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Global Governance of Renewable Energy and the WREC/WREN Case

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Abstract

This paper explores sources of global governance through the specific case of the World Renewable Energy Congress/Network (WREC/WREN). The current literature on global governance, debates the channels of governance in an era characterised by the rise of intergovernmental organisations (IGOs) and non-governmental organisations (NGOs). It also takes into consideration increasing scientific and technological development. Global governance has long been associated with the relations between governments and their policies. This study seeks to answer the question of whether the presumed distinctions between public and private, and science and policy, prevail in contemporary global environmental governance. This paper maintains that the lines between these realms are blurry in global environmental governance. As a hybrid organisation and as a boundary organisation, the WREC/WREN demonstrates how tensions between state-centric vs. private governance and science vs. politics play out in global renewable energy governance. States, private actors, and the scientific community, emerge as the three sources of global renewable energy governance. Nevertheless, more time and research is needed to determine the effectiveness of this governance pattern in renewable energy.

Introduction

The established literature in the field discusses the sources of governance in international politics, which is a sphere without a central authority to set common rules. And it discusses the literature on global environmental governance debates politics, economy, and scientific expertise as the major aspects shaping international practices and arrangements in an issue area. The specific topic at the intersection of the economy and the environment, both of which are major issues on the global political agenda, is that of renewable energy. It draws the attention of states, thanks to leaders' concern for economic development, energy dependency, and environmental protection. Private businesses are also interested in renewable energy, thanks to the sensitivity of the economy to energy production. Lastly, the nature of environmental problems, and the enhancement of renewable energy technologies, requires scientific and technical expertise.

As one of the leading organisations promoting renewable energy, the World Renewable Energy Congress/Network (WREC/WREN) provides the grounds for exploring the three facets – politics, economy, and science – of global environmental governance. I argue that the lines between these realms are blurry in global environmental governance. As a hybrid organisation and as a boundary organisation, the WREC/WREN demonstrates how tensions between state-centric vs. private governance and science vs. politics play out in global renewable energy governance. States, private actors, and the scientific community emerge as three sources of global renewable energy governance.

In this paper, firstly, I introduce some issues in global environmental governance literature and argue for the relevance of the WREC/WREN case to these debates. Secondly, I discuss the structure and activities of the WREC/WREN as a hybrid organisation and as a

boundary organisation. The WREC/WREN is a hybrid organisation whose membership is open to both states and non-governmental organisations. From this perspective, the WREC/WREN is an example of private governance where non-state actors, in addition to states, participate in the creation of governance structures. Moreover, scientific expertise and political pursuits are generally deemed to be distinct poles but the WREC/WREN presents renewable energy as an issue merging two poles; both scientific and political governance matter in WREC/WREN's decisions and activities.

Thirdly, in the final section I discuss the effectiveness of the WREC/WREN in two respects: institutional effectiveness and environmental effectiveness. An institutional effectiveness perspective examines WREC/WREC's ability to build bridges across these different interests and produce a common agenda for all parties. On the other hand, an environmental effectiveness perspective questions the level to which WREC/WREN's targets, such as increase in renewable energy production and reduction in CO_2 emissions from fossil fuels, are achieved. In my conclusion, I observe that governance in global environmental politics is not exclusively shaped by states. The WREC/WREN pursues norms and policies shaped by governmental and intergovernmental institutions, private businesses, and scientific institutions. Also, with respect to the effectiveness question, I conclude that the WREC/WREN is relatively more successful in producing largely recognised knowledge and policy recommendations; whereas progress in implementation of policy recommendations, adoption of renewable energy technologies, and reduction of environmental degradation remain more limited so far.

Global governance, environment, and the WREC/WREN

Governance encompasses "routinized arrangements of a prevailing order" and "regulatory mechanisms in a sphere of activity" (Rosenau, 1992: 4-5). Therefore, global governance can be defined as "the nature of global order and processes through which governance occur on a worldwide scale" (Rosenau, 1992: 1). In world politics, governance at global scale occurs without an overarching central authority at international level (Rosenau, 1992: 7). Particularly in recent decades, globalisation and the rise of transnational actors brought the global governance concept into question. An understanding of world politics with nation-states at the centre is claimed to be challenged by strengthening of intergovernmental organisations (IGOs) and non-governmental organisations (NGOs).

