THE RENEWABLE ENERGY COMMONS: GLOBAL PUBLIC GOODS, GOVERNANCE RISK, AND INTERNATIONAL ENERGY

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Introduction

For years, the great bane of international cooperation has been the much-scorned free rider. International public goods such as climate change mitigation, vaccination against disease, reduction in acid rain, and preservation of the ozone layer all require incentivizing states to participate in international institutions when the individually rational thing to do is remain on the sidelines. Lawyers, policymakers, and scholars have come up with a host of devices to deter free riding and encourage participation in global public goods. Issue linkages, trade sanctions, financial assistance, and minimum participation requirements are just some of the carrots and sticks that states use in international public goods institutions. And these efforts have frequently been successful. For example, the Montreal Protocol, which governs ozone-depleting substances and uses financial assistance for developing countries as a carrot coupled with the stick of trade sanctions against non-members, has near-universal membership and has been haled as the

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single most successful environmental agreement to date.[2] But as the end of 2012 draws near, the inability to conclude a successor agreement to the Kyoto Protocol is forcing commentators to rethink their approach to supplying global public goods. The traditional tools of international governance have proven inadequate to generate meaningful international cooperation on climate change mitigation. What, then, is the way forward?

I argue that the scholarly focus on increasing participation and deterring free riders has caused commentators to underestimate the ways in which institutional design can undermine the ability of international legal regimes to facilitate cooperation. International institutions can be designed in a number of ways that compound the risk of that international cooperation will fail, which I refer to as governance risk. In this brief article, I focus on two features of institutional design that are intended to encourage participation in public goods institutions, but can create the risk of gridlock and governance failure.

First, many public goods institutions are epistemic institutions. They establish processes for exchanging and evaluating information in an effort to reduce scientific uncertainty as a barrier to bargaining over substantive regulation among states with diverse epistemic and normative commitments. However, states and private actors do not invest in research on environmental harms behind a veil of ignorance. They frequently know the distributional consequences of regulating a particular activity; that is, they know which states (and domestic constituencies) stand to win and which to lose from governing a particular activity. Institutions that merge the knowledge-exchange and development process with the ability to negotiate and impose binding legal regulations

[2] Scott Barrett, Why Cooperate? The Incentive to Supply Global Public Goods 74 (2007) (quoting former UN Secretary General Kofi Annan).

thus run the risk that states that oppose the imposition of substantive regulations will use epistemic processes as a way to try to block the adoption of substantive regulation.

Second, governance risk can be systemic. Policies adopted in one institution can lead to governance failures or higher costs to cooperation in other institutions. Governance risk is systemic when institutions are linked in some way: institutionally, as when institutions have overlapping jurisdiction or competence; at the bargaining table, as when states hold cooperation in one institution hostage to extract concessions in an otherwise unrelated institution; or functionally, as when two otherwise unrelated institutions regulate different aspects of the same underlying activity. Systemic governance risk is an underappreciated negative externality of cooperation in the fragmented international legal system. For example, cooperation in an area such as energy security, with its focus on stable and cheap access to fossil fuel supplies, can crowd out cooperation on climate change, with its focus on raising the prices of carbon-intensive energy sources. States in one institution might also respond to the threat of interference from another institution by attempting to obstruct the other institution's mission, as members of OPEC have done during the climate change negotiations.

This Article proceeds in three parts. In Parts I and II, I briefly sketch a theory of institutional governance risk and systemic governance risk, respectively. Institutions organized around the production of public goods, such as climate change mitigation, are particularly prone to high degrees of governance risk. The institutional design choices that aim to increase participation and reduce free-riding in public goods institutions, such as creating negotiating bodies like the United Nations Framework Convention on Climate Change (UNFCCC) that encourage broad membership by extracting few upfront

commitments from states, can sometimes exacerbate governance risk by introducing epistemic and normative divisions among negotiators that can paralyze institutions. Systemic governance risk, for its part, is most frequently found among institutions that might appear unrelated, but in fact regulate different facets of the same underlying activity. Climate change institutions and energy institutions are a perfect example. Actions taken under the auspices of the International Energy Program (IEP) or the Organization of Petroleum Exporting Countries (OPEC) can make cooperation under the auspices of the UNFCCC costlier than it otherwise would have been.

Part III discusses several ways in which institutions might be designed to reduce these governance risks. In short, I argue that sometimes further fragmenting institutions by giving them very narrow mandates can reduce both institutional governance risk, the risk the institution itself fails, and systemic governance risk, the risk it causes other institutions to fail. I explore this argument in the context of a relatively new intergovernmental organization, the International Renewable Energy Agency (IRENA). IRENA mitigates its governance risk by divorcing epistemic issues from the ability to promulgate binding legal rules. IRENA's activities involve almost exclusively the development and dissemination of energy related to renewable energy, with little to no possibility of serving as a forum for the negotiation of legal obligations such as minimum renewable energy requirements for states. As such, IRENA's is an intergovernmental effort to create a "renewable energy commons" on which policymakers and investors can draw. At the same time, IRENA mitigates contribution to systemic governance risk by focusing on long-run trends among market actors that are largely ungoverned by existing international institutions. IRENA thus does not offer the promise of grand cooperation

held out by institutions such as the UNFCCC, but neither is it likely to founder on the cooperative challenges those institutions face. Instead, institutions such as IRENA, that mitigate the risks they pose to the interests of member states and other institutions, offer the realistic possibility of incremental cooperation on the provision of public goods.

I. Institutional Governance Risk

Analysis of cooperation in the production of public goods has tended to focus on deterring free-riding. International institutions that produce public goods (hereinafter "public goods institutions") are thus designed to incentivize states to participate, in hopes that participation will increase compliance with the institution's rules, and therefore contribution to the public good. In the next two Parts of this article, I identify two common techniques for encouraging states to contribute to public goods: the use of epistemic institutions and issue linkages. By epistemic institutions I mean international institutions that contain information-producing obligations aimed at facilitating cooperation by reducing scientific and market-related uncertainty. Issue linkage refers to a situation in which two or more issues are joined such that the resolution of one issue affects the resolution of the other. I argue that both these techniques for generating cooperation on public goods create governance risk. By governance risk I mean the risk that legal institutions and rule-making processes, and the substantive rules that emerge therefrom, are not optimal from the standpoint of mitigating underlying market or behavioral risks.[3] Governance risk comes in at least two forms, institutional governance

[3] The idea that governance failures, as opposed to market failures or state failures, create risks that should be studied in their own right, is drawn from the work of Bob Jessop. See Bob Jessop, The Rise of Governance and the Risk of Failure: the Case of Economic Devlepment, 50 Int'l Soc. Sci. J. 29 (1998). The concept of "governance risk" also features prominently in studies of corporate

risk and systemic governance risk. In this Part, I analyze the risks of gridlock flowing from epistemic institutions with broad participation, a form of institutional governance risk. In Part II, I analyze the systemic governance risks created by issue linkages.

Institutional governance risk refers to the possibility that a feature of an institution may make effective cooperation on achieving the institution's mission costlier and therefore increase the risk of governance failure. The intuition behind the notion of institutional governance risk is that when designing institutions,[4] states operate in an environment in which the effects of their institutional choices are not known with certainty.[5] Choices about broad versus narrow membership, procedural rules, the scope of the mandate and the authority given to an international organization all affect the likelihood that the institution will be successful in achieving its aims.[6] Although a review of all the ways in which the design of an institution can risk ineffective governance is

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governance, which incorporates considerations of the risks posed by individual companies' governance practices. For example, the RiskMetrics Group publishes "governance risk indicators," which are available at: www.riskmetrics.com/GRId-info. See Tom Baker & Sean J. Griffith, Predicting Corporate Governance Risk: Evidence from the Directors' & Officers' Liability Insurance Market, 74 U. Chi. L. Rev. 487 (2007).

[4] I use the term "institution" broadly to refer to both international organizations, including diplomatic conferences, and bodies of substantive laws such as treaties

[5] Cf. Barbara Koremenos, Loosening the Ties that Bind: A Learning Model of Agreement Flexibility, 55 Int'l Org. 289 (2001).

