



The extraterritorial dimensions of biofuel policies and the politics of scale: live and let die?

Mairon G. Bastos Lima & Joyeeta Gupta

To cite this article: Mairon G. Bastos Lima & Joyeeta Gupta (2014) The extraterritorial dimensions of biofuel policies and the politics of scale: live and let die?, Third World Quarterly, 35:3, 392-410, DOI: [10.1080/01436597.2014.893484](https://doi.org/10.1080/01436597.2014.893484)

To link to this article: <https://doi.org/10.1080/01436597.2014.893484>



Published online: 15 May 2014.



[Submit your article to this journal](#)



Article views: 344



[View Crossmark data](#)



Citing articles: 6 [View citing articles](#)

The extraterritorial dimensions of biofuel policies and the politics of scale: live and let die?

Mairon G. Bastos Lima^{a*} and Joyeeta Gupta^b

^a*Institute for Environmental Studies, VU University Amsterdam, The Netherlands;* ^b*Faculty of Social and Behavioural Sciences, University of Amsterdam, The Netherlands*

Despite criticism, global biofuel production continues to rise, using primarily food crops. Between 2001 and 2012 it increased nearly six-fold, driven primarily by domestic policies, yet raising strong international concerns, eg over impacts on global food prices. Nevertheless, little international biofuel governance has emerged. This article examines the various extraterritorial dimensions of domestic biofuel policies and investigates why international biofuel governance has remained vague, despite its controversial nature. It uses the politics of scale to analyse why countries may wish to frame it as a global or domestic issue. Three extraterritorial dimensions are identified: global environmental impacts, global socioeconomic impacts, and attempts at extraterritorial control over biofuel production abroad. While major producers have successfully avoided liability for impacts by preventing the scaling up of much biofuel governance to the international level, major importers have tried to fill perceived governance gaps using policies aimed at extraterritorial control. We show that both the rise of nationally oriented development policies with extraterritorial impacts and of unilateral sustainability rule making primarily affect weaker countries, making global inequalities more pronounced. It is essential that adaptation governance take into account both environmental and global socioeconomic changes, such as higher agricultural commodity prices.

Keywords: biofuels; governance; scale; politics; extraterritoriality

Two seemingly contrasting and yet concurrent trends have marked the global setting in the past few years. On the one hand, the globalisation of political institutions, growing economic and financial integration, technological, communication, logistics and transport systems, demographic transformation and cultural shifts have all led to the scaling up of many policies and policy processes to the global level. On the other hand, there is some disenchantment with

*Corresponding author. Email: mairon.bastoslima@vu.nl

international institutions and increasing reluctance to scale up governance authority to that level.¹ This reluctance is particularly visible in sectors considered to be of national interest, such as energy or agriculture. For instance, the Doha Round of negotiations of the World Trade Organization (WTO) have stalled several times, alternating between periods of ‘death’ and revival, and it remains unfinished since 2001, primarily because of the entangled interplay of national interests related to the agricultural sector.² Global energy governance, too, remains weak and scattered, without any major institutional framework, despite growing concerns about global energy security and climate change.³ In climate governance energy production and consumption interests have been crucial in hindering any major achievement since the 1997 Kyoto Protocol.⁴ All in all, the world seems to find itself in a context of increasing need, but decreasing willingness to cooperate.

It is in this context that liquid biofuels (renewable fuels produced from biomass resources) have emerged rapidly as a contentious replacement for oil derivatives. World biofuel production rose from 4.4 billion litres (bl) in 1980 to 18 bl in 2000, leaping to 106 bl in 2012.⁵ This biofuel consists primarily of ethanol, an alcohol which can replace petrol or be blended with it, and biodiesel, a replacement for fossil diesel, which also can be used in either blended or pure form. Respectively, their annual production stood at 83.1 bl and 22.5 bl in 2012, replacing 3% of the world’s road transport fuel usage – three times more than they did in 2004.⁶ In a baseline scenario projections are that world biofuel production will double by 2020.⁷

The issue is that virtually all that production derives from farming and agriculture, with profound environmental, socioeconomic and political implications. Ethanol is conventionally produced from crops rich either in starch (eg corn, cassava) or sugar (eg sugarcane, sugar beet), which can be broken down through a fermentation and distillation process – as in the manufacturing of liquors.⁸ Biodiesel, in turn, is produced from organic fats, mainly vegetable oils (from rapeseed, soybean, sunflower, oil palm, coconut, etc) and, to a much lesser extent, animal fat from the livestock industry. It is obtained through a process called trans-esterification, which turns these organic fats (which often can be used raw, too, but less efficiently) into a cleaner fuel analogous to conventional diesel.⁹ This large reliance on agriculture means, first, that increased demand for liquid biofuels provides a growing market and thus an additional incentive for the cultivation of these feedstock crops. As such, it becomes connected to the whole range of environmental and socioeconomic issues related to agriculture, such as impacts on soil quality and water resources, deforestation, but also the creation of employment and income in rural areas. On average biofuel production creates at least twice as many jobs as any other renewable energy sector.¹⁰ Second, the utilisation of agricultural crops – or of resources such as arable land and freshwater – for biofuel production means that it competes directly or indirectly with food production, and thus probably affects availability of supplies, market prices and food security. Third, at a broader level expanded biofuel production from agriculture means that social groups, regions, countries and even continents that have agriculture as a major economic activity are endowed to become new energy providers, potentially altering contexts of political power from the local through to the global level. Therefore, because of their link to

agriculture, biofuels acquire whole new dimensions that are often absent in discussions on other renewable energies.

Biofuel expansion has received much attention from the international scientific community and multilateral organisations, and many have implicitly or explicitly identified it as a global issue, yet very little international biofuel governance exists.¹¹ This article sets out to examine what is the global relevance of biofuel expansion and analyses why its international governance has remained limited. It first elaborates on the politics of scale, discussing why countries may choose to scale an issue up or down. The article then assesses the domestic policy making behind biofuel expansion and its extraterritorial dimensions, analyses the politics of scale in the biofuels case, and draws some general lessons for governance in the emerging context of global power multipolarity.

The politics of scale and extraterritorial control

Scale is a key analytical theme in governance studies.¹² It is generally understood as the spatial, temporal, analytical or quantitative dimensions used to measure and study processes or phenomena.¹³ ‘Levels’, in turn, refers to the positions along a scale, such as the spatial or geographical designations of local, regional, national and international levels. These, in particular, are of key relevance to governance. Because political and administrative systems are generally associated with such geographical levels, problems are usually framed as belonging to one or more of them, even if cross-level interactions are recognised, and so are the solutions proposed.¹⁴

However, the scale at which a problem is perceived, experienced and discussed does not necessarily match that at which it is dealt with.¹⁵ Framing a problem and eventually placing the main locus or loci of governance at one or more given levels is not a purely technical task, it is a profoundly political one. Framing is a subjective exercise bound to particular understandings, views, interests and preferences, and different actors may come into conflict over these.¹⁶ For instance, a country may see an issue – say, biofuel expansion – as global and seek its regulation at the international level, while others may perceive it as a domestic affair and wish to keep it under national-state authority.

‘Scaling’, therefore, refers to the attempts to shift the level at which an issue is considered or where governance takes place.¹⁷ It is important to note, however, that such changes do not necessarily replace but generally *add* to previous loci of governance. For instance, European countries continue to have national climate policies even though much climate action has migrated to the EU level. Nevertheless, because legal hierarchies are usually in place, higher levels tend to prevail whenever governance is ‘scaled up’, although this is not necessarily always the case.¹⁸ In this context the politics of scale may help explain why actors try to scale issues up or down.

