

## 10 Clean Energy and the Hybridization of Global Governance

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The transformation of global governance has taken multiple forms. When the international relations scholarship speaks of such transformations it refers implicitly or explicitly to an ideal type of twentieth-century intergovernmental regimes, characterized by an integrated structure and legal frameworks often managed by international organizations (IOs). Increasingly, the idea of integrated international regimes centered on organizational hierarchies has been challenged by a growing complexity of institutional modalities and actors making governance claims. At least three distinctive pathways of change in governance architectures can be discerned.

First, among the traditional intergovernmental institutions and organizational hierarchies there has been expansion of mandates to include new and interdependent issues, resulting in regime complexes with overlapping functions, norms, practices, and contractions.<sup>1</sup> A second pattern of change and complexity, which has become apparent over several decades, is one where a traditional intergovernmental institution remains central to a governance regime, but finds itself flanked by a growing orbit of other IOs, as well as a diverse set of transnational network-based initiatives and market instruments. Political processes of “horizontal rescaling,” whereby issues become linked to and grafted on the mandates of preexisting or new institutions, often result in this type of complexification.<sup>2</sup> Prototypical examples of such transformation are the governance of health and climate change.<sup>3</sup> Finally, for a third set of global cooperation dilemmas an integrated intergovernmental regime never was. Instead, distinct spheres of decentralized governance seem to have developed organically out of a series of new institutional

<sup>1</sup> Raustiala and Victor 2004; Alter and Meunier 2009; Hofmann 2009; Orsini et al. 2013 among others.

<sup>2</sup> Andonova and Mitchell 2010.

<sup>3</sup> Keohane and Victor 2011; Moon 2013; Moon et al. 2010; Morse and Keohane 2014; Andonova 2017.

experiments, reforms, and practices, often carving political space in-between preexisting regimes. In such decentralized spheres, transnational governance, conceptualized here as networks linking actors across jurisdictions and steering action toward a set of collective and public purposes, is a centrally important mode of organization and delivery of governance functions.<sup>4</sup> Such networks may operate in the shadow of governmental hierarchies, in the sense that they may include public actors, draw resources from governmental agencies, or seek to ultimately influence the creation of new hierarchical instruments. Nonetheless, substantial articulation of governance purposes, norms, and functions takes place across more horizontally structured networks and associated markets. The governance of forestry, private military companies, business and human rights, clean energy, and the internet have in many ways followed such pattern of governance formation with a relatively decentralized structure.<sup>5</sup>

This chapter focuses on clean energy governance to analyze the patterns and causes of decentralized governance, when political gridlocks have continuously blocked the issue in the frameworks of traditional hierarchies. This is a policy sphere that has been constructed as such first through transnational network-based initiatives, and more recently with the creation of several new IO hierarchies and hybrid structures. The analysis links to the line of inquiry in this volume about how networks capture the growing interdependence across issue areas and actors claiming governance roles. It also brings evidence of tendencies of hybridization and considerable layering of modes of governance, as networks often engage markets, rely on state agencies for resources, and create pathways to new intergovernmental or hybrid structures.<sup>6</sup>

The chapter follows the overall framework of the volume by examining how the modes of governance for clean energy have changed over time, and what political dynamics can account for the relative decentralized governance of the issue. The first section defines clean energy as an issue area of global governance, and specifies the rationale for the intertemporal research design of the empirical analysis. The second section analyzes the evolution of clean energy governance across three distinct periods and institutional developments – from limited cooperation within hierarchical institutions to the proliferation of networks and ultimately the creation of new hierarchies and hybrid arrangements. The third section examines the political drivers of decentralized governance.

<sup>4</sup> See Andonova et al. 2009; Andonova et al. 2017; Bulkeley et al. 2014.

<sup>5</sup> Avant 2005, 2016; Cashore et al. 2004; Pattberg 2007; Raustiala 2016; Ruggie 2013.

<sup>6</sup> Abbott et al. 2016; Andonova 2017; Bartley 2018.

The Conclusion reflects on whether decentralized governance is good news for cooperation.

### **Clean Energy Governance: Definition and Methods**

The governance of clean energy involves the articulation of shared norms and objectives on the transition toward energy systems that are more efficient and less damaging to health and the environment, as well as their implementation through a set of policies, networks, and practices. Different organizations and networks working on clean energy have adopted alternative, broader or narrower terminology and policy focus on the issue, such as “renewable energy,” “low-carbon energy,” or “sustainable energy.”<sup>7</sup> For the purposes of this analysis, clean energy is defined as the technologies, services, and processes that reduce energy consumption and enable a transition to systems with low environmental and health impacts, in particular through achieving greater efficiency and increasing the share of renewable sources.<sup>8</sup> The empirical examination of the paths to decentralized governance for clean energy adopts an intertemporal methodology of analysis to document institutional change, following the approach of Colgan, Keohane, and Van de Graaf.<sup>9</sup> Specifically, the chapter identifies three relevant, albeit overlapping, periods during which distinctive modalities of clean energy governance developed, or in some circumstances failed to do so. This research design corresponds to the interest of this volume as a whole to inquire how changes in world politics have reshaped the modes of governance over time, and the objective of the chapter to understand the pathways to decentralized governance of clean energy.

The first period of analysis, the 1980s–1990s, marked the rise in salience of issues related to alternative energy sources and energy efficiency in the aftermath of the Organization of the Petroleum Exporting Countries (OPEC) embargo and oil crisis (1970s) and heightened concern about global warming (1980s and early 1990s). Yet, the rise in issue salience also coincided with strong geopolitical interests to retain

<sup>7</sup> See for example the different terminologies adopted by the Renewable Energy Network (REN21, [www.ren21.net/about-ren21/about-us/](http://www.ren21.net/about-ren21/about-us/)); the International Renewable Energy Agency (IRENA, <https://irena.org/aboutirena>); the International Energy Agency (IEA, [www.iea.org/about/](http://www.iea.org/about/)), the Sustainable Energy for All initiative (SEforAll, [www.seforall.org/about-us](http://www.seforall.org/about-us)).

<sup>8</sup> This conceptualization follows the definition adopted in Andonova and Chelminski 2016. It is derived from the objectives on clean energy outlined in major policy and academic initiatives such as SEforALL, the IEA, and the MIT Clean Energy Prize (see <http://cep.mit.edu/tracks-1>).

<sup>9</sup> Colgan et al. 2012.

sovereign control over the relative reliance on fossil fuels and the national energy mix, resulting in limited intergovernmental collaboration on cleaner energy.

The second period, from the late 1990s to 2010, marks the long stalemate in climate cooperation that followed the adoption of the Kyoto Protocol under the United Nations Framework Convention on Climate Change (UNFCCC) and the crowning debacle of its 2009 Conference of Parties in Copenhagen. This has been also a period of increased proliferation of networks for clean energy governance, starting to carve out a new space for cooperation with a noticeable degree of separation from the gridlocks of the traditional energy and climate institutions.

Finally, the third and most recent time period studied in the chapter, 2009–2017, has brought about a certain consolidation and formal, normative recognition of the decentralized sphere of clean energy governance. This period also marked the creation of a new intergovernmental hierarchy, the International Renewable Energy Agency (IRENA), as well as the more hybrid structures of networks and hierarchies such as the UN Sustainable Energy for All initiative and organization (SEforALL) and the Sustainable Development Goal (SDG) 7 on Affordable and Clean Energy.