[6] In recent years, scholars working in international law and international relations have studied extensively the various design features of international agreements. See, e.g., Kenneth W. Abbott & Duncan Snidal, *Hard and Soft Law in International Governance*, 54 INT'L ORG. 421, 446–47 (2000); Andrew T. Guzman, The Design of International Agreements, 16 EUR. J. INT'L L. 579 (2005); Kal Raustiala, *Form and Substance in International Agreements*, 99 AM. J. INT'L L. 581 (2005). In so doing, they have both explained as a descriptive matter why international institutions look the way they do in particular circumstances and have also speculated about the desirability of alternative institutional designs. Commentators have, for example, worried that the fragmentation of international law might undermine or skew cooperation, *see, e.g.*, Eyal Benvenisti & George W. Downs, *The Empire's New Clothes: Political Economy and the Fragmentation of International Law*, 60 STAN. L. REV. 595 (2007), and thought about how international institutions can be designed to facilitate learning in the face of uncertainty. Koremenos, supra note 5. Scholars have also analyzed how states bargain for flexibility mechanisms in international institutions, such as exit and escape clauses, to insure against individuals risks. *See* Laurence R. Helfer, Exiting Treaties, 91 VA. L. REV. 1579, 1599–1601 (2005); Alan O. Sykes, *Protection as a 'Safeguard': A Positive Analysis of the GATT 'Escape Clause' with Normative Speculations*, 58 U. CHI. L. REV. 255, 279 (1991); Timothy Meyer, *Power, Exit Costs, and Renegotiation in International Law*, 51 Harv. Int'l L. J. 379 (2010).

beyond the scope of this paper,[7] I focus here on the relationship between membership decisions and epistemic issues arising from a lack of certainty about the underlying market failure in institutions organized around the production of public goods.

In short, I argue that public goods institutions strive for broad participation in order to discourage free-riding. Broad participation brings with it normative and epistemic divisions, however, that can block agreement on substantive cooperation. International agreements try to reduce these divisions by creating information-producing obligations aimed at reducing uncertainty about the regulated phenomenon. But states do not engage in information production without taking into account the distributional consequences of engaging in knowledge production that may lead to substantive regulation. When it is clear that a state stands to lose out from regulating a particular phenomenon, it may try to influence epistemic processes in order to reduce the likelihood of regulation.

Broadly speaking, the fruits of international cooperation can be divided into two classes: those benefits of cooperation that are excludable, and those that are not. Goods that are non-excludable, meaning that those states that do not contribute to the production of the good cannot be prevented from consuming it, are often referred to as "public goods." Goods that are excludable are referred to as "private goods" or "club goods."[8] Mitigating climate change is an example of a public good. The effects of climate change are felt globally. There is no way to prevent states from sharing in the benefits which

[7] In another work, I provide a more complete account of governance risk in international lawmaking. See Timothy Meyer, Governance Risk in International Energy, University of Georgia School of Law Research Paper Series (on file with author).

[8] In fact, public goods theory generally classifies cooperative goods both according to whether the good is excludable and whether the good is rivalrous. See Richard Cornes & Todd Sandler, THE THEORY OF EXTERNALITIES, PUBLIC GOODS, AND CLUB GOODS 3-12 (1996) (defining public and club goods). For my purposes, it is enough to focus on the excludability aspect of public goods.

would come from averting the catastrophic climate change that scientists predict will occur if global warming is not held to a two degrees Celsius increase.[9] Free trade, on the other hand, is often described as a club good.[10] A state can erect trade barriers that deny particular states access to its markets, and allowing one state access to one's markets does not preclude one from denying other states access.

Where the benefits of cooperation are non-excludable, states will often want institutions to have broad membership for at least two reasons. The first is that the greater the number of contributing states, the stronger the public good. Unfortunately, this goal is undermined by the logic of individual incentives. Public goods are subject to free riding, meaning that states do not fully capture the value of their investment in the public good and cannot be prevented from enjoying the benefits of the investment of others. States therefore have an incentive to withhold cooperation on a public good or to fail to comply with a legal obligation to contribute to one.[11] International institutions seek to overcome this incentive to free-ride in a variety of ways, including by expanding participation at the negotiation stage. The hope is that participation and engagement in negotiations, such as

[9] See Copenhagen Accord para. 2 ("We agree that deep cuts in global emissions are required according to science, and as document by the IPCC Fourth Assessment Report with a view to reduce global emissions so as to hold the increase in global temperature below 2 degrees Celsius"), available at unfccc.int/resource/docs/2009/cop15/eng/IO7.pdf. Likewise, there is no way to prevent states from sharing in the costs of catastrophic climate change. Global warming is thus sometimes referred to as a public "bad." The phrase "good" is not, however, intended to connote something that is normatively desirable. Rather, the word "good" in the expression "public good" is used in the sense of a commodity.

[10] See, e.g., Chris Brummer, Regional Integration and Incomplete Club Goods: A Trade Perspective, 8 Chi. J. Int'l L. 535 (2008).

[11] See, e.g., Scott Barrett, Environment & Statecraft: The Strategy of Environmental Treaty-making 199-205 (2003) (modeling the minimum participation necessary to sustain some level of production of a public good).

those that occur under the auspices of the UNFCCC, will lead to greater compliance with the substantive rules that emerge from the negotiations.[12]

The second way in which excludability encourages institutions to foster broad membership is through concerns about legitimacy and democratic governance. International institutions are often thought to suffer from a democracy deficit.[13] They are not transparent, are too far removed from accountable national governments, and in some situations can make decisions with profound consequences without any input from affected governments.[14] These features of international governance have put pressure on international institutions to be more transparent and to expand participation in decision-making to include non-state actors and all affected states.[15] This pressure is particularly acute where issues are perceived to have significant consequences for states and their citizens, as where the provision of global public goods such as climate change mitigation is concerned. In part because of the high political salience of many public goods issues, and in part because the regulations emerging from international institutions may affect them anyway, states generally wish to participate in international public goods institutions. From the standpoint of democratic theory, then, cooperation on providing public goods necessitates broad participation in negotiating the terms of cooperation.

The pressures for broad participation in public goods institutions can make designing effective institutions, and in particular institutions that are not gridlocked, much more difficult. One reason is that broad participation makes it likely that there will

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[12] See Joost Pauwelyn, The Transformation of World Trade, 104 Mich. L. Rev. 1, 61 (2005) ("In the end, therefore, rather than undermine the normative structure of the WTO, limited exit or somewhat lower levels of discipline—in tandem with higher levels of participation and politics—is the best recipe for an effective and legitimate world trade system.")

[13] See, e.g., Daniel Bodansky, The Legitimacy of International Governance: A Coming Challenge for International Environmental Law? 93 Am. J. Int'l L. 596, 598 (1999).

[14] Id. at 598-99.

[15] Id. at 613.

be greater normative and epistemic divisions among participants. In particular, states may disagree about the scientific and market-related facts characterizing the issue on which they are attempting to cooperate. Contests over knowledge have distributional implications in the same way that contests over policies and legal rules do. States and private actors are keenly aware of this fact, and therefore may attempt to generate understandings of knowledge and risk that reflect their underlying distributional preferences.[16] Knowledge of risk changes states' calculations about how to regulate, because it changes states' understanding of the costs and benefits of particular policies.[17] To illustrate, consider the expanded understanding of the effects of ozone depletion on human health. The Vienna Convention on the Protection of the Ozone Layer was negotiated in 1985. It was negotiated by only forty-three countries and its principal obligations pertained to fostering research and the exchange of information.[18] Shortly after the Vienna Convention negotiations concluded, however, scientists published two startling findings. First, scientists discovered the now well-known hole in the ozone layer over Antarctica.[19] Second, scientists published a report in 1986 estimating that ozone depletion would cause 150 million additional cases of cancer and three million additional deaths in the United States by 2075.[20] The increased scientific certainty about the costs of inaction spurred international cooperation. In 1987, over sixty states participated in the

[16] Tora Skodvin & Arild Underdal, Exploring the dynamics of the science-politics interaction 29, in SCIENCE AND POLITICS IN INTERNATIONAL ENVIRONMENTAL REGIMES (Andresen et al. eds. 2000) (arguing that the political process can distort and delegitimize scientific processes by attempting to influence them in support of political objectives).
[17] See Arild Underdal, Science and Politics: the anatomy of an uneasy partnership 3, in SCIENCE AND POLITICS IN INTERNATIONAL ENVIRONMENTAL REGIMES (Andresen et al. eds. 2000) (discussing the role of scientific knowledge in promoting policymaking).
[18] David Hunter, et al., International Environmental Law & Policy 546 (4th ed. 2011).
[19] Id. at 550
[20] Id. at 551.