Individual actors may have contradictory desires to an issue scale up or down for different reasons. For instance, a country may wish to scale it up in order to collaborate with others or divide responsibilities, but this may run counter to domestic interests that motivate scaling down, such as safeguarding domestic industries from international regulation. Scaling up an issue exposes a country to policy prescriptions that other countries see as important. For

example, many developed countries would like to export the concept of the rule of law to other countries and may even go far as to make it a condition for development cooperation. However, they may be much more reluctant to scale the rule of law up to the global level. For instance, the USA does not promote the rule of law at the global level and rejects interference from the International Court of Justice over its national sovereignty, even though it is committed to promoting the rule of law in other countries and condemns those countries which do not adopt it.¹⁹

Gupta identifies four clusters of motivations a country may have in the politics of scale: (1) to enhance the understanding of a problem; (2) to improve the effectiveness of governance; (3) to promote domestic interests; and/or (4) to promote extraterritorial interests.²⁰ Within each cluster issue-specific arguments can be used to argue in favour of scaling up or down. The understanding of a problem may be enhanced by scaling it up and accounting for higher-level dynamics such as global impacts or thresholds.²¹ Inversely it may also benefit from being dealt with at lower levels, where contextual factors can be analysed in greater detail. Similarly the effectiveness of governance may be increased by accounting for factors that operate at larger scales – but it may also benefit more from a closer involvement of local actors and from the utilisation of pre-existing institutional capabilities at lower levels. As such, the characteristics of the issue and of the governance context in question are key variables.

Nevertheless, one should not be overly deterministic and neglect the role that actors' (self)-interests can play. While a country concerned with its national sovereignty or with its 'vulnerable' industry sectors prefers to keep governance at the national level rather than submit to international rule making, countries that suffer from the externalised effects of human activity abroad may want to scale governance up and put stronger pressure on those actors – as seen in the case of climate change negotiations.²² These interests may be not only domestic, but also extraterritorial, ie related to issues outside one's own jurisdiction. For instance, control over resources outside one's territory may be sought by promoting an international regulatory framework; or, if multilateral negotiation is seen as too difficult, actors may prefer to scale the issue down and apply divide-and-control tactics to exert power over other actors on a one-to-one basis.²³ In this context Table 1 provides a non-exhaustive list of possible motivations for scaling sustainable development issues up or down.

While clustering these reasons may serve a theoretical and analytical purpose, it is important to note that in reality they are often intertwined. For instance, the 'effectiveness' of governance cannot be dissociated from particular understandings of a problem or from interests. Institutional effectiveness can be measured according to different criteria, and it is bound to norms and preferences.²⁴ As such, countries will probably try to promote their own view of effectiveness and thus 'effective' solutions that meet their particular concerns and parameters – and possibly their domestic interests, too – at the global level. As there may be disputes among different understandings of an issue, framing it internationally according to one's own view creates practical advantages (eg easier translation into domestic policy) as well as wider 'soft power', by scaling up a country's norms to the global level.²⁵

Table 1. Motivations for scaling sustainable development issues up or down.

	Motivations to scale up	Motivations to scale down
To enhance the understanding of a problem	<ul style="list-style-type: none"> ■ To identify the global impacts or thresholds of a problem; ■ To account for externalities; ■ To understand norms and principles which operate at higher levels and influence decision making. 	<ul style="list-style-type: none"> ■ To better account for contextual elements, increase the level of detail, and potentially improve the accuracy of problem definition.
To improve the effectiveness of governance	<ul style="list-style-type: none"> ■ To include other actors at larger levels and ensure greater political legitimacy; ■ To address drivers of environmental or socioeconomic change that operate at higher levels and, thus, promote more suitable courses of action. 	<ul style="list-style-type: none"> ■ To involve local actors more closely and design solutions that are suited to a given context; ■ To use existing institutional set-ups and avoid the economic and political costs of re-engineering them to suit decisions taken at higher levels.
To promote domestic interests	<ul style="list-style-type: none"> ■ To share responsibility and avoid taking immediate action at the domestic level; ■ To create a levelled playing field by forcing other countries or regions to live by the same rules or standards; ■ To disseminate one's standards of production, prevent loss in competitiveness and reduce the relative costs of policy implementation domestically; ■ To prevent racing to the bottom and spread more sustainable production patterns. 	<ul style="list-style-type: none"> ■ To safeguard (development) interests that could be curtailed by decisions at higher levels; ■ To avoid liability for extraterritorial effects of domestic policies.
To promote extraterritorial interests	<ul style="list-style-type: none"> ■ To gain a certain measure of control over resource use outside one's jurisdiction, even if at the cost of reduced control by actors at lower levels; ■ To join forces and collaborate with other actors who share similar concerns. 	<ul style="list-style-type: none"> ■ To apply divide-and-control tactics to increase one's power over others (eg negotiating on a one-to-one basis) ■ To bypass a government or agency perceived as a hindrance or obstacle to action.

Currently such disputes have become particularly relevant. With increasing global power multipolarity and the rise of emerging economies with their own sets of concerns, interests, values and historical memories, the international arena has become a battleground of diverse perspectives.²⁶ Prevailing in the global intergovernmental arena is becoming increasingly difficult. This has led, on the one hand, to the rise of new governance mechanisms such as public–private partnerships and networked relationships, where individual actors and non-state actors can pursue their own interests aside from multilateral negotiations.²⁷ On the other hand, it is also leading to a rise in domestic policies that attempt to exert extraterritorial control. This has received far less attention than private governance in the literature.

Extraterritoriality, in this context, relates to processes taking place outside one's own territory, ie outside one's own legitimate jurisdiction.²⁸ Attempts at

extraterritorial control, therefore, refer to rules or regulations made for processes taking place in the jurisdiction of others, usually other countries. Examples of this are trade restrictions that aim to dictate, based on one's own values and preferences, how economic activities in other countries should take place. Generally, these are unilateral rule-making processes where those who become subject to such rules are not consulted (eg the US Lacey Act of 1900 prohibits the import of plants and wildlife that have been illegally collected, transported or sold; this emerged out of US normative standards).

We identify three possible reasons for pursuing forms of extraterritorial control:

- To promote one's scientific understanding of a problem, or of global environmental thresholds being crossed, which other countries may be reluctant to accept;
- To promote one's own values or norms (sometimes seen as universal), but which are not equally promoted in other parts of the world;
- To exert an influence over resources in other countries' jurisdictions according to one's own national interests;

As to the tools used to exert such forms of control, besides trade restrictions eco-labelling can also be used. In this process state and/or non-state actors may create and define sustainability (or other) criteria and label products in order to sway consumers. This, in turn, may push producers toward compliance. Although such producers are usually part of the multi-stakeholder processes where those criteria are designed, research shows that membership, standards and preferences usually reflect a dominance of consumer-country actors.²⁹ These labels are normally associated with certification schemes, such as the Forest Stewardship Council (FSC), Marine Stewardship Council (MSC), or the Roundtable on Sustainable Palm Oil (RSPO), which in principle give products greater market penetration. In some cases retailers or downstream industries may go as far as choosing to import *only* certified goods, as in the decision by the Dutch Product Board for Margarine, Fats and Oils to use only RSPO-certified palm oil as of 2015, a move later followed in Belgium and which might set a trend.³⁰

Finally, a third tool of extraterritorial control is emerging through biofuel policies. It refers to consumption targets tied to sustainability standards. Technically these are not a trade restriction, for trade is still allowed. However, products which fail to meet the standards do not count towards the targets. Since these targets are often mandatory and associated with fiscal and other economic benefits, a strong incentive is given to import and consume only products that meet those standards. This form of attempt at extraterritorial control is discussed in further detail in the next section, which describes the biofuel policies of key global players and examines the extraterritorial dimensions they have had.

