



## The politics of biofuels, land and agrarian change: editors' introduction

Saturnino M. Borras Jr. , Philip McMichael & Ian Scoones

To cite this article: Saturnino M. Borras Jr. , Philip McMichael & Ian Scoones (2010) The politics of biofuels, land and agrarian change: editors' introduction, *The Journal of Peasant Studies*, 37:4, 575-592, DOI: [10.1080/03066150.2010.512448](https://doi.org/10.1080/03066150.2010.512448)

To link to this article: <https://doi.org/10.1080/03066150.2010.512448>



Published online: 23 Sep 2010.



Submit your article to this journal [↗](#)



Article views: 12854



View related articles [↗](#)



Citing articles: 34 View citing articles [↗](#)

## **The politics of biofuels, land and agrarian change: editors' introduction**

Saturnino M. Borras Jr., Philip McMichael and Ian Scoones

This introduction frames key questions on biofuels, land and agrarian change within agrarian political economy, political sociology and political ecology. It identifies and explains big questions that provide the starting point for the contributions to this collection. We lay out some of the emerging themes which define the politics of biofuels, land and agrarian change revolving around global (re)configurations; agro-ecological visions; conflicts, resistances and diverse outcomes; state, capital and society relations; mobilising opposition, creating alternatives; and change and continuity. An engaged agrarian political economy combined with global political economy, international relations and social movement theory provides an important framework for analysis and critique of the conditions, dynamics, contradictions, impacts and possibilities of the emerging global biofuels complex. Our hope is that this collection demonstrates the significance of a political economy of biofuels in capturing the complexity of the 'biofuels revolution' and at the same time opening up questions about its sustainability in social and environmental terms that provide pathways towards alternatives.

**Keywords:** biofuels, land-grabbing, agrarian movements, Via Campesina

### **Questions of agrarian political economy**

In this collection we ask a number of questions emerging out of the new agrarian political economy created by the 'biofuel complex'. Together the papers offer perspectives from political economy, political sociology and political ecology, and provide a framework for understanding new agrarian relations in the biofuel era.

Our starting point, following Bernstein (2010a), has been four key questions in agrarian political economy: Who owns what? Who does what? Who gets what? And what do they do with the surplus wealth? As White and Dasgupta (2010) explain, we are also interested in the emergent social and political relations in the biofuel complex, asking, how do people interact with each other? And, given the impacts on natural resources and sustainability, we are also interested in questions about people-environment interactions, asking for example, how are changes in politics shaped by dynamic ecologies, and vice versa? (See also Bernstein 2010b).

---

This collection comes out of the workshop on the same theme held in October 2009 in Halifax, Canada, sponsored by the *Journal of Peasant Studies* and Initiatives in Critical Agrarian Studies (ICAS). We thank all the workshop participants, with special mention to Diamantino Nhampossa of União Nacional de Camponeses Moçambique (UNAC) and Via Campesina-Africa, for their participation, and the Canada Research Chairs Program, International Development Studies (IDS) Program at Saint Mary's University, and the Inter-Church Organization for Development Cooperation (ICCO) through ICAS for financial assistance. We also thank all the scholars who peer-reviewed the papers, but for obvious reasons have to remain anonymous.

At the same time, we are concerned with the politics of representation, that is, what are the discursive frames through which biofuels are promoted and/or opposed? And what are the institutional structures, and cultures of energy consumption on which a biofuels complex depends, and what alternative political and ecological visions are emerging to call the biofuels complex into question? Through a range of cases, which we will introduce briefly below, the aim is to ask a range of big-picture questions in a number of sites globally, focusing all the time on the political economy of the biofuel complex.

While there has been much written on the expansion of biofuels and associated 'land grabs' across the world (e.g. GRAIN 2008, Monsalve *et al.* 2008, Oxfam 2008, Cotula *et al.* 2009, von Braun and Meinzen-Dick 2009), there has been much less analysis of the underlying political-economic-ecological dynamics. This collection therefore starts with a set of questions which have helped frame the papers:

- Is the new rush to allocate land for biofuels fundamentally changing agrarian structures? What are the echoes of past colonial interventions in plantation agriculture?
- Who is driving these new biofuel investments? Where are the centres of power? What are the politics of the underlying policy processes?
- How do social-economic-political dynamics intersect with ecological dynamics? Is there a particular political ecology of biofuels?
- What are the impacts of new biofuel investments? Who wins, who loses – and what are the consequences for rural livelihoods? What new agrarian relations – dissected by class, gender, ethnicity or race – are emerging?
- What forms of resistance exist? What are the issues that unite and divide key actors around biofuels? Are there alternative biofuel development trajectories that support livelihoods, protect the environment and are rooted in principles of social justice?