Consequently, the literature on global governance investigates the contribution of IGOs and NGOs in creating and shaping routinised arrangements and regulatory mechanisms of the new era. The field of global environmental governance focuses on the developments in international and transnational environmental affairs. The studies on environmental governance underline political, economic and scientific aspects of environmental affairs. The making of environmental agreements and regulations pertains to political agenda of countries or specific governments. Moreover, the economic system is discussed as both the source of problems and the field to be affected by implementation of these agreements and regulations (Hurrell and Kingsbury, 1992; Young, 1999; Levy and Newell, 2005; Young et al., 2008). Lastly, the need for research and the uncertainty regarding some of the environmental problems necessitate reference to scientific knowledge. Presence of consensual scientific knowledge and the ability of experts to exert influence in policy-making process enhances the power and impact of environmental rules and policies on compliance of relevant parties (P. Haas, 1989). The

community of scientists and experts can (re)define the problems and set and reinforce the international agenda in environmental politics thanks to the credibility and authority it enjoys.

Briefly, politics, economy, and science become primary facets of issues in global environmental governance. The topic of renewable energy, as represented by the WREC/WREN case, reflects these three dimensions of global environmental governance. The WREC/WREN is a non-profit organisation aiming for the advancement and use of renewable energy technologies. WREC/WREN meetings started in 1990 and ten biennial congresses have been held since 1990. The WREC/WREN was founded as a distinct institution in 1992, during the second World Renewable Energy Congress in Reading, UK. The first three meetings of the WREC/WREN took place in Reading, UK. Following the meetings in Reading, the WREC/WREN held seven meetings at different countries around the world in addition to a number of regional meetings (WREC/WREN, 2009a).

Representatives of governments and IGOs, private businesses, and scientific institutions take part in the body of the WREC/WREN and attend the meetings or other organisations of this organisation. The ideas and policies pursued by the WREC/WREN are shaped by these three principles. By bringing these three worlds together, the WREC/WREN demonstrates that the presumed conflicts between public and private, and science and politics are not inherent characteristics of renewable energy governance. A discussion of hybrid organisations and boundary organisations reveals how the WREC/WREN reconciles these presumably conflicting realms. This discussion reveals that, rather than assuming mutually exclusive roles, actors in each realm reinforce others' existence and practices.

Hybrid organisations, private governance, and the WREC/WREN

Strengthening of non-state actors is one of the challenges to state-centric understanding of governance in the era of globalisation. Non-state actors represent a wide range of international actors including IGOs, multinational corporations (MNCs), and non-profit NGOs (Young, 1999: 9-10). In context of private governance and hybrid regimes, private non-state authorities specifically refer to MNCs, national companies, labour unions, and advocacy groups. In addition to states, these private authorities increasingly engage in making of rules and norms in international politics. International norms, principles, and decision-making procedures created and maintained through involvement of both states and private authorities are defined as hybrid (mixed) regimes (Clapp, 1998). The involvement of these private actors and the presence of hybrid regimes prove that rule-makers at the international level are not predominantly states; in other words, global governance becomes privatised.

The membership and structure of the WREC/WREN conforms to the definition hybrid regimes. The WREC/WREN membership "is open to any individual or organization (company, institute, agent, government or educational) wishing to support and further the aims and objectives of the Network" (WREC/WREN, 2008b). 168 countries around the world are members of the WREC/WREN. Moreover, eighty-two private businesses and scientific institutions hold corporate membership to the WREC/WREN (WREC/WREN, 2008b). Private businesses with corporate membership are primarily energy producers, heating companies, and producers of energy-related technologies. Most of the scientific institutions with corporate membership are universities, publishers, research centres, and national or regional scientific organisations.

Teegen, Doh, and Vachani (2004) propose that hybrid NGOs contribute to governance in two respects.[1] Firstly, they suggest that hybrid NGOs serve as platforms where operational and advocacy efforts are combined. Operational efforts deal with performance of businesses whereas advocacy efforts address causes such as human rights and environmentalism. Hybrid organisations establish codes of conduct for firms and states pertaining to both operational and advocacy efforts. In the field of renewable energy, a compromise between operational and advocacy efforts represents merging of economic enterprises and environmental protection efforts in the body of renewable energy organisations like the WREC/WREN.

