

Transnational Public-Private Partnerships as Learning Facilitators: Global Governance of Mercury

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Abstract

Drawing from theories of regime interplay and social learning, this article investigates linkages between hybrid governance schemes and intergovernmental regimes. My analytic framework suggests that, by enhancing cooperation among stakeholders, transnational public-private partnerships will facilitate policy-makers' learning, and accordingly advance the formation of intergovernmental regimes. Here I use qualitative methods to examine the influence of the UNEP Global Mercury Partnership on negotiations over different components of the Minamata Convention on Mercury. Technical and scientific information provided by this partnership helped relevant policy-makers understand the problems to be addressed and some appropriate solutions, thereby accelerating the consensus-making process and shaping the features of certain provisions. I also compare the influences of different partnership areas, revealing that inclusive stakeholder engagement and boundary coordination between different governance schemes are two important conditions for transnational partnerships to promote cooperation in intergovernmental fora.

Over the last two decades, various actors have made up the system of global environmental governance in "a messy, non-linear, non-hierarchical and intertwined fashion" (Najam et al. 2004, 24). This proliferation of governance initiatives requires researchers to analyze new schemes involving state and nonstate actors individually, as well as their links to intergovernmental regimes. While recent studies have begun to focus on relationships among transnational governance schemes, they have often examined the role of public authority in shaping or orchestrating schemes involving private actors, rather than the influence of such nonstate governance initiatives on intergovernmental institutions (Green 2013a; Hale and Roger 2014).

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To fill this research gap, this article investigates the influence of hybrid governance schemes—transnational public-private partnerships (PPPs)—on the development of intergovernmental regimes. The “PPP” is defined here as “agreements for collaborative governance” between public and nonstate actors that “establish common norms, rules, objectives, and decision-making and implementation procedures for a set of policy problems,” and “transnational” refers to the participation of actors from different countries (Andonova 2010, 25–26).¹ While existing research has indicated many potential benefits of transnational partnerships for reducing the deficit left by multilateral environmental agreements, empirical analyses of the partnerships’ impacts have remained scarce (Andonova and Levy 2003; Bäckstrand 2008; Börzel and Risse 2007).² In this article, I investigate how transnational partnerships can contribute to the development of intergovernmental regimes, and under what conditions.

I focus on the critical role of partnerships as knowledge producers, developing an analytical framework that suggests that partnerships can, through exchange and collaboration among stakeholders, help policy-makers learn practical knowledge and thereby advance the formation of formal institutions.³ I argue that the active participation of various stakeholders and boundary coordination between governance schemes are critical for allowing partnerships to provide usable knowledge to improve policy-makers’ understanding of targeted problems and to identify appropriate policy responses. By elaborating some specific interaction mechanisms between hybrid and public governance and examining the conditioning factors for such interaction, I attempt to provide new insight into the role of partnerships in the regime complexes of global environmental governance.

This article analyzes the influence of the United Nations Environment Programme Global Mercury Partnership (hereafter “GMP”) on the formation of the Minamata Convention on Mercury. This case study complements existing research on transnational environmental governance, which until now has mainly focused on climate change. Using data from primary and secondary sources, I find that when policy-makers were hesitant to accept certain regulations or held divergent positions in the negotiations, the scientific and technical information provided by the GMP advanced the consensus-making process, and even shaped some treaty components, by showing both the need for regulation and feasible solutions. I also compare how different areas of the GMP influenced the relevant negotiations. Disaggregating this partnership sheds light on the conditions that enable transnational partnerships to advance intergovernmental cooperation, indicating that the GMP was more influential when a

1. The terms “private” and “nonstate” are used interchangeably in this article.
2. A notable exception is Beisheim and Liese (2014), but their study does not consider interactions between partnerships and intergovernmental regimes.
3. PPPs can undoubtedly fulfill many other functions, but their role as knowledge producers is largely overlooked in the literature.

broad range of stakeholders participated and when UNEP actively introduced the partnership's activities into the negotiations.

Bringing Hybrid Governance Schemes into Regime Complexes

Scholars of environmental politics conceptualize transnational PPPs as being driven by “the deliberate pooling of authority, competences, and resources from both the public and private spheres” (Andonova 2010, 28). This definition emphasizes nonbinding cooperation and stakeholder participation. First, because it is based on voluntary action for a common purpose, a transnational PPP's authority is negotiated across the public and private spheres, instead of being granted through delegation, market mechanisms, or moral recognition. By avoiding the “least-common-denominator effect,” this nonbinding nature allows actors to gain experience through “learning by doing” (Victor 1998). Second, such a PPP forms a type of “networked governance” based on transnational networks encompassing both public and private actors, who interact in decentralized and flexible ways. By including important nonstate stakeholders, the hybrid networks of transnational PPPs are more conducive than intergovernmental regimes to norm diffusion across different countries (Bäckstrand 2008).

Research has pointed out several functions that PPPs can fulfill, including information sharing, capacity building, and rule setting, and has noted their potential to improve the quality of governance (Andonova et al. 2009; Börzel and Risse 2007). Moreover, although transnational PPPs are independent of intergovernmental regimes, these two types of governance schemes often coexist in the same issue areas and interact with each other. Nonetheless, research has rarely examined the ways in which transnational PPPs assist intergovernmental regimes and the conditions under which the latter can benefit from the former.

Indeed, studies on transnational PPPs' influence at the intergovernmental level can expand the scope of the earlier “regime complex” theorizing, which focused on regimes established by governments (Keohane and Victor 2011). Although more recent studies have mapped hybrid and private schemes onto the whole governance system, we still lack research to “assess the effectiveness, normative impact, and distributional consequences of these diverse schemes and activities” (Abbott 2012, 580). Although a few scholars have analyzed the interplay between public and private rules, the impacts of hybrid governance remain largely underexplored (Green 2013b; Green and Auld 2016).

