The Policy Context of Biofuels: A Case of Non-Governance at the Global Level?

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The production of crop-based liquid biofuels (such as ethanol and biodiesel) to replace fossil fuels used in transportation has grown rapidly and become controversial in recent years. On the one hand, biofuels are promoted as a path to sustainable development—a way to mitigate climate change, promote rural development and improve energy security.[1] On the other hand, a number of socioeconomic and environmental problems have been associated with their expansion. Many governments and non-state actors have been promoting biofuels, and a number of international bodies have started focusing on the issue. Can that be characterized as global biofuel governance? Can we speak of a biofuel regime?

This article sets out to analyze the nature of the global biofuel policy context, taking account of how biofuels rose onto the international agenda and assessing the institutional landscape emerging in parallel. We first explain our analytical framework, then elaborate on the global biofuel policy context and analyze it in terms of distributional issues and governance architectures. In addition to shedding light on global biofuel governance, this analysis contributes to a broader reflection on how to define governance more clearly in relation to new and emerging sustainability issues in the twenty-first century.

Earth System Governance and the Framework of Analysis

Recognition is growing that human-induced global change poses serious challenges to human societies and to the ecosystems on which they depend.[2] These changes take place in interlocked systems: the Earth's biophysical systems operate as a whole,[3] and globalization, too, has made socioeconomic systems increasingly interdependent.[4] It is in this context that earth system governance, understood as governance efforts to prevent, mitigate, and adapt to environmental change, have become an important field of research.[5]

1. FAO 2008; Koh and Ghazoul 2008; Sagar and Kartha 2007; UNEP 2009.
2. World Commission on Environment and Development 1987; Millennium Ecosystem Assessment 2005.
3. Leemans et al. 2009; Rockström et al. 2009.
4. Keohane and Nye 1977.
5. Biermann 2007; Biermann et al. 2009a.

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There are various possible governance architectures; different governance systems may involve, rely on, or assign particular roles to different sorts of agents and actors; they may include different accountability mechanisms; they may be characterized by higher or lower levels of adaptiveness; and, not the least important, they may lead to different outcomes in terms of access to resources and allocation of benefits and burdens. These issues make up five analytical problems of earth system governance: architecture, agency, accountability, adaptiveness, and access and allocation.[6] Here we investigate two: architecture and access and allocation.

Analyzing Architecture

Governance architectures describe overarching systems of institutions in a given issue area, including formal and informal principles, norms, rules, organizations, decision-making procedures, and other forms of structural arrangements.[7] It is broader than the concept of regime, which focuses on formal arrangements of a specific type.[8] Regimes have been defined as

> . . . sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations. Principles are beliefs of fact, causation and rectitude. Norms are standards of behaviour defined in terms of rights and obligations. Rules are specific prescriptions or proscriptions for action. Decision-making procedures are prevailing practices for making and implementing collective choice.[9]

A regime thus refers to an institutional framework where global policies: (a) establish consensus on substantive and procedural aspects (principles, rights, obligations and rules; procedures for decision-making, enforcement and dispute-settlement); (b) lead to a process of international learning conducive to convergent state policies;[10] and (c) which result in rule-consistent behavior by national governments.[11] Architecture, on the other hand, encompasses all institutional arrangements, whether they amount to a regime or not. It remains unclear, however, whether or when such architectures can be characterized as *governance*.

Our interest here is in analyzing and explaining "non-governance," which remains a major research gap.[12] The Commission on Global Governance states that:

6. Biermann 2007; Biermann et al. 2009a.
7. Biermann et al. 2009b; Young 2008.
8. Biermann et al. 2009b.
9. Krasner 1982: 186.
10. Haas 1989: 377.
11. Rittberger 1993: 11.
12. Dimitrov et al. 2007; Biermann et al. 2009a: 34.

