res. Paper No. 293, 2005), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=557121.

government commitments by protecting investors against illegitimate political interference with their investments.³²⁹ This function is particularly relevant for water-energy-climate cooperation in Central Asia: as introduced in Section II.A, *supra*, a major obstacle to cooperation in the region relates to the lack of enforcement by states of the agreements governing inter-state water and energy exchanges. Involving foreign investments in the construction and operation of export-oriented power plants could contribute to the implementation of the regional energy and water agreements in Central Asia.³³⁰

More specifically, the export of electricity to neighboring power markets can constitute an important part of the business case for new power plants in Central Asia. Exporting electricity can be a way for investors to mitigate the investment risk relating to the limited solvency of national electric utilities—entities that are currently exposed to high levels of debt and non-payment by domestic energy consumers.³³¹ “To ensure access to neighboring markets, foreign investors could require clear export and import guarantees from the countries concerned.”³³² In particular, foreign investors in power generation could conclude investment agreements with the host country where the investment is made.³³³ Moreover, the operators of hydropower plants could conclude long term Power Purchase Agreements (PPAs) with the importing states or with private parties in the importing states.³³⁴ Investors in thermal power plants could conclude long-term agreements for the supply of fossil energy to these installations. As highlighted by the *Petrobart* investment arbitration decision, energy contracts—not only energy infrastructure—are protected as “investments” under the investment regime of the ECT.³³⁵ In the *Energymynok* investment arbitration, the tribunal concluded that an Agreement on the Parallel Operation of Energy Systems “in itself can evidence an Investment” within the meaning of the ECT.³³⁶ Following this interpretation, a PPA between the operator of a

329. See RUDOLF DOLZER & CHRISTOPHE SCHREUER, *PRINCIPLES OF INTERNATIONAL INVESTMENT LAW* 119 (2012).

330. See Boute, *supra* note 82.

331. See Artur Kochnakyan et al., World Bank, *Tajikistan: Financial Assessment of Barki Tojik*, World Bank Rep. No. 83696 (Oct. 2013).

332. Boute, *supra* note 82, at 30–32.

333. *Id.*

334. *Id.* at 48.

335. *Petrobart Ltd. v. Kyrgyz Republic*, No. 126/2003, at 68–72 (Stockholm Chamber of Commerce, 2005) (recognizing that the sale of goods can qualify as an “investment” protected under international investment arbitration).

336. *State Enterprise ‘Energymynok’ (Ukr. v. The Republic of Mold.)*, No. SCC Arbitration V (2012/175), ¶ 81 (Stockholm Chamber of Commerce, 2015). The tribunal determined that the Agreement on the Parallel Operation of Energy Systems (APO) is

power plant and an importing state could be considered an “investment” in the territory of the importing state. Similarly, a PPA between the exporting state and a private company located in a third country could be considered an “investment” in the territory of the exporting state.

To ensure state compliance with the sensitive elements of water-energy exchanges, the investment agreements and PPAs must regulate as clearly as possible the volume, price, and time (seasonality and peak-base load) aspects governing the export of hydro and thermal power.³³⁷ Additionally, to overcome the energy transit barrier highlighted above, the agreements must cover non-discriminatory access to the interconnection capacity, nomination at the border, balancing requirements, and contribution to system frequency. Fossil fuel supply contracts between thermal capacity investors and lower riparian countries must establish a clear delivery regime for the transfer of fossil fuels.

Clear commitments on the regulatory and contractual regime governing energy exports and imports in Central Asia can be enforced through international arbitration.³³⁸ Depending on the harm caused to the investor, the breach of a contractual agreement entered into by a state can amount to a violation of the “umbrella clause” of the ECT provided that “[e]ach Contracting Party shall observe any obligations it has entered into with an Investor or an Investment of an Investor of any other Contracting Party.”³³⁹ Moreover, foreign investors can invoke the frustration of the “reasonable and legitimate expectations” that governed their investment decisions in the

an agreement relating to the transportation, distribution and supply of Energy Materials and Products by way of transmission and distribution grids (meeting the requirement in ECT Understandings IV (2)(iii)) The Energy Material/Product was transmitted/distributed in Moldova and added economic value to Moldova. That the APO was signed by Ministries, and that two state entities, NCC and Moldenergo (neither being party to the APO), were designated . . . to carry out the performance of the technical and operational functions under the APO, does not change the characterization of the APO. The APO confers to the Party/Ministry a right to undertake an economic activity concerning the transit of electricity in the host State; that activity, in the Tribunal’s view, constitutes an Investment according to the ECT.