Biofuel policies and their extraterritorial dimensions

A policy-driven expansion

It is a fairly established consensus that worldwide biofuel expansion is resulting primarily from public policies at the national – or, in the EU case, supranational

– level, putting in place mandatory consumption targets, fuel-blending mandates, and other regulatory and economic incentives such as facilitated conditions on investment, tax breaks, loans and subsidies.³¹ These policies have encouraged large-scale biofuel production by private sector or state-controlled fuel companies.³² By instituting captive markets, they create an artificial demand for biofuels, securing consumption regardless of any oscillation in their economic competitiveness *vis-à-vis* fossil fuels.³³

The adoption of these biofuel promotion policies is spreading fast across the world: as of 2013 more than 50 countries had some such policies in place.³⁴ Yet the sector remains dominated by a few agriculturally important countries which host most production and consumption. Together the USA, Brazil and the EU account for as much as 90% of world biofuel production.³⁵ This means, first, that they are likely to be responsible for most of the global economic impact caused by the diversion of agriculture to fuel production. Second, their policies may also be considered a driver of biofuel expansion abroad, as many countries – particularly low-income countries in the developing world, e.g. in Africa and Central America – have been producing it for export via private sector initiatives or bilateral agreements. Such agreements include the Africa–EU Energy Partnership, in which the EU fosters export-oriented biofuel feedstock cultivation in African countries as a form of development cooperation.³⁶ Similarly the USA and Brazil have financed and transferred technology for feedstock cultivation and biofuel production across Latin America and the Caribbean, often to export it to the US market.³⁷ As such, the policies of these ‘hubs’ of global biofuel expansion deserve close attention. The following paragraphs discuss briefly the contexts of these three cases.

Already 40% of US corn production is being utilised for ethanol manufacturing, often with animal feed as a co-product.³⁸ In a few years ethanol outputs have increased to make up 4% of the total road fuel usage in the USA and its production – the world’s largest – increased by 20% between 2009 and 2010 alone.³⁹ US ethanol production is set to grow even more as the government has set mandatory targets for consuming 136 bl of biofuels by 2022. According to the policy, production of conventional corn-grain ethanol should not exceed 56.78 billion litres, leaving most of the rest to more advanced biofuels such as cellulosic ethanol.⁴⁰ However, corn-grain ethanol production was already at 49 bl in 2010, and there is growing scepticism about whether advanced technologies will be ready in time to make a significant contribution.⁴¹ For instance, the USA has reduced its perspective (set in 2007) of producing 950 million litres of cellulosic ethanol by 2011 to only 25 million litres because of the challenges of making it cost-efficient and commercially viable.⁴² Thus the perspective is that corn-grain ethanol will remain dominant in the near future.

Ranking second in biofuel production and consumption is Brazil, whose sector is dominated by sugarcane-ethanol and soybean-biodiesel. Brazilian sugarcane production has been increasingly orientated towards biofuels – or, more broadly, bioenergy. Currently, 50%–60% of Brazil’s sugarcane output is used for ethanol rather than for producing sugar.⁴³ The exact rate fluctuates because producers can shift between one or the other depending on ethanol and international sugar prices, but on average the percentage destined for biofuel has grown significantly over the past decade.⁴⁴ In addition, electricity generation from

sugarcane biomass has become increasingly relevant and already meets 11% of Brazil's demand for electricity.⁴⁵ As for biodiesel production, it grew from virtually nothing before 2008 to about 2.7 bl in 2011, replacing 5% of Brazil's total diesel consumption – as defined by a government mandate.⁴⁶ This has been beneficial to soybean growers, who can now count on one more downstream market, greater demand and, therefore, higher prices. In 2012 about 30% of Brazil's vegetable oil (mostly soybean) was diverted to biodiesel.⁴⁷ Overall liquid biofuels amount to 15% of Brazil's fuel consumption in the transport sector.⁴⁸

The EU has the world's third largest biofuel output, coming mostly from Germany, France and Spain.⁴⁹ Unlike in the USA and Brazil, where ethanol dominates, EU biofuel production consists largely of biodiesel, using rapeseed as its main feedstock. In 2011 biodiesel production consumed 65% of the EU's vegetable oil, meeting about 4.65% of the transport fuel demand.⁵⁰ The EU Renewable Energy Directive, however, establishes that every member country must reach a minimum 10% rate of renewables in the transport sector by 2020.⁵¹ This is of key relevance not only because European countries are diverting edible oil into biodiesel production, but also because these countries are large net importers, which therefore exert much influence overseas. In 2011 nearly a quarter of all liquid biofuels consumed in the EU were produced abroad; the European Commission estimates that, in order to meet the 2020 target without major impacts on European agri-food systems, 30% of the feedstocks and biofuels used in the EU will have to be imported.⁵² As the next section discusses, this creates a number of extraterritorial impacts.

Extraterritorial impacts of biofuel policies

Given the interdependence of the Earth's ecological systems and growing economic globalisation, the consequences of biofuel expansion cannot be circumscribed to a single country or region. Rather, such a large-scale reallocation of agricultural outputs and of land and water for feedstock-crop cultivation is poised to have some global consequences. To the extent that these worldwide ripple effects result from domestic biofuel policies, they can be considered extraterritorial impacts of such policies. Three examples are discussed below: rising international food prices, the increase in land-based investments overseas and global environmental impacts.

The extent to which the diversion of crops and arable land for biofuels has an impact on international agricultural commodity markets, food prices and food security is a matter of persistent debate. However, most assessments agree that impacts do exist, even if their exact extent is not fully understood, and that agricultural commodity prices are poised to go up partly because of increasing demand for biofuels, making access to food harder for much of the world's poor.⁵³ In this context low-income, net food-importing countries find themselves in a particularly vulnerable position.⁵⁴ The OECD and the Food and Agriculture Organisation (FAO) note that in the 2009–11 period as much as 12% of the world's coarse grains, 11.5% of its vegetable oil supply, and 20% of its sugarcane were used for biofuels, a share that is forecast to increase, respectively, to 14%, 16%, and 34% by 2021.⁵⁵ Again, this change is not the result of an evenly spread global transition, but essentially of the biofuel policies of large-scale producers such as the USA, Brazil and the EU.

Another extraterritorial impact of some domestic biofuel policies is the incentive they may give to the expansion of export-oriented production abroad. This is particularly the case with mandatory consumption policies in large import markets such as the EU.⁵⁶ Recent years have seen a surge of large-scale land-based investments in developing countries, partly driven by an interest in producing biofuels to export.⁵⁷ In some cases this arises out of explicit agreements between countries, such as the Africa–EU Energy Partnership.⁵⁸ In others private investors, often from abroad, see an opportunity to engage in export-oriented feedstock cultivation, frequently with the legislative support of local governments, which see such investments as development opportunities.⁵⁹ However, although these investments *may* lead to poverty reduction and rural development, more often they have meant the disfranchisement of local communities in favour of those private investors.⁶⁰

Finally, domestic biofuel policies may also have extraterritorial effects to the extent that large-scale biofuel production causes global environmental impacts, either on the climate or on global hydrology. On the one hand, the creation of positive impacts on the global climate through the reduction of greenhouse gas emissions is precisely one of the rationales behind biofuel expansion.⁶¹ On the other hand, it cannot be taken for granted that such impact will always be positive. Large-scale land-use change for feedstock cultivation, particularly if it leads to deforestation, can severely worsen climate change, negating any benefits from fossil fuel substitution.⁶² Moreover, the large-scale utilisation of freshwater resources for feedstock cultivation can also pose problems.⁶³ Lastly, the expansion of feedstock cultivation has been linked in many cases to biodiversity loss, which may not be an extraterritorial impact but is still an international concern. This is particularly the case with oil palm expansion in Southeast Asia, but also with sugarcane cultivation in the Central-West region of Brazil, near the Pantanal wetland.⁶⁴

Attempts at extraterritorial control: examining the EU case

As a response to such perceived risks from unfettered expansion, some governments have adopted sustainability standards for feedstock cultivation and biofuel production. However, because of international trade and the transnational nature of some biofuel production chains, these standards create another extraterritorial dimension to the extent that they attempt to regulate production abroad. The standards have been aimed primarily at environmental protection, though not exclusively – some have also incorporated food security and local development criteria.