> Governance is the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken.[13]

Governance thus does not necessarily require consensus at global level—it can include multiple social actors making competing rules. The question, then, is to what extent governance is purposive in nature, aiming to achieve some common goal and accommodate diverse interests. Rosenau has argued that both government and governance:

> refer to purposive behaviour, to goal-oriented activities, and to systems of rule, but government suggests activities that are backed by formal authority whereas governance refers to activities backed by shared goals that may or may not derive from formally prescribed responsibilities and do not require police powers to ensure compliance.[14]

The Earth System Governance Project speaks of "integrated system[s] of formal and informal rules, rule-making systems, and actor-networks at all levels of human society (from local to global) that are set up to steer societies."[15] Thus, drawing from these definitions, we argue that governance refers to a qualified type of architecture—not just to any institutional landscape. Namely, governance refers to institutional systems where there is steering towards a shared purpose and some degree of collective issue-management and accommodation of different interests. We therefore utilize these elements to analyze whether biofuels can be considered an instance of "non-governance" at the global level.

Our analysis builds on the assessment of three types of institutions: (1) non-binding or ideational (principles and norms), (2) regulatory (binding rules or regulations), and (3) organizational (structural arrangements between actors, such as fora and partnerships). It is beyond the scope of this paper to analyze agency—when actors become agents and which particular strategies of action are used. However, mapping the key actors and their arrangements provides a more accurate examination of the existing biofuel architecture.

Analyzing Access and Allocation

Access and allocation refer to distributional issues and to how governance deals with questions of equity. On a material level, access refers to meeting basic needs such as water and food and to how this is influenced, improved or impaired by the governance system.[16] On a second, more abstract level, access refers to participation in decision-making arenas where different views can be ex-

13. Commission on Global Governance 1995:2.
14. Rosenau 1992: 4.
15. Biermann et al. 2009a: 4.
16. Biermann et al. 2009a.

pressed, and to functional systems of accountability—including the courts.[17] This analysis considers both dimensions of access.

Allocation deals with how resources, risks, and various benefits and burdens are allocated among actors.[18] It has three main dimensions: how resources are shared; how risks and burdens are distributed; and how responsibilities for causing environmental problems are divided.[19] The first two dimensions are particularly important for the biofuel case; they draw attention to the distribution of (a) energy resources and other co-benefits and (b) of negative impacts from the production process. We analyze not only how allocation takes place among different types of actors, but also among countries, as a measure of North-South equity.

The Global Biofuel Context

The lion's share of global liquid biofuel production and utilization consists of ethanol and biodiesel—almost all of it produced from industrial agriculture.[20] Ethanol is normally extracted from starch- or sugar-rich plants (e.g., corn, sugarcane) and used blended in or as a replacement for gasoline. Biodiesel is produced from animal fats or vegetable oils (e.g., soy oil, palm oil, rapeseed oil), replacing or mixed with mineral diesel.[21]

The Rise of Biofuel and its Drivers

Global biofuel production has expanded rapidly, both in output and in number of producing countries. In 2000, world annual biofuel production was at 17 billion liters of ethanol and 1 billion liters of biodiesel; in 2010, production surpassed 90 billion liters of ethanol and 20 billion liters of biodiesel—a six-fold increase.[22] By 2019, global biofuel production is expected to double again, nearing 200 billion liters (160 billion liters of ethanol and 40 billion liters of biodiesel).[23] Although a few countries account for most of this output, the number of producers is increasing. By 2011, more than fifty countries had adopted biofuel policies, most in the last five to ten years.[24]

Three major factors drive biofuel expansion. First is the need to reduce greenhouse gas (GHG) emissions and mitigate climate change. Many countries have established biofuel consumption targets to replace some fossil fuels.[25] Biofuels appear to be an attractive replacement because their technology is well

17. Gupta and Lebel 2010.
18. Biermann et al. 2009a.
19. Gupta and Lebel 2010.
20. OECD-FAO 2010.
21. Koh and Ghazoul 2008.
22. OECD-FAO 2010; UNEP 2009.
23. OECD-FAO 2010.
24. See Amigun et al. 2011; Searchinger 2009; Sorda et al. 2010.
25. See Sorda et al. 2010.