For each period of time the analytic narrative examines the political drivers of deadlock or variable creation of governance mechanisms for clean energy. More specifically, it places the spotlight on the evolution and sequencing of governance modalities, which have become the building blocks of decentralized governance architecture. The empirical analysis relies on a cross-examination of studies that so far have tended to situate clean energy initiatives as a subset of the regime complexes of climate change or energy, rather than as a distinct governance sphere.<sup>10</sup> In addition, it draws on text analysis of treaty instruments, international reports, and other primary documents, as well as on interviews and a new database on Transnational Clean Energy Governance to document the evolutions of organizational modalities.<sup>11</sup>

<sup>10</sup> See for example, Bulkeley et al. 2014; Florini and Sovacool 2009; Dubash and Florini 2011; Lesage et al. 2010; Keohane and Victor 2011, 2013; Van de Graaf 2013a.

<sup>11</sup> The dataset draws on the following data sources: Barnsley and Ahn 2014; Andonova and Chelminski 2016; and Climate South 2018 (see [www.geg.ox.ac.uk/research/climate-south](http://www.geg.ox.ac.uk/research/climate-south)). Through additional coding the new dataset on Transnational Clean Energy Governance, 1980–2018 includes transnational initiatives with explicit and central focus on the governance of clean energy as defined in this chapter. On the basis of the type of actors that constitute the transnational governance network, the initiatives in the Transnational Clean Energy Governance, 1980–2018 are also coded and classified as

## **The Making of Clean Energy Governance: Networks, Hierarchies, and Hybrids**

*Hierarchical Institutions and Stasis in Clean Energy Governance, 1980–1997*

Global energy governance has been traditionally structured around inter-governmental hierarchies, like the majority of issues that emerged in twentieth-century Cold War politics. In the wake of the 1973 oil crisis triggered by the embargo of OPEC, Western industrialized nations established the International Energy Agency (IEA, 1974) as the principal institution to facilitate cooperation for the security and predictability of oil supply among members of the Organisation for Economic Co-operation and Development.<sup>12</sup> Within intergovernmental hierarchies, however, there was very limited scope for cooperation on cleaner or alternative energy sources to fossil fuels for much of the twentieth century. This was despite the fact that the 1970s oil shocks put on the policy agenda the issue of greater energy efficiency and diversification of resources with a certain urgency, and prompted the adoption of domestic policies including in the USA, but also in some countries with autocratic regimes such as Brazil and the Philippines. The salience of the issue led to the first United Nations Conference on New and Renewable Sources of Energy in Nairobi (1981). However, the proposal to create a specialized energy department within the World Bank with policy and financing power was opposed by the USA. More generally, the geopolitical context and state interests during that period were such that the management of the energy mix rested firmly within the sovereign prerogatives of states.

Within the IEA, a Working Party on Renewable Energy Technologies was created as an advisory body in 1982. However, the tight control over the agency by member states, concerned primarily about the stability of oil prices, made any substantial policy work or agreement on renewable sources outside the reach of the agency. As Colgan et al. characterize it, the IEA “remained structurally frozen in time.”<sup>13</sup> Similarly, the Energy Sector Management Assistance Program (ESMAP) was created in 1983 as a program within the World Bank, but at that time it focused largely on access to energy and energy security. Text analysis of ESMAP Annual Reports between 1983 and 1995 shows that these documents only marginally mention “environmental externalities” and “energy

private, public, or partnered, following the methodology specified by Andonova et al. 2018.

<sup>12</sup> Keohane 1984; Van de Graaf 2012.      <sup>13</sup> Colgan et al. 2012, 126.

efficiency,” a far cry from any serious policy or strategy for project investments away from fossil fuels.<sup>14</sup>

The issue of energy externalities and cleaner sources gained salience again in the late 1980s and early 1990s with the rise in scientific and public concern about climate change and reliance on fossil fuels. Countries adopted the UNFCCC in 1992 as the main instrument of climate cooperation. However, the convention entirely avoided the issue of the transition to more sustainable energy sources and technology. While its text calls for reduced emissions of greenhouse gases, which implies progressive reduction in the use of fossil fuels, its language does not contain any provision that directly mentions energy resources. The term “energy” appears only in the Preamble, referring to developing countries and stating that: “their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general.”<sup>15</sup> States were simply not ready to delegate authority on energy matters through the hierarchical mechanisms of an intergovernmental treaty, despite their centrality for addressing climate change. As the then US President George H.W. Bush remarked at the UNFCCC negotiations, “the American way of life is not up for negotiation.”<sup>16</sup> The Global Environmental Facility (GEF) was established as the main funding mechanism to serve the UNFCCC along with several other environmental conventions, providing some resources for clean energy projects, which however were limited and bound by additionality conditions.

The adoption of the Kyoto Protocol under the UNFCCC was the most notable event in the intergovernmental politics of climate change during the second part of the 1990s, with important, although not fully anticipated effects on the politics of clean energy governance. The Kyoto Protocol established emission reduction targets for industrialized states (Annex I countries), interpreting the UNFCCC provision for “common but differentiated responsibilities” in a way that reified the divisions between industrialized and developing countries on climate cooperation (see Chapter 3). Article 2 of the Kyoto Protocol also specified that Annex I industrialized countries will advance policies and measures to implement their emission reduction obligations according to their national circumstances, including through “enhancement of energy efficiency” and “promotion, development and increased use of, new and renewable

<sup>14</sup> “Annual reports,” ESMAP. [www.esmap.org/annual-reports](http://www.esmap.org/annual-reports).

<sup>15</sup> United Nations Framework Convention on Climate Change, adopted on May 9, 1995, 1771 U.N.T.S. 107, 3

<sup>16</sup> “A Greener Bush,” *The Economist*, February 13, 2003.

forms of energy.”<sup>17</sup> The Kyoto Protocol was thus the only legal instrument under the UNFCCC that included soft but explicit expectations about energy sector reforms. However, by placing the provision under Annex I the Kyoto Protocol also deepened the geopolitical discord on climate change between the USA, the European Union states, and developing countries. Its provision on clean energy is likely an additional factor that contributed to its rapid demise in the US political context, and conversely supported the European Union’s embrace of stronger commitments on renewable sources since the late 1990s.<sup>18</sup> The protocol furthermore did not include dedicated financing or a strong technology transfer mechanism for clean energy, implicitly pushing to the sideline questions of developing countries’ engagement in a low-carbon transition.<sup>19</sup> Divergence of geopolitical interest ossified into inflexible negotiating blocks, and gridlock settled in for the next decade, particularly after the US withdrawal from the Kyoto Protocol.<sup>20</sup>

The analysis of institutional hierarchies and treaty provisions thus reveals a highly limited scope to address the transition to a more sustainable energy mix within institutions such as the IEA, the UNFCCC, or the World Bank at times of geopolitical discord and heightened concern among states to maintain sovereign control and limited international delegation over energy policy decisions.