The EU biofuel policy is a case in point. As a net biofuel importer and mindful of the implications of its consumption policies abroad, the EU has put in place a number of sustainability criteria applicable to its member-countries but which also attempt a form of extraterritorial control over how feedstock is grown and biofuel is produced overseas. Most notably, the criteria include the following:

- (1) mandatory reduction of at least 35% in greenhouse gas emissions, compared to the fossil fuel being replaced (to be raised to 60% as of 2017);⁶⁵

- (2) restrictions on land-use changes for biofuel feedstock cultivation, to avoid deforestation or peatland degradation;
- (3) monitoring by the European Commission and preparation of biannual reports on social impacts such as land rights, food security and development in the producing country.

Biofuels which do not meet these criteria may still be imported, but they do not count towards the mandatory consumption targets of member-countries.⁶⁶

The implementation of this form of extraterritorial control is, of course, a challenge. It remains unclear how the EU can monitor production overseas if producers are not willing to comply. Moreover, enforcement is a sensitive issue: when the criteria were about to be hammered out, Brazil, Indonesia, Malaysia and a number of other biofuel producers jointly issued a letter to the EU threatening to bring the case to the WTO if the criteria became a trade barrier.⁶⁷ Nevertheless, the EU has still managed to implement its standards in development cooperation, such as in the Africa–EU Energy Partnership or in its trilateral agreement with Brazil and Mozambique to produce sugarcane-ethanol in the latter with technical support from the former, aiming at European markets.⁶⁸ This is taking place in parallel with the emergence of private certification schemes such as the RSPO, which has a large number of Europe-based industry and NGO members and is recognised by the EU as an acceptable standard.

Three dimensions of extraterritoriality can therefore be identified in emerging biofuel policies: global environmental impacts, global socioeconomic impacts and attempts at extraterritorial control. While the first dimension is a well known subject of studies on governance, the second is particularly novel in this context. As to the third, even though it is already known, as in the form of trade restrictions, it appears here in a more subtle form, as a transnational policy incentive tied to submission to extraterritorial control by the importer. As will be discussed in the next section, this is of particular relevance to the politics and governance of biofuels internationally.

The politics of scale in biofuel governance

A major debate in the politics of biofuels has been whether they should be treated as a global issue in need of international governance or should remain governed at the domestic level. In other words, this is a debate about the possible scaling-up of biofuel governance to the international level. However, it is important to observe that, rather than a ‘yes or no’ question, this is a complex process where different understandings of the issue and different political agendas compete. It is a debate about *what* elements get to be scaled up, *how* they are to be governed, and *who* has influence on this process.

International biofuel governance has been thin, and focused not so much on the range of sustainability issues raised, but rather on the commoditisation of biofuels to enhance international trade.⁶⁹ Some multilateral bodies such as the International Energy Agency have embraced biofuel governance, and new ones have been created for the purpose of governance (eg a Global Bioenergy Partnership and an International Biofuels Forum), but membership is usually limited to biofuel advocates, and debates are usually limited to technical standardisation,

trade promotion and deployment of feedstock cultivation in more countries, leaving environmental and socioeconomic issues to be addressed within domestic contexts or by voluntary market certification mechanisms.⁷⁰

We argue that this is by no means accidental. Rather, it results from the action of key players (primarily Brazil and the USA but increasingly other emerging producers such as Argentina) wishing to scale up biofuel governance in certain ways while resisting the attempts to scale it up in others. Biofuels have been the object of intense international debate in venues more inclusive than those mentioned above, such as the FAO or the Conferences of the Parties (COPs) of the Convention on Biological Diversity (CBD). For instance, after international food prices peaked in 2008 the FAO called a 'High-Level Conference on World Food Security' to address 'the challenges of climate change and bioenergy', but the USA and other major producers successfully resisted attempts to create international biofuel regulations and watered down the final declaration.⁷¹ Similarly, at the 10th COP of the CBD in Nagoya in 2010, biofuels became a major subject of discussion, but Brazil, Argentina and other producer countries played a key role in eliminating language and avoiding decisions that could lead to international control over biofuel expansion.⁷² These examples illustrate the strategy of major biofuel producers of bypassing UN fora where international regulations could be adopted, and promoting instead trade-oriented institutions. As such, the desires of these countries to scale the issue up or down have not been contradictory; rather, they are articulated in a way that promotes a limited biofuel governance that suits their particular preferences and interests. Table 2 analyses the selective scaling of biofuel governance from the part of large producer countries.

Meanwhile, large biofuel importers have sought biofuel regulation on the basis of sustainability concerns. However, political intransigence on the part of large biofuel producers has probably frustrated the initial intentions, led by the EU, of creating an international environmental framework on biofuels – in other words, they have prevented scaling up its norms and interests to the global level.⁷³ Moreover, the WTO is seen as a hindrance to any attempt to discriminate over biofuels based on methods of production, as this generally violates Article XX of the General Agreement on Trade and Tariffs.⁷⁴ Hence the EU has instead taken the path of unilateral action, launching its own sustainability criteria and making its biofuel consumption targets conditional upon them (Table 3).

However, such public policies with extraterritorial effects – as well as consumer-led private certification mechanisms – have been contested. While low-income countries such as those in sub-Saharan Africa entering partnerships with Europe have acquiesced to these foreign regulations, emerging middle-income countries have increasingly refused them. For instance, Malaysia and Indonesia have started to reject RSPO certification, calling for their own sustainability standards and thus shaking off what has been perceived as an undue burden and undesirable foreign extraterritorial control.⁷⁵ In 2011 the Indonesian Palm Oil Producers Association made a bold move by walking out of the RSPO in favour of the new Indonesian Sustainable Palm Oil (ISPO) standard, made by Indonesia's government.⁷⁶ At the same time the Malaysian Palm Oil Association, while remaining an RSPO member, has advised producers against seeking new RSPO certification and showed support for the upcoming Malaysian Sustainable Palm Oil

Table 2. The politics of scale in biofuel governance from the perspective of large producer countries.

	Reasoning to scale up biofuel governance to the international level	Reasoning to keep biofuel governance at the domestic level
To enhance the understanding of a problem	■ To harmonise various GHG-accounting methodologies to make them mutually acceptable.	—
To improve the effectiveness of governance	■ To set common technical standards in order to trade biofuels internationally as commodities.	—
To promote domestic interests	—	<ul style="list-style-type: none"> ■ To safeguard domestic biofuel expansion, not submitting it to decisions at the international level; ■ To avoid liability for extraterritorial effects of domestic biofuel policies, such as the increase in food prices.
To promote extraterritorial interests	—	<ul style="list-style-type: none"> ■ To approach other countries individually (particularly developing countries) to expand biofuel production worldwide and consolidate international trade; ■ To bypass UN venues where international regulations on biofuel expansion are more likely to emerge.

standards, too.⁷⁷ Clearly, these moves are facilitated by the existence of other emerging consumer markets such as China and India, which may continue to purchase Southeast Asian palm oil even if the EU rejects these new government-made standards.