known, easily replicable using a number of different feedstocks (raw materials), and they do not require major changes in vehicle engine technology.[26] This makes biofuels available in the short term and more cost-competitive (compared to fossil fuel prices) than other renewable energies. In addition, most other renewable energies produce *power* and not liquid fuels. Biofuels leave almost intact the existing transport infrastructure.[27]

Second, and related to the above, many oil-importing countries see biofuels as a way to make their energy economy more favorable.[28] Domestic biofuel production reduces oil imports and vulnerability to oil market price fluctuations. By improving energy self-reliance, it also reduces dependence on suppliers seen as politically unstable (e.g., countries in the Middle East) or countries who may suspend fossil fuel supplies in political disputes (e.g., Russia or Venezuela). Thus, biofuels are attractive even when imported, as a way to diversify energy markets and reduce import dependence on oil-exporting countries.[29]

Third, unlike other renewables biofuel production involves the agricultural sector. Currently, most biofuel production comes from agriculture,[30] and large agribusiness has been key in its promotion.[31] Biofuels provide a new market for agricultural commodities, one that can help raise prices and which, unlike food, has an elastic demand. Moreover, biofuel expansion can provide much-needed income to rural workers and smallholder farmers.[32]

Overall, there is a fair degree of consensus that biofuel expansion is fuelled by public policies rather than by market forces alone.[33] Abundant public economic incentives (e.g., tax breaks or favored loans from public banks) support regulatory instruments such as blending mandates and consumption targets. Pilgrim and Harvey argue, for example, that biofuels are *politically instituted* markets, for the reasons discussed above.[34] This outcome of national and supranational levels of policy-making is at the expense of both international and local levels.[35] In developed countries, these markets also have a ripple effect abroad. Developing countries are seen as more suitable for biofuel production due to their tropical climate, availability of land and water, and cheaper labor costs.[36] Also, developing country governments have created largely favorable policy environments hoping to attract foreign investments.[37] As such, much of the biofuel expansion in the South is a response to Northern demand.[38]

26. Mathews 2007; Pacala and Socolow 2004.
27. Mathews 2007.
28. Farrell et al. 2006; Hira and Oliveira 2009.
29. See Seelke and Meyer 2009; Wright 2008.
30. OECD-FAO 2010.
31. Abramovay 2008; Lehrer 2010.
32. FAO 2008; Goldemberg et al. 2008; Mathews 2007.
33. FAO 2008; Searchinger 2009; Sorda et al. 2010.
34. Pilgrim and Harvey 2010.
35. See Mol 2007.
36. Mathews 2007.
37. Schoneveld et al. 2010.
38. Dauvergne and Neville 2009; Smith 2010.

The International Context: Global Players and Institutions

Globally, a few key players have been responsible for most of the "push" on biofuels: the United States, Brazil, and the European Union, which together account for 90 percent of global biofuel production.[39]

The US produces 43 percent of the global biofuel output, mostly corn-grain ethanol.[40] In the 2009/2010 harvest, about 35 percent of the country's corn production was used for biofuel manufacturing, replacing about 10 percent of domestic gasoline consumption.[41] The US has also imported biofuels through the Caribbean Basin Initiative, whereby Caribbean countries have operated as intermediaries for Brazilian ethanol—which until 2012 faced a US$0.54/gallon import tariff in the US market—to enter the country duty-free.[42] With this tariff lifted, US-Brazil biofuel trade is likely to increase. The US aims to reduce its vulnerability to oil price volatility and dependence on OPEC countries, and has thus been one of the leading forces pushing for a global biofuel market.[43] It participates in all major international biofuel governance initiatives and has signed a number of bilateral agreements. Most notably, it has signed a memorandum of understanding with Brazil for a "Western Hemisphere Energy Compact," which envisages further biofuel promotion in Central America and Africa—respectively current and potential future suppliers of biofuels.[44]