*Expanding Clean Energy Governance through Networks,  
Late 1990s–Present*

The longstanding geopolitical gridlock in climate politics between 2000 and 2015 is widely interpreted as one of the main triggers for alternative, network-based action by non-state and substate actors on climate-related issues. Indeed, this was a period of rapid proliferation of transnational clean energy governance initiatives (see Figure 10.1). However, the stasis in intergovernmental regimes on energy and climate change is only a partial account of the politics that produced a decentralized and layered architecture of clean energy governance. The diversification of political agency in international affairs and the ability of non-state and substate actors to directly claim governance roles have shaped in significant ways networked modes of governance.<sup>21</sup>

<sup>17</sup> Kyoto Protocol to the United Nations Framework Convention on Climate Change, adopted December 11, 1997, 37 I.L.M. 22 (1998), Article 2

<sup>18</sup> Schreurs et al. 2009. <sup>19</sup> Benedick 2001. <sup>20</sup> Depledge 2006; Hale et al. 2013.

<sup>21</sup> Andonova et al. 2009, 2017; Bulkeley et al. 2014; Green 2014; Hoffmann 2011; Prakash and Potoski 2006; Ruggie 2004; Slaughter 2004.

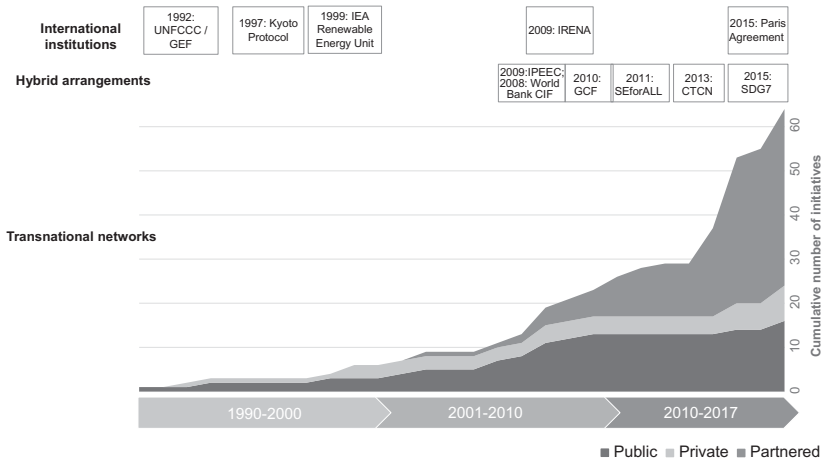


Figure 10.1 Evolving modalities of clean energy governance.

Source: Author, data from Transnational Clean Energy Database, 1990–2018

The 1992 Rio Summit on the Environment and Sustainable Development, where the UNFCCC was negotiated, provided one of the first formal platforms for participation by private, advocacy, and substate actors. As a result, several transnational initiatives with explicit priorities on energy sustainability were launched, independently from the intergovernmental processes that steered clear from the issue. The E-7 consortium of electricity companies (later renamed E-8 and now the Global Sustainable Electricity Partnership) pledged to promote “expertise, competence, know-how” and investment for more efficient and environmentally sound electricity use and production, including through greater share of renewables.<sup>22</sup> The Local Governments for Sustainability (ICLEI) network engaged municipalities in horizontal collaboration to leverage commitments, resources, and support for local sustainability, such as the advancement of cleaner energy systems, energy efficiency, and urban planning.<sup>23</sup> ICLEI became the network with the widest global participation of cities with commitments for climate and energy action.<sup>24</sup> In many ways the E-7 partnership and ICLEI were precursors of a larger tendency in subsequent decades to advance the clean energy discourse and objectives through the expansion of transnational governance networks. Figure 10.1 captures the intertemporal tendency in the rise of transnational networks as modes of governance for clean energy

<sup>22</sup> E-7 1992.    <sup>23</sup> Betsill and Bulkeley 2004.    <sup>24</sup> Andonova et al. 2017.



since the late 1990s, alongside intergovernmental institutions and hybrid initiatives.

Figure 10.1 also reveals a rapidly developing tendency toward shared authority between public and private actors through transnational governance networks and public–private partnerships, operating in parallel with intergovernmental institutions. The political incentives behind the proliferation of networks have several dimensions.

First, the divergence of preferences among groups of industrialized countries, which contributed to the gridlock in climate cooperation for much of the 2000s, motivated the mobilization of coalitions of the “green and greedy” or of the “brown and greedy”<sup>25</sup> between public and private or advocacy interests, to promote energy technology diffusion and policies via transnational networks. Entrepreneurs of donor-driven networks typically included government departments within states, often alongside with industry associations and IOs.<sup>26</sup> The Asia-Pacific Partnership, for example, was sponsored by the US government and involved counterparts in Australia, India, and China, among others. Through a series of ministerial meetings it promoted a technology-oriented approach to the reduction of greenhouse gases from the fossil fuel industry, including clean coal. The partnership was also interpreted as an effort to undermine the Kyoto Protocol.<sup>27</sup> European countries with proactive renewable policies in turn supported initiatives such as the Renewable Energy and Energy Efficiency Partnership (REEEP), the Johannesburg Renewable Energy Coalitions, and REN21.<sup>28</sup> All of these initiatives used a transnational, network-based structure that facilitated involvement of private actors, policy officials, and actors from developing countries in a process of governance experimentation and project-based investment.<sup>29</sup>

Second, IOs, or more precisely departments and individual leaders within IOs, sometimes reacted with surprising speed and entrepreneurship to establish new programs on clean energy governance. More often than not such programs took the shape of hybrid partnership networks, rather than hierarchically implemented instruments or formal policies.<sup>30</sup> In 1997, for example, the United Nations Environment Programme (UNEP) established its Energy Branch. In an interview the founding director of the Energy Branch explained:

Before the Kyoto Protocol, it was impossible to discuss renewable energy and energy efficiency in the political context of the UN. The Protocol brought the issue into the open. There was a growing interest among industry and

<sup>25</sup> Hicks et al. 2008. <sup>26</sup> Andonova 2014, 2017; Bulkeley et al. 2014.

<sup>27</sup> Taplin and McGee 2010. <sup>28</sup> Andonova, Castro et al. 2018.

<sup>29</sup> Bulkeley et al. 2014; Szulecki et al. 2011. <sup>30</sup> Andonova 2010, 2017; Newell 2011.

policy circles in renewable energy, but the quality of information and expertise were limited; particularly for developing countries, which were not members of the IEA.<sup>31</sup>

Organizational entrepreneurs within UNEP thus saw a political opportunity to advance a portfolio of clean energy programs and partnerships that would fall within UNEP's mandate and expertise related to technology, industry, and climate change.<sup>32</sup> This work proceeded in large part through networks, including the REN21 partnership network that expanded to become one of the most authoritative governance bodies providing information and facilitation of policy coordination on issues of renewable energy.<sup>33</sup> UNEP's clean energy portfolio benefited to a great degree from the parallel creation of another entrepreneurial structure – the United Nations Foundation and the UN Fund for International Partnerships (UNFIP) – set up by then Secretary-General Kofi Annan with the support of a \$1 billion grant from US philanthropist Ted Turner.<sup>34</sup> The fund identified clean energy as a priority for supporting partnership collaboration between UN agencies and private and civil society actors. Over time UNEP's Energy Branch established a diverse portfolio of transnational programs and partnerships, with the support of UNFIP, a variety of public and private donors, relevant departments in developing countries, industry, and think tanks. The focus of energy initiatives, in which UNEP is engaged, ranges from energy efficiency (e.g., the Global Market Transformation for Efficient Lighting, the Sustainable Buildings and Construction Programme, the Global Fuel Efficiency Initiative) to improved access to clean energy (e.g., the African Rural Energy Enterprise Development Programme, the Clean Cookstove Alliance, REEEP, Sustainable Biofuels) and provision of expertise and technical support on energy-related strategies.