Therefore, the first task of this article is to investigate the process through which transnational PPPs influence their corresponding intergovernmental regimes. My analytical framework underscores a common thread in previous theorizing: that knowledge is the PPP's key asset (Andonova 2010). Drawing on the theory of institutional interplay, I suggest that the influence of transnational PPPs on the formation of relevant intergovernmental regimes follows the pattern of “cognitive interaction,” because negotiations over regime formation are rule-making processes to generate collective knowledge or norms that

will prescribe state behaviors (Gehring and Oberthür 2009). This pattern of interaction can be summarized in four steps: First, the source institution (transnational PPP) generates knowledge, including new scientific and technical information or experiences from previous governance. Second, actors within either the source or the target institution (intergovernmental regimes) feed this knowledge into the decision-making process of the target institution. Third, the knowledge changes the preferences of actors relevant to the target institution. Finally, the changed preferences influence the collective negotiation process. In short, this interplay constitutes a learning process wherein the policy-makers involved in intergovernmental negotiations “absorb new meanings and interpretations of reality” generated by transnational PPPs, and therefore “change their interests and adjust their willingness to consider new courses of actions” (Adler and Haas 1992, 385).

Figure 1 illustrates the hypothesized pathway. The knowledge provided by transnational PPPs can trigger learning by the policy-makers participating in intergovernmental negotiations, raise their awareness of relevant issues, and identify necessary objectives and means (Dimitrov 2003). Indeed, learning can change actors’ interest in relevant issues by reducing uncertainty as well as by creating shared understanding of possible solutions (Goldstein and Keohane 1993). These changes can help policy-makers reach consensus, and thus advance the regime formation process.

Knowledge Transfer from Transnational PPPs to Intergovernmental Regimes

While the causal mechanism above sheds light on the route through which transnational partnerships can influence intergovernmental regimes, it does not clarify *when* the knowledge from transnational partnerships triggers learning by policy-makers involved in relevant intergovernmental negotiations. Answering this question requires in-depth examination of some features of partnerships.

Previous studies have underscored the primary role played by epistemic communities in achieving policy coordination among governments (Haas 1992). Epistemic communities (groups of experts bound by shared beliefs in the verity and applicability of particular forms of knowledge) promote their shared knowledge and become the key agents for policy-makers’ learning, contributing to the creation and maintenance of social institutions that guide international behavior (Haas 1989; Haas 1992). Thus, transnational partnerships that include members of certain epistemic communities and relevant intergovernmental fora can

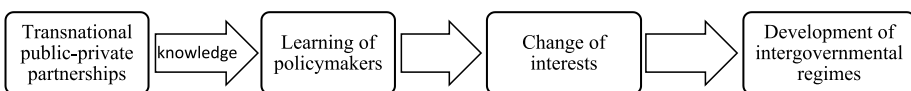


Figure 1
Pathway of Influence

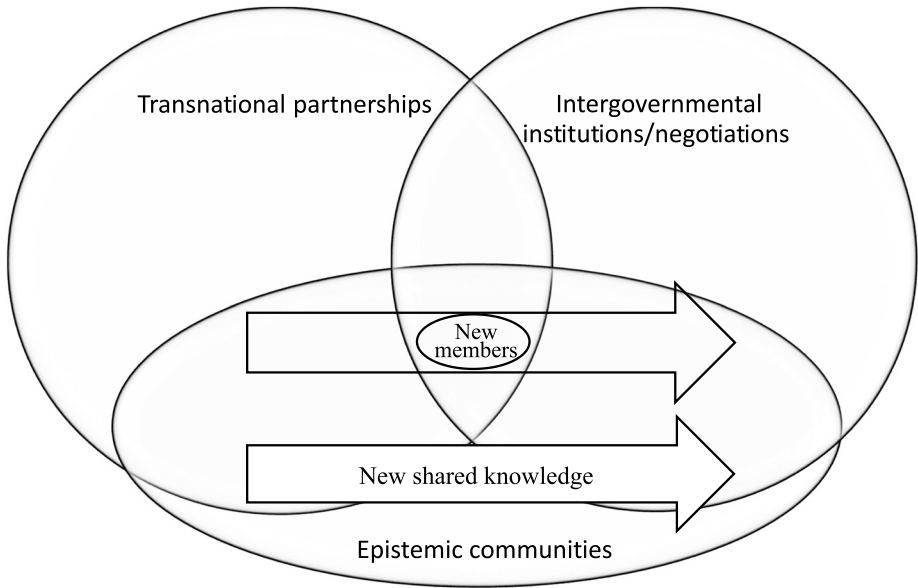


Figure 2
Mechanisms of Knowledge Transfer

Mechanism 1: Transnational partnerships transfer existing knowledge to policy-makers by enhancing their cooperation and socialization with members of epistemic communities. *Mechanism 2:* Transnational partnerships generate new knowledge that advances the formation of intergovernmental regimes, and even influences the content of regimes.

enhance exchange among these actors, enabling them to generate more consensual knowledge. Meanwhile, the partnership's hybrid nature provides opportunities for the members of epistemic communities to interact with government officials outside their communities, helping these communities use "actor linkages" to expand the coalition in support of relevant policies (Selin 2010).

Indeed, transnational partnerships can form additional platforms for epistemic communities to incorporate new members in intergovernmental regimes, and can even generate new shared knowledge among their members. Figure 2 illustrates two non-mutually-exclusive mechanisms of influence; the arrows show how knowledge is transferred from transnational PPPs to their corresponding intergovernmental fora through epistemic communities.⁴ First, the PPP is helpful in passing existing knowledge to intergovernmental negotiations by integrating new members who participate in both fora, such as the policy-makers of some key states. Through their involvement in some partnership activities, these policy-makers cooperate and socialize with relevant experts, improving their understanding of targeted problems and potential solutions. Second, the PPP is

4. The coexistence of these two mechanisms implies that new knowledge can also be transferred through new members. In this situation, the two arrows would be combined into one.

conducive to the generation of certain new knowledge through information exchange among its participants or demonstration projects. Such new knowledge will not only advance the formation of intergovernmental institutions but will also shape the content of relevant regulations.