Brazil generates 32 percent of the global biofuel output.[45] In the 2008/2009 harvest, 61 percent of Brazil's sugarcane went for ethanol manufacturing, substituting 55 percent of the country's gasoline consumption.[46] Brazil is the world's largest ethanol exporter (about 17 percent of the production), selling mostly to Europe and the US—but increasingly also to Asia.[47] Brazil actively promotes biofuel production in the developing world. In 2008, it opened the first overseas office of its Agricultural Research Corporation (EMBRAPA) in Ghana to help deploy biofuels in West Africa.[48] Brazil seeks to create a global biofuel market where it can use its comparative advantage, but it realizes that such a market needs more than a handful of producers.[49]

Lastly, the EU accounts for 15 percent of the global biofuel output, but as a major importer it exerts great influence over biofuel producers all over the globe.[50] Biofuels accounted for only 4.26 percent of the EU road transport fuel consumption in 2010, but a mandatory target is in place to reach 10 percent by 2020.[51] Due to controversies over biofuels, the EU set a number of sustainability

39. UNEP 2009.
40. Lehrer 2010; UNEP 2009.
41. Renewable Fuels Association 2010; US Department of Agriculture 2011.
42. Seelke and Meyer 2009.
43. See United States of America 2007.
44. Wright 2008.
45. UNEP 2009.
46. Ministry of Agriculture, Livestock and Food Supply 2009.
47. National Agency of Petroleum, Natural Gas and Biofuels 2010.
48. Wright 2008.
49. Empresa de Pesquisa Energética 2010: 225; Abramovay 2008.
50. UNEP 2009.
51. Flach et al. 2011.

criteria for a biofuel to count towards that target. These criteria focus mainly on ecological aspects: minimum reductions in GHG emissions (compared to fossil fuels) and requirements forbidding certain types of land from being converted for feedstock cultivation, namely peat-land and biodiversity hot spots.[52] As the EU is a major importer of biofuels, non-member producing countries may eventually become subject to these unilateral restrictions. This applies, for instance, to African countries producing feedstock under the EU-Africa Energy Partnership, which, *inter alia*, incentivizes biofuel manufacturing in Europe using raw materials cultivated in Africa.[53] This unilateral policy initiative led Brazil and other developing countries to make a joint statement against the EU, threatening to file a complaint at the World Trade Organization (WTO) if these criteria ever become a barrier to trade.[54]

The major biofuel players also led a number of multilateral initiatives. In 2005 a G8+5 Summit launched the Global Bioenergy Partnership (GBEP), which since 2007 is a registered partnership under the UN Commission on Sustainable Development. GBEP's main goal is the worldwide promotion of biofuels and other forms of bioenergy, focusing mainly on standardizing GHG accounting methodologies and developing sustainable "best practices" to be adopted voluntarily.[55] These goals also have been pursued since 2007 at the International Biofuels Forum (IBF), a Brazilian initiative involving India, China, South Africa, the US and the European Commission. The IBF's main goals are the development of common technical standards, the commoditization of biofuels and their establishment as a viable replacement to oil on the international market.[56]

These initiatives added to—and to an extent duplicated—the work of international task forces from the bioenergy division of OECD's International Energy Agency (IEA Bioenergy). These task forces seek to foster international biofuel trade, working on production chain and market analysis, optimization of biofuel production and transport, and the development of sustainability criteria for market certification.[57]

Meanwhile, several multi-stakeholder roundtables have pursued voluntary "sustainability labeling" relating to biofuels in the private sector.[58] They include: the Roundtable on Sustainable Palm Oil, Bonsucro (previously named Better Sugarcane Initiative), the Round Table on Responsible Soy, and the Roundtable on Sustainable Biofuels (RSB), which aims to be universally applicable.[59] These

52. See Flach et al. 2010.
53. See Charles et al. 2009.
54. *Valor Econômico*, 7 November 2008, available at http://www.noticiasagricolas.com.br/noticias.php?id=36735, accessed February 28, 2011.
55. Global Bioenergy Partnership 2009.
56. UN Department of Public Information 2007.
57. Faaij et al. 2010.
58. Oosterveer and Mol 2010.
59. See Palmujoki 2009.

initiatives explicitly focus on voluntary certification and expansion of international biofuel markets.