A third type of clean energy network involves a growing number of non-state and substate actors, which have created horizontal initiatives across borders for climate and clean energy. Most municipal and regional climate governance networks, such as ICLEI, C40, or Regions20, place strong emphasis on efficient energy management, transportation, efficiency of buildings, and displacement of polluting technologies. Clean energy issues have thus found a space on subnational policy agenda, through their interdependence with concerns about local air pollution, dependence on imported fossil fuel, and the effects of

<sup>31</sup> Interview, director of UNEP Energy, Paris, July 2015. <sup>32</sup> Andonova 2017.

<sup>33</sup> Andonova 2017; interview with senior staff member of REN21, Paris, May 2015. See also Barnsley and Ahn 2014; REN21 2015; Stadelmann and Castro 2014.

<sup>34</sup> Andonova 2017.

climate change. Nongovernmental organizations (NGOs) and industry associations have similarly established partnerships or voluntary commitments to advance cleaner and more efficient energy systems. However, the most significant contribution from the private sector to the clean energy transition has taken place primarily through markets, including through trade and foreign direct investment and in response to incentives put in place by government policies and diffusion effects.<sup>35</sup>

Finally, and somewhat paradoxically, the influence of formal hierarchical institutions such as the Kyoto Protocol of the UNFCCC, or agencies such as the World Bank and the IEA on clean energy collaboration, has materialized primarily through associated networks and market-based mechanisms rather than hierarchical implementation of intergovernmental commitments. The Clean Development Mechanism (CDM) and the Joint Implementation (JI) mechanisms of the Kyoto Protocol became de facto the most important market-based instruments under the UNFCCC for clean energy technology transfer.<sup>36</sup> This is despite the fact the CDM and JI were not designed to exclusively target clean energy investment, and in some instances produced perverse incentives for low-cost offsets in methane capture from coal mines or the continued production and destruction of hydrochlorofluorocarbons.<sup>37</sup> Nonetheless, approximately 72 percent of all CDM projects up to February 2019 involved renewable energy, providing project-based investments for the diffusion of cleaner technologies,<sup>38</sup> and importantly, for the creation of domestic constituencies in favor of such transitions.<sup>39</sup>

Under the shadow of the formal UNFCCC market mechanisms emerged private carbon markets and transnational private rules to regulate them. Green qualifies private carbon markets as “entrepreneurial governance” capturing the bottom-up agency of private developers, epistemic communities, consultants, associations, and NGOs.<sup>40</sup> In 2013 the new Climate Technology Centre and Network (CTCN) involving multiple institutions and experts was established to facilitate “technology solutions, capacity building and advice on policy” under the UNFCCC Technology Mechanism, with limited direct funding allocated to it.<sup>41</sup>

Kyoto Protocol market mechanisms, furthermore, provided an impetus for the Environment Department of the World Bank to create, with donor countries and private actor participation, a series of carbon funds as financial instruments to support the implementation of market-

<sup>35</sup> Dechezleprêtre et al. 2011; Gallagher 2014. <sup>36</sup> Stadelmann and Castro 2014.

<sup>37</sup> Wara and Victor 2008. <sup>38</sup> UNEP DTU Partnership 2019.

<sup>39</sup> Andonova and Sun 2019; Schröder 2012. <sup>40</sup> Green 2014.

<sup>41</sup> See [www.ctc-n.org/](http://www.ctc-n.org/).

based carbon offsets. In the course of less than ten years the expanding number of climate funds made the World Bank a focal point for the creation, in 2008, of the Climate Investment Facility (CIF), the largest mechanism at the time for targeted financing for clean technology transfer and climate change.<sup>42</sup> Amid the proliferation of organizational platforms, transnational networks, and markets for clean energy, there was a sense that the IEA was lagging behind.<sup>43</sup> However, the IEA had an important epistemic advantage as the principal depository of credible information on energy, technology roadmaps, and advisory functions.<sup>44</sup> Ultimately, with facilitation and financing by the G8, the International Partnership for Energy Efficiency Cooperation (IPEEC) and the Low-Carbon Energy Technology Platform were created as partnership platforms through which the IEA has expanded its expertise and advisory functions on cleaner energy, particularly with respect to developing countries.<sup>45</sup> As the present analysis reveals, during the period of stagnating climate negotiations in the late 1990s and the 2000s, networks with highly variable constellations of actors became the most vibrant modes of clean energy governance. Such networks were created at multiple sites of governance, reflecting the interdependency of issues and actors, and frequently in conjunction with market mechanisms linked to carbon offsets and technology investments. Moreover, the transnational governance networks captured by Figure 10.1 are, in many ways, just the tip of a more complex web of initiatives and practices, linking the global and the local transnationally.

Specific cases can illustrate further the functioning of this sphere of interdependent and overlapping networks. Consider the initiative of the mayor of Saint Cristóbal in the Galapagos Islands to launch the first wind power project ever built on an island for the displacement of 50 percent of the island's diesel-generated electricity. This initiative was prompted by concerns about dependency on imported diesel fuel and its significant externalities resulting from air pollution and oil spills. It became possible primarily through a global partnership network, which included the Global Sustainable Electricity Partnership, investments from private utilities such as American Electric Power and RWE Power AG, the United Nations Development Program, the national government of Ecuador,

<sup>42</sup> Andonova 2017; Newell 2011; Nakhooda 2011; interview with staff members of the World Resources Institute, Washington, DC, July 2014.

<sup>43</sup> Van de Graaf 2012; Colgan et al. 2012.

<sup>44</sup> Interview, director of UNEP Energy, Paris, July 2015. See also Keohane 1984.

<sup>45</sup> Interview with staff member of the International Energy Agency, May 2015, Paris. See also Barnsley and Ahn 2014; Lesage et al. 2010.

and facilitation and financial support from UNFIP.<sup>46</sup> As this very local episode illustrates, multiple institutions, partnerships, and platforms *interplay* to create spheres of decentralized network-based governance. By focusing on the global level the analysis of this chapter thus captures some of the gateways to a much thicker and broader network of actors.