Id. However, *in casu*, the Tribunal ruled that the claimant did not have a sufficient role in the economic activity carried out and therefore decided that it lacked jurisdiction over the case. *Id.*

337. See Fields et al., *supra* note 84, at 29; Erik J. Woodhouse, *The Obsolescing Bargain Redux? Foreign Investment in the Electric Power Sector in Developing Countries*, 38 N.Y.U. J. INT’L L. & POL. 121, 130 (2005–2006) (discussing the importance, and at the same time limits, of PPAs for investments in power production).

338. Boute, *supra* note 82, at 30–32.

339. ECT, *supra* note 14, at art. 10, ¶ 1.

export-oriented power plants.³⁴⁰ The right of foreign investors to “independently enforce the contractually agreed export-import regime could contribute to the de-politicization of regional electricity cooperation.”³⁴¹ Energy investment law—as an “externally supported commitment device”³⁴²—could help enforce energy and water supply commitments and so improve trust between the Central Asian countries.³⁴³

The conclusion of long-term PPAs with foreign partners and the protection of these agreements under investment law could indirectly contribute to improving the credibility of water management arrangements in the region. In particular, to honor long-term PPAs covering the output of hydropower plants in the summer, the upper riparian countries will have to

340. See Anatole Boute, *Challenging the Re-Regulation of Liberalized Electricity Prices Under Investment Arbitration*, 32 ENERGY L.J. 497, 519 (2011). For a discussion of the protection that international investment law and in particular the fair and equitable treatment standard offers to foreign investments in the electricity sector, see *id.* at 497–539. See generally Anatole Boute, *Combating Climate Change through Investment Arbitration*, 35 FORDHAM INT'L L.J. 613 (2012).

341. Boute, *supra* note 82, at 30–32.

342. Emma Aisbett, *Bilateral Investment Treaties and Foreign Direct Investment: Correlation Versus Causation 5* (Mar. 15, 2007) (unpublished manuscript) (on file with Munich University Library, Munich Personal RePEc Archive Paper No. 2255), http://mpr.ub.uni-muenchen.de/2255/1/MPRA_paper_2255.pdf.

343. This approach is not novel. The Loan Agreement between Uzbekistan and the Asian Development Bank for the financing of the Talimarjan power project stipulates that Uzbekistan “shall ensure that Uzbekenergo [the vertically integrated electricity supplier, also in charge of regulating the Uzbek electricity sector] enters into a sustainable power trade framework with neighboring countries, and exports and imports power based on sound commercial arrangements.” Loan Agreement (Special Operations) (Talimarjan Power Project) 19, Uzb.-Asian Dev. Bank, May 1, 2010, <http://www.adb.org/projects/documents/loan-agreement-talimarjan-power-project-between-republic-uzbekistan-and-asian-d-0>. In the same vein, the agreements between Russia and Kyrgyzstan governing the construction and exploitation of the Kamaratin GES-1 and the Verkhne-Naryn hydropower plants and the agreements between Russia and Tajikistan concerning the exploitation of the Sangtuda hydropower plant contain an explicit commitment by Kyrgyzstan and Tajikistan to guarantee the export of the electricity produced. These agreements identify the Russian investors (INTER RAO and Rushydro) that are tasked with the implementation of these projects—indirectly conferring rights to these companies. See *Soglashenie mezhdru Pravitel'stvom Rossiiskoi Federatsii i Pravitel'stvom Kirgizskoi Respubliki o Stroitel'stve i Ekspluatatsii Verkhne-Narynskogo kaskada gidroelektrostantsii* [Agreement Between the Government of the Russian Federation and the Government of the Kyrgyz Republic on the Construction and Operation of the Upper Naryn Cascade of Hydropower Plants], Sept. 20, 2012, <http://narynhydro.kg/soglashenie.html>; *Soglashenie mezhdru Pravitel'stvom Rossiiskoi Federatsii i Pravitel'stvom Kirgizskoi Respubliki o Stroitel'stve i Ekspluatatsii Kamaratinskoi GES-1* [Agreement Between the Government of the Russian Federation and the Government of the Kyrgyz Republic on the Construction of Kamarata-1], Feb. 3, 2009, http://www.conventions.ru/view_base.php?id=1425.