In contrast to this market-oriented approach, agencies inside the UN system have focused mostly on the sustainable development aspects of biofuels, warning of the environmental and socioeconomic risks posed by unfettered biofuel expansion and emphasizing potentials for rural development and climate change mitigation.[60] UN agencies, however, neither regulate biofuel production nor provide an acceptable venue for biofuel governance, to date. Their work remains limited to biofuel policy analyses and recommendations. When food prices peaked in 2008 and large-scale biofuel production became very controversial, the UN Food and Agriculture Organization (FAO) hosted the "High-level conference on World Food Security: the Challenges of Climate Change and Bioenergy." No agreement on international biofuel policies existed during this conference, with the final declaration only calling for more international dialogue, further R&D investments and agricultural trade liberalization.[61] The summit failed to establish any structured governance processes, and the treatment of biofuels within the UN remains scattered and *ad hoc*.

Socioeconomic and Environmental Outcomes

Although biofuels are widely promoted as "win-win-win" solutions to climate change, energy insecurity, and development needs, it is clear that positive outcomes are not a given—they depend on *where* and *how* biofuels are produced.[62] Debatable contributions to climate change mitigation, environmental impacts from expanded industrial agriculture, and mixed socioeconomic outcomes have transformed biofuels into an ongoing sustainability debate. A brief examination of these issues clarifies what is at stake for biofuel governance.

In principle, biofuels are "carbon-neutral" because what they emit during combustion is offset by what the crop absorbs from the atmosphere.[63] However, the actual reduction of GHG emissions depends on the entire fuel life cycle. Some biofuels reduce emissions by more than 70 percent, while others may *increase* them due to energy-intensive production chains, emissions of other GHGs (e.g., methane or nitrous oxide) during feedstock cultivation and processing and/or replacement of carbon-rich areas (e.g., forests, peatland) for agriculture, creating huge upfront emissions from land-use change.[64] Analysis becomes even more complex if *indirect* land-use changes are accounted for, e.g., feedstock cultivation displacing other farming activities that in turn trigger land-use changes and GHG emissions.[65]

60. FAO 2008; UNEP 2009; UN Energy 2007.
61. High-Level Conference on World Food Security 2008.
62. FAO 2008; Koh and Ghazoul 2008; UNEP 2009.
63. Koh and Ghazoul 2008.
64. Fargione et al. 2008; Flach et al. 2010.
65. See Sawyer 2008.

Debate about the environmental consequences of expanding biofuel production is not restricted to climate change. With 95 percent of all liquid biofuels coming from large-scale industrial agriculture,[66] issues such as water and chemical use also receive attention. Agriculture is responsible for 70 percent of the world's freshwater use,[67] and a large-scale transition from fossil fuels to biofuels may represent an important additional pressure on already strained water resources.[68] Although fuel processing has become increasingly water-efficient, feedstock cultivation still requires large amounts of freshwater.[69] Even the most water-efficient biofuels consume far more water per liter of fuel produced than do fossil fuels.[70] Furthermore, industrial agriculture relies heavily on chemical inputs such as pesticides and fertilizers, which negatively impact the environment and human health.[71] Finally, continued reliance on monocultures is deleterious for agro-biodiversity and soil quality.[72] Expanding biofuels through this pattern of agriculture may thus exacerbate already large impacts on the environment.

In the socioeconomic realm, a range of important issues have come to the fore, including rural job creation, land disputes, and food insecurity. Rural employment has been one of the main arguments in support of increased biofuel production, particularly in the developing world.[73] Sugarcane harvesting in Brazil employs hundreds of thousands of manual workers every year, as does oil palm cultivation in Southeast Asia.[74] However, these jobs tend to be insecure and often require operating under unsafe conditions.[75] In more extreme cases, workers are intimidated, harassed, bound by debt, or not allowed to quit. In Brazil, for example, more than 2,000 people were found working in sugarcane plantations under such illegal conditions in the year 2009 alone.[76] Meanwhile, programs to include small-scale farmers in biofuel production chains have met with mixed success. While many contract farming schemes worldwide have failed and led to losses for the private sector and for smallholders,[77] other experiences have successfully created an income for thousands of small-scale farmers.[78] Thus, it remains important to thus understand what policies and institutional frameworks are conducive to socially inclusive biofuel production.