negotiation of the Montreal Protocol, an increase in participation of roughly 50 percent.[21] Moreover, bowing to the inevitability of some regulation, the industry group CFC Alliance reversed its former position and embraced an international agreement capping CFC growth.[22]

Epistemic divisions among states can make reaching consensus on the scientific basis for regulation, let alone the substance of regulation itself, considerably more difficult. Moreover, the bargaining that characterizes international rulemaking may result in lowest-common-denominator regulation, in which the most uncooperative states set the level of regulation. The climate change regime is a perfect example. For years energy industry participants and oil-producing states sought to persuade the public and other governments that the science of climate change, and in particular studies on the human contribution to climate change, were unsound.[23] The presence of these groups thus created an epistemological divide that impeded bargaining over climate change. Similarly, different normative positions can prevent the adoption of arguably beneficial measures. Oil-producing states, for example, have maintained within the climate change framework that they should be compensated for revenue lost as a result of climate change policies that, it is presumed, will decrease consumption of oil.[24] And at the fifteenth Conference of the Parties to the UNFCCC at Copenhagen, a small group of countries led

[21] Id. at 552.
[22] Id.
[23] Cf. David Hunter, et al., International Environmental Law & Policy 675 (4th ed. 2011) (discussing OPEC nations efforts to block an agreement on climate change measures).
[24] See Jad Mouawad & Andrew C. Revkin, Saudis Seek Payments for Any Drop in Oil Revenues, N.Y. Times (October 13, 2009).

by Bolivia, Sudan, and Venezuela prevented the conference from adopting the Copenhagen Accord.[25]

International institutions attempt to resolve epistemic divisions among states by imposing obligations to create and share scientific information. The framework/protocol method of regulation—seen in the ozone regime,[26] the Convention on Long-Range Transboundary Air Pollution,[27] and the climate change regime,[28] among others—relies on knowledge-based assessments of environmental problems to change states' understanding of the value of regulation. The Convention on Long-Range Transboundary Air Pollution, for example, requires parties to cooperate on research in technologies for measuring and reducing emissions of air pollutants.[29] Agreements like the Rotterdam Convention on Prior Informed Consent[30] and the Stockholm Convention on Persistent Organic Pollutants[31] establish processes by which states share information about hazardous chemicals. Such information serves as the basis for considering whether to subject the chemicals to greater controls. In short, institutions like those mentioned above hope to generate cooperative solutions to public goods problems by first generating consensus on

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[25] Daniel Bodansky, The Copenhagen Climate Change Conference: A Postmortem, 104 Am. J. Int'l L. 230, 231 (2010). In Bolivia's case, this objection was in part because, in its view, the measures agreed at Copenhagen and later Cancun would not prevent catastrophic climate change. See Louise Gray, Cancun climate change summit: Bolivians dance to a different beat, but fail to derail the talks, The Telegraph, December 12, 2010, available at: http://www.telegraph.co.uk/earth/environment/climatechange/8197539/Cancun-climate-change-summit-Bolivians-dance-to-a-different-beat-but-fail-to-derail-the-talks.html.

[26] Vienna Convention on the Protection of the Ozone Layer, Mar. 22, 1985, 1513 U.N.T.S. 293 [hereinafter "Vienna Convention"]; Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 1522 U.N.T.S. 3.

[27] Nov. 13, 1979, 1302 U.N.T.S. 217 [hereinafter "LRTAP"].

[28] United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107 [hereinafter "UNFCCC"); Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 37 I.L.M. 22.

[29] Art. 7; see also Vienna Convention arts. 3 & 4, annexes I & II.

[30] Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Sept. 11, 1998, 38 I.L.M 1.

[31] May 22, 2001, 2256 U.NT.S. 119.

the scientific underpinnings of the problem. And these kinds of epistemic obligations in treaties are often successful. Consensus reduces the costs of bargaining over regulatory cooperation, and so information-producing obligations have become a standard feature of international environmental agreements.

But this process of reducing scientific uncertainty as a prelude to regulation works best when the distributional issues arising from prospective regulation are mild. Sometimes, however, the distributional concerns associated with cooperating on the production of information will be so severe that the production of information and the formulation of binding legal obligations in the same institution will cause the institution to gridlock. In effect, combining information-producing obligations with the possibility of legal regulation causes states that expect to lose from regulation to entrench themselves over epistemic issues in a way that raises the transaction costs of resolving both epistemic issues and substantive regulation. Epistemic issues essentially become an early stumbling block to agreement on regulation. While contesting the development of scientific knowledge might strike some as irrational at first glance, the logic is similar to fights over institutional design and substantive policy choices. Procedural rules affect the likely shape of substantive policies by altering bargaining dynamics. If a two-thirds vote of the conference of the parties is necessary to subject a chemical to a treaty's substantive controls, states will expect the list of chemicals to which the treaty applies to grow at a faster rate than if a consensus rule applies. States thus treat bargaining over procedural rules as a means of contesting bargaining over substantive rules. Similarly, epistemic obligations—obligations that require the production and dissemination of information—that precede bargaining over substantive regulations will often be negotiated and

implemented with an eye towards the substantive regulation that emerges. States that oppose regulation will oppose epistemic obligations, and more likely try to influence the way in which epistemic obligations are implemented and the kinds of information they produce, as a means to influencing the substantive policy choices that result.

Disagreements about the appropriate legal standard for dealing with scientific uncertainty are in many ways fights about the distributional implications of knowledge. The Stockholm Convention, for example, establishes an elaborate review process through which proposals to subject chemicals to regulation must be adopted.[32] The precautionary principle—holding that a lack of scientific certainty is not a legitimate basis for failing to regulate a potential harm—is incorporated as a standard for evaluating the scientific data presented to the reviewing committee.[33] During the negotiations, the United States, backed by the chemical industry, opposed the incorporation of the precautionary principle into the Convention, reasoning that a legal standard that favored scientific certainty would allow it to avoid regulation on epistemic grounds.[34] Moreover, during the negotiation the United States successfully pressured the European Union to agree that the Committee charged with gathering data and making recommendations as to what chemicals should be covered by the Convention could not begin its work until the treaty entered into force, a move that delayed scientific exchange and regulation of newly

[32] Id. art. 8.

[33] Id. Lawyers, generally not specialists in science by any means, have devised legal doctrines that aim to reduce the affect of epistemological divides on bargaining. The precautionary principle is the most notable such rule, holding that a lack of scientific certainty is a not basis for failing to regulate. The precautionary principle, which can be understood as a legal rule obligating states to discount epistemological disagreements that are matters of degrees of certainty, reduces the impediments posed by epistemological concerns in two ways. First, it provides a rhetorical strategy states and pro-regulation groups can use in attempting to persuade governments to enact regulations. Second, its availability as a defense in disputes may make states on the margin more likely to act unilaterally in regulating potentially harmful activities.

[34] Hunter et al, supra note __, at 933.

identified chemicals.[35] Moreover, negotiations on expanding the Stockholm Convention's coverage to additional chemicals have been extremely slow.[36] Similar dynamics characterized negotiations between the United States and the European Union over regulation of genetically-modified organisms (GMOs).[37] For example, after the Codex Alimentarius Commission's standards were incorporated into the WTO's Agreement on the Application of Sanity and Phytosanitary Measures, the Codex Commission became a considerably more politicized body as the EU and the United States fought over appropriate standards for GMOs.[38] These kinds of distributional concerns exacerbate governance risk and can prevent bargaining on the basis of the best available scientific information.[39]

The use of scientific information to set whaling quotas in the International Whaling Commission (IWC) also illustrates how epistemic obligations can be used to frustrate substantive regulation. The IWC has long contained an apparatus, including most notable a Scientific Committee, for producing scientific information about whaling and market-related information about whaling catches.[40] This information is used as an input into the IWC's decisions setting whaling quotas. In the early years of the IWC quotas were based on scientific advice, but the quotas suggested by scientists were