Conditions for PPPs Facilitating Policy-Makers' Learning

According to this reasoning, PPPs can be seen as knowledge systems led by experts aiming to promote certain rules and norms. To trigger policy-makers' interest in establishing formal institutions, the knowledge from partnerships needs to be perceived as "usable" and "authoritative" in terms of accuracy and political tractability (Parson 2003). In this respect, research indicates that scientific information is more likely to drive institutional development when decision-makers believe the information is salient, credible, and legitimate (Cash et al. 2003). Specifically, *salience* requires that knowledge capture the interests of potential users so that they cannot ignore it; *credibility* means the use of several standard procedures to collect data and make inferential claims; and *legitimacy* implies overcoming the distrust that the information is being used to pursue the self-interests of its providers (Clark et al. 2006, 15).

As compared to scientific assessments led by intergovernmental bodies, transnational PPPs can, in several ways, increase the salience, credibility, and legitimacy of knowledge when stakeholders at different levels actively participate. First, by tapping into multiple levels of expertise from various stakeholders, transnational PPPs can better address the needs of actors directly affected by global environmental governance, thus increasing the salience of information produced by the partnerships (Andonova and Levy 2003). Because science is not independent from politics, effective governance requires the incorporation of local knowledge into scientific information, such that dynamic interaction between the "local" and "global" enhances the authoritative status of the information (Jasanoff and Martello 2004).

Second, by drawing on different types of expertise, PPPs are likely to make their knowledge credible to both state and nonstate actors. For instance, they can adopt participatory approaches that integrate the tacit and experimental knowledge of nonstate actors into conventional scientific research produced by public institutions such as intergovernmental organizations (Cash et al. 2003; Clark et al. 2006).

Third, the engagement of multiple stakeholders enables transnational PPPs to provide more legitimate information by increasing the transparency of the knowledge production process (Gupta and Mason 2014). PPPs provide opportunities for different stakeholders to "co-produce" knowledge, as divergent interests are put on the table to address the legitimacy crisis of science in environmental governance (Bäckstrand 2003; Cash et al. 2003). In sum, the more inclusively a partnership engages different stakeholders, the more likely it is to provide salient, credible, and legitimate knowledge that will contribute to the development of the relevant intergovernmental regime.

Furthermore, the linkage between partnerships and intergovernmental regimes can also condition the influence of the partnerships. In this respect, research has underlined the importance of managing boundaries between communities of experts and decision-makers to harnessing knowledge for sustainable development: the two communities need open, iterative, and inclusive communication, translation of information facilitating mutual comprehension, and mediation of conflicts through transparency, rules of conduct, and criteria for decision-making (Cash et al. 2003). Importantly, such boundary management will be more effective if some organizations act as intermediaries between knowledge and policy (Guston 2001). Therefore, one can expect that a transnational PPP will exert more influence on the relevant intergovernmental regime if certain boundary organizations actively facilitate communication, translation, and mediation between the two communities.

Research Design

To demonstrate the hypothesized mechanisms of PPPs' influence (see Table 1), I examined global mercury governance from 2009 to 2013, when the UNEP Global Mercury Partnership (GMP) worked independently of the Intergovernmental Negotiating Committee (INC) for the Minamata Convention. This case study shows the impacts of transnational governance on an understudied environmental issue, because most existing studies have focused on climate change. Moreover, studying one, single issue area can control for the variation in problem structure—a major alternative explanation of institutional influence (Mitchell 2006). Because the risks of mercury have strong scientific consensus, mercury is a most-likely case for knowledge to influence intergovernmental negotiations; nonetheless, this case is still helpful in investigating the role played by transnational PPPs in the formation of intergovernmental regimes.

To demonstrate the different mechanisms and conditions of PPPs' influence, my empirical analysis disaggregates the GMP into seven partnership areas, which correspond to different components of the treaty under negotiation. Each area

Table 1
Hypotheses on the Conditions for Partnerships' Influence

<i>Hypothesis 1</i>	The more inclusively transnational partnerships incorporate the interests of different stakeholders, the more likely these partnerships will help policy-makers reach the consensus necessary to develop intergovernmental regimes.
<i>Hypothesis 2</i>	The more actively boundary organizations support the interaction between transnational partnerships and intergovernmental regimes, the more influence these partnerships will exert at the intergovernmental level.

works independently, with different leads and participants, so they vary in terms of stakeholder representation and interaction with intergovernmental negotiations. I treat each partnership area as a unit of analysis and examine its influence on the relevant negotiations. This design also enables an evaluation of the two inferred conditions, which provides new empirical insight into the design and operation of PPPs.

As was suggested earlier, transnational partnerships can advance consensus making in intergovernmental negotiations by changing policy-makers' interest in existing proposals, and by generating new knowledge to shape the rules to be established. Hence, I use qualitative methods to examine both types of influence that the GMP has had on negotiations. Specifically, after tracing the formation of the Minamata Convention, I analyze each point of progress in the negotiations to identify whether it was driven mainly by policy-makers' learning; if this is the case, I then investigate whether the learning was triggered by the GMP. To sort out the GMP's effects, I focus on the proximity of events so as to identify the causal relationship between knowledge from the GMP and changes of states' positions in the negotiations (Fearon 1991). The data are drawn from the official documents of UNEP and other stakeholders; from secondary sources, including *Earth Negotiations Bulletin* and the academic literature; and from semi-structured interviews with fourteen key practitioners from different organizations participating in the negotiations.⁵

Constructing a Legally Binding Agreement for Global Mercury Governance

Table 2 lists formative events in establishment of the intergovernmental mercury regime. As of the early 2000s, no comprehensive international arrangement existed to address mercury pollution and many countries were still lacking appropriate regulations, although the risks of mercury to human health and the environment had been acknowledged for many centuries (Selin and Selin 2006). In 2001, the issue was discussed at the 21st meeting of the UNEP Governing Council (GC-21), which approved a comprehensive scientific assessment of global mercury pollution.