Secondly, with regards to the state vs. non-state distinction, Teegen, Doh, and Vachani assert that hybrid NGOs function as both insiders and outsiders; they fill in the gaps by bringing together private actors and states. The authors declare that hybrid NGOs "have changed the way governments and corporations conduct business, and have altered the bargaining relationship between these two sectors" (2004: 469). Given these two functions of hybrid organisations, the WREC/WREN can be identified as a strong example of hybrid organisation in both respects; it bridges economic and environmental concerns and represents both private actors and governments. Private actors are incorporated into the body of the WREC/WREN with a status by no means inferior to states. Representation of private actors provides evidence to the claim that states do not stand as sole sources of rules and norms at global governance and leads the scholars to underline a phenomenon in contemporary global governance: private governance. Private governance refers to "the new agenda in global governance that is defined by an intricate private-public nexus in which private and public authorities work hand-in-hand to redefine the

[1] While using the term NGOs, Teegen et al. (2004) refer to a broader range of non-state actors including voluntary organisations and civil society as well as private businesses whereas Clapp's (1998) definition of non-state, or private, actors mainly refers to private businesses.

parameters of global policy-making" (Falkner, 2003: 84). The increasing power of markets and the progresses in global information and communication technologies locate the private actors at an instrumental position in global governance and verify that states do not have monopoly in decision-making.

Given the phenomenon of private governance, an essential question is whether the private actors are replacing states. In other words, are positions of the two sets of actors in global governance mutually exclusive? The strengthening of private actors may call for the argument that the centrality of nation-states in global governance is declining. Nonetheless, it remains to be explored if non-state actors actually replace the nation-states, or assume a secondary position as pressure groups, or emerge as entities co-producing the international system with nation-states rather than causing them to decline. Haufler (1993) suggests that non-state actors can be significant players in the creation and maintenance of international politics in a way reversing the traditional understanding of non-state actors as backstage players in a state-dominated world politics. However, she also underlines that this is not to mean that a strict boundary between public and private spheres exists and the private realm is expanding at the expense of the public realm governed by states.

Haufler (1993) acknowledges that non-state actors can either act independently in establishing international regimes or redefine state preferences through domestic or transnational pressure. The second possible role Haufler attributes to non-state actors –redefining state preferences as pressure groups- seems to be implying that non-state entities are secondary actors of global politics after states. Nevertheless, depicting the role of non-state actors as a mutually exclusive alternative to states or introducing them merely as pressure groups does not reflect the relationship between public and private actors in world politics. According to Haufler, the two

sets of actors indeed have a reciprocal relationship through which public and private players influence each other; the line between public and private realms is blurred in global governance. Private actors are able to constrain state behaviour through their market power. Nonetheless, the eventual implementation of a regime whose creation is led by NGOs needs to resort to state authority (Haufler, 1993: 106). On one hand, technology, global economy, environmental problems, or international norms emerge and influence states without their discretion. On the other hand, and also in return, proposed regulations and solutions to transnational issues depend on the existence of states and their sovereign authority.

Therefore, the relationship between private authority and states' sovereign authority in era of globalisation does not necessarily render a hollowing-out of the state. Knill and Lehmkuhl (2002) also recognise that globalisation, which they characterise by rapid economic and technological changes, poses new problems to states in maintaining control over their territories. However, the authors also highlight another outcome of recent economic and technological developments, that is, high demand for regulation in global ecological problems, global financial markets, and the internet. Even though states negotiate these regulations with non-state actors -which are IGOs, MNCs and non-profit NGOs- designation and implementation of these regulations at the domestic level rely on governments.

The argument that public and private activities do not replace but reinforce each other also applies to renewable energy and the WREC/WREN case. In renewable energy governance, a part of the negotiations take place through IGOs, such as the OECD, and the WTO. Nonetheless, "international negotiations and agreements are only one aspect of the management of the global environment" (Hurrell and Kingsbury, 1992: 9). There are two other aspects of global environmental governance: the first aspect relates to private governance as discussed so

far; political pressure from renewable energy producers and competitiveness of specific industries are influential in creation of rules and norms in global renewable energy governance. The second aspect relates to domestic authority; a great deal in international action "will depend on reform at the domestic level: on the growth of environmental awareness and changing individual attitudes and life-styles, on the reform of public policies that encourage unsustainable forms of development" (Hurrell and Kingsbury, 1992: 9). International norms and policies shaped by IGOs and NGOs need recognition and appeal at domestic level. In order for these international policies to be embodied, governments should become a party of international agreements or institutions, and then, reform their policies and harmonise their regulations with international norms. Moreover, states hold the privilege of providing enforcement over their sovereign territories; consequently, they can ensure implementation more effectively.