*Layering and Institutionalization of Clean Energy Governance,  
2009–2017*

After the first decade of rising networks for clean energy governance, the creation of IRENA in 2009 marked a turn to formal intergovernmentalism for the first time in this policy issue. The mandate of the new organizational hierarchy focuses on renewable energy, rather than on a broader scope of technologies and systems for a sustainable energy transition. Nonetheless, it also represents the first formal institutionalization of clean energy governance. Existing accounts explain IRENA as a major institutional breakthrough, driven by a new geopolitical constellation and a sufficient coalition of powerful state actors that were increasingly dissatisfied with the limitations of the IEA.<sup>47</sup> However, the present analysis raises a prior question: to what extent did the growing constellation of clean energy networks and markets prior to 2009 ultimately help to articulate a closer agreement among industrialized countries and with the Global South? Lead countries on clean energy, such as Germany and the UK, used high-level network-based platforms such as the G8 and G20 to advance greater consensus on energy transition and to pledge financing as a commitment mechanism. Transnational partnerships and market-based instruments, in turn, promote learning, policy diffusion, and project-based investment in emerging and developing countries, strengthening policy constituencies. Transnational networks thus constructed, over the first decade of the twenty-first century, a sphere of governance that is related to and yet distinct from the contentious climate politics, and which appeared more technical and focused on information, technology transfer through projects, and new investment mechanisms. Not coincidentally, the new intergovernmental agency IRENA was fashioned as a depository of expertise, capacity building, and project-based investment to promote renewable resources.

After 2009 the formal institutionalization of the emergent sphere of clean energy governance in some ways responded to concerns about

<sup>46</sup> Interview with senior staff of UNFIP, New York, September 2014. See also Global Sustainable Electricity Partnership 2016.

<sup>47</sup> Colgan et al. 2012; Van de Graaf 2013a, 2013b.

institutional fragmentation and the role of decentralized networks as conduits of influence by powerful actors.<sup>48</sup> It proceeded with the parallel construction of institutions under the auspices of more broadly representative UN frameworks (Figure 10.1), and with a formal articulation of norms and the rationalization of clean energy governance as a sphere of hybrid authority. Because of their voluntary and self-selecting participation, transnational governance arrangements have tended to privilege the agendas of actors with stronger capacity and interests, rather than those that are marginalized with fewer resources and greater need for governance support.<sup>49</sup> The resulting patterns of participation often reified familiar inequities across the industrialized North and the Global South.<sup>50</sup> Led by such concerns, developing countries challenged the increasing dominance of the World Bank in climate financing networks and markets, and motivated, in part, the negotiations of the Green Climate Fund (GCF) under the more representative structure of the UNFCCC. Ultimately the GCF was fashioned as a formal intergovernmental institution, which however did not replace the World Bank CIF, and included partnership-type horizontal structures through its Private Sector Facility.<sup>51</sup>

The UN initiative on *Sustainable Energy for All* (2011), launched by then UN Secretary-General Ban Ki-Moon subsequently became the main vehicle for the formal recognition and institutionalization of the decentralized sphere of clean energy governance. The process had all the elements of organizational orchestration.<sup>52</sup> The UN Secretary-General launched the initiative as a “movement” and “consultation” rather than a summit or negotiation, engaging UN agencies but also a multitude of partnerships and networks for clean energy governance.<sup>53</sup> In effect, *Sustainable Energy for All* deliberately brought the hybrid structure of the decentralized governance for clean energy to the floor of the UN General Assembly. It became the first multi-stakeholder process to result in the adoption of a UN General Assembly Resolution 65/151 on the *International Year of Sustainable Energy for All*, which articulated for the first time a set of broad normative objectives and a policy consensus for a “sustainable energy transition.”<sup>54</sup> It implicitly recognized the two decades of prior work of the multitude of transnational networks, IOs, and partnerships and provided the normative glue of a new sphere of hybrid governance. Notably, the *Resolution on Sustainable Energy for All* does not mention the UNFCCC, having been adopted during the period

<sup>48</sup> Barnett and Duvall 2005; Hafner-Burton et al. 2009. <sup>49</sup> Andonova and Levy 2003.

<sup>50</sup> Bulkeley et al. 2014. <sup>51</sup> Andonova 2017. <sup>52</sup> Abbott et al. 2016.

<sup>53</sup> The Secretary-General’s High-Level Group on Sustainable Energy for All 2012.

<sup>54</sup> UN General Assembly 2011, 2012, 3.

of stagnation in climate negotiations, even though it calls for a climate-resilient future.<sup>55</sup> The resolution also paved the way for the inclusion, in the 2015 Sustainable Development Goals (SDGs), of Goal 7 on the advancement and implementation of “access to affordable, reliable, sustainable and modern energy for all.”<sup>56</sup> In an interesting twist of institutional evolution, the Sustainable Energy for All Initiative was subsequently incorporated as a formal IO in Vienna, albeit with a multi-stakeholder constituency including “leaders in government, the private sector and civil society” and a mandate linked to SDG 7 and the UNFCCC Paris Agreement.<sup>57</sup> This identity card of the organization and Figure 10.1 summarize the hybrid and decentralized structure of clean energy governance that developed in the course of two decades, through the interplay of networks, markets, and hierarchies.

### **Decentralized Governance for Clean Energy: Why Is It Happening?**

The decentralized sphere of networks, hierarchies, and hybrid arrangements for clean energy governance represents an increasingly common institutional constellation in international relations. It is characterized by the absence of a core integrated regime, instead involving the layering of organizational modalities and sources of authority. Such constellations have become part of a broader tendency of hybridization of governance that relies increasingly on the interplay between public and private governance, and between traditional bureaucratic hierarchies, transnational networks, and informal instruments of governance.<sup>58</sup> What accounts for the growing reliance on a relatively non-hierarchical layering of networks, markets, and formal IOs for the governance of many global issues?

In the case of clean energy, geopolitics has been a fundamental structural and political variable that in the first instance prevented the effective integration of clean energy issues in preexisting or new international regimes, as documented most notably for the cases of the IEA and the UNFCCC. Furthermore, as issues gain in complexity there is both a greater degree of uncertainty about the payoffs of collaboration and greater normative contestation, leading to consistent reluctance by states

<sup>55</sup> UN General Assembly 2011. <sup>56</sup> UN General Assembly 2015, 14.

<sup>57</sup> “About Us,” SEforAll. [www.seforall.org/about-us](http://www.seforall.org/about-us).

<sup>58</sup> Abbott et al. 2016; Andonova 2017; Andonova et al. 2018; Bartley 2018; Büthe and Mattli 2011; Farrell and Newman 2014; Kahler 2016; Pauwelyn et al. 2012; Vabulas and Snidal 2013; Sending and Neumann 2006; Green 2014; Raustiala 2016; Tallberg et al. 2013.

to delegate substantial authority on energy under the UNFCCC framework.<sup>59</sup> Even the Paris Agreement, which is considered as a milestone in breaking the climate cooperation gridlock, “encourages” “technology development and transfer” but does not include a specific mention of “energy” or “energy transition.”<sup>60</sup> Categories matter. They reflect how different institutions may facilitate or obstruct the articulation of contested political priorities, and influence international relations and policy choices.<sup>61</sup>

While geopolitics and other structural accounts capture important changes in world politics, such as the constellation of power and interests, resources, and connectivity, the present analysis shows that the pluralization of agency has to a large extent shaped the networks and market-based mechanisms that gave rise to the sphere of clean energy governance. It furthermore highlights the role of governance entrepreneurs, for example actors with strong normative, epistemic, or incentive-based motivations, to engage in the construction of new experimentalist governance through transnational networks. Such entrepreneurs can be private, non-state actors,<sup>62</sup> but also institutional actors such as IOs or government agencies that have driven or orchestrated the political coalitions behind the proliferation of governance modalities.<sup>63</sup>

The empirical analysis of the making of clean energy governance also reveals that networks and markets have deployed governance functions primarily through expertise, financing, and the project-based implementation of technology.<sup>64</sup> They focused at first on providing credible information and facilitating stronger epistemic consensus on renewable energy, energy efficiency, and other transition pathways, implicitly or explicitly assuming advocacy and policy diffusion functions. A large number of transnational partnerships and subnational initiatives in turn have adopted strong capacity-building, financing, and project-implementation approaches. The influence of these modalities of governance has materialized by revealing and updating preferences and by the facilitation of learning and negotiation among formerly distant political positions on clean energy. Policy-making and regulation on clean energy matters, in turn, have remained largely in the domain of domestic politics.