The *Global Mercury Assessment Report* was presented at GC-22 in 2003, concluding that national or regional action is not sufficient to tackle the issue because mercury cycles globally (UNEP Chemicals 2002). Accordingly, the EU, Norway, and Switzerland advocated the creation of a legally binding instrument to regulate global mercury pollution, whereas the United States, Australia, and New Zealand called for immediate voluntary action (Andresen et al. 2013; Eriksen and Perrez 2014). Due to the confrontation between the two blocs, the UNEP Governing Council (GC) postponed until the next meeting consideration of the different options for international regulation. The stalemate continued in 2005: the

5. Anonymity was guaranteed to all respondents.

Table 2
Important Events in the Establishment of the Minamata Convention

<i>Date</i>	<i>Events</i>
Feb. 2001	Initiating the first global scientific assessment
Feb. 2003	Appealing for national, regional and global action Setting the objectives for international action Inviting the submission of governments' views on medium- and long-term actions
Feb. 2005	Calling for developing partnerships Deciding to assess the need for further action at the next UNEP GC
Sept. 2005	Identifying five partnership areas
Feb. 2007	Urging governments and stakeholders to support partnerships Establishing a working group to assess different options for international regulation
Feb. 2009	Agreeing on the elaboration of a legally binding instrument Forwarding the GMP's overarching framework to the UNEP GC
June 2010	} Holding five sessions of intergovernmental negotiations
Jan. 2011	
Oct.–Nov. 2011	
June–July 2012	
Feb. 2013	Adopting the text of the Minamata Convention
Oct. 2013	Opening the Convention for signature

United States, Japan, and Australia still supported a partnership approach, while the EU, Norway, and Switzerland argued that such partnerships must be complementary to a legally binding instrument (Earth Negotiations Bulletin 2005). Without a consensus on global actions, the GC urged different stakeholders to develop and implement voluntary partnerships; five partnership areas were identified by late 2005.

Bargaining at GC-24 led to a two-tiered arrangement: establishing a working group to assess different options for mercury regulation, including a legally binding instrument, and urging governments and other stakeholders to strengthen and develop partnerships. Moreover, UNEP was asked to develop an overarching framework for the GMP, including partnership goals and operational guidelines

(UNEP 2007).⁶ The UNEP Chemicals Branch (“UNEP Chemicals”) was designated as the secretariat to coordinate the GMP’s activities. By 2009 the GMP was established, with a well-defined structure and goals in different areas, and the number of participants and scope of activities began to expand quickly. The tipping point occurred at GC-25 in 2009, where the US government under President Obama decided to support a legally binding instrument.⁷ As a result, the states reached an agreement to elaborate a new intergovernmental treaty on mercury.

The negotiations for the new treaty started in June 2010 and were organized into five meetings. At the first meeting (INC1), states exchanged their initial positions and identified key areas of agreement and contention. At INC2, delegates made a preliminary agreement to regulate mercury use in artisanal and small-scale gold mining (ASGM), with support from developing countries. Agreements were also concluded by the end of INC3 on the issues of mercury storage, waste management, and reduction of primary mining (Earth Negotiations Bulletin 2010; Earth Negotiations Bulletin 2011a; Earth Negotiations Bulletin 2011b).

Some contentious issues were deferred to the last two INC meetings. Consensus was reached on the last day of INC5 to set flexible control measures for atmospheric emissions, use the phase-down approach for some products and processes, and develop an independent fund and a monitoring system for compliance (Eriksen and Perrez 2014). Hence, the convention covered the whole life cycle of mercury and set a range of targets (Selin 2014). Opened for signature in October 2013, it has been signed by 128 countries, with thirty-two ratifications.⁸ Although the formation of this convention was far from easy, as the next section will show, its establishment and widespread support reveal that policy-makers from different states gradually improved their understanding of mercury pollution and the necessary solutions.

Global Mercury Partnership and Intergovernmental Negotiations

The process described above shows two reasons why the GMP did not exert much influence before 2009 on the formation of the new treaty. First, without a governing body, the GMP had neither well-defined objectives nor operational guidelines until the end of 2008, and it only started formal activities in 2009. Second, the partnership originally had very few participants, and its network was expanded only after states had agreed to negotiate a new treaty (see Figure 3). Indeed, with the concern that a strong partnership could render a treaty

6. The term “United Nations Environment Programme Global Mercury Partnership” appeared for the first time in a mandate made at GC-24 in 2007. Before 2007, although several partnership areas were identified, they were not considered parts of an overall “partnership.”

7. Author’s interviews with two UNEP officials, Geneva, September 11, 2013, and May 20, 2014. For a detailed analysis on the change of the US position, see Andresen et al. (2013).

8. See the official website of the Minamata Convention, www.mercuryconvention.org/Countries/tabid/3428/Default.aspx, last accessed October 13, 2016.