Access to land resources has become another key issue. Growing economic

66. OECD-FAO 2010.
67. *FAO Aquastat*, http://www.fao.org/nr/water/aquastat/water_use/index.stm, accessed March 2, 2011.
68. de Fraiture et al. 2008; Mulder et al. 2010.
69. de Fraiture et al. 2008; Goldemberg et al. 2008.
70. See Mulder et al. 2010.
71. Tilman et al. 2002.
72. FAO 2004; Tilman 2002.
73. Leturque and Wiggins 2009; von Braun and Pachauri 2006.
74. Goldemberg et al. 2008; Sandker et al. 2007.
75. Novaes 2007.
76. Gomes et al. 2010; World Rainforest Movement 2008.
77. See Ariza-Montobbio and Lele 2010; Garcez and Viana 2009.
78. See Zapata et al. 2010.

interest in biofuels is part of a new rush for land acquisition in the developing world, often facilitated by favorable domestic policies aimed at attracting foreign investment.[79] This can disenfranchise the rural poor, where community lands have been leased to private companies for feedstock cultivation.[80] In some regions, agricultural expansion boosted by biofuels has also increased land conflicts between peasants and large-scale growers, and between the latter and indigenous peoples, who have found it increasingly difficult to secure their land rights.[81]

Finally, biofuel production has a dual relationship with food security. A 2011 report commissioned by the G20 and authored by ten international organizations (including FAO, WTO and the World Bank) concluded that biofuel policies have played a significant role in global food price increases and volatility.[82] This, in turn, aggravates food insecurity in sensitive regions.[83] However, different biofuel feedstock crops have different impacts, and much depends on each region's vulnerability to food price fluctuation.[84] Also, biofuel production can create income for smallholders, support food purchases and improve local food security.[85] In different countries, many smallholder farmers have been incorporated into feedstock plantation programs, but success has been highly dependent on the policy frameworks in place and on the particular production schemes adopted.[86]

Next-generation biofuels, such as algae biodiesel and cellulosic ethanol extracted from grasses, may change this picture in many ways but they also pose their own risks. For instance, the grass species being selected as feedstocks are often strong candidates to become invasive in the future.[87] The economic viability of such advanced biofuels remains low, and it is uncertain whether they will be embraced if they leave out established agricultural sectors and their powerful actors. It is clear is that there are ongoing challenges to be addressed by biofuel governance, and a range of new ones to pre-empt. With this in mind, we turn to the analysis of the global biofuel policy context.

Analyzing the Global Biofuel Policy Context

Architecture

The architecture of the global biofuel policy context has three underlying principles and norms. The first principle is that biofuels are beneficial for sustainable

79. Cotula et al. 2008; Schoneveld et al. 2010.
80. GRAIN 2008, Habib-Mintz 2010.
81. Gomes et al. 2010; Rangel 2009.
82. FAO et al. 2011.
83. FAO 2008.
84. Clapp 2009.
85. von Braun and Pachauri 2006.
86. See, for instance, Ariza-Montobbio and Lele 2010; Habib-Mintz 2010; Zapata et al. 2010.
87. Raghu et al. 2006.

development and they can replace fossil fuels on a large scale. This seems to work as an *a priori* belief not been open to revision, despite indications that a large-scale transition to biofuels may not be sustainable. Second, there has been, as an explicit norm, a mission to turn biofuels into commodities for international trade. And third, as an implicit norm, international policy initiatives have been kept limited and non-intrusive, leaving maximum room for individual countries and actors to pursue their own agendas. At the international level, there has been a clear preference for voluntary mechanisms based on market certification instead of binding regulations.