This context suggests that, despite growing economic globalisation, the international political arena is inversely becoming increasingly marked by nationally oriented policies. As a consequence of these contradictory trends, relative capabilities to deal with transnational impacts, to make attempts at extraterritorial control, or to resist such attempts, are becoming increasingly determinant. This, of course, further exposes and exploits the vulnerabilities of countries in weak positions, such as net food-importers, who suffer the impacts of biofuel policies abroad without any say in the matter, or small biofuel exporters who then become subject to whatever form of unilateral regulation is imposed on them by large consumer markets. Meanwhile, major biofuel producer countries, which tend to have powerful agricultural sectors and are frequently net food exporters, benefit from higher international agricultural commodity prices and normally have enough of a domestic biofuel market not to be significantly affected by foreign attempts at extraterritorial control. In other words, unilateral biofuel sustainability standards such as the EU's mean far more to small biofuel-exporting

Table 3. Underlying motivations for attempting extraterritorial control, illustrated by the EU biofuel policy.

Motivations	The case of the EU biofuel policy
To promote one's scientific understanding of a problem, or of global environmental thresholds being crossed, which other countries may be reluctant to accept	Most of the time the EU has been a leader at international climate negotiations, pushing for commitments from other countries on limiting greenhouse gas emissions to 450 ppm
To promote one's own values or norms (sometimes seen as universal), but which are not equally promoted in other parts of the world	The EU biofuel sustainability criteria, emphasising climate and biodiversity concerns, reveal its focus on biophysical as opposed to socioeconomic considerations in sustainable development, unlike those of developing countries
To exert an influence over resources in other countries' jurisdictions according to one's own (supra)national interests	The EU is keen on improving its energy security by shifting away from Russian and Middle Eastern fossil fuels; however, for that it requires the use of arable land and agricultural production from overseas
To bypass an international agency perceived as a hindrance or a foreign state government perceived as otherwise unwilling or incapable	The EU has avoided WTO-incompatibility issues, which tend to be an obstacle to national or international regulations that discriminate products on the basis of how they are produced

countries in Africa, which depend on foreign investment in agriculture and produce feedstock or biofuels primarily for export, than to large producers such as the USA or Brazil.

Conclusions

The biofuels phenomenon offers a good example of the contemporary politics of scaling sustainable development issues between the national and the international level. This case illustrates the decreasing willingness of developed countries and emerging economies to give up authority over strategic issues such as energy and agriculture in an increasingly multipolar world. While some have called for an international framework to regulate biofuel expansion, large producers such as Brazil and the USA have strongly – and so far successfully – opposed attempts to scale up the issue at UN fora. Instead, these major producers have adopted a neo-liberal approach to biofuels, ensuring their national sovereignty and building up international institutions that focus on market expansion and free biofuel trade. This shows that the politics of scale is not simply a matter of divergence over the level of governance that fits best, but rather a competition to set the agenda and steer what goes where in a multi-level governance process. This means scaling it up and making it international on a few points of interest while keeping that level innocuous with regard to other aspects.

However, dissatisfaction among some with such limited international biofuel governance has led to an increasing number of unilateral environmental regulations. We argue that, in a context of growing economic interdependence and of increasing sustainability concerns that do not get addressed through multilateral negotiations, unilateral measures with extraterritorial effects are poised to become prevalent. Something similar was seen, for instance, in the EU attempt to impose a carbon tax on international flights to or from Europe.⁷⁸ Such unilateral actions may, admittedly, initiate international cooperation and spur institutional innovation

in terms of new environmental norms and rules.⁷⁹ However, the biofuels case shows that they may also expose the vulnerability of weaker countries and make global inequalities more pronounced. If, on the one hand, poorer countries are the ones most affected by the impacts of biofuel expansion on international food prices or on the global environment; on the other hand, they are also most vulnerable to extraterritorial control, thanks to their dependence on foreign investments in agriculture and exports.⁸⁰

This context obviously poses a major challenge to global governance, arguably because its institutional set-up is not adjusted to deal with issues of this nature. Institutional solutions have most often dealt with issues related to common-pool resources,⁸¹ which is not the case here. Furthermore, while governance on transnational or global environmental impacts has evolved for at least 40 years, there is a lack of international institutions to deal with global *socio-economic* impacts from domestic development policies. This is doubtless another key reason for the absence of articulated responses on the biofuel controversies. In an economically globalised world, where impacts from the decisions over production are not restricted to producer countries themselves, the international community may increasingly need to consider governance strategies related not only to the ‘commons’ but also to the ‘privates’.

What can be done? There is an ongoing global agricultural transition whereby, in light of the upcoming scarcity and increasing prices of fossil fuels, agriculture is going beyond food to produce replacements for what has traditionally been produced from oil – primarily fuel, but also increasingly bio-materials such as biodegradable plastics.⁸² Agriculturally important countries have of course been interested in this transition and attempted to push it, both because of its apparent global environmental benefits and for reasons of economic self-interest. Rather than attempting to delay this transition, governance efforts may be more effective – and find greater political viability – by focusing on *adaptation* measures that address the vulnerability of poorer countries, safeguarding them not only against the environmental changes underway but also against the socioeconomic changes taking place (in this case, higher agricultural commodity prices). Economic research has long made clear that food security is more a matter of improving capacities to *access* food than of simply increasing supplies.⁸³ In reality, non-staple cash crops, such as tobacco, coffee, cotton and flowers, have for long diverted millions of hectares from food production worldwide without being vilified for doing so, and the livestock industry still utilises far more grain than the biofuel sector does.⁸⁴ Instead, and especially given that most of the world’s poor are located in rural areas, there is a greater need for governance attention to promoting biofuel production systems that are socially inclusive and that can help *improve* access to food, energy and other resources.

Notes on Contributors

Mairon G. Bastos Lima is a PhD researcher at the Institute for Environmental Studies (IVM), VU University Amsterdam. He holds a Master’s in Environmental Studies from the University of Waterloo and has done extensive research on energy and agriculture policy and governance, with a focus on biofuels. His publications include (with J. Gupta), “The Policy Context of Biofuels: A Case of Non-governance at the Global Level?” *Global Environmental Politics* 13, no. 2 (2013):

46–64; *Adjusting Biofuel Policies to meet Social and Rural Development Needs: Analysing the Experiences of Brazil, India and Indonesia*. Policy research brief 40. Brasilia: International Policy Centre for Inclusive Growth, 2013; and *An Institutional Analysis of Biofuel Policies and their Social Implications: Lessons from Brazil, India and Indonesia*. United Nations Research Institute for Social Development (UNRISD), Occasional Paper 9. Geneva: UNRISD, 2012.

Joyeeta Gupta is Professor of Environment and Development in the Global South at University of Amsterdam's Faculty of Social and Behavioural Sciences, and Professor of Water Law and Policy at the UNESCO–IHE Institute for Water Education, Delft. She has published extensively on climate change policy and governance, as well as on North–South issues, and is a lead author on the Intergovernmental Panel on Climate Change (IPCC). Recent works include *The History of Global Climate Governance* (2014); *Climate Change, Forests and REDD: Lessons for Institutional Design* (as co-editor with N. v. d. Grijp, 2013); and (with L. Lebel) “Access and Allocation in Earth System Governance: Water and Climate Change Compared.” *International Environmental Agreements: Politics, Law and Economics* 10, no. 4 (2010): 377–395.