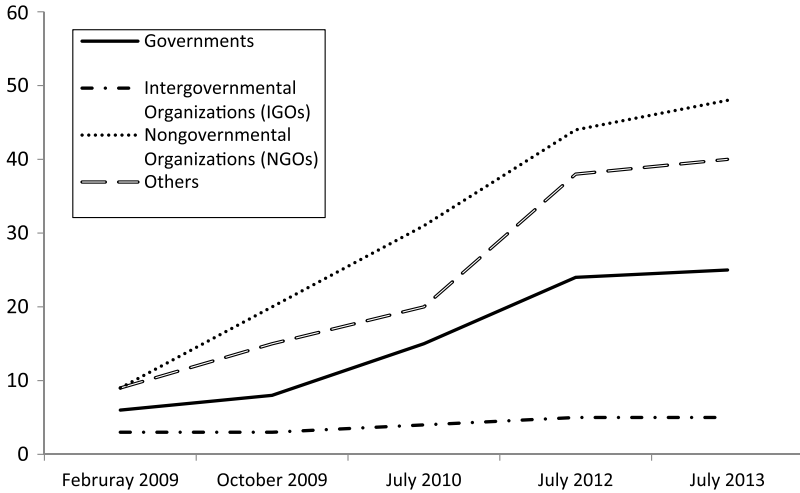


Figure 3
Number of the GMP's Official Participants

Data sources: UNEP reports on activities undertaken under the GMP

unnecessary, most states advocating a legally binding instrument were reluctant to support the GMP before 2009.⁹

By mid-2009, after establishing an overarching framework, the GMP comprised seven partnership areas concerning different key aspects of mercury management: reducing mercury use in ASGM, in products, and in chlor-alkali production; emissions control from coal combustion; waste management; supply and storage; and research on mercury air transport.¹⁰ Each area has its own leads and can be seen as an independent partnership with specific goals and plans; together, their activities are coordinated by UNEP Chemicals under the GMP umbrella. Below I compare the influences of these partnership areas, including mercury reductions in vinyl chloride monomer (VCM)¹¹ but excluding "mercury air transport and fate research," which focuses on general scientific research rather than regulatory measures.

Since 2009, the GMP has significantly increased its number of participants and activities, so that its network has been more closely connected with policy-makers in the intergovernmental negotiations. Importantly, the GMP could introduce its knowledge to negotiators through policy reports and workshops as well as through national demonstration projects. Such knowledge is particularly

9. Author's interviews with a UNEP official, Geneva, May 19, 2014; and a negotiator for Nigeria, Geneva, May 27, 2014; and phone interview with a negotiator for Switzerland, May 27, 2014.

10. Another partnership area on mercury releases from the cement industry was initiated in July 2013, after the end of the treaty negotiations, and therefore is excluded from this study.

11. Although UNEP failed to establish an area on VCM under the GMP, some projects in this sector have been launched using a partnership approach and are reported on the GMP's webpage.

Table 3

Overview of Each Partnership Area's Impacts on GMP Negotiations

<i>Partnership Area</i>	<i>Impacts</i>
Artisanal and Small-Scale Gold Mining	Raised the awareness of policy-makers and local stakeholders Provided global data on mercury use in this sector Recommended the formalization of the sector, along with alternative technologies
Coal Combustion	Convinced emerging economies that control measures are feasible Disseminated monitoring technologies
Products	Identified targeted products and manufacturers Disseminated information on economics of transition
Chlor-Alkali	Provided global data on mercury-cell facilities and technical assistance to targeted countries
Vinyl Chloride Monomer	Disseminated information on economics of transition Raised the awareness of Chinese stakeholders Supported research on the status of mercury use and the development of alternative technologies
Waste Management	Promoted technical guidance on good practices
Supply	Almost none

critical at negotiations' early stages, to inform policy-makers of relevant scientific information and solutions. A remarkable channel concerns the technical briefings that occurred on the day before the negotiations at INC1–INC3. Organized by UNEP Chemicals, these briefings invited participants from each partnership area to present key information generated from their work and to answer questions from policy-makers attending the negotiations.¹² Table 3, which is based on various UNEP documents and my interviews, shows an overview of each partnership area's impacts on the relevant treaty components. Below is an in-depth analysis of the mechanisms and conditions of influence in each area.

Artisanal and Small-Scale Gold Mining

ASGM is the world's largest anthropogenic user and emitter of mercury (UNEP 2013). Accordingly, the GMP has identified a partnership area to reduce mercury

12. Author's interview with a UNEP official, Geneva, May 20, 2014.

in this sector, co-led by the Natural Resources Defense Council (NRDC) and the United Nations Industrial Development Organization (UNIDO). Nonetheless, this issue was not substantively discussed at INC1 because of many developing countries' unwillingness to restrict ASGM, which provides the livelihoods of 10–15 million miners worldwide.¹³ Moreover, some countries had banned ASGM without supporting miners' transitions to other jobs, which created a black market for mercury and exacerbated pollution.

Transnational advocacy networks calling for a reduction of mercury pollution from ASGM are dominated by civil society organizations and conceptualize the issue as being related to both environment and development (Sipl 2015). Thus, the ASGM partnership involved various NGOs with expertise in the sector, including the Artisanal Gold Council (AGC), which established a global database of mercury use in ASGM. These data were widely cited in UNEP documents and used in the negotiations to inform policy-makers about pollution's severity and locations, leading some governments to "face the reality" on ASGM.¹⁴ Importantly, through knowledge sharing among its participants, the ASGM partnership recommended an innovative two-fold solution for the new convention: promoting mercury-free technologies and formalizing the sector (UNEP 2010). In suggesting the latter innovation, this approach differed from most previous discussions, which had emphasized the sector's negative aspects, creating an environment of "rational consideration" for governments to reform the sector.¹⁵

A critical event that helped the ASGM partnership introduce its recommendations to policy-makers occurred between INC1 and INC2: in December 2010, the partnership convened a Global Forum on ASGM in the Philippines, attended by more than one hundred representatives from seventeen governments and many IGOs and NGOs. By inviting governmental officials and civil society groups from countries facing challenges on ASGM, the forum provided an invaluable opportunity for stakeholders to reconsider issues, discuss potential policies, and share success stories through constructive dialogues (UNEP 2011a). According to a participant, the forum was "transformative," since it was "the first time that government officials responsible for mercury and ASGM from different continents...came together to share their experience."¹⁶ As a result, this multi-stakeholder forum transmitted important information on ASGM to policy-makers in developing countries, helping relevant governments learn about feasible solutions.