In terms of rules, there is density of public policies at the national level and a paucity at the international level. Many states have steered domestic biofuel production through providing economic and regulatory incentives that create politically instituted markets, even as no international biofuel regulations exist.

Existing organizational structures, such as GBEP and the IBF, work as fora where some countries can debate biofuel issues and agree on certain strategies, while preserving their autonomy to ultimately follow their individual preferences. None of these operates as a forum where countries can make collective commitments, let alone *legally binding* ones. The FAO attempted to play such a role at the 2008 high-level conference on world food security, but it did not reach any meaningful agreement and no biofuel governance structures were established.[88]

It is hard to say that any of those bodies govern biofuel expansion in any meaningful way. Even on non-political issues such as biofuel technical standardization, very little progress has been achieved,[89] let alone on more sensitive issues such as trade barriers or sustainability standards. It could be argued that the existing biofuel policy architecture provides a lean, neoliberal institutional framework where the players are not bound by regulations but just cooperate voluntarily out of their own (self) interest. A more critical examination, however, reveals problems of scope, accountability and legitimacy. First, there is a clear prevalence of institutional arrangements that promote biofuels as an economic good, not as a sustainable development issue. This is revealed by the absence of mechanisms to jointly address, deliberate, or articulate international and multi-level policies on the ecological and socioeconomic impacts of biofuel production. Second, these fora are not accountable to anyone for their decisions (including their non-decisions).[90] And third, their legitimacy is questionable since these bodies are constituted by selective groups of like-minded actors (mostly large biofuel-producing countries), not by a diversity of voices and stakeholders. These fora and partnerships seem to work effectively as platforms for joint *research* but this agenda is also not necessarily unbiased, and it differs

88. IISD 2008.
89. See Oosterveer and Mol 2010.
90. Bachrach and Baratz 1962.

fundamentally from governance processes where science systematically feeds into policy-making, such as at the United Nations Framework Convention on Climate Change (UNFCCC).[91] As we analyze below, this has had major implications for issues of access and allocation.

Access and Allocation

Impacts on people's access to resources such as water and food have been among the most controversial issues in the biofuel debate. However, the treatment of these issues in international biofuel policy remains limited and *ad hoc.* While lip service is paid to access issues through the discussion of voluntary sustainability parameters in multiple fora, these have been left in reality to the market or to individual countries to resolve—however limited their capacity. In practice, access issues have received only nominal attention at the international level, without any collective measures or joint plans of action. The 2008 FAO conference made that visible, as biofuel impacts on food and ecosystems were discussed and serious challenges were acknowledged, yet no policies or concrete actions were agreed upon.[92]

Leaving access issues to be addressed only by individual countries may prove dangerous because it does not account for the extra-territorial effects of domestic biofuel policies. There is little that food-insecure countries can do if the biofuel policies of major agricultural producers affect international food prices.[93] The same applies to other global changes that may be triggered by expanding biofuel production, such as impacts on the climate, on global hydrology, or cumulative effects of land-use change.[94] Addressing such issues unilaterally, as the EU tried to do, seems biased towards European priorities and unfair to those who are affected but have no say in how sustainability policy is drafted.

Access is also hampered in its other, immaterial dimension, as the existing biofuel institutions represent only selective groupings of actors working for a limited agenda. In other words, the poorer and more critical actors lack venues where they can express their interests and views on biofuels and influence the institutions crafted. After the FAO High-level Conference, the UN special envoy on the right to food, Olivier de Schutter, noted that smaller countries were concerned about the impacts of global biofuel expansion but could do little against powerful lobbies of the biofuel agro-industry and against major biofuel countries who wanted no intervention in their agendas.[95] Even at existing multistakeholder roundtables, the presence of South-based NGOs is limited.[96]

91. Gupta 2010.
92. High-Level Conference on World Food Security 2008.
93. See Clapp 2009.
94. See Rockström et al. 2009.
95. *Reuters,* 5 June 2008, available at http://www.reuters.com/article/2008/06/05/idUSL05325106, accessed March 2, 2011.
96. Bastos Lima 2009.