In different ways, these questions provide the starting point for the papers that follow in this collection. In the following sections, we lay out some of the emerging themes which define the politics of biofuels, land and agrarian change.

### **The emerging biofuels complex**

The recent expansion of industrial biofuels expresses several trends in global political economy. These include the global commodification of a time-honoured local energy supplement and the consolidation of corporate power in the energy and agribusiness sectors. The biofuels revolution responds to an assumed 'energy crisis', as the cost of capital inputs (production, processing, transport) rises in an age of peaking oil supplies. In addition, a desire to reduce dependence on Middle Eastern oil drives governments to develop an industrial biofuels complex which delivers 'energy security'. At the same time, biofuels represent a new profitability frontier for agribusiness and energy sectors beset with declining productivity and/or rising costs (Magdoff 2008, McMichael 2009, Houtart 2010, McMichael 2010). Biofuels are also presented as a route to reducing or transforming energy-use patterns in ways that can ameliorate environmental concerns without affecting economic growth. This 'win-win' narrative is reflected in diverse policy debates in Europe (Franco *et al.* 2010) and in the United States (Hollander 2010 and Gillon 2010), and has dominated the framing of the biofuels debate globally.

Thus, when the Bush administration set corn ethanol targets (35 billion gallons by 2017) with huge subsidies to the agribusiness giants ADM, Bunge, Cargill and others in 2007, the European Union matched this with a 10 percent target for a biofuels mix in transport fuels by 2020. Following this example, the UK's Gallagher Report (Gallagher 2008) estimated, via a mid-range scenario of land use, that by 2020 about 500 million more hectares of land, one-third more than currently under cultivation, would be required to meet global demand for biofuels. Estimates suggest that Northern fuel needs could be met now with the conversion of 70 percent of European farmland to fuel crops, and the entire US corn and soy harvest (Holt-Giménez 2007). However, given (subsidised) biofuel targets and enabling Kyoto protocols, corporations and financiers are investing massively in biofuel production in the global South. It is these combined processes that are creating an emergent global biofuel complex.

Some estimates show that European firms already claim over five million hectares of land for biofuel development across the global South. At present Brazil plans to replace 10 percent of the world's fossil fuels by 2025 with sugar ethanol, Malaysia and Indonesia are expanding oil palm plantations to supply 20 percent of EU biodiesel needs, India plans 14m hectares of land for *Jatropha* plantations, and Africa 400m (Holt-Giménez 2007, Vidal 2007, 3, Altieri 2009). With this, some argue, food production will be undermined and the shift to biofuels will aggravate land availability for rural livelihoods (Weis 2010).

The lure of biofuels can also potentially accelerate deforestation trends – for example, 80 percent of the Indonesian rainforest (covering 77 percent of Indonesia in the mid-1960s) has already disappeared (Gouverneur 2009, 5), largely due to timber exploration and massive expansion of palm oil. Dispossessed indigenous peoples in the Amazon refer to biofuel plantations as the 'devil's orchards', which accelerate displacement trends with oil-palm and sugarcane plantations that, some estimates show, generate one-tenth the number of jobs generated by family farming per 100 hectares (Holt-Giménez 2007), and by displacing food crops with fuel crops.

Meanwhile, where normative and/or legitimacy concerns, combined with the global financial crisis, may have slowed the 'biofuel revolution', initiatives to develop a global complex continue. Ethanol superpower Brazil leads the way, 'helped in this strategy by the trans-nationalisation of its leading firms, by the initiatives of its national development bank, BNDES, which increasingly operates outside Brazil, and by its leadership position in tropical agriculture research and extension' (Wilkinson 2009, 103; also Wilkinson and Herrera 2010).

A *global* biofuel complex is still incipient, as neo-mercantilist practices (protected subsidised national biofuel sectors, with offshore complements managed through tariff structures) continue alongside emergent globalising recombinant corporate/state arrangements (Neville and Dauvergne 2010). New oil, auto, food, and biotech industrial alliances, investing in Southern land and processing infrastructures, and the development of an international marketing infrastructure complement new private-public partnerships. One such new alliance, between Cargill and Monsanto, incorporated as Renessen, seeks to integrate animal feed and agro-fuels, where genetically modified maize, soy and rapeseed produced for feed can produce biofuels from the same biomass. Here animal feed becomes a by-product of biofuel production, making it 'still more difficult for countries to extricate themselves from industrial farming' (TNI 2007, 11). In the palm-oil complex, for example, the