One month later, at INC2, many developing countries openly expressed their willingness to reduce mercury use in ASGM. This was a major progress in comparison to previous negotiations: at INC1, countries like Tanzania and Honduras had noted their difficulties regulating ASGM, whereas at INC2 the African Group called for mandatory obligations to reduce emissions from

13. Author's interviews with a UNEP official and a UNEP consultant, Geneva, May 2014.

14. Author's interview with a UNEP consultant, Geneva, May 22, 2014.

15. Author's Skype interview with an official of NRDC, May 21, 2014.

16. Author's Skype interview with an official of NRDC, May 21, 2014.

ASGM, and the Latin American and Caribbean Groups also supported a gradual elimination of mercury in ASGM (Earth Negotiations Bulletin 2010; Earth Negotiations Bulletin 2011a). Since then, related negotiations have accelerated: at INC3, states agreed on provisions that require the parties to develop and implement a national action plan to reduce mercury use in and releases from ASGM (Article 7). To explain this consensus, a UNEP official indicated: “without the Global Forum to coordinate developing countries’ position, the negotiations should have taken more time to reach the agreement.”¹⁷

Indeed, the interplay between the ASGM partnership and the relevant negotiations demonstrates the two mechanisms illustrated in Fig. 2. First, by involving both state and nonstate actors, this partnership constituted an institutionalized platform of exchange between NGOs and IGOs working on ASGM and the governments of developing countries facing relevant challenges, allowing these organizations to influence implicated policy-makers and advocate the need for pollution reduction. Second, this partnership enabled its participants who had relevant expertise to generate an original recommendation to formalize the sector, which was then taken up by negotiators and used in the Convention (Annex C). Therefore, the ASGM partnership not only accelerated the consensus-making process in the negotiations, but also shaped the relevant provisions. Apart from this partnership, other factors seemed unable to influence the negotiations on ASGM, since reducing emissions from ASGM does not require any new technology, and powerful actors in the countries with ASGM had not favored formal regulation before the partnership’s activities.

To account for this partnership’s influence, the engagement of key stakeholders on the ASGM issue—civil society actors—was critical. Of all GMP areas, the ASGM partnership had the highest proportion of NGO participants (57 percent), involving not only high-profile transnational organizations such as NRDC or AGC, but also local groups in Asia and Africa.¹⁸ These NGOs actively interacted with policy-makers through the global forum and other partnership activities to advocate regulation. In this process, UNEP Chemicals and UNIDO served as boundary organizations to actively transmit the solution suggested by the partnership to government officials, through numerous reports, workshops, and side events at the INC meetings. In sum, both inclusive stakeholder participation and boundary management by IGOs contributed to a high level of influence on the relevant negotiations.

Coal Combustion

Coal burning is the second largest source of mercury emissions, of which more than 85 percent come from power generation (UNEP 2013). Accordingly, the

17. Author’s interview with a UNEP official, Geneva, May 20, 2014.

18. Data as of October 2011; available online at <http://tinyurl.com/j8xfjbb>, last accessed May 31, 2015.

GMP identified in 2005 a partnership area focusing on reducing emissions from coal-fired plants. Since 2009, the coal partnership has been led by the International Energy Agency Clean Coal Centre, a nonprofit, research-oriented organization experienced in mercury pollution management. This partnership has deeply engaged relevant experts on the issue from various research institutions, including government agencies, private consulting, and universities, in both developed and developing countries. Through many reports and field projects, it has advanced collaboration among technical experts from different organizations and between experts and policy-makers.

Drawing on its participants' expertise, the coal partnership has indicated that up to 95 percent of mercury releases from coal can be captured by improving coal and plant performance and by optimizing control systems for other pollutants (UNEP 2013). By underscoring the feasibility of some control technologies, the coal partnership transferred relevant knowledge to policy-makers in the negotiations—especially those from emerging economies—and thereby increased their interest in controlling emissions from coal-fired plants.

As the negotiations began, emerging economies dependent on coal for power generation were against stringent regulation on emissions control, advocating voluntary measures instead. To further cooperation on this issue, the coal partnership endeavored to help policy-makers in these countries understand monitoring and control technologies. Specifically, it conducted several inventories and demonstration projects on emissions reduction in China, Russia, and South Africa from 2009 to 2011. Through these projects, experts involved in the partnership taught implicated government officials and stakeholders how to monitor emissions, transmitting knowledge on mercury behavior and means of control. Additionally, this partnership had developed technical guidance for determining appropriate approaches to control mercury emissions in individual coal-fired plants, which was introduced to policy-makers at INC2. According to a project leader, activities in Russia and South Africa succeeded in giving them “some optimism on how reducing mercury emissions may be available,” and “the project work in China was a real eye-opener in terms of showing how emissions are actually already far more under control than anyone thought, and how existing and impending legislation could actually result in emission reductions within the next decade.”¹⁹

Because of these projects, at INC3 China and India were no longer attempting to avoid obligations for the “unintentional emissions” they had been unwilling to regulate previously (Earth Negotiations Bulletin 2010; Earth Negotiations Bulletin 2011a; Earth Negotiations Bulletin 2011b). Indeed, the coal partnership enabled implicit agreement among negotiators around 2011 to include provisions in the treaty for controlling all types of mercury emissions from coal combustion. Therefore, this partnership's impacts followed the first arrow in Fig. 2,

19. Author's e-mail exchange with an expert at the International Energy Agency Clean Coal Centre, May 28, 2014.

relying on existing knowledge to advance the relevant consensus-making process, although it could not accelerate an agreement on the regulation targets.

Indeed, the coal partnership influenced the negotiations by allowing policy-makers from emerging economies to learn about the importance and means of relevant emissions control. To explain this influence, a key enabling factor was the collaboration among various public and private organizations from both developed and developing countries, which facilitated the transfer of usable knowledge to policy-makers. Moreover, UNEP Chemicals was highly engaged in outreach activities on behalf of this partnership, helping the latter widely disseminate the outcomes of its projects to negotiators through documents and workshops.