<sup>59</sup> Keohane and Victor 2013.

<sup>60</sup> See Paris Agreement, 2015. <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

<sup>61</sup> Barnett and Finnemore 2004.

<sup>62</sup> Boasson and Huitema 2017; Green 2014; Cashore et al. 2004; Prakash and Potoski 2006.

<sup>63</sup> Andonova 2017; Abbott et al. 2015; Hale and Roger 2014.

<sup>64</sup> See also Andonova et al. 2009; Andonova, Castro et al. 2018.



Finally, the analysis in this chapter demonstrates that the entrepreneurship of decentralized and network-based modalities of governance has not taken place in an institutional vacuum. Political entrepreneurs take cues from the intergovernmental space or from domestic politics to foster alliances across borders and identify windows of opportunity for action. Ultimately, we also observe a turn to more formal institutionalization, albeit through a hybrid structure that has included the creation of a new intergovernmental hierarchy IRENA, the adoption through a multi-stakeholder process of a UN resolution, a set of goals on clean energy, and subsequently the incorporation of SEforALL into an organizational bureaucracy with a multi-stakeholder constituency to manage the UN SDG on sustainable energy. These mechanisms advance the functions of institutionalizing and legitimating the emergent sphere of clean energy governance by articulating more explicitly its underlying purpose, norms, and policy objectives. The analysis thus reveals processes of experimentation across multiple planes of politics as key dynamics that can help to explain the decentralized development of new hybrid spheres of governance from the ground up.

### **Conclusion: Is Decentralized Governance Good News for Cooperation?**

Climate change, by now an existential threat to earth systems, has given the impetus for political interests to advance cleaner energy technologies and cooperation. Paradoxically, and somewhat counterintuitively, the UNFCCC has not proved to be the most conducive institutional setting for developing a substantive agreement on advancing a clean energy transition. Clean energy collaboration proceeded first through transnational networks and experimental initiatives, linking to or in parallel with the climate and energy regimes. Such network-based collaboration became visible at the highest political level (G8, the Major Economies Forum, the Clean Energy Ministerial), as well as through hundreds and possibly thousands of transnational public-private partnerships, networks of cities, regions, NGOs, and industry. Some of these networks expanded and became institutionalized as “multisector” IOs. Others have lost political influence and disbanded. These institutions have put in place a set of tools in terms of credible expertise, capacity building, policy advice, and funding to support transition pathways.

Such developments raise the question: is decentralized governance good news for cooperation? Is it signaling the coming end of international treaty-making as we know it? Is it second best to the traditional integrated and legalized regimes?

The complexification of global governance may not always be good news for researchers or policy-makers, who now may have to make sense of and work with myriad institutions, networks, and market-based activities. For many issue areas, however, gone are the days of the relatively integrated and organized regimes around specific rules and commitments, against which we could attempt to measure effectiveness. And yet the governance of clean energy is part of a broader set of issues, where decentralized governance has made the advancement and articulation of global objectives possible, while still depending to a large degree on national governments and substate actors for their codification and implementation. The development of decentralized governance for clean energy, I would argue, has followed in many ways the problem structure of the issue and the underlying interest by the majority of states to retain considerable sovereignty in setting priorities and policies to shape the use and mix of energy resources.

The variety of initiatives, norms, and funding instruments attempts to steer domestic practice, implementation, and learning to support more sustainable energy strategies. In this sense, one could stipulate that the pluralization of agency in world politics and of modes of organization has contributed to fostering collaboration, which may not have been possible through state-centric and formal diplomacy-driven modalities. Several streams of politics, fluctuating between gridlock and cooperation, seemed to have come together to facilitate a normative commitment to a more sustainable energy future and enabled streams of information, projects, and investment. From such a perspective, complex decentralized governance has made collaboration on clean energy possible, despite a clear tendency to keep the issue under the lid of sovereignty. At the same time, the multitude of institutions that make the structure of governance and their boundaries can appear fragmented, elusive, and contested. The distributional implication of myriad governance modes, their sufficiency for addressing global problems, and the lines of accountability are far from established. Understanding the contemporary transformation of governance is thus, in many ways, only the first step toward a larger and more difficult inquiry about effectiveness and accountability.

Transnational networks, flatter in structure compared to hierarchies, are nonetheless important conduits of power and influence.<sup>65</sup> Nonlegalized network governance thus tends to privilege certain agendas that are pursued by actors with stronger capacity and interests, compared to marginalized actors with fewer resources and greater need for

<sup>65</sup> Barnett and Duvall 2005; Hafner-Burton et al. 2009.

governance support.<sup>66</sup> The resulting patterns of participation in transnational governance networks often reify, at least in their initial stages, familiar inequities across the industrialized North and the Global South.<sup>67</sup> In practice, transnational market-based networks have privileged participation by large emerging countries such as China, India, Brazil, or Russia.<sup>68</sup> New financing mechanisms may consolidate the influence of traditionally powerful institutions such as the World Bank and donor agencies.<sup>69</sup> Such concerns, particularly among developing countries, have prompted demands for the greater institutionalization of new financing instruments, including through oversight and alignment with the UNFCCC as a broadly representative institution.

### References

- Abbott, Kenneth W., Jessica F. Green, and Robert O. Keohane. 2016. Organizational Ecology and Institutional Change in Global Governance Journal. *International Organization* 70 (2): 247–277.
- Abbott, Kenneth W., Philipp Genschel, Duncan Snidal, and Bernhard Zangl. 2015. *International Organizations as Orchestrators*. Cambridge: Cambridge University Press.
- Alter, Karen J., and Sophie Meunier. 2009. The Politics of International Regime Complexity. *Perspectives on Politics* 7 (1): 13–24.
- Andonova, Liliana B. 2010. Public–Private Partnerships for the Earth: Politics and Patterns of Hybrid Authority in the Multilateral System. *Global Environmental Politics* 10: 25–53.
2014. Boomerangs to Partnerships? Explaining State Participation in Transnational Partnerships for Sustainability. *Comparative Political Studies* 47 (3): 481–515.
2017. *Governance Entrepreneurs: International Organizations and the Rise of Global Public–Private Partnerships*. Cambridge: Cambridge University Press.
- Andonova, Liliana B. and Kathryn Chelminski. 2016. Emergence of a Regime Complex for Clean Energy: The Critical Role of Legitimacy. Paper presented at the 2nd Annual Conference on Environmental Politics and Governance, June 16–19, Gerzensee, Switzerland.
- Andonova, Liliana B. and Marc A. Levy. 2003. Franchising Global Governance: Making Sense of the Johannesburg Type II partnerships. In *Yearbook of International Co-operation on Environment and Development 2003/2004*, edited by Olav S. Stokke and Oystein B. Thommessen, 19–31. London: Earthscan.
- Andonova, Liliana B., Michele M. Betsill, and Harriet Bulkeley. 2009. Transnational Climate Governance. *Global Environmental Politics* 9 (2): 52–73.