Notes

1. Roberts, “Multipolarity and World (Dis)order”; and Sonnenfeld and Mol, “Social Theory and the Environment.”
2. Clapp, “Two Agriculture Negotiations”; and Pritchard, “The Long Hangover.”
3. Florini and Sovacool. “Who governs Energy?”
4. Gupta, “A History of International Climate Change Policy.”
5. Murray, *Ethanol's Potential*; REN21, *Renewables 2013 Global Status*; and UNEP, *Towards Sustainable Production*.
6. IEA, *World Energy Outlook*; and REN21, *Renewables 2013 Global Status*.
7. OECD/FAO, *Agricultural Outlook 2011–2020*.
8. Koh and Ghazoul, “Biofuels, Biodiversity, and People”; and Sagar and Kartha, “Bioenergy and Sustainable Development?”
9. Sagar and Kartha, “Bioenergy and Sustainable Development?”
10. REN21, *Renewables 2012 Global Status*.
11. Bastos Lima and Gupta, “The Policy Context of Biofuels.”
12. Cash et al., “Scale and Cross-scale Dynamics”; IDGEC, *Science Plan*; and Gupta, “Global Change.”
13. Gibson et al., “The Concept of Scale.”
14. Cash et al., “Scale and Cross-scale Dynamics”; IDGEC, *Science Plan*; Gupta, “Global Change”; and Scott, *Seeing like a State*.
15. Lebel et al., “The Politics of Scale”; and Towers, “Applying the Political Geography of Scale.”
16. Meijerink and Huitema, “Policy Entrepreneurs and Change Strategies”; and Towers, “Applying the Political Geography of Scale.”
17. Gupta, “Global Change.”
18. Cash et al., “Scale and Cross-scale Dynamics”; and Hooghe and Marks, “Unraveling the Central State.”
19. Murphy, *The United States and the International Court of Justice*.
20. Gupta, “Global Change.”
21. See Rockström et al., “A Safe Operating Space for Humanity.”
22. Gupta, “A History of International Climate Change Policy”; and Lebel et al., “The Politics of Scale.”
23. Gupta, “Global Change.”
24. Mitchell, “Evaluating the Performance of Environmental Institutions.”
25. See Nye, “Public Diplomacy and Soft Power.”
26. Hurrell and Sengupta, “Emerging Powers.”
27. See Biermann and Pattberg, *Global Environmental Governance Reconsidered*; Dellas et al., “Agency in Earth System Governance”; and Mert, “Partnerships.”
28. Dover and Frosini, *The Extraterritorial Effects of Legislation*.
29. Bastos Lima, “Biofuel Governance and International Legal Principles”; and Dingwerth, “North–South Parity.”
30. Mongabay, “Belgium to Source only RSPO-certified Palm Oil.”

31. FAO, *Biofuels*; Sorda et al., "An Overview of Biofuel Policies"; and UNEP, *Towards Sustainable Production*.
32. Bastos Lima, *An Institutional Analysis of Biofuel Policies*; and Searchinger, "Government Policies and Drivers of World Biofuels."
33. Pilgrim and Harvey, "Battles over Biofuels."
34. Bastos Lima and Gupta, "The Policy Context of Biofuels."
35. OECD/FAO, *Agricultural Outlook 2012–2021*.
36. Charles et al., "The EU–Africa Energy Partnership."
37. Bastos Lima, *An Institutional Analysis of Biofuel Policies*; and Seelke and Meyer, *Brazil–US Relations*.
38. OECD/FAO, *Agriculture Outlook 2012–2021*.
39. REN21, *Renewables 2012 Global Status*.
40. EPA, *EPA Finalizes Regulations*.
41. US National Research Council, *Renewable Fuel Standard*.
42. UNEP, *Towards a Green Economy*.
43. CONAB, *Acompanhamento da Safra Brasileira*.
44. See MAPA, *AgriEnergy Statistical Yearbook 2009*.
45. EPE, *Balanço Energético Nacional 2012*.
46. *Ibid.*
47. OECD/FAO, *Agricultural Outlook 2012–2021*.
48. EPE, *Balanço Energético Nacional 2012*.
49. REN21, *Renewables 2012 Global Status*.
50. Flach et al., *EU-27 Biofuels Annual 2011*; and OECD/FAO, *Agricultural Outlook 2012–2021*.
51. European Parliament, *Directive 2009/28/EC*.
52. Flach et al., *EU-27 Biofuels Annual 2012*.
53. Abbot et al., *What's Driving Food Prices?*; Ajanovic, "Biofuels versus Food Production"; Baffes and Hanjotis, *Placing the 2006/2008 Commodity Price Boom*; FAO, *Biofuels*; and OECD/FAO, *Agricultural Outlook 2012–2021*.
54. Runge and Senauer. "How Biofuels could Starve the Poor."
55. OECD/FAO, *Agricultural Outlook 2012–2021*.
56. See Fonseca et al., *Impacts of the EU Biofuel Target*.
57. Borrás and Franco, "Global Land Grabbing"; Cotula et al., "Agricultural Investment and International Land Deals"; and Dauvergne and Neville, "The Changing North–South and South–South Political Economy."
58. Charles et al., "The EU–Africa Energy Partnership."
59. Bastos Lima, "Biofuel Governance and International Legal Principles"; and Smith, *Biofuels and the Globalisation of Risk*.
60. Bastos Lima, *An Institutional Analysis of Biofuel Policies*; Cotula et al., "Agricultural Investment and International Land Deals"; and German et al., "Local Social and Environmental Impacts of Biofuels."
61. Koh and Ghazoul, "Biofuels, Biodiversity, and People"; and Sagar and Kartha, "Bioenergy and Sustainable Development?"
62. Fargione et al., "Land Clearing"; and Searchinger et al., "Use of US Croplands."
63. Mulder et al., "A Comparative Analysis."
64. Koh et al., "Remotely Sensed Evidence"; and Sawyer, "Climate Change."
65. The reductions achieved by each biofuel have been set by the EU itself, through an accounting methodology set by its Joint Research Centre. European Parliament, *Directive 2009/28/EC*.
66. *Ibid.*
67. Deutsche Welle, "Biofuels Producers."
68. Charles et al., "The EU–Africa Energy Partnership"; and Reuters, "EU, Brazil, Mozambique."
69. Bastos Lima and Gupta, "The Policy Context of Biofuels."
70. Bastos Lima, "Biofuel Governance and International Legal Principles"; and Bastos Lima and Gupta, "The Policy Context of Biofuels."
71. Pomeroy and Doyle, "Interview."
72. IISD, "Summary of the Tenth Conference of the Parties"; and Petterman, "Update on the Negotiations at COP-10."
73. See Stearns, "EU Warns Brazil."
74. Douma, "Legal Aspects of the European Union's Biofuels Policy."
75. See Hasan, "Gapki withdraws from RSPO."
76. *Ibid.*
77. Adnan, "Malaysian Palm Oil Association."
78. See Hertogen, "Sovereignty as Decisional Independence."
79. *Ibid.*; and Shaffer and Bodansky, "Transnationalism, Unilateralism and International Law."
80. See Clapp, "Food Price Volatility."
81. Young, "Institutions and Environmental Research."
82. Langeveld et al., "Development Perspectives."
83. Sen, *Poverty and Famines*.
84. OECD/FAO, *Agricultural Outlook 2012–2021*.