Mercury-Containing Products

Because large amounts of mercury are used globally in numerous products, mercury reduction in products was among the first areas identified by the GMP. Led by the US Environmental Protection Agency, the product partnership involved the governments of several developing countries and some IGOs that promote mercury-free products (e.g., UNIDO and the World Health Organization). However, almost half of the participants were NGOs, with the particularly active engagement of advocacy groups like Health Care Without Harm and the International POPs Elimination Network.²⁰ Driven by collaboration between governments and NGOs, the work of this partnership has centered around raising awareness on existing alternatives in developing countries.

During the years of negotiations, the product partnership provided useful information for policy-makers to determine the scope of products under regulation. In particular, before INC1 it created a global database on the manufacturers of mercury-containing products, classified by product category, country, and region.²¹ These data have helped states identify their own problems and assisted the INC Secretariat in preparation of the draft Convention text.²² Moreover, this partnership supported and disseminated research on the economics of conversion to mercury-free products in several countries. For instance, a project in China analyzed the social-economic costs of transition toward mercury-free medical devices, and thereby raised awareness among Chinese health regulators about the risks associated with mercury-added products.²³ Likewise, projects in Latin America and Africa also demonstrated to local stakeholders the benefits from phasing out mercury-added projects. With support from this partnership, the draft text prepared for INC3 identified almost all of the types of regulated

20. Data as of October 2011; available online at <http://tinyurl.com/j8xfjbb>, last accessed May 31, 2015.

21. Available at the UNEP website, <http://tinyurl.com/q65xyj5>, last accessed May 25, 2015.

22. Author's phone interview with a former UNEP official, June 10, 2014.

23. Author's email contact with a negotiator for China, May 29, 2014.

products later used in the final treaty, including batteries, lamps, and measuring devices (UNEP 2011b). Thus, the product partnership assisted negotiators in coming to agreement about the list of regulated products.

However, the product partnership could not accelerate the debate on whether to use a negative or a positive list approach to regulation (Selin 2014). Additionally, the debate surrounding dental amalgam shows that this partnership has exerted less influence than the two abovementioned areas. Several UNEP officials indicated in their interviews that in the negotiations some industry stakeholders reiterated the lack of suitable alternatives, argued for removing dental amalgam from the phase-out list, and in the end successfully pushed for a phase-down approach. This disagreement shows that the product partnership could not promote a consensus among all stakeholders because not all stakeholders had participated in this partnership's activities. Consequently, those who were excluded from cooperation within the product partnership contested the authority of the information provided by this partnership, such that its contribution to the consensus-making process remained limited.

Chlor-Alkali Production

Another major source of mercury demand is chlor-alkali production, represented in the GMP by a partnership area also led by the US Environmental Protection Agency. As compared with other areas, the chlor-alkali partnership had the fewest participant organizations and was dominated by industry stakeholders, with little engagement from civil society groups and governments other than the US.²⁴ The main contribution of this partnership to the negotiations was the "global inventory of mercury-cell chlor-alkali facilities," supported by the World Chlorine Council—a global association representing chlorine producers.²⁵ The data from this inventory were presented at INC2 and thereby became an important basis for the subsequent negotiations.

Moreover, the chlor-alkali partnership promoted mercury-free technologies in countries using mercury-cell facilities through studies on the economics of conversion and demonstration projects. As a major user of mercury in this industrial process, Russia played a key role in the relevant negotiations. However, the partnership projects to assist Russian producers with upgrading their plant processes and equipment had little impact on the Russian government, which was unwilling during the negotiations to accept stringent regulation, and finally deferred the phase-out date to 2025 (Eriksen and Perrez 2014).

Furthermore, a remarkable decrease of mercury use in chlor-alkali production between 2000 and 2010 reflects that the producers in many countries,

24. Data as of October 2011, available online at <http://tinyurl.com/j8xfjbb>, last accessed May 31, 2015.

25. Data downloadable at <http://tinyurl.com/opydtfj>, last accessed May 31, 2015.

such as EU member states and India, already had knowledge of alternative technologies and their benefits before most activities by this partnership had launched (UNEP 2013). Therefore, the chlor-alkali partnership did not generate any new knowledge, and its influence on the negotiations was at most moderate, in identifying the location of mercury users and highlighting the availability of alternative technologies.

Vinyl Chloride Monomer Production

VCM production using mercury as a catalyst is the world's second largest sector of mercury demand, and China represents 80–90 percent of global use of this process.²⁶ To address this issue, UNEP actively engaged relevant Chinese stakeholders, even though it could not establish a partnership area. Specifically, UNEP Chemicals implemented a project from 2008 through 2011 with the Chinese Ministry of Environmental Protection to investigate the level of mercury use and its reduction status in VCM production, and to evaluate the feasibility of mercury-free catalysts.²⁷ By inclusively involving many key stakeholders, including government agencies, industry representatives, research institutions, and international experts, this project helped the Chinese government update its understanding on the exact challenges and feasible solutions in this sector.

The project's impact is reflected by a change in China's position in the negotiations: at INC2 and INC3, China consistently emphasized the absence of feasible mercury-free alternatives and called for "a practical approach on a voluntary basis"; however, after this project China began to support a phase-down obligation at INC4, expressing its willingness to halve its mercury use in VCM production (Earth Negotiations Bulletin 2011a; Earth Negotiations Bulletin 2011b; Earth Negotiations Bulletin 2012). According to a Chinese negotiator, information generated by this project helped Chinese policy-makers identify a feasible target and, further, increased the interest of the government and domestic industry in promoting more efficient technology.²⁸ Therefore, this partnership project generated new knowledge for the implicated stakeholders and thereby influenced the position of a major state in the negotiations. In this process, UNEP Chemicals proactively used the links between the project and the negotiations to encourage the Chinese government to make a commitment.