Similarly, the developments with respect to liberalisation of trade in renewable energy products and associated goods illustrate the arguments Hurrell and Kingsbury (1992) propose. Rules of trade in renewable energy related products are negotiated through a process in which international organisations such as the OECD, the WTO, and the WREN/WREC participate. These organisations obviously exert influence in rule making; however, there is also a developing private industry of renewable energy. An assessment of liberalisation of trade in the three major renewable energy related goods -charcoal, solar photovoltaic (PV) systems, and wind pumps and turbines- reveal that:

> while OECD countries still account for the bulk of world trade in renewable energy technologies, especially the most technically advanced parts of those technologies, new investments in manufacturing are taking place in developing countries, and several companies have started to emerge as regional or even global suppliers. There are now also many small and medium-sized companies around the world — in both developed and developing countries — that make their business marketing and servicing renewable-energy-based systems scaled to the needs of households or small communities. (Steenblik, 2005: 25)

Firstly, liberalisation of trade in the renewable energy related goods has implications for the private renewable energy industry. Elimination of tariffs on renewable energy and associated technologies will reduce taxes consumers in many countries still pay for these goods. Manufacturers located both in OECD countries and developing countries are expected to benefit from increased trade in renewable energy technologies and components (Steenblik, 2005: 6).

Secondly, in addition to the producers' and IGOs' demand for liberalisation, another significant dimension of renewable energy governance is the need for domestic regulations to carry out global standards. "For the maximum benefits of trade liberalisation in renewable-energy technologies to be realised, additional reforms may be required in countries' domestic policies, especially those affecting the electricity sector, and rural electrification in particular" (Steenblik, 2005: 6). For this purpose, governments are supposed to ensure a stable investment climate, build a competitive market for different electric power options, and develop innovative ways to finance small-scale projects. The advancement of renewable energy technologies and the international trade system might be factors developing beyond the control of individual states; however, realisation of changes they bring about begs to the existence of states as sovereign entities with authority to enforce and practice relevant regulations for renewable energy markets.

Briefly, given the strong role of markets and firms, a political economy approach to international environmental governance is necessary. In addition to states and IGOs, firms as investors, innovators, experts, manufacturers, and polluters are critical players in global environmental governance. Therefore, businesses cannot be left out of if one wants to understand economic and political structures that give rise to and, at the same time, seek solutions to environmental problems (Newell and Levy, 2005: 329). The WREC/WREN is also a site where

businesses come into picture as polluters, renewable energy producers, and consumers. As corporate members of the WREC/WREN, private actors such as energy production and heating companies shape the norms and rules of renewable energy governance much like the government agencies do, and at the same time, they become restrained by those governance structures.

Science, policy and global governance: the WREC/WREN as a boundary organisation

Much like the division between public and private, science and policy are regarded as the two conflicting worlds; most of the time politicians or private businesses are perceived as actors pursuing short-run interests as opposed to innovation and progress introduced by scientists. This perception is criticised by various scholars. For instance, E. Haas (1990) rejects the proposition that scientific knowledge is necessarily against political interest. He states that:

> as scientific knowledge becomes common knowledge and as technological innovation is linked to institutional tinkering, the very mode of scientific inquiry infects the way political actors think. Science in short, influences the way politics is done. Science becomes a component of politics because the scientific way of grasping reality is used to define the interests that political actors articulate and defend. (E. Haas, 1990: 11)

E. Haas argues that consensual knowledge, which he defines as "common understandings about cause-and-effect linkages about any set of phenomena considered important by society" (1990: 21), can guide the actors about what their interests are. Furthermore, E. Haas also suggests that interests informed by consensual knowledge are mediated through international organisations and then, they become public policy (1990: 51).