[35] See UN Conference approves POPs Convention in Stockholm, available at: www.outstolenfuture.org/policy/pops/2001-0522popsconvention.htm.
[36] David L. VanderZwaag, The Precautionary Approach and the International Control of Toxic Chemicals: Beacon of Hope, Sea of Confusion and Dilution, 33 Hous. J. Int'l L. 605, 620 (2011).
[37] See Mark A, Pollack & Gregory C. Shaffer, When Cooperation Fails: The International Law and Politics of Genetically Modified Foods (2009).
[38] Id. at 165.
[39] See James Morrow, The Forms of International Cooperation, 48 Int'l Org. 387, 413 (1994).
[40] *See generally* Steinar Andresen, *The Whaling Regime* 35-69, in , in SCIENCE AND POLITICS IN INTERNATIONAL ENVIRONMENTAL REGIMES (Andresen et al. eds. 2000) (describing the international whaling regime).

generally in line with interests of the whaling industry.[41] By the 1970s, concern that whaling nations controlled the flow of scientific and market-related information to the IWC featured prominently in discussions of whaling regulation.[42] Critics worried that information produced by whaling nations was neither impartial nor complete.[43] In response, there was a push for increased use of outside and independent scientists within the IWC's Scientific Committee and the inclusion of international organizations such as UNEP and the Food and Agricultural Organization as observers.[44] In terms of effects on generating scientific consensus on whaling quotas, the success of this push for the independence of scientists in producing independent scientific information is unclear. The majority of scientists that participate in the Scientific Committee are sent by national governments,[45] and there is a question as to whether those scientists are truly independent of their governments.[46] As Andresen reports, during the 1980s polarization within the IWC was high, scientific consensus on whaling policy was elusive in part because scientists were often well-connected to environmental groups and national governments that had normative commitments for or against a whaling moratorium (which the IWC ultimately imposed) that were independent of the scientific basis for that moratorium.[47] In particular, scientists in the Scientific Committee of the IWC are often also members of their national delegations, creating implicit and sometimes explicit pressures on scientists to conform their scientific advice to national preferences.[48]

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[41] *Id.* at 41-42.
[42] *Id.* at 45
[43] *Id.*
[44] *Id.* at 47.
[45] *Id.* at 48.
[46] *Id.* at 49.
[47] *Id.* at 50.
[48] *Id.* at 51.

The IWC thus illustrates how epistemic obligations can be co-opted by national interests and lead to what is arguably a case of institutional failure. The IWC continues to impose a moratorium on whaling to this day, but the moratorium lacks the support of the Scientific Committee[49] and has led to disputes among the parties, including a withdrawal and reaccession to the IWC by Iceland and a pending case before the International Court of Justice challenging Japan's whaling practices.[50] Thus, while it would be an exaggeration to claim that the disputes arising from the IWC's whaling moratorium flow from the scientific processes at work in the IWC, it is equally true that the IWC's epistemic processes have become an additional venue in which whaling policies can be contested. That contestation, in turn, affects the quality of information produced by the IWC.

II. Systemic Governance Risk

Like other forms of risk, governance risk can be systemic. Systemic governance risk refers to the possibility that actions or policies taken within one institution make cooperation more difficult or costly in another institution. The term systemic risk has been used differently in different contexts, but the underlying definition generally involves a market or institutional event that triggers additional institutional failures or makes the institutional operating environment more difficult or costly.[51] Scholars have

[49] *See* Letter of Resignation from the Chairman of the Scientific Committee of the IWC, May 26, 1993, available at: www.highnorth.no/library/Management_Regimes/IWC/le-fr-th.htm (describing the Scienfitic Committee Chairman's resignation as a a result of the rejection of the Scientific's Committee advice as a basis of setting whaling quotas).
[50] Whaling in the Antarctic (Japan v. Australia).
[51] Cf. Steven L. Schwarcz, Systemic Risk, 97 Geo. L.J. 193, 198 (2008).

not appreciated the systemic nature of governance risk in the international arena. To be sure, scholars have noted that international regimes are fragmented, that they are often overlapping and non-hierarchical.[52] Scholars have studied how states behave in light of this fragmented legal system, focusing on strategies such as forum shopping and the creation of strategic ambiguity in the content of and relationship among legal obligations.[53] But issues of fragmentation constitute only a small part of systemic governance risk. Studies of fragmentation tend to focus on issues of institutional competence, including concerns about jurisdictional overlap and choice-of-law rules to resolve conflicts. A systemic governance risk perspective focuses attention on a much broader set of relationships between institutions, including, most notably, functional relationships that may not be captured by analyses of institutional conflicts and linkages.

How can governance risk be systemic? In short, cooperative institutions can create or magnify the risk that other cooperative institutions will fail. This kind of systemic governance risk is created when two institutions are linked. Institutions can be linked in three broad ways: 1) through direct or functional linkages, as when action in one area affects economic activity in another area (for example, a carbon tax may change energy consumption and production patterns); 2) through issues that are linked at the bargaining table; and 3) through issues linked institutionally, as when trade measures are used to enforce environmental obligations.[54]

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[52] See, e.g., Kal Raustiala & David G. Victor, The Regime Complex for Plant Genetic Resources, 58 INT'L ORG. 277 (2004); Mark A. Pollack & Gregory Shaffer, Hard vs. Soft Law: Alternatives, Complements and Antagonists in International Governance, 94 Minn. L. Rev. 706 (2010); Mark A. Pollack & Gregory Shaffer, Hard Versus Soft Law in International Security, 52 Boston College L. Rev. 1147 (2011); Benvenisti & Downs, *supra* note 6.

[53] See supra fn. 43.

[54] John Whalley, What Role for Trade in a Post 2012 Global Climate Policy Regime, NBER Working Paper 17498, available at: http://www.nber.org/papers/w17498; Oren Perez, Multiple Regimes,

Legal scholarship has tended to focus on the third type of linkage, and in particular the possibility that "slack" enforcement authority in one regime (typically the trade regime) can be used to enforce the rules in another regime.[55] Scholars have, for example, analyzed the effectiveness of trade sanctions as a device to enforce the Montreal Protocol's ban on CFCs.[56] More generally, during the 1990s and early 2000s, scholars and commentators were optimistic that trade regimes such as the WTO might be linked to a host of obligations requiring contributions to public goods, such as environmental and human rights obligations. [57]

The logic behind this linkage is that club goods, such as market access or financial assistance, can profitably be linked to contribution to public goods, such as mitigating air pollution, as a solution to the familiar problem of free riders. [58] Oftentimes, a state's individual contribution to the production of a public good is not rational; the state's individual abatement efforts, in the context of an environmental problem, cost it more than the benefits it receives from its own abatement efforts, and it receives the benefits of the abatement efforts of others regardless of whether it makes any such efforts itself. Club goods, because they are excludable, can be used to change this incentive. If contributing to the production of a public good allows a state to get both the marginal benefit from the public good as well as some excludable benefit such as financial assistance, market access, or technology transfer, a state is more likely to contribute to the public good. This logic undergirds much of international environmental law. The

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Issue Linkage, and International Cooperation: Exploring the Role of the WTO, 26 U. Pa. J. Int'l Econ. L. 735 (2005).

[55] Perez, supra note 54, at 747 (noting that linkages are thought desirable for their ability to boost enforcement).

[56] See, e.g., Barrett, supra note 11, at 313.

[57] See, e.g., David W. Leebron, Linkages, 96 Am. J. Int'l L. 5 (2002) (analyzing "trade and . . ." linkages).

[58] Mancur Olson, THE LOGIC OF COLLECTIVE ACTION; Perez, supra note 54, at 747 (noting this benefit of linkages).

Montreal Protocol, for example, requires parties to ban the import from non-parties of substances controlled by the Protocol,[59] and also provides a financial mechanism that provides "all agreed incremental costs" for developing states to assist them in meeting their obligations under the Protocol.[60] Similar financial mechanisms have been created in a host of other environmental agreements, including the Green Climate Fund initially established through the Copenhagen Accord,[61] the Stockholm Convention,[62] and the Convention on Biological Diversity.[63]

This happy story of how issue linkages can reinforce cooperation, while surely accurate in certain instances, underestimates the dangers to cooperation posed by issue linkages. Linkages can be destructive as well as constructive.[64] Where institutional and bargaining linkages are concerned, the way in which linkages can be destructive is straightforward. The traditional logic of linkages suggests that linking Issue 1 to Issue 2 should make it easier either to strike a bargain on the two issues together, because you can make trades across the issues, or to achieve greater compliance by using the threat of losing benefits on one issue to force compliance on the other issue.[65] Once a linkage is formed, though, it is easy to imagine instances in which getting its way on Issue 2 is more important to State A than preserving cooperation on Issue 1. In those situations, it might have been possible for the states to cooperate on Issue 1 in isolation, but cooperation on Issue 1 is destroyed by an inability to cooperate on the linked Issue 2.[66]

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[59] Art. 4.
[60] Art. 10.
[61] Copenhagen Accord para. 10, UNFCCC, Decision 2/Cp.15 (December 18, 2009); available at: unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf.
[62] Art. 13.
[63] Art. 21.
[64] Perez, supra note 54.
[65] Id.
[66] Id.