Waste Management

The partnership area on waste management was established in 2008 for lifecycle management of mercury. It has been led by the Japanese government and has

26. Data from <http://tinyurl.com/hkkmyhq>, last accessed October 15, 2016.

27. Author's interview with a UNEP official, Geneva, May 18, 2014.

28. Author's e-mail contact with a negotiator for China, May 29, 2014.

focused on identifying and disseminating environmentally sound management techniques and practices. Attracting the participation of many governments, IGOs, and NGOs, this partnership has conducted several projects in developing countries to assess and manage mercury waste and has cooperated with the Basel Convention to develop relevant technical guidelines. While these activities were important in raising stakeholders' awareness globally and in promoting useful techniques, their influence on the relevant negotiations remained limited, because states agreed at the very beginning of the negotiations to defer the adoption of specific requirements for waste management measures (Eriksen and Perrez 2014). Hence, knowledge from this partnership was not widely transmitted to the negotiations and will probably exert more direct influence later, during the treaty implementation.

Mercury Supply

The GMP established a partnership area on mercury supply and storage in June 2009, led by the Spanish and Uruguayan governments. In terms of mercury supply, this partnership has focused its work on the world's last known exporting mercury mine, in Kyrgyzstan. Supported by some developed countries, the partnership has launched a project to promote more sustainable economic activities in this mining region. Nonetheless, due to an unstable political environment with limited stakeholder engagement, the project failed to close the mine, and the government of Kyrgyzstan has not signed the Convention.²⁹ Therefore, this partnership did not influence the negotiations on primary mining, which ended with China's commitment to close its mines in 15 years.

Key Findings

To summarize, the analysis above demonstrates that knowledge—scientific and technical information—is “one of the most distinctive advantages” of the GMP in comparison to other types of international cooperation.³⁰ By disseminating existing knowledge to or generating new knowledge for policy-makers, several partnership areas significantly influenced their corresponding negotiations. Moreover, the comparison shows that inclusive stakeholder participation and active management of links between partnerships and the negotiations enhanced the partnerships' contributions to regime formation. Table 4 summarizes these findings.

29. Author's interviews with a negotiator for Switzerland, May 27, 2014, and a US Environmental Protection Agency official, May 23, 2014.

30. Author's interview with a UNEP official, Geneva, May 20, 2014.

Table 4

Summary of Findings

<i>Partnership Area</i>	<i>Stakeholder Inclusiveness</i>	<i>UNEP's Boundary Coordination</i>	<i>Level of Influence</i>	<i>Type of Knowledge Facilitating Learning</i>
Artisanal and Small-Scale Gold Mining	Highly multistakeholder	Very active	Very high	Existing and new
Vinyl Chloride Monomer	Multistakeholder	Very active	High	New
Coal Combustion Products	Multistakeholder Government and NGO-dominated	Active	High	Existing
Chlor-Alkali	Industry-dominated	Active	Moderate	Existing
Waste Management	Multistakeholder	Limited	Low	Existing
Mercury Supply	Government-dominated	Limited	Very low	Existing

Conclusions

Regime complexity, with rising authority of nonstate actors, reflects a nascent trend in global environmental governance. By focusing on transnational PPPs, I have examined the “linkage politics” between hybrid and intergovernmental governance, as illustrated by cognitive interaction based on governance and actor linkages, whereby the GMP transferred knowledge to negotiations on the Minamata Convention (Selin 2010). During these negotiations, such knowledge helped implicated policy-makers learn about the targeted problems and feasible solutions, and thereby accelerated the consensus-making process, and even shaped some provisions. According to an observer, “without the Partnership’s support, governments would face [a] difficult time having the technical information necessary for the creation of the Convention. . . . The negotiations wouldn’t have been successfully finished within four years.”³¹

My research contributes to the study of institutional interplay by specifying two mechanisms through which transnational PPPs influence intergovernmental regimes. First, partnerships enhance interaction between stakeholders and policy-makers at different levels and create a sense of community among them, insofar as the coalition in support of relevant policies is expanded and the consensus-making process accelerated. Second, partnerships provide opportunities for stakeholders to produce new knowledge to be incorporated within

31. Author’s interview with a UNEP official, Geneva, September 2013.

intergovernmental regimes—as shown in particular by the cases of ASGM and VCM, where the relevant provisions drew from new information generated by some partnership activities.

Furthermore, the comparison across the GMP's partnership areas highlights two important conditions for partnerships to reach their potential of advancing intergovernmental cooperation. First, the engagement of core stakeholders is crucial for PPPs to provide authoritative knowledge for policy-makers. In fact, the debate on dental amalgam could have been settled better if the product partnership had incorporated the interests of different industry groups. This condition also partly explains the GMP's small impact on the issues of chlor-alkali and primary mining, although vested interests—respectively, among the Russian and Kyrgyz governments—seem difficult to overcome through knowledge transfer. Moreover, an influential PPP requires that some IGOs actively introduce their work in the corresponding intergovernmental process. In this respect, UNEP Chemicals behaved as a negotiation “facilitator” by using the GMP as a tool to promote consensus on several issues, a strategy of “forum shopping” to explore institutional linkages (Selin 2010).

The case of global mercury governance shows that knowledge is a critical asset of transnational PPPs, which enables hybrid governance to enhance intergovernmental cooperation through social learning among policy-makers. The interaction mechanisms and conditioning factors indicated here shed new light on PPPs' effects, and therefore provide insightful recommendations for practitioners of global governance seeking synergies among different governance schemes. As regime complexity is expanding in many environmental issues, further effort will be needed to study different issue areas and more complex systems systematically, so as to advance our understanding of the institutional interplay between transnational and intergovernmental governance and the challenges for multilevel governance associated with such interplay.

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