A Haasian approach to the relationship between science, policy, and international organisations would interpret the WREC/WREN's function as a platform where scientific knowledge is produced and used as a guide to policy-makers. The WREC/WREN connects science and policy worlds in its body. Aside from granting membership to scientific institutions, the WREC/WREN organises biennial world-scale congresses and a number of regional

congresses during which several workshops and research presentations on renewable energy take place. Moreover, the WREC/WREN publishes journals and review reports on renewable energy. Regular publications of the WREC/WREN are: *Renewable Energy* –the official scientific journal of the WREC/WREN-, *Annual Review of Renewable Energy*, *ISESCO Science and Technology Vision*, and complete proceedings of WREC/WREN congresses (WREC/WREN, 2009b). Lastly, those holding significant positions at the WREC/WREN are typically academics or experts with doctoral degrees.

As E. Haas suggests, scientific studies produced by the WREC/WREN are presented to policy-makers as sources on how to (re)design renewable energy policies. WREC/WREN congress reports include recommendations for policy-makers, and representatives of governments resort to WREC/WREN's products while declaring their policy goals. From Haas's point of view, it should be noted that what (re)defines policy-makers' interest and policy objectives is not the progress in science but the dialogue between scientists and policy-makers and legitimisation of scientific knowledge in the eyes of policy-makers. International organisations like the WREC/WREN are mediators linking consensual knowledge and policy preferences.

An alternative approach to understand the relationship between science, policy, and international organisations is the boundary organisations perspective. Even though Haas recognises that consensual knowledge is a social construct which can be influenced by dominant powers in society and politics, a critique of the idea of a strict line between science and politics is more obvious in the boundary issues and organisations approach. Miller (2001) regards boundary organisations as a new class of institutions performing at the boundary between science and policy; they mobilise science in support of policy. Miller employs the phrase "boundary

organisations," to refer to "those social arrangements, networks, and institutions that increasingly mediate between the institutions of science and the institutions of politics" (2001: 482). Also boundary organisations engage in co-optation, which implies incorporation of representatives from the two realms into membership and decision-making procedures. WREC/WREN members are drawn from both science and policy world and, as Miller's definition affirms, the WREC/WREN mediates between these scientific and political actors; it aims at bringing them together around the idea of strengthening the use and improvement of renewable energy technologies.

However, Guston et al. (2000) emphasise that the idea of boundary organisations does not assume a well-defined boundary between science and policy. They acknowledge that science and non-science are not demarcated from each other with regards to some essential characteristics or methods of the two realms. The boundary organisations argument recognises that the division between science and policy is blurry and, thanks to this blurriness, boundary organisations simultaneously draw resources from and produce knowledge for scientific and political authorities. By compromising the two presumably conflicting realms, boundary organisations strive to provide reliability and stability in the issue area (Guston, 2001). The existence of boundary organisations mobilising science in support of policy verifies the claim that scientists and scientific institutions are among the producers of governance structures. As well as politics and economy, science leads the decision making and norm setting processes.

Guston (2001) borrows from Jasanoff's arguments, where boundary organisation's task is identified as co-production of knowledge and scientific order, which is "the production of mutually supporting forms of knowledge and forms of life" (Jasanoff, 1996: 397). Jasanoff offers a critical reading of the science vs. policy distinction and argues that production of

scientific knowledge is also a political enterprise rather than being an entirely objective product. According to her, more than a few scientists engage in policy-making, and those scientists should recognise that their studies are normative as much as explanatory. Jasanoff also notes that boundary issues between science and policy, such as genetic engineering, animal rights, and environmental disputes, call for participation of scientists and policy-makers. Institutions and legislation evolving around these boundary issues enable collaboration between scientists and non-scientists, and the knowledge boundary organisations present provide stability and order to their specific fields; this knowledge becomes the basis for both further research and future policy.

The overlap between WREC/WREN's features and Guston's (2001) identification of boundary organisations explains how the WREC/WREN fits in this characterisation. According to him, boundary organisations exhibit three attributes: Firstly, they encourage the creation and use of boundary objects, which are objects used by representatives of both science and politics for specific purposes. Secondly, they require participation of actors from both sides of the boundary in the structure and decision-making process of the organisation. Thirdly, since boundary organisations exist at the frontier of science and politics, they draw resources from both of the spheres but they also should have accountability to each (Guston, 2001: 400-401).