A common example in international environmental agreements illustrates the point. In public goods-producing institutions, the club good is being offered as a sweetener to certain states, often developing states in the environmental context. Developing states are therefore not expected to contribute to the production of the club good. Institutions that offer a club or private good as an inducement for states to contribute to the production of a public good have to find some subset of states willing to contribute to the production of both. The contributions to the club good come from developed states. These contributions, which often take the form of cash contributions to institutions such as the Green Climate Fund, thus are added to the cost of developed countries' contributions to the public good. This arrangement creates a second-order public goods problem. Increasing the provision of the public good by incentivizing developing nations to participate in environmental agreements raises the costs of contributing to the public good for developed states. In the context of climate change, developed states must both pay the cost of policies aimed at abating their own emissions of greenhouse gases and, through the Green Climate Fund, bear some portion of the cost of developing states' abatement policies. This, in turn, makes free-riding by developed states more likely. In other words, building public goods institutions by linking them to club goods, such as foreign assistance, can unravel participation in public goods institutions by encouraging developed states to free-ride.

Even more important for systemic governance risk are functional linkages. States are unable to control functional linkages. States' only decision when two issues are functionally linked is whether to deal with them within the same institution or

separately.[67] Consider, by way of example, energy security and climate change. Both are affected by the way in which energy is produced and consumed. Policies adopted in one set of institutions thus have important ramifications for the potential for successful cooperation in the other institution. All else equal, if the Organization of Petroleum Exporting Countries (OPEC) increases production of oil, leading to a drop in oil prices and an increase in consumption, it will be harder for states to meet their emissions reduction commitments under agreements like the Kyoto Protocol. Similarly, when states parties to the International Energy Program (IEP) agreement (the parent agreement to the International Energy Agency (IEA)) activated their commitment during June 2011 to release oil from the strategic reserves in response to oil supply disruptions from Libya, they reduced oil prices, at least temporarily.[68] This reduction in price furthered the IEP's economic objectives, but at the cost of mitigating the effects of a market event—the disruption of oil supplies from Libya—that would have furthered climate change objectives.

In the case of cooperation aimed at reducing oil prices and cooperation on climate change, governance risks are negatively correlated. Successful cooperation on oil prices negatively affects states' ability to cooperate on climate change, and successful cooperation on climate change negatively impacts states' ability to cooperate on low oil prices.[69] Rather than reinforcing cooperation, a functional link between negatively correlated policies can actually undermine larger cooperative efforts. By contrast, positively correlated risks pose both a threat and an opportunity. On the one hand, if

[67] Cf. Robert D. Cooter, The Strategic Constitution 120 (2000).
[68] Ann Florini, The IEA in Global Energy Governance, 2 Glob. Pol. 40, 41-42 (2011).
[69] This differs from negatively correlated systemic risk among financial institutions, where negatively correlated risks can be protected against through diversification. See Richard A. Posner, Economic Analysis of Law 446 (6th ed. 2003).

governance risk is positively correlated between two institutions, then the failure of one institution makes the failure of the other more likely. On the other hand, positively correlated risks will often mean that successful cooperation in one institution reinforces cooperation in another institution. For example, successful efforts by the International Renewable Energy Agency (IRENA) to spur diffusion of and innovation in renewable energy technology should make climate change cooperation easier by reducing the costs to states of agreeing to policies that reduce their reliance on carbon-intensive fuel sources.

From a governance standpoint, the ideal institutional design maximizes the expected gains from cooperation, adjusted for systemic governance risk, across linked issues. One way to achieve this objective is by making the governance risks posed by linked institutions uncorrelated. Thus, counterintuitively, one way to deal with the fact that fragmented legal institutions pose systemic governance risks is to further fragment institutions in a way that reduces the relationship between governance outcomes across institutions, or at the very least reduces the likelihood that a governance failure in one institution will make cooperation harder in another institution. In the next section, I argue that IRENA is an example of an institution that is designed to mitigate systemic governance risk. It thus may offer a model for how to nest institutions in a way that reinforces, rather than undermines, cooperation in linked institutions.

III. Mitigating Governance Risk through a Renewable Energy Commons

In this Part, I describe a new international organization, the International Renewable Energy Agency (IRENA). IRENA is an intergovernmental institution charged with promoting the development of renewable energy around the globe. IRENA is designed in large part to reduce the two types of governance risk described above. As an organization engaged in facilitating the development of renewable energy technology, IRENA faces risks from fossil fuel-exporting states that may wish to contest the development of alternative energy sources. Conceptually, IRENA could therefore face epistemic challenges from fossil fuel-exporting states, and it could pose systemic governance risks to institutions such as the Organization of Petroleum Exporting Countries and the Gas Exporting Countries Forum, both of which aim to coordinate the production of fossil fuels to ensure higher profits. However, IRENA is designed with a narrow mandate that reduces these risks. Most notably, by denying IRENA the power to impose legal obligations relating to renewable energy, IRENA's creators reduced the incentive for oil-exporting states to resist IRENA's epistemic mission to develop and diffuse renewable energy technology and limited IRENA's ability to interfere directly with the legal obligations created by other institutions.

IRENA thus may represent a second-best form of international cooperation on renewable energy. Climate change negotiations in the UNFCCC have stalled, with many states unwilling to undertake binding legal obligations to reduce their emissions under present circumstances. With top-down approaches failing, incremental bottom-up approaches such as those envisioned by IRENA may be the best hope for interstate cooperation on renewable energy. While such bottom-up approaches do not promise the dramatic results that are thought to accompany legally binding obligations coming out of

institutions like the UNFCCC, by limiting their governance risks they are also less likely to prompt the backlash that has rendered the UNFCCC framework unable to move beyond 2012.

A. IRENA

The International Renewable Energy Agency was created in 2009.[70] IRENA's chief objective is to "promote the widespread and increased adoption and the sustainable use of all forms of renewable energy."[71] The Agency's Statute charges it with fulfilling this mission by, among other things, analyzing member states' laws and policies regarding renewable energy and technology transfer; coordinating with other intergovernmental and nongovernmental agencies; facilitating investment in renewable energy and technology transfer; and encouraging research into renewable energy, its effects, and how it can be effectively deployed.[72]

IRENA differs from a number of renewable energy initiatives born in the last fifteen years in that it is a stand-alone intergovernmental organization.[73] Although an intergovernmental body, IRENA expressly lacks the authority to impose legal obligations on its members, is not designed as a body aimed at facilitating the negotiation of legal obligations, and does not seem inclined (at least yet) to venture into the realm of soft law instruments.[74] Rather, IRENA's activities are geared toward reducing the transaction

[70] Statute of the International Renewable Energy Agency.
[71] Id. art II.
[72] Id. art IV.
[73] Other renewable energy initiatives are either nestled within larger organizations, such as the IEA's renewable energy programs, or are NGOs, such as the Renewable Energy & Efficiency Partnership (REEEP).
[74] Id. art. I, IV ("The Agency shall analyse, monitor and, without obligations on Members' policies, systematize current renewable energy practices . . .").

costs associated with investment in, and the development and diffusion of, renewable energy technology. In this sense, IRENA aims to create what might be termed a "renewable energy commons," in which information about renewable energy resources, technology, and feasibility studies is available at low cost. Low-cost access to renewable energy information and technology is critical to solving both climate change issues as well as energy poverty issues. The projected emissions from non-OECD countries account for the majority of long-term greenhouse gas emissions. At the same time, non-OECD countries often have not installed fossil fuel-based energy infrastructure. With cheaper labor costs, these countries are able to meet the increasing energy demands through the installation of renewable energy, provided that renewable energy technology and investment is available at an affordable cost. Indeed, the OECD reports that renewable energy comprises a larger portion of non-OECD countries' energy mix as compared with OECD countries.[75] Brazil, for example, gets 46% of its energy from renewable sources, while Indonesia gets 34% and India gets 26%.[76]

IRENA accomplishes its mission primarily through facilitating the availability and exchange of information. The information is made available to a wide range of information consumers, including governments as well as business entities. By reducing search costs, particularly in the intellectual property area, IRENA can approach, if not actually create, an open access system that facilitates the diffusion of and investment in renewable energy applications.