Bibliography

- Abbot, P. C., C. Hurt, and W. E. Tyner. *What's Driving Food Prices? March 2009 Update*. Farm Foundation, 2009. <http://www.farmfoundation.org/webcontent/Whats-Driving-Food-Prices-March-2009-Update-1702.aspx>.
- Adnan, H. 2011. "Malaysian Palm Oil Association won't quit Roundtable on Sustainable Palm Oil." *The Star*, October 6. <http://biz.thestar.com.my/news/story.asp?file=/2011/10/6/business/9638574&sec=business>.
- Ajanovic, A. "Biofuels versus Food Production: Does Biofuels Production increase Food Prices?" *Energy* 36, no. 4 (2011): 2070–2076.
- Baffes, J., and Haniotis, T. *Placing the 2006/2008 Commodity Price Boom into Perspective*. Policy Research Working Paper 5371. Washington, DC: World Bank, 2008.
- Bastos Lima, M. G. *An Institutional Analysis of Biofuel Policies and their Social Implications: Lessons from Brazil, India and Indonesia*. Occasional Paper 9. Geneva: United Nations Research Institute for Social Development (UNRISD), 2012.
- Bastos Lima, M. G. "Biofuel Governance and International Legal Principles: Is it Equitable and Sustainable?" *Melbourne Journal of International Law* 10, no. 2 (2009): 470–492.
- Bastos Lima, M. G., and J. Gupta. "The Policy Context of Biofuels: A Case of Non-governance at the Global Level?" *Global Environmental Politics* 13, no. 2 (2013): 48–66.
- Biermann, F., and P. Pattberg. *Global Environmental Governance Reconsidered*. Cambridge, MA: MIT Press, 2012.
- Borras, S. M., and J. C. Franco. "Global Land Grabbing and Trajectories of Agrarian Change: A Preliminary Analysis." *Journal of Agrarian Change* 12, no. 1 (2012): 34–59.
- Cash, D. W., W. N. Adger, F. Berkes, P. Garden, L. Lebel, P. Olsson, L. Pritchard, and O. Young. "Scale and Cross-scale Dynamics: Governance and Information in a Multilevel World." *Ecology and Society* 11, no. 2 (2006): 8.
- Charles, M. B., R. Ryan, R. Oloruntoba, T. von der Heide, and N. Ryan. "The EU–Africa Energy Partnership: Towards a Mutually Beneficial Renewable Transport Energy Alliance?" *Energy Policy* 37, no. 12 (2009): 5546–5556.
- Clapp, J. "Food Price Volatility and Vulnerability in the Global South: Considering the Global Economic Context." *Third World Quarterly* 30, no. 6 (2009): 1183–1196.
- Clapp, J. "WTO Agriculture Negotiations: Implications for the Global South." *Third World Quarterly* 27, no. 4 (2006): 563–577.
- CONAB. *Acompanhamento da Safra Brasileira: Cana-de-Açúcar, Safra 2013/2014*. [Tracking the Brazilian Harvest: Sugarcane, Harvest 2013/2014.] Brasília: Companhia Nacional de Abastecimento, 2013.
- Cotula, L., S. Vermeulen, P. Mathieu, and C. Toulmin. "Agricultural Investment and International Land Deals: Evidence from a Multi-country Study in Africa." *Food Security* 3, no. supp. 1 (2011): S99–S113.
- Dauvergne, P., and K. Neville. "The Changing North-South and South-South Political Economy of Biofuels." *Third World Quarterly* 30, no. 6 (2009): 1087–1102.
- Dellas, E., P. Pattberg, and M. Betsill. "Agency in Earth System Governance: Refining a Research Agenda." *International Environmental Agreements: Politics, Law and Economics* 11 (2011): 85–98.
- Deutsche Welle. "Biofuel Producers Call Proposed EU Regulations Unfair." November 6, 2008. <http://www.dw.de/biofuel-producers-call-proposed-eu-regulations-unfair/a-3770090-1>.
- Dingwerth, K. "North–South Parity in Global Governance: The Affirmative Procedures of the Forest Stewardship Council." *Global Governance: A Review of Multilateralism and International Organizations* 14, no. 1 (2008): 53–71.
- Douma, W. T. "Legal Aspects of the European Union's Biofuels Policy: Protection or Protectionism?" *German Yearbook of International Law* 53 (2010): 371–420.
- Dover, R., and J. Frosini. *The Extraterritorial Effects of Legislation and Policies in the EU and US*. Brussels: Directorate-General for External Policies, European Parliament, 2012.
- Empresa de Pesquisa Energética (EPE). *Balanco Energético Nacional 2012: Ano Base 2011*. [National Energy Balance 2012: Base Year 2011.] Rio de Janeiro: EPE, 2012.
- Environmental Protection Agency (EPA). *EPA Finalizes Regulations for the National Renewable Fuel Standard Program for 2010 and Beyond*. Washington, DC: Office of Air Transportation and Air Policy, US EPA, 2010.
- European Parliament. *Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the Promotion of the Use of Energy from Renewable Sources*. Brussels: Official Journal of the European Union, L140/16–L140-62, 2009.
- FAO. *Biofuels: Prospects, Risks and Opportunities – State of Food and Agriculture*. Rome: FAO, 2008.
- Fargione, J., J. Hill, D. Tilman, S. Polasky, and P. Hawthorne. "Land Clearing and the Biofuel Carbon Debt." *Science* 319, no. 5867 (2008): 1235–1238.
- Flach, R., S. Lieberz, K. Bendz, B. Dahlbacka *EU-27 Biofuels Annual 2011*, Global Agricultural Information Network (GAIN) report NL1013, 2011. The Hague: US Department of Agriculture, 2011.
- Florini, A., and B. K. Sovacool. "Who governs Energy? The Challenges facing Global Energy Governance." *Energy Policy* 7 (2009): 5239–5248.