The WREC/WREN meets Guston's (2001) criteria to a considerable degree. With respect to the first criterion, it can be asserted that the WREC/WREN utilises renewable energy as its boundary object. Ali Sayigh, the Director General of the WREC/WREN, is also editor of the *Renewable Energy* journal and he authors several scientific publications. In one of his articles, Sayigh (1999) discusses the reasons for adopting renewable energy as a future environmental and economic strategy. Sayigh (1999) begins his study by emphasising the increase in world

population and energy consumption vis-a-vis limited conventional resources as economic reasons to prefer renewable energy resources. Moreover, Sayigh underlines the environmental threats posed by climate change and notes that transition to renewable energy can reduce CO_2 emissions from fossil fuels. After presenting different types of renewable energy resources and elaborating on relevant technologies, Sayigh introduces his policy recommendations.

Sayigh's (1999) policy recommendations address both states and international institutions. He also encourages both public and private sectors to become a part of the transition to renewable energy. Sayigh lastly remarks that public education is a part of his project. Sayigh's portrayal of renewable energy corresponds to Guston's (2001) conception of boundary objects. In Sayigh's account, renewable energy is in the interest of both scientists and policy-makers, and as Guston maintains, representatives of each realm can have their specific reasons to become interested in renewable energy. Scientists might be interested in renewable energy for further research on new technologies or finding solutions to climate change. Whereas, the policy-makers might primarily be interested in responding to popular pressure for development and energy independence. With this regard, renewable energy stands as the boundary object convening two different worlds and the WREC/WREN encourages use of this boundary object for reasons addressing specifically science and policy worlds.

The WREC/WREN also meets Guston's second criterion for a successful boundary organisation, which is participation of actors from both sides of the boundary. As discussed before, the WREC/WREN employs co-optation as a bridging strategy; members of the Congress and those holding significant positions in its body are mostly scientists from a range of fields and high-level officials from environment-related policy-making institutions. Furthermore, major

activities of the WREC/WREN are its biennial congresses, and these congresses consist of technical committees, each composed of researchers and policy-makers (WREC/WREN, 2009c).

The third and final condition Guston introduced is accountability of a boundary organisation to both scientific and policy-making authorities. According to this condition, a boundary organisation is expected to succeed in pleasing the two sets of principals and it necessitates integrity, and productivity of research, and provision of regular strategies for principals on either side of the boundary. These principles and strategies maintain stability of the boundary while also the boundary organisation can continue drawing resources and using opportunities granted by actors on either side of the boundary (Guston, 2001: 402).

In support of Guston's suggestions, the WREC/WREN draws resources from and produces strategies for both scientists and policy-makers. The WREC/WREN IX Congress took place in 2006, the WREC X was held in 2008, and the latest congress -WREC XI- takes place in 2010. In addition to some private companies, major sponsors of the all three WREC/WREN congresses are institutions from the science and policy world. The WREC/WREN is an organisation affiliated with the UNESCO, and therefore, the UNESCO is always one of the leading sponsors. The European Commission is another political institution supporting WREC/WREN's activities. Elsevier Science and US National Renewable Energy Laboratory (NREL) are among the major scientific institutions providing financial assistance to activities of the WREC/WREN (WREC/WREN 2006; WREC/WREN 2008a; and WREC/WREN 2009d).

Furthermore, strategies and recommendations produced by the WREC/WREN concentrate on new scientific research and policy prescriptions for the future. The final report of the WREC X, concludes that climate change should be addressed urgently and effectively,

policy-makers should be educated about the significance of renewable energy, renewable energy technologies should be advanced, dependency to fossil fuels should be addressed, and networking and education activities should be bolstered (WREC/WREN 2008a). Conclusions of the WREC X reinforce the proposition that the WREC/WREN remains accountable to both scientific and policy institutions by making use of its boundary object, that is, renewable energy.