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[75] OECD Factbook 2011-2012: Economic, Environmental and Social Statistics, available at: http://www.oecd-ilibrary.org/sites/factbook-2011-en/06/01/06/index.html?contentType=/ns/Book,/ns/StatisticalPublication&itemId=/content/book/factbook-2011-en&containerItemId=/content/serial/18147364&accessItemIds=&mimeType=text/html

[76] *Id.*

IRENA's work program to date has consisted of three initiatives: Knowledge Management and Technology Cooperation (KMTC), Policy Advisory Services and Capacity Building (PACB), and the Innovation and Technology Centre (IITC). Although still in their early stages, each of these initiatives aims to reduce the transaction costs to investment in and diffusion of renewable energy technology in its own way.

The Knowledge Management and Technology Cooperation (KMTC) initiative's objective is to create a global knowledge commons of sorts. It pursues this objective in two ways. First, it creates Renewable Readiness Assessments (RRAs), which provide an analysis of the soft structures, including economic conditions and the legal and regulatory environment, in place in individual countries.[77] The RRAs, which are publicly available,[78] provide information on soft structures to investors and also provide recommendations to the host government on how it can create a legal and regulatory environment conducive to attracting investment in renewable energy infrastructure. Second, the KMTC initiative is assisting in the creation of a "Global Atlas for Solar and Wind."[79] The Global Atlas—an idea from the Clean Energy Ministerial's Solar and Wind Working Group that is now a partnership between donor states, IRENA, the UNEP, data and technology providers, and end-users—aims to provide an internet-based Geographic Information System for wind and solar resources.[80] The idea rests on the fact that, much like traditional fossil fuels, renewable energy resources are often unevenly geographically distributed. Different areas are more or less suitable for different kinds of renewable

[77] See, e.g., Renewable Readiness Assessment for Mozambique, available at http://www.irena.org/menu/index.aspx?mnu=Subcat&PriMenuID=35&CatID=109&SubcatID=164, (2012).
[78] See supra note 77. Only two RRAs have been created so far, those for Senegal and Mozambique.
[79] "Global Atlas for Solar and Wind Energy," IRENA Document, available at: http://www.irena.org/menu/index.aspx?mnu=Subcat&PriMenuID=35&CatID=109&SubcatID=163.
[80] Id.

infrastructure. Wind farms, for example, might be most profitably located off the coast where the wind blows regularly. Solar farms are most efficiently placed in areas with lots of sunlight and very few features that might result in damage to solar panels. At the most elementary level, the Global Atlas can map the location of physical sites that might be suitable for the installation of renewable energy infrastructure.[81] The Atlas also will include relevant information on economic conditions, as well as the legal and regulatory environment in specific locations.[82]

The public good of high-quality geographic data on renewable resources reduces the transaction costs to planning and investing in renewable energy infrastructure. Like other public goods, information about suitable sites for renewable energy is likely to be underdeveloped. Those who find suitable sites cannot be sure they will reap the benefits of investing in the search costs. IRENA and its partners, by investing in the development of this information, thus provide a resource to public policymakers and investors that the latter might not develop themselves but which they are able to use. The provision of this information is particularly important in the energy sector, where infrastructure investment timelines often stretch out decades.[83] The development and systemization of the data is also important. While significant mapping has been done in the developed world, the developing world remains largely unmapped.[84] Moreover, the information that exists is often compartmentalized among a variety of organizations.[85] A clearinghouse for

[81] "Implementation Strategy for a Global Solar and Wind Atlas," at 9, available at http://www.irena.org/menu/index.aspx?mnu=Subcat&PriMenuID=35&CatID=109&SubcatID=163, (2012).
[82] Id. at 11.
[83] Id. at 9.
[84] Id.
[85] Id. at 9, 14.

information promises to dramatically reduce search costs and thereby boost investment in renewable energy.

The Policy Advisory Services and Capacity Building (PACB) initiative further implements IRENA's focus on providing information that reduces the transaction costs of investing in renewable technology infrastructure and research. IRENA's Renewable Energy Learning Partnership (IRELP) focuses on expanding and systematizing information about education on renewable energy with the objective of reducing the technology gap between developed and developing countries.[86] Consistent with its focus on an informational approach to promoting renewable energy, IRENA also is preparing a report on the types of jobs supported by the renewable energy sector and the skills necessary for specific job types.[87] Such a document performs the dual role of providing information to policymakers on how to create renewable energy jobs, while at the same time persuading them that investing in attracting renewable energy jobs is beneficial. Finally, the PACB initiative also includes a database compiled and maintained in partnership with the IEA—the IEA/IRENA Global Renewable Energy Policies and Measures Database—that provides a searchable index to country specific policies and policy targets.[88] A potentially valuable tool for researchers studying comparative renewable energy policy, the database also provides a starting place for investors looking for information on renewable energy policies in target markets and policymakers looking for policy ideas.

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[86] See http://www.irena.org/menu/index.aspx?mnu=Subcat&PriMenuID=35&CatID=110&SubcatID=156

[87] Renewable Energy - Jobs Status, Prospects & Policies, available at http://www.irena.org/Menu/index.aspx?PriMenuID=36&mnu=Pri, (2011).

[88] IEA/IRENA Global Renewable Energy Policies and Measures Database, available at: http://www.iea.org/textbase/pm/?mode=re.

The final component of IRENA's program is the Innovation and Technology Centre (IITC). While the KMTC and the PCBA generally emphasize the availability of information on renewable resources and soft structures, IITC emphasizes more directly the availability of and research into technology itself. Not surprisingly, renewable energy technology is subject to intellectual property protection. Renewable energy patents are difficult to search for. While the European Patent Office (EPO) has a classification for patents with renewable energy applications, the classification is so broad as not to be terribly useful.[89] IITC aims to tackle these high search costs by creating a single searchable database of renewable energy patents that integrates information from the EPO and the roughly 200,000 renewable energy patents known to the World Intellectual Property Organization.[90] IITC also hopes to put together use data on particular renewable energy patents, with the idea that use data will provide policymakers and investors an idea as to which patents perform well commercially.[91] This use data will thus be a cost-saving tool in identifying practically useful renewable energy technologies. Moreover, it could be a springboard to identifying groups of renewable energy patents that function well together within particular types of projects. IITC's pilot project in this area involves compiling information on renewable energy patents useful in desalinization plants, which are energy-intensive and are largely found in the developing world.[92]

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[89] Interview with Mirei Isaka, International Renewable Energy Agency, March 2012 (on file with author).
[90] IRENA Proposed Work Programme and Budget for 2012, at 38 (January 30, 2012), available at: http://www.irena.org/documents/uploadDocuments/2assembly2012%2F2012WPB_A_2_1.pdf [hereinafter "2012 Work Programme"].
[91] Isaka, *supra* note 89.
[92] *Id.*

More concretely, the IITC program is in the process of developing draft reports on the cost effectiveness of renewable energy,[93] while also examining the feasibility of discrete technology transfers that IRENA might facilitate, such as biofuel technology transfer from Brazil to Africa.[94]

B. Epistemic Governance and Narrow Mandates

IRENA's ability to executive its mission is contingent to a large extent on its institutional architecture. From the time IRENA was first conceptualized, there has been a question as to whether IRENA should be a stand-alone institution, as it ultimately was established to be, or nested within some larger institution. Candidates for umbrella-institutions included the United Nations (possibly under the UNFCCC) and the IEA.[95] The IEA in particular seemed a natural destination for the new agency. Germany spearheaded IRENA's creation, with the backing of Denmark and Spain.[96] All three nations are founding members of the IEA. Moreover, the IEA has been involved with renewables for close to three decades.[97] The UNFCCC also has a great interest in facilitating renewable energy technology transfer as part of its mission to reduce the emissions of greenhouse gases. The UNFCCC has for some years had an Expert Working Group on Technology Transfer. In 2010, the parties to the UNFCCC increased the emphasis on technology transfer, creating a Technology Mechanism that consists of an Executive Committee and a Climate Technology Centre and Network. Why, given the

[93] Summary of the IRENA Workshop on Renewables – Competitiveness and Innovation (October 6, 2011), available at: http://www.iisd.ca/ymb/irena/iitco/html/ymbvol187num5e.html.
[94] See 2012 Work Programme, supra note 90, at 37.
[95] German Government Doc.
[96] Thijs Van de Graaf, *How IRENA is Reshaping the Global Energy Architecture*, Euro. Energy Rev. (2012).
[97] *Id.*

existence of these well-established institutions and their interest in technology transfer, did IRENA's sponsors nonetheless insist on establishing a free-standing organization?