maintain the upstream reservoir at sufficient levels during the winter.³⁴⁴ Taking into account that PPAs in theory fall within the scope of application of investment treaties, private foreign investors could seek to enforce the implementation of this water and energy regime before investment arbitration.

V. POSITIVE REGIME INTERACTION AND INTEGRATED WATER-ENERGY-CLIMATE LAW

As illustrated by the case of Central Asia, the interrelated nature of water and energy security requires an integrated approach to the regulation of these sectors. However, the fields of international energy and water law have been developed and studied in isolation from each other. The international regulation of energy security, such as under the Energy Charter Treaty, does not recognize the negative impact that national energy independence policies can have on the sustainability of water management. Moreover, with the exception of hydropower generation, the international regulation of transboundary water utilization does not explicitly address states' concern for energy security. International climate law promotes more sustainable water uses—as a climate adaptation measure—and stimulates the development of more efficient energy production—as a climate mitigation measure. However, international climate law fails to recognize how energy and water uses relate to each other in the context of climate change mitigation and adaptation. The fragmented nature of the international regime governing water, energy, and climate security must be clearly understood in order to avoid regulatory choices in one field of law that would conflict with the objectives pursued by another field of law. The case of Central Asia highlights the threat that conflicting uses of energy and water resources represent for water-energy-climate security and even for peace in the region.

At the same time, the case of Central Asia illustrates the possible “productive friction between regimes”³⁴⁵ in international law. The general principles of international law—together with the specific disciplines of international water, energy, and climate law—can mutually reinforce each other in addressing the water-energy-climate security challenges of the twenty-first century.

Applied to Central Asia, the general principles of international law provide crucial guidance in resolving water and energy disputes in the region. Under the principle of sovereignty over natural resources, the upper ripa-

344. See Pöyry Energy Ltd., *supra* note 38, at 321–22.

345. Young, *supra* note 25, at 1.

riean countries cannot be prevented from developing their hydropower capacity.³⁴⁶ Similarly, the lower riparian countries cannot be forced to exploit and export their fossil resources to compensate the winter energy deficit of the upper riparian countries. However, the principle of sovereignty over natural resources is not absolute. According to the principle of good neighborliness,³⁴⁷ the upper riparian countries must take into account the interests of and avoid harm to the lower riparian countries. Similarly, the principle of good neighborliness requires the lower riparian countries to assist the upper riparian countries, or at least not deliberately harm their interests by blocking the transit of thermal power from third countries.

Taking into account the possibly disastrous consequences that could result from increased water scarcity in the context of climate change, the parties must cooperate in good faith to achieve water and energy security in a mutually reinforceable way. In practice, this means that Uzbekistan must be ready to compromise on its radical opposition to large hydropower projects and its refusal to facilitate fossil exchanges with the upper riparian countries. Moreover, the upper riparian countries must be ready to consider the possibility of implementing large hydropower projects in collaboration with the lower riparian countries or external strategic partners if this can contribute to avoiding the risk that maximization of winter hydropower generation represents for the lower riparian countries.