<sup>66</sup> Andonova and Levy 2003. <sup>67</sup> Bulkeley et al. 2014.

<sup>68</sup> Castro and Michaelowa 2011; Andonova and Sun 2019.

<sup>69</sup> Nakhooda 2011; Newell 2011.

- Andonova, Liliana B., Paula Castro, and Kathryn Chelminski. 2018. Transferring Technologies. In *Governing Climate Change: Polycentricity in Action?* edited by Andrew Jordan, Dave Huitema, Harro van Asselt, and Johanna Forster, 266–284. Cambridge: Cambridge University Press.
- Andonova, Liliana B. and Ronald Mitchell. 2010. The Rescaling of Global Environmental Politics. *Annual Review of Environment and Resources* 35: 255–282.
- Andonova, Liliana B., Thomas N. Hale, and Charles B. Roger. 2017. National Policy and Transnational Governance of Climate Change: Complements or Substitutes? *International Studies Quarterly* 61 (2): 253–268.
- Andonova, Liliana B., Thomas N. Hale, and Charles B. Roger, eds. 2018. *The Comparative Politics of Transnational Climate Governance*. London: Routledge.
- Andonova, Liliana B. and Yixian Sun. 2019. Private Governance in Developing Countries: Drivers of Voluntary Carbon Offset Programs. *Global Environmental Politics* 19 (1): 99–122.
- Avant, Deborah D. 2005. *The Market for Force: The Consequences of Privatizing Security*. Cambridge: Cambridge University Press.
2016. Pragmatic Networks and Transnational Governance of Private Military and Security Services. *International Studies Quarterly* 60 (2): 330–342.
- Barnett, Michael N. and Martha Finnemore. 2004. *Rules for the World: International Organizations in Global Politics*. Ithaca, NY: Cornell University Press.
- Barnett, Michael N. and Raymond Duvall, eds. 2005. *Power in Global Governance*. Cambridge: Cambridge University Press.
- Barnsley, Ingrid and Sun-Joo Ahn. 2014. *Mapping Multilateral Collaboration on Low-Carbon Energy Technologies*. IEA Insights Series. Paris: IEA.
- Bartley, Tim. 2018. *Rules without Rights: Land, Labor, and Private Authority in the Global Economy*. Oxford: Oxford University Press.
- Benedick, Richard E. 2001. Striking a New Deal on Climate Change. *Issues in Science and Technology* 18 (1): 71–76.
- Betsill, Michele M. and Harriet Bulkeley. 2004. Transnational Networks and Global Environmental Governance: The Cities for Climate Protection Program. *International Studies Quarterly* 48 (2): 471–493.
- Boasson, Elin Lerum and Dave Huitema. 2017. Climate Governance Entrepreneurship: Emerging Findings and a New Research Agenda. *Environment and Planning C: Politics and Space* 35 (8): 1343–1361.
- Bulkeley, Harriet, Liliana B. Andonova, Michele M. Betsill, Daniel Compagnon, Thomas N. Hale, Matthew J. Hoffmann, Peter J. Newell, Matthew Paterson, Charles B. Roger, and Stacy D. VanDeveer. 2014. *Transnational Climate Change Governance*. Cambridge: Cambridge University Press.
- Büthe, Tim and Walter Mattli. 2011. *The New Global Rulers: The Privatization of Regulation in the World Economy*. Princeton: Princeton University Press.
- Cashore, Benjamin, Graeme Auld, and Deanna Newsom. 2004. *Governing through Markets: Forest Certification and the Emergence of Non-State Authority*. New Haven: Yale University Press.
- Castro, Paula and Axel Michaelowa. 2011. Would Preferential Access Measures Be Sufficient to Overcome Current Barriers to CDM Projects in Least Developed Countries? *Climate and Development* 3 (2): 123–142.

- Climate South. 2018. Cooperative Climate Action 2013–2018: Global Performance and Geographic Scope. Research Report Published by the German Development Institute/Deutsches Institut für Entwicklungspolitik (DIE), the Blavatnik School of Government at the University of Oxford, the African Centre for Technology Studies (ACTS), and The Energy and Resources Institute. [www.geg.ox.ac.uk/sites/geg.bsg.ox.ac.uk/files/2018-2012/ClimateSouth%2020Global%20climate%20action%202013-2018%20Nov2018.pdf](http://www.geg.ox.ac.uk/sites/geg.bsg.ox.ac.uk/files/2018-2012/ClimateSouth%2020Global%20climate%20action%202013-2018%20Nov2018.pdf).
- Colgan, Jeff D., Robert O. Keohane, and Thijs Van de Graaf. 2012. Punctuated Equilibrium in the Energy Regime Complex. *Review of International Organizations* 7 (2): 117–143.
- Dechezleprêtre, Antoine, Matthieu Glachant, Ivan Haščič, Nick Johnstone, and Yann Ménière. 2011. Invention and Transfer of Climate Change – Mitigation Technologies: A Global Analysis. *Review of Environmental Economics and Policy* 5 (1): 109–130.
- Depledge, Joanna. 2006. The Opposite of Learning: Ossification in the Climate Change Regime. *Global Environmental Politics* 6 (1): 1–22.
- Dubash, Navroz K. and Ann Florini. 2011. Mapping Global Energy Governance. *Global Policy* 2 (s1): 6–18.
- E-7. 1992. The Environment, Global Warming, and the Development of the Electricity Industry. Chairpersons Joint Statement. E-7 James Bay Inaugural Summit, April 9, 1992. [https://globalelectricity.org/content/uploads/E7\\_JamesBay\\_Summit.pdf](https://globalelectricity.org/content/uploads/E7_JamesBay_Summit.pdf). Accessed 15 February 2019.
- Farrell, Henry and Abraham L. Newman. 2014. Domestic Institutions beyond the Nation-State: Charting the New Interdependence Approach. *World Politics* 66 (2): 331–363.
- Florini, Ann and Benjamin K. Sovacool. 2009. Who Governs Energy? The Challenges Facing Global Energy Governance. *Energy Policy* 37 (12): 5239–5248.
- Gallagher, Kelly S. 2014. *The Globalization of Clean Energy Technology. Lessons from China*. Cambridge, MA: MIT Press.
- Global Sustainable Electricity Partnership. 2016. *Galápagos San Cristobal Wind Energy Project 2003-2016: Performance Summary and Recommendations for Enhancing Ecuador's Longest-Operating Wind Project*. <https://globalelectricity.org/content/uploads/Galapagos-Report-2016-English.pdf>.
- Green, Jessica F. 2014. *Rethinking Private Authority: Agents and Entrepreneurs in Global Environmental Governance*. Princeton: Princeton University Press.
- Hafner-Burton, Emilie M., Miles Kahler, and Alexander H. Montgomery. 2009. Network Analysis for International Relations. *International Organization* 63 (3): 559–592.
- Hale, Thomas N. and Charles B. Roger. 2014. Orchestration and Transnational Climate Governance. *Review of International Organizations* 9 (1): 59–82.
- Hale, Thomas N., David Held, and Kevin Young. 2013. *Gridlock: Why Global Cooperation Is Failing When We Need It Most*. Cambridge: Polity Press.
- Hicks, Robert L., Bradley C. Parks, J. Timmons Roberts, and Michael J. Tierney. 2008. *Greening Aid? Understanding the Environmental Impact of Development Assistance*. Oxford: Oxford University Press.
- Hoffmann, Matthew J. 2011. *Climate Governance at the Crossroads: Experimenting with a Global Response After Kyoto*. Oxford: Oxford University Press.