Perhaps counterintuitively, the answer is that a narrow legal mandate and institutional independence increases IRENA's freedom to produce information useful to a wide variety of actors. IRENA's institutional architecture accomplishes this objective in several ways, which I discuss in turn below. First, IRENA's institutional independence reduce the risk that it will be help up by bargaining issues among member states or fights over internal administrative priorities. Second, its narrow mandate ensures to focus on epistemic issues – the production and dissemination of information to a wide constituency of actors – provides incentives for IRENA to produce usable expert information without the distortions in its mission that can emerge from being under the direct control of a policymaking body with an agenda.

From the outset, there has been a question about whether institutional design offers a number of clear advantages from the standpoint of governance risk. These advantages can be divided into epistemic approaches to governance and an emphasis on reducing risky overlap. In general, epistemic approaches to governance focus on reducing institutional governance risk arising from disagreements about how knowledge should be used, while reducing overlap mitigates systemic governance risk.

IRENA's approach to epistemic governance yields three benefits from the standpoint of institutional governance risk: it legitimizes the issues with which IRENA is charged with dealing; by limiting its tasks to purely epistemic charges rather than regulatory ones, IRENA reduces the incentive for states that would lose from green

energy requirements to be obstructionist; and IRENA's epistemic tasks are aimed at influencing market participants directly, rather than public policymakers exclusively.

First, one of the important ways in which governments contribute to international public goods is by funding the institutions that contribute to the production of public goods. Many governments, most notably the United States, are reluctant to increase funding for international organizations, however.[98] This leads to the common problem of unfunded mandates, in which governments create obligations for other governmental (in the national context) or intergovernmental (in the international context) organizations without providing the funding necessary for them to carry out their mission.

Creating an independent institutional platform for renewable energy helps solve this problem by publicizing and legitimatizing the problem with which the institution is designed to deal and creating an independent basis for requesting funding from governments. In effect, the creation of a new institution is a costly signal that those states backing the institution believe there is an underlying problem that should be addressed through cooperation. This signal changes the calculus of other states more effectively than simply expanding the mission of an existing organization. Moreover, it creates a more visible institutional framework for encouraging state engagement, which in turn may put pressure on states to contribute resources even if they themselves are suspicious of the organization's mission.

[98] See Executive Budget Summary FY 2011 Function 150 and Other International Programs 95, available at www.state.gov/documents/organization/135888.pdf (noting the year-over-year decline in funding for international organizations in the US budget).

A comparison between IRENA's budget and the IEA's budget illustrates the resource effect the creation of a new, specialized institution can have. The IEA, which also does quite a bit of work on renewable energy, has an annual budget of roughly € 26 million.[99] Of this, only roughly two percent, or just over € 500,000, are devoted to renewable energy programs specifically.[100] Moreover, a member of the IEA Governing Board has pointed out that the IEA has seen virtually no real growth in its annual budget over the last twenty-five years, meaning that any increased budgetary allocation for renewable energy must come out of the pocket of the IEA's more traditional programs focused on fossil fuels and electricity.[101] By contrast, IRENA's 2011 budget was nearly $25 million, and its 2012 budget is over $28 million, all of it dedicated to renewable energy programs.[102] IRENA has thus very quickly assembled a pool of resources for international renewable energy cooperation that dwarfs what the IEA is able to allocate to the issue, and indeed nearly matches the IEA's entire budget.

In addition to the epistemic signaling value flowing from its creation, IRENA's activities are almost exclusively epistemic in nature, rather than regulatory, and they aim to influence market participants rather than governments and public policymakers exclusively. This emphasis on shaping perceptions of risk and opportunities for renewable energy, with an emphasis on the private sector and no institutional threat of legal obligations for states, increases constructive engagement with IRENA and reduces the incentive and ability for states to block IRENA's activities.

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[99] IEA Budget (2010), available at: http://www.iea.org/about/IEA_Budget.pdf.
[100] Interview with IRENA Director General Nominee Hans Jorgen Koch, available at: http://www.worldwatch.org/node/6172.
[101] Id.
[102] See IRENA Proposed 2012 Work Program, supra note 90, at 3.

Contests over risks and perceptions of costs and benefits in other fora are fraught with the implications for the legal rules and policies that flow from particular understandings of real-world problems. Most obviously, if climate change is in fact influenced by human activity, as scientists agree, then energy institutions, including both traditional energy institutions such as the IEA but also climate change institutions such as the UNFCCC, will face political pressure to regulate carbon emissions swiftly and more strictly. Oil-producing states and industry groups have thus contested knowledge-based assessments of the risk from climate change as a precursor to contesting the policies that should be adopted on the basis of that knowledge.

As discussed in Part I, these contests over risk perceptions can paralyze an institution. States will move to contest the development of knowledge and perceptions of risk as a way to forestall efforts to develop legal rules with adverse distributional consequences. IRENA addresses this problem by divorcing epistemic issues from the possibility of legal regulation. Within the framework of IRENA itself, the development of informational resources is not threatening because IRENA lacks the ability to translate epistemic consensus into legal obligations for states. IRENA's governance risk—the risk that it will fail in its mission—is thus reduced by drawing its mandate in a way that is less likely to provoke dissension among member states. Of course, a consensus in favor of legal obligations supporting renewable energy could still emerge based on IRENA's work. But the fact that IRENA itself does not provide the framework for negotiating obligations means the transaction costs of negotiating those obligations will be higher. Counterintuitively, these higher bargaining costs facilitate IRENA's epistemic mission. They reduce resistance from member states and potential financial sponsors who stand to

lose from legal rules targeting carbon emissions. These states have less to fear from the development and diffusion of knowledge because the international legal response is further removed. There is thus less of an incentive to contest and distort the development of information. In effect, IRENA's focus on epistemic issues reduces the risk it poses to fossil fuel-producing states, which therefore reduces IRENA's risk of regulatory failure.

Moreover, IRENA's approach to knowledge creation is to shape the perception of renewable energy as furthering development objectives. The PACB program emphasizes renewable energy jobs; the KMTC program emphasizes reducing search costs for investors through the Global Atlas; and the IITC program's emphasizes reducing search costs for renewable patents, encouraging technology diffusion, and shaping perceptions of the cost-effectiveness of renewable energy. All stress the economic potential of renewable energy, rather than the environmental benefits and related economic risks. This emphasis on economic benefits serves two critical purposes. First, the value of renewable energy may not be obvious to public policymakers in developing countries whose principal objective is to grow their economy. By positioning itself as a development agency of sorts, IRENA can increase the appeal of renewable energy infrastructure to developing countries. IRENA's RRAs are a crucial tool in this effort, identifying for states how they can best attract investment and encourage energy development. Second, IRENA's focus on reducing transaction costs for investment can mobilize private financial resources that, once invested in the success of renewable energy, provide a political constituency in favor of renewable support. This strategy of appealing to the private sector is a bottom-up approach to building support for renewable

energy, rather than a top-down approach.[103] By aiming at investors as much as policymakers, IRENA avoids some of the pitfalls of top-down governance, most notably the need to get state consent.[104] IRENA may thus be able to accomplish through direct market incentives and persuasion what it cannot do through the creation of binding legal obligations.

IRENA is also designed to reduce systemic governance risk. IRENA primarily creates systemic governance risk for institutions like OPEC and the Gas Exporting Countries Forum (GECF). By encouraging the growth and development of cheap renewable energy, IRENA could reduce demand for oil and natural gas, thereby limiting OPEC or the GECF's ability to coordinate production and influence prices. There are several features of IRENA that mitigate this systemic risk by limiting the ways in which IRENA's activities are functionally linked and negatively correlated with the activities of other international organizations.