- Fonseca, M. B., A. Burrell, S. H. Gay, M. Henseler, A. Kavallari, R. M'Barek, I. P. Dominguez, and A. Tonini. *Impacts of the EU Biofuel Target on Agricultural Markets and Land-use: A Comparative Modelling Assessment*. Brussels: European Commission Joint Research Centre, 2010.
- German, L., G. C. Schoneveld, and P. Pacheco. "Local Social and Environmental Impacts of Biofuels: Global Comparative Assessment and Implications for Governance." *Ecology and Society* 16, no. 3 (2011): 29.
- Gibson, C., E. Ostrom, and T. K. Ahn. "The Concept of Scale and the Human Dimensions of Global Change: A Survey." *Ecological Economics* 32 (2000): 217–239.
- Gupta, J. "A History of International Climate Change Policy." *Wiley Interdisciplinary Reviews Climate Change* 1, no. 5 (2010): 636–653.
- Gupta, J. "Global Change: Analysing Scale and Scaling in Environmental Governance." In *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers*, edited by O. R. Young, H. Schroeder and L. A. King 225–258. Cambridge MA: MIT Press, 2008.
- Hasan, F. 2011. "Gapki withdraws from RSPO to support ISPO." *Jakarta Post*, October 5. <http://www.thejakarta.com/news/2011/10/05/gapki-withdraws-rspo-support-ispo.html>.
- Hertogen, A. "Sovereignty as Decisional Independence over Domestic Affairs: The Dispute over Aviation in the EU Emissions Trading System." *Transnational Environmental Law* 1, no. 2 (2012): 281–301.
- Hooghe, L., and G. Marks. "Unraveling the Central State, but How? Types of Multi-level Governance." *American Political Science Review* 97, no. 2 (2003): 233–243.
- Hurrell, A., and S. Sengupta. "Emerging Powers, North-South Relations and Global Climate Politics." *International Affairs* 88, no. 3 (2012): 463–484.
- IDGEC. *Science Plan of the Institutional Dimensions of Global Environmental Change*. IHDP Report 9. Bonn: International Human Dimensions Programme, 1999.
- International Energy Agency (IEA). *World Energy Outlook: 2006*. Paris: IEA, 2006.
- International Institute for Sustainable Development (IISD). "Summary of the Tenth Conference of the Parties to the Convention on Biological Diversity." November 1, 2012. <http://www.iisd.ca/vol09/enb09544e.html>.
- Koh, L. P., and J. Ghazoul. "Biofuels, Biodiversity, and People: Understanding the Conflicts and Finding Opportunities." *Biological Conservation* 141, no. 10 (2008): 2450–2460.
- Koh, L. P., J. Miettinen, S. C. Liew, and J. Ghazoul. "Remotely Sensed Evidence of Tropical Peatland Conversion to Oil Palm." *Proceedings of the National Academy of Sciences* 108 (2011): 5127–5132.
- Langeveld, J. W. A., J. Dixon, and J. F. Jaworski. "Development Perspectives of the Biobased Economy: A Review." *Crop Science* 50 (2010): S142–S151.
- Lebel, L., P. Garden, and M. Imamura. "The Politics of Scale, Position, and Place in the Governance of Water Resources in the Mekong River." *Ecology and Society* 10, no. 2 (2005): 18.
- MAPA. *AgriEnergy Statistical Yearbook 2009*. Brasília: MAPA Agroenergia, Ministry of Agriculture, Livestock and Food Supply, 2009.
- Meijerink, S., and D. Huitema. "Policy Entrepreneurs and Change Strategies: Lessons from Sixteen Case Studies of Water Transitions around the Globe." *Ecology and Society* 15, no. 2 (2010): 21.
- Mert, A. "Partnerships and the Privatisation of Environmental Governance: On Myths, Forces of Nature and Other Inevitabilities." *Environmental Values* 21, no. 4 (2012): 475–498.
- Mitchell, R. B. "Evaluating the Performance of Environmental Institutions: What to Evaluate and How to Evaluate It?" In *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers*, edited by O. R. Young, H. Schroeder and L. A. King, 79–114. Cambridge, MA: MIT Press, 2008.
- Mongabay. "Belgium to Source only RSPO-certified Palm Oil by 2015." January 31, 2012. http://news.mongabay.com/2012/0131-belgium_rspo.html#.
- Mulder, K., N. Hagens, and B. Fisher. "A Comparative Analysis of the Energy Returns on Water Invested." *Ambio* 39, no. 1 (2010): 30–39.
- Murphy, S. D. *The United States and the International Court of Justice: Coping with Antinomies*. Legal Studies Research Paper No. 291. Washington, DC: George Washington University, 2008.
- Murray, D. *Ethanol's Potential: Looking beyond Corn*. Washington, DC: Earth Policy Institute, 2005.
- Nye, J. "Public Diplomacy and Soft Power." *Annals of the American Academy of Political and Social Science* 616 (2008): 94–109.
- OECD/FAO. *OECD/FAO Agricultural Outlook 2012–2021*. Paris: OECD/FAO, 2012.
- OECD/FAO. *OECD/FAO Agricultural Outlook 2011–2020*. Paris: OECD/FAO, 2011.
- Petterman, A. "Update on the Negotiations at COP-10: Will Biodiversity Survive the Process?" Global Justice Ecology Project. Accessed December 17, 2013. <http://globaljusticeecology.org/connections.php?ID=462>.
- Pilgrim, S., and M. Harvey. "Battles over Biofuels in Europe: NGOs and the Politics of Markets." *Sociological Research Online* 15, no. 3 (2010): 4.
- Pomeroy, R., and A. Doyle. "Interview: Biofuels Win at Summit but UN Food Envoy Fights On." Reuters, June 5, 2008. <http://www.reuters.com/article/2008/06/05/idUSL05325106>.
- Pritchard, B. "The Long Hangover from the Second Food Regime: A World-historical Interpretation of the Collapse of the WTO Doha Round." *Agriculture and Human Values* 26 (2009): 297–307.
- REN21. *Renewables 2013 Global Status Report*. Paris: REN21 Secretariat, 2013.
- REN21. *Renewables 2012 Global Status Report*. Paris: REN21 Secretariat, 2012.

- Reuters. "EU, Brazil, Mozambique to Sign Bioenergy Pact." July 12, 2010. <http://www.reuters.com/article/2010/07/12/ozatp-eu-brazil-bioenergy-idAFJJOE66B0SL20100712>.
- Roberts, J. T. "Multipolarity and the New World (Dis)order: US Hegemonic Decline and the Fragmentation of the Global Climate Regime." *Global Environmental Change* 21, no. 3 (2011): 776–784.
- Rockström, J., et al. "A Safe Operating Space for Humanity." *Nature* 461 (2009): 472–492.
- Runge, C. F., and B. Senauer. "How Biofuels could Starve the Poor." *Foreign Affairs* 86, no. 3 (2007): 41–55.
- Sagar, A. D., and S. Kartha. "Bioenergy and Sustainable Development?" *Annual Review of Environment and Resources* 32, no. 1 (2007): 131–167.
- Sawyer, D. "Climate Change, Biofuels and Eco-social Impacts in the Brazilian Amazon and Cerrado." *Philosophical Transactions of the Royal Society B: Biological Sciences* 363, no. 1498 (2008): 1747–1752.
- Scott, J. C. *Seeing like a State: How Certain Schemes to Improve the Human Condition have Failed*. New Haven, CT: Yale University Press, 1998.
- Searchinger, T. "Government Policies and Drivers of World Biofuels: Sustainability Criteria, Certification Proposals and their Limitations." In *Biofuels: Environmental Consequences and Interactions with Changing Land Use*, edited by R. W. Howart, and S. Bringezu, 37–52. Ithaca, NY: Cornell University Press, 2009.
- Searchinger, T., R. Heimlich, R. A. Roughton, F. Dong, A. Elobeid, J. Fabiosa, S. Tokgoz, D. Hayes, and T. H. Yu. "Use of US Croplands for Biofuels increases Greenhouse Gases through Emissions from Land-use Change." *Science* 319, no. 5867 (2008): 1238–1240.
- Seelke, C. R., and P. J. Meyer. *Brazil–US Relations*. Washington, DC: Congressional Research Service, 2009.
- Sen, A. *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford: Oxford University Press, 1982.
- Shaffer, G., and D. Bodansky. "Transnationalism, Unilateralism and International Law." *Transnational Environmental Law* 1, no. 1 (2012): 31–41.
- Smith, J. *Biofuels and the Globalisation of Risk: The Biggest Change in North-South Relationships since Colonialism?* London: Zed Books, 2010.
- Sonnenfeld, D. A., and A. P. J. Mol. "Social Theory and the Environment in the New World (Dis)order." *Global Environmental Change* 21, no. 3 (2011): 771–775.
- Sorda, G., M. Banse, and C. Kemfert. "An Overview of Biofuel Policies across the World." *Energy Policy* 38, no. 11 (2010): 6977–6988.
- Stearns, J. "EU Warns Brazil on Environmental Impact of Biofuels." Transnational Institute, July 5, 2007. http://www.tni.org/archives/bloomberg_biofuels.
- Towers, G. "Applying the Political Geography of Scale: Grassroots Strategies and Environmental Justice." *Professional Geographer* 52, no. 1 (2000): 23–36.
- UNEP. *Towards A Green Economy: Pathways to Sustainable Development and Poverty Eradication*. Nairobi: United Nations Environment Programme, 2011.
- UNEP. *Towards Sustainable Production and Use of Resources: Assessing Biofuels*. Nairobi: United Nations Environment Programme, 2009.
- US National Research Council. *Renewable Fuel Standard: Potential Economic and Environmental Effects of US Biofuel Policy*. Washington, DC: National Academies Press, 2011.
- Young, O. R. "Institutions and Environmental Research: The Scientific Legacy of a Decade of IDGEC Research." In *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers*, edited by O. R. Young, H. Schroeder and L. A. King 3–46. Cambridge, MA: MIT Press, 2008.