Because of a lack of fora where such actors can influence the global biofuel agenda, their international influence becomes dependent on their capacity to sway their states. It clearly lags behind the larger and more powerful biofuel agro-industry. This outcome is reflected in particular features of the global biofuel policy context: the prevailing view of biofuels as commodities for large-scale production and international trade rather than as a tool for local development; the absence of binding sustainability rules and preference for business-friendly self-regulation mechanisms; and the exclusion of alternative norms—such as food sovereignty[97]—from the debate.

With regard to allocation, equity concerns again seem overlooked. First, biofuel research, development and production have been mostly linked to consolidated agricultural sectors rather than to small-scale agriculture or to strategies that target poverty. The growing volume of biofuels produced, likewise, go mostly to higher-income consumers (automobile users) rather than to the 2.6 billion people lacking access to modern energy.[98] That is particularly problematic since biofuels have been promoted as sustainable development, often using energy poverty as a rationale.[99] Second, much biofuel production is allocated to the South to meet Northern consumption demands. The global biofuel order thus risks prioritizing improved access to renewable energy for developed countries, while developing countries are exposed to further risks of ecosystem degradation, reduced access to water, and food insecurity.[100] As such, the treatment of biofuels at the international level not only neglects existing equity needs, but lets production continue in ways that seem poised to aggravate them.

Conclusions

The global biofuel context is characterized by considerable policy-making at the national and supranational levels, but much less rule-making at the international level. A sort of centrifugal force is emerging from the nation-state and spiraling outwards to the international level. It seems clear that we cannot speak of an international biofuel regime, for there are no collectively established rules to steer countries' behavior. Moreover, state policies remain largely disconnected from scientific evidence and processes of international learning; quite the opposite, there is now a growing UN consensus against existing pro-biofuels public policies.[101] Yet major biofuel players—particularly large producing countries and their agribusiness sectors—share the view that biofuels are (1) a viable and desirable replacement for oil, (2) to be fostered in international trade, and (3) in a largely unregulated global context where each country can pursue its own agenda.

97. McMichael and Schneider 2011.
98. Sagar and Kartha 2007.
99. See von Braun and Pachauri 2006.
100. Smith 2010.
101. See FAO et al. 2011.

These like-minded actors have used their own policy making venues—bypassing UN fora—to pursue their shared goals and collectively address perceived problems such as trade barriers to biofuels and lack of uniform technical standards. This reveals a degree of purposive governance and collective issue-management. However, these fora have clearly excluded a broader discussion of biofuels that would involve other actors and divergent interests. Biofuels cannot be seen as a case of complete 4non-governance yet the incomplete treatment of biofuels by key actors leaves a large vacuum that proves highly problematic in the face of the social and environmental issues at stake. In an interdependent world, such large-scale activities in some countries are prone to have global impacts, as food price hikes and climate change demonstrated. As it is, the global biofuels institutional framework is weak. It is unsuited to prevent negative ecological or socioeconomic consequences and is inaccessible to those whose stakes in it are relatively higher but whose power is low. This ends up also limiting the scope of the biofuel production strategies pursued, given that the needs, views and interests of weaker actors are left un- or underexplored.

Enlarging global biofuel governance to encompass social and environmental problems will, however, prove challenging due to the number of issues, sectors and actors involved. Biofuels bring together issues as diverse as energy security and water conservation, the energy and agricultural sectors whose governance is already complex and where countries are hardly willing to compromise and large actor-networks from all these sectors, adding up to a huge constellation of interests and views to be reconciled.

If access and allocation issues are to be addressed and if the sustainability of biofuel production is to be ensured, efforts in the direction of greater global biofuel governance are warranted. This will require adding new purposes to biofuel governance and eventually developing regulations about which feedstocks are used and how biofuels are produced. Failure to deal with these issues would mean that biofuels might not be a case of non-governance, but arguably could be characterized as a form of "misgovernance," whereby business-as-usual is continuously pursued despite ample knowledge of its growing social and environmental costs.

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