First, unlike the IEA, which limits its membership to OECD states, IRENA's membership is not restricted to any particular group of states. Fossil fuel-producing states, by making use of the consensus and super-majority rules employed by IRENA, are thus able to block any measures in IRENA that would unduly affect their ability to govern fossil fuel production.[105] From the standpoint of fossil fuel-importing states,

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[103] Daniel Bodansky, A Tale of Two Architectures: The Once and Future U.N. Climate Change Regime, available at: http://ssrn.com/abstract=1773865.
[104] Id. at 14-15.
[105] This ability to limit systemic governance risk by blocking action could, of course, be a source of institutional governance risk, i.e., fossil fuel-producing states could paralyze IRENA to prevent it from affecting their ability to cooperate in OPEC or the GECF. As described above, however, IRENA's design and the nature of the relationship between renewable energy and fossil fuels allows fossil-fuel exporting states to play a more constructive role.

IRENA is complementary to climate change objectives and national policies regarding fostering renewables.

Second, IRENA is aimed primarily at boosting the use of renewable energy in the developing world. The initial RRAs have targeted Africa and are moving into Asia and the Pacific.[106] IITC's more specific efforts to encourage technology diffusion have also focused on technology transfer from Brazil to Africa.[107] Moreover, while the developing world collectively is a major consumer of fossil fuels, much of that consumption is driven by China and India.[108] The creation of long-term renewable energy infrastructure in other parts of the developing world thus is unlikely to create a significant decrease in demand for fossil fuels from major importers' in the short run. In the long run, fossil fuel supplies are likely to run out and the fossil fuel exporting nations seem to be positioning themselves to be leaders in energy technology in the developing world. IRENA's geographic priorities and the relationship between fossil fuels and renewable energy thus reduce the systemic governance risk posed by IRENA.

IRENA's narrow focus on renewable energy also reduces the jurisdictional overlap between IRENA and other intergovernmental organizations. Although there are many organizations involved in promoting renewable energy,[109] and other organizations

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[106] IRENA 2012 Proposed Work Program and Budget, supra note 90, at 20.
[107] Id. at 37.
[108] See Richard K. Lester and Edward Steinfeld, THE COAL INDUSTRY IN CHINA (AND SECONDARILY INDIA)(2007) ("China is expected to account for more than half of global growth in coal supply and demand over the next 25 years… like China, India derives over half of its commercial energy from coal, and together the two countries are projected to account for over 68% of the incremental demand in world coal through 2030."); see also International Energy Outlook 2011.pdf available at http://www.eia.gov/forecasts/ieo/more_highlights.cfm#world.
[109] For example, the IEA, the G20, the World Bank, and REN21 are but some of the institutions involved in global renewable energy programs. The IEA, for example, has made energy efficiency a priority, focusing on how energy efficiency measures and the installation of clean energy technology can help states meet climate change objectives. *See* Ann Florini, *The IEA in Global Energy Governance*,

such as the World Intellectual Property Organization that are relevant to IRENA's mission, IRENA shares priorities with these organizations without having formal institutional ties imposed upon it. The formal institutional linkages that exist between IRENA and other organizations are therefore created with IRENA's consent, rather than coming to pass as a product of overlapping allocations of authority by states. IRENA's institutional partnerships, with the IEA and WIPO, thus should not impose significant systemic risks for those organizations. By virtue of being negotiated between the two organizations, they are presumptively welfare enhancing for those organizations.[110] Moreover, as mentioned before, IRENA does not have the ability to impose legal obligations on its members, is not designed as a body aimed at facilitating the negotiation of legal obligations, and has not tried to promulgate soft law instruments. IRENA is therefore unable to impose legal obligations on its members that are inconsistent with other obligations they may have.

The result is an international organization that's relative lack of linkages may prove to be a strength. In researching the design of international agreements, scholars have argued that in some cases soft law may be superior to hard law because states are

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2 Glob. Pol. 40, 44 (2011). The G20 has established a series of energy working groups, one of which is devoted to clean energy and energy efficiency. Thijs Van de Graaf & Kirsten Westphal, *G8/G20 and Energy Governance*, 2 Glob. Pol. 19, 26 (2011). For its part, the World Bank has Climate Investment Funds that "represent more public finance than has ever before been dedicated to climate change." Peter Newell, *The Governance of Energy Finance: The Public, the Private and the Hybrid*, 2 Glob. Pol. 94, 96 (2011).

[110] See Karen N. Scott, International Environmental Governance: Managing Fragmentation through Institutional Connection, 12 Melb. J. Int'l L. 1 (2011) (discussing agreements and formal cooperation among multilateral environmental institutions); Margaret A. Young, Trading Fish, Saving Fish: The Interaction between Regimes in International Law (2011) (analyzing the interaction between trade regimes and environmental regimes dealing with fisheries).

willing to make deeper commitments if the commitments are not legally binding.[111] Concerns about governance risk suggest a similar prescription. In some instances, drawing the mandate and powers of an international institution narrowly may facilitate cooperation to a greater extent than giving the institution a broad mandate and powers, given the institutional and systemic risks entailed in such a broad reach. While much remains to be seen about how IRENA will operate in practice, its limited mandate allows it to focus on improving access to affordable renewable energy technology without having its ability to function undercut by policy choices made in different institutions.[112] While perhaps not a first-best solution, in that it does not impose renewable development and utilization obligations, it focuses on building support and capacity for renewable energy in a way that complements both energy security and climate change objectives.

Conclusion

International institutions are a response to the fact that many market failures cannot be addressed by states individually. International institutions facilitate cooperation in a wide variety of ways, including by imposing rules on states; providing frameworks and bodies in which states can more effectively bargain to cooperative solutions; and,

[111] Raustiala, supra note 6; Andrew T. Guzman & Timothy Meyer, International Soft Law, 2 J. Legal Analysis 171 (2010).

[112] This is not, of course, to say that IRENA may not be undermined in its ability to accomplish its mission. Oil-producing countries in particular may have an interest in controlling the type of work that IRENA does and the pace at which is accomplishes its work. Indeed, there is some evidence that oil-producing states have developed outsized influence within IRENA.

where public goods are concerned, encouraging broad participation in international institutions. At the same time, however, institutions create risks that are often underappreciated. In particular, two common techniques for encouraging broad participation in public goods institutions – epistemic cooperation as a prelude to bargaining over substantive regulation and issue linkages – can raise the costs of cooperation or cause cooperative institutions to fail in their missions in ways that scholars have not fully explored. Joining epistemic obligations to institutions designed to produce substantive regulation can lead states that expect to lose from regulation to use epistemic processes as a means to delay or distort bargaining over substantive regulation. This is a form of institutional governance risk, a feature of an institution that makes it less likely it will accomplish its stated mission. Governance risk can also be systemic, as when policies implemented in one institution raise the costs of cooperation, or cause outright cooperative failures, in other institutions. This occurs when the two institutions are linked either institutionally, by states in bargaining processes, or functionally as when two institutions regulate different facets of the same underlying activity. The way in which cooperative solutions create negative externalities for other cooperative problems has been underappreciated in the literature on international law and deserves more study.

This article begins that study by examining how IRENA tries to mitigate both conventional governance risk and systemic governance risk. IRENA's institutional design suggests two approaches to mitigating governance risk. First, IRENA divorces epistemic issues from rulemaking powers. Where epistemic issues have deep distributional implications, trying to use an institution both to build a knowledge-based assessment of the risks posed by the underlying market failure and to negotiate rules based on that

assessment risks creating the gridlock that has characterized much of the negotiations in the UNFCCC. IRENA solves this problem by confining itself to dealing with epistemic issues, in attempting to frame renewable energy as a pro-business enterprise and working to create a knowledge commons for renewable energy. Second, IRENA reduces the systemic risk it poses through its very narrow mandate. IRENA's mandate directs it to focus on long-term strategies for growing the use of renewables, largely in markets that are not heavily tied to fossil fuels. While this narrow mandate may to some extent reduce the upside to what IRENA can accomplish, it also limits the downside risk of hurting cooperation efforts in other energy institutions.

Institutions such as IRENA thus may offer a model for cooperation on global public goods problems such as climate change that have bedeviled governments for years. Counterintuitively, by removing itself from the array of institutions aimed at creating legal obligations, IRENA may be able to increase its overall effectiveness. It does not hold out the great hopes for sudden and sweeping change that are often associated with large multilateral processes such as the UNFCCC. Instead, it offers more modest and achievable goals on the back of which more expansive cooperative efforts may some day stand.