- Hofmann, Stephanie C. 2009. Overlapping Institutions in the Realm of International Security: The Case of NATO and ESDP. *Perspectives on Politics* 7, 1: 45–52.
- Kahler, Miles. 2016. Complex Governance and the New Interdependence Approach. *Review of International Political Economy* 23 (5): 825–839.
- Keohane, Robert O. 1984. *After Hegemony: Cooperation and Discord in the World Political Economy*. Princeton: Princeton University Press.
- Keohane, Robert O. and David G. Victor. 2011. The Regime Complex for Climate Change. *Perspectives on Politics* 9 (1): 7–23.
2013. The Transnational Politics of Energy. *Daedalus* 142 (1): 97–109.
- Lesage, Dries, Thijs Van de Graaf, and Kirsten Westphal. 2010. *Global Energy Governance in a Multipolar World*. Farnham: Ashgate.
- Moon, Suerie. 2013. WHO's Role in the Global Health System: What Can Be Learned from Global R&D Debates? *Public Health* 128 (2): 168–172.
- Moon, Suerie, Nicole A. Szlezák, Catherine M. Michaud, Dean T. Jamison, Gerald T. Keusch, William C. Clark, and Barry R. Bloom. 2010. The Global Health System: Lessons for a Stronger Institutional Framework. *PLOS Medicine* 7: 1.
- Morse, Julia C. and Robert O. Keohane. 2014. Contested Multilateralism. *Review of International Organizations* 9 (4): 385–412.
- Nakhooda, Smita. 2011. The Multilateral Development Banks, Energy Governance, and Asia. *Global Policy* 2: 120–132.
- Newell, Peter J. 2011. The Governance of Energy Finance: The Public, the Private and the Hybrid. *Global Policy* 2: 94–105.
- Orsini, Amandine, Jean-Frédéric Morin, and Oran R. Young. 2013. Regime Complexes: A Buzz, a Boom, or a Boost for Global Governance? *Global Governance* 19 (1): 27–39.
- Pattberg, Philipp H. 2007. *Private Institutions and Global Governance: The New Politics of Environmental Sustainability*. Cheltenham: Edward Elgar.
- Pauwelyn, Joost, Ramses A. Wessel, and Jan Wouters, eds. 2012. *Informal International Lawmaking*. Oxford: Oxford University Press.
- Prakash, Aseem and Matthew Potoski. 2006. *The Voluntary Environmentalists: Green Clubs, ISO 14001, and Voluntary Environmental Regulations*. Cambridge: Cambridge University Press.
- Raustiala, Kal. 2016. Governing the Internet. *American Journal of International Law* 110 (3): 491–503.
- Raustiala, Kal and David G. Victor. 2004. The Regime Complex for Plant Genetic Resources. *International Organization* 58 (2): 277–309.
- REN21. 2015. *Renewables 2015 Global Status Report*. Paris: REN21.
- Ruggie, John G. 2004. Reconstituting the Global Public Domain: Issues, Actors and Practices. *European Journal of International Relations* 10 (4): 499–531.
2013. *Just Business: Multinational Corporations and Human Rights*. New York: W.W. Norton.
- Schreurs, Miranda, Henrik Selin, and Stacy D. VanDeveer, eds. 2009. *Transatlantic Environment and Energy Politics: Comparative and International Perspectives*. Farnham: Ashgate.
- Schröder, Miriam. 2012. Local Climate Governance in China: *Hybrid Actors and Market Mechanisms*. New York: Palgrave Macmillan.

- Sending, Ole J. and Iver B. Neumann. 2006. Governance to Governmentality: Analyzing NGOs, States, and Power. *International Studies Quarterly* 50 (3): 651–672.
- Slaughter, Anne-Marie. 2004. *A New World Order*. Princeton: Princeton University Press.
- Stadelmann, Martin and Paula Castro. 2014. Climate Policy Innovation in the South: Domestic and International Determinants of Renewable Energy Policies in Developing and Emerging Countries. *Global Environmental Change* 29: 413–423.
- Szulecki, Kacper, Philipp H. Pattberg, and Frank Biermann. 2011. Explaining Variation in the Effectiveness of Transnational Energy Partnerships. *Governance* 24 (4): 713–736.
- Tallberg, Jonas, Thomas Sommerer, Theresa Swuatrito, and Christer Jönsson. 2013. The Opening Up of International Organizations: *Transnational Access in Global Governance*. Cambridge: Cambridge University Press.
- Taplin, Ros and Jeffrey McGee. 2010. The Asia-Pacific Partnership: Implementation Challenges and Interplay with Kyoto. *Wiley Interdisciplinary Reviews: Climate Change* 1 (1): 16–21.
- The Secretary-General’s High-Level Group on Sustainable Energy for All. 2012. Sustainable Energy for All: a Global Action Agenda (April). [www.seforall.org/sites/default/files/SEFA-Action-Agenda-Final.pdf](http://www.seforall.org/sites/default/files/SEFA-Action-Agenda-Final.pdf).
- UN General Assembly. 2011. General Assembly Resolution 65/151, *International Year of Sustainable Energy for All*, A/RES/65/151 (February 16, 2011).
2012. General Assembly Resolution 67/314, *International Year of Sustainable Energy for All, 2012: Report of the Secretary-General*, A/RES/67/314 (August 16, 2012).
2015. General Assembly Resolution 70/1, *Transforming Our World: The 2030 Agenda for Sustainable Development*, A/RES/70/1 (October 21, 2015).
- UNEP DTU Partnership. 2019. CDM Projects by Type. <http://cdmpipeline.org/cdm-projects-type.htm#1>.
- Vabulas, Felicity and Duncan Snidal. 2013. Organization without Delegation: Informal Intergovernmental Organizations (IIGOs) and the Spectrum of Intergovernmental Arrangements. *The Review of International Organizations* 8 (2): 193–220.
- Van de Graaf, Thijs. 2012. Obsolete or Resurgent? The International Energy Agency in a Changing Global Landscape. *Energy Policy* 48: 233–341.
- 2013a. *The Politics and Institutions of Global Energy Governance*. New York: Palgrave Macmillan.
- 2013b. Fragmentation in Global Energy Governance: Explaining the Creation of IRENA. *Global Environmental Governance* 13 (3): 14–33.
- Wara, Michael and David G. Victor. 2008. A Realistic Policy on International Carbon Offsets. *PESD Working Paper 74*. Stanford, CA: Stanford University Press.