International water law reinforces these cooperation requirements by insisting on the “community of interests” and maximum benefits for the riparian states, in connection with the optimization of water use.³⁴⁸ These notions provide strong support for the regional management of water resources. As argued in this Article, the optimal utilization of water resources in Central Asia does not only depend on actions by the upper riparian countries in control of the transboundary water flows. The lower riparian countries also have a responsibility in ensuring the sustainable management of water resources. By securing supplies of thermal power or fossil energy to the upper riparian countries at affordable conditions, the lower riparian countries can help reduce the necessity of winter hydropower generation and therein contribute to the equitable and reasonable use of water in the region.

346. See LEB, *supra* note 17, at 142.

347. G.A. Res. 34/99, ¶ 4, U.N. Doc. A/RES/34/99 (Dec. 14, 1979), <http://www.un.org/documents/ga/res/34/a34res99.pdf>.

348. Territorial Jurisdiction of Int'l Comm'n of River Oder (U.K. v. Pol.), Judgment, 1929 P.C.I.J. (ser. A) No. 23, at 27 (Sept. 10); Gabčíkovo-Nagymaros Project (Hung. v. Slov.), 1997 I.C.J. Rep. 41, ¶ 85 (Sept. 25).

The principles of international water law remain relatively broad and thus require further specification and operationalization in regional water management agreements. Moreover, specific enforcement measures are crucial to ensuring compliance with the principles of international water law. In this respect, international experience in the management of shared water resources presents interesting examples of effective regional cooperation models. Although it would be unrealistic to advocate the transplant in Central Asia of the Senegal River approach—one of the most elaborate water cooperation regimes³⁴⁹—this experience illustrates the type of compromises (e.g., joint investments in hydropower) that the Central Asian countries could make in order to improve the management of the regional water and energy resources. However, even if fully transplanted in Central Asia, the Senegal River approach to regional water integration would not be sufficient to secure sustainable water management in the region. Additional mechanisms are needed to ensure the supply of energy from the lower to the upper riparian countries to compensate for water storage in the winter.

International climate and energy law can help enforce water-energy exchange mechanisms and thereby improve trust between the parties. In particular, the independent Measurement, Reporting, and Verification of regional emission reductions resulting from the joint management of water and energy resources could assist the countries in ensuring compliance with their respective commitments. Moreover, the protection of energy contracts (i.e., investment agreements, PPAs, and fossil fuel contracts) under the ECT could provide an external commitment guarantee by involving private investors in the regional cooperation framework.

In contrast to international water law, the formulation of the principle of cooperation under international energy and climate law provides very little support to the development of joint management mechanisms to overcome national-centered policies. The UNFCCC, for instance, explicitly subordinates regional cooperation to national development priorities—effectively justifying energy independence policies and thus undermining the transboundary management of resources. The national exception to cooperation under international energy and climate law differs from the focus on the “community of interests” and the optimization of shared resources under international water law. Following the development of international water law, international energy and climate law could be improved by integrating stronger cooperation requirements—in particular by regarding the transboundary and integrated management of resources.

349. LEB, *supra* note 17, at 67.

CONCLUSION

Despite the mutual benefits of cooperation in Central Asia and the official support that the states have given to this option in regional agreements, governments are reluctant to rely on their neighbors for their water and energy security. The strategic objective of national self-sufficiency imposes a high energy, social, economic, and environmental cost on the region. Political tensions—such as those relating to the construction of large hydro-power plants, the cost of energy and water services, and the general lack of trust between the parties—exacerbate the technical difficulties in developing a functioning framework for water-energy cooperation. External legal mechanisms are needed to overcome the current political obstacles to cooperation and guide the Central Asian parties in the development of transboundary management mechanisms.

Given the water-energy interdependence in the region, Central Asia provides a unique case study to assess the effectiveness of international law in contributing to the sustainable management of transboundary resources. An integrated analysis of the water-energy-climate nexus under international law highlights the diverging approaches to the regulation of transboundary cooperation in these distinct fields. Taking into account the necessity to achieve water and energy security in a mutually reinforceable way in the context of climate change, it is essential to ensure the consistency and complementarity of the international regimes governing these interrelated challenges.