Both Haas and the boundary organisations approach negate an understanding of science and policy as two irreconcilable extremes. Particularly, the boundary organisations perspective emphasises that the line between science and policy is an obscure one, and the actors should become aware of normative implications of the outcomes emerging from the cooperation between scientists and policy-makers. As both approaches would suggest, the WREC/WREN plays the mediator role between the two worlds and it provides opportunity for production of knowledge and policy recommendations supported by legitimacy and material sources of scientific and political institutions. The authority stemming from recognition and the access to material capabilities contribute in the impact of scientific authorities on creation and shaping of routinised arrangements and regulatory mechanisms at international level. A boundary organisation like the WREC/WREN can define what kind of rules and best practices should be adopted and promoted by the actors of world politics- civil society, private businesses, and governments.

Effectiveness of the WREC/WREN

Effectiveness in relation to international institutions is a controversial concept that can be defined in several ways. Young discusses multiple definitions and dimensions of the term. He defines effectiveness as the ability to channel one's "behaviour in such a way as to eliminate or

substantially ameliorate the problem that led to its creation. A governance system that has little behavioural impact, by contrast, is ineffective" (Young, 1994: 30). This definition of effectiveness focuses on the change in actors' behaviour more than the final situation of the problems led to an institution's creation. For instance, if a hybrid institution like the WREC/WREN succeeds in expansion of renewable energy technologies, it can be considered as an effective institution.

However, Young also recognises that effectiveness, particularly with regards to global environmental governance, is multi-dimensional and separate dimensions of effectiveness do not necessarily co-vary. Depending on the way it is defined, effectiveness may imply solution of the environmental problem that motivated the parties to come together, attainment of specific goals defined by an agreement, ability to cause change in behaviours of participants, and implementation of provisions of an international regime in political institutions of member states (Young, 1994: 142-145). A governance system might be successful according to one definition of effectiveness while performing poorly in others.

Keohane, Haas and Levy maintain that international institutions' purpose is facilitating cooperation among the members by providing relevant information, increasing credibility, and reducing transaction costs of negotiations (1993: 22-23). Given this purpose of international institutions and Young's definition of effectiveness as ability of institutions to cause change in actors' behaviours, it can be argued that the WREC/WREN as a hybrid organisation and as a boundary organisation makes a difference but to a limited extent.

As Hurrell and Kingsbury note, "it would be wrong to assume that the universal rhetoric of ecological interdependence and existence of international consensus translates readily into effective international action. Even in established environmental regimes, implementation and

enforcement lag far behind the achievements of standard setting" (1992: 47). Despite the broad agreement on norms set by the WREC/WREN, its effectiveness in causing behavioural change is still debatable. The WREC/WREC focuses more on publications and education instead of specifying rules and procedures. Direct impacts of the WREC/WREN activities largely remain at the level of defining and encouraging best practices in use and diffusion of renewable energy. As a tool of private governance, the WREC/WREN does not monitor or compel the actors to realise their commitments and ensure environmental protection. The WREC/WREN might encourage but cannot bind countries to adopt certain set of domestic regulations; this power is mostly in monopoly of states.

The analysis above examines WREC/WREN's effectiveness with reference to its direct impact on actors' behaviours. One can also question indirect impacts of WREC/WREN's studies. Effectiveness can be evaluated in terms of ability to develop common understandings and a mindset supportive of transition to renewable energy. Miller (2001) underlines an attribute of boundary organisations, which may contribute in the effectiveness of these organisations in creating shared norms at global level, thanks to their credibility and legitimacy. Particularly in the international context, boundary organisations might bridge national differences through commonly accepted prescriptions guided by scientific facts rather than ideologies and national interests. According to Miller, practices of experts and even the kinds of scientific evidence that predominate in policy deliberations differ from country to country (2001: 487). He advocates that international boundary organisations can eliminate, or at least reduce, these differences among countries.

Nevertheless, Michael Jefferson, the Chairman of Policies Committee at the WREC/WREN, (2006) contends that international renewable energy negotiations are yet to

prove Miller's (2001) suggestion that boundary organisations can bridge national differences through their credibility and legitimacy. Jefferson's observations tackle the UN system broadly but WREC/WREN is an institution directly affiliated with the UNESCO and linked to several UN organisations. Jefferson also discusses WREC/WREN's potential role in renewable energy governance. He asserts that despite international organisations' commitment to accelerate diffusion of renewable energy production and reduce CO_2 emissions from fossil fuels, negotiations turn into a gridlock due to problems originating at national levels. He examines the UN environmental regimes from 1970s to 2000s and indicates that opposition of specific countries and continuous disagreements between the participants overwhelm UN efforts to achieve considerable progress (Jefferson, 2006: 585-590). Jefferson's analysis does not necessarily refute the claim that the WREC/WREN is able to bridge national differences among negotiators because the WREC/WREN is established in 1992, which coincides with the third and last decade of the period Jefferson analyses. However, there is still no evident proof of the claim that WREC/WREN as a boundary organisation can effectively overcome differences in interests and discourses dominating the negotiation processes.

Lastly, it is possible to examine effectiveness of the WREC/WREN with reference to environmental effectiveness perspective. This perspective deals with the degree to which the environmental degradation processes are arrested or its consequences are reversed. This perspective is critical of the institutional effectiveness approach since it leaves out broader socio-economic problems and ignores the actual state of the environmental problem. Kutting underlines that environmental effectiveness requires structural changes in the wider web of social, economic, and environmental practices (2000: 34-36). From an environmental effectiveness point of view, the WREC/WREN can be considered effective only if it can replace

fossil fuels with renewable energy, which are lying at the basis of economic activities since the industrial revolution. Such a replacement is expected to have direct environment-friendly consequences such as reducing CO_2 emissions, preventing air pollution, and limiting the pace of climate change.

So far, it is difficult to talk about global scale success in transition to renewable energy and reversing of the problems associated with the use of fossil fuels:

> with little progress on accelerating 'new' renewable energy diffusion and use; with world coal use having increased in recent years; with nearly two billion people still without modern energy services; with about the same number at risk from severe pollution in the home and local atmosphere; with growing concern for the quality and quantity of the world's water resources; with declining numbers of natural habitats and species; with the seemingly onward march of bricks and mortar, bitumen and concrete, transport and distribution infrastructures, bold measures are indeed required. (Jefferson, 2006: 591)

The current situation indicates that no remarkable progress has been achieved in the adoption of renewable energy resources and reduction of CO_2 emissions from fossil fuel consumption. Nevertheless, there are two problems with measuring environmental effectiveness of the WREC/WREN. Firstly, the WREC/WREN is an institution established less than two decades ago, in 1992; therefore, it cannot be charged for prevailing global scale patterns. Secondly, the WREC/WREN primarily focuses on networking. It may facilitate consensus on desired outcomes and define what is in interest of countries; however, it is not a platform leading international treaties, defining specific goals with target dates, monitoring the implementation of these agreements, and measuring the environmental outcomes of implementation of treaties. Therefore, no clear indicator to assess environmental effectiveness of the WREC/WREN is available.

Overall, regardless of the way that effectiveness is defined –behavioural change, developing common understandings, or producing environment friendly outcomes- the evidence is yet to prove that the WREC/WREN has been instrumental in altering trends in renewable energy governance at a remarkable level.

Conclusion

Renewable energy is an issue, first, tackling resource scarcity and industrial production, second, addressing countries' development efforts and the problem of energy dependency, and third, requiring scientific research and technological development. The WREC/WREN is an institution representative of these three dimensions of renewable energy: economy, politics, and science. While dealing with different aspects of renewable energy, the WREC/WREN draws sources from and provides guidance for representatives of each realm. Proceeding from the WREC/WREN case, I argued in this paper that global environmental governance is shaped by three major principals: politics, economy, and science.

The literature on global environmental governance underscores the impact of non-state actors in global politics. In addition to studies arguing for the central role of states, this literature consists of works emphasising the impact of MNCs or the need for scientific expertise in addressing environmental issues. This paper's discussion of the WREC/WREN allows for framing of the dynamic interaction among all these fields in the process of creating governance structures.

Through a discussion of hybrid regimes and boundary organisations, I demonstrated that separating the three realms from one another with strict lines is not a simple task. The presumed dichotomies between public and private, and science and politics are not essentially accurate. In

global environmental governance, demands and activities of each realm influence and shape the others; therefore, actors on either side of these perceived dichotomies do not replace but reinforce each other. Nevertheless, it would be too confident to claim that the interaction of economy, politics, and science mediated through the WREC/WREN is able to fundamentally transform behaviours of actors and trends in energy production. Further research on international institutional efforts to enhance renewable energy can particularly focus on operationalisation and measurement of the concept of effectiveness.

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