Indonesian palm oil trade is dominated by a combination of Cargill (the world's largest private company), an ADM-Kuck-Wilmar alliance (the world's largest biofuels manufacturer), and Synergy Drive, and the Malaysian government firm 'soon to become the world's biggest palm oil conglomerate' (Greenpeace 2007, 3). In parallel there is the 'ethanol alliance' (US, Brazil, the Central American corridor, together with multinational companies); Brazil's ethanol alliances with India, China, Mozambique and South Africa; and the Southern Cone transgenic soy complex (Argentina, and Paraguay, with Bunge, and Dreyfus), linked to EU preferences. More recently, Royal Dutch Shell is exploring a joint venture with Brazil's most powerful bioethanol producer, Cosan. For Shell, this move arrests a profitability slide by signalling growth potential to investors, for Cosan this alliance would double ethanol production, and for Brazil it would consolidate its role as 'the world's alternative energy superpower with the potential to ship huge quantities of fuel to the US and Europe', assuming a US reduction in biofuel import tariffs (Mathiason 2010, 43).

The emerging biofuels complex thus reproduces a 'global ecology' (Sachs 1993), whereby planetary resources are to be managed through the application of the market paradigm to the environment ('market environmentalism'), reinforcing a growing 'metabolic rift', and the separation of people and nature (McMichael 2010). The consequences are the deepening of a North/South asymmetry (via the 'ecological footprint'), and the privileging of corporate management of energy resources: converting biofuels into an industrial commodity at the expense of encouraging local biofuel developments for local 'energy sovereignty', in accordance with the requirements of food sovereignty (Rosset 2009) and the reproduction of biodiversity (see, for example, related discussion by Fernandes *et al.* 2010).

Characterised as part of an 'energy transition', many believe corporate-driven and controlled biofuels represent short-term responses sustaining an unsustainable model of agro-industrialisation, and energy consumption, in the name of arresting climate change through market environmentalism. Substituting an alternative energy commodity to address greenhouse gas (GHG) emissions, the market paradigm thus 'externalises' the profound social and environmental contradictions stemming from an industrial biofuel complex. By constructing the biofuel complex in this way, alternative food-energy pathways are excluded, and more sustainable and equitable uses of biofuels in agri-food-energy systems are, as a consequence, ignored.

In the papers in this collection, the contours of the emerging biofuel complex are interrogated. There are clear winners and losers, but the story is not one of simple black and white. The political configurations that construct the biofuel complex and frame the narratives that justify investment in it must be understood if we are to unravel its causes and consequences.

### **Global (re-)configurations**

All contributions in this collection are, at root, concerned with locating the expansion of biofuels in understandings of globalisation processes. As already discussed, in some parts of the world, a new corporate-driven biofuel politics is emerging, but it is one with multiple axes and influences, and simplistic analyses of the political dynamics of the biofuel complex are insufficient. Dauvergne and Neville, for example, highlight how capitalist relations between North and South, rooted in

long-term colonial and trading relationships, are being supplanted by new configurations, including linkages between countries in the global South, with Brazil and Indonesia being major players. There are, they suggest, also triangular North-South-South formations, where transnational capital based in the North allies with South-South collaborations. Wilkinson and Herrera (2010), for example, document the extraordinary array of investors in Brazil's bio-ethanol industry which, prior to the 2008–09 financial crisis and global economic slow-down, looked set to take off in a massive way. Equally, Richardson (2010) notes the importance of Brazilian alongside South African investors in the expansion of sugar cane in southern Africa. As McMichael (2010, 611) observes, these new dimensions of globalisation create new agri-food-fuel regimes, constructing in turn new 'projects of rule', whereby the corporate food-fuel regime creates, to paraphrase Harvey (2003), 'a politics of accumulation by dispossession'.

How do we understand these new relationships, constructed in new ways with new players? Conventional axes of power of course still operate, but there are important new dimensions. Across the papers different words are used to describe these formations: alliances, chains, networks and assemblages. Although all have different connotations and implications, drawing from different literatures (e.g. Sassen 2006, Mol 2007), the general sense is the same: biofuels as a commodity are constructed through social, political and economic relations in ways that must be understood as a whole, and located within wider, often global, processes.

Following Ong and Collier (2005), Hollander (2010), for example, identifies a biofuel assemblage centred on Miami, Florida, but with hemispheric reach. The assemblage connotes 'the proliferation of technologies across the world produces systems that mix technology, politics, and actors in diverse configurations that do not follow given scales or political mappings' (Ong and Collier 2005, 338). They are, as a result, situated, unstable and contingent. As Hollander shows, Miami, as a 'global city' (Sassen 2006), is the centre of sugar politics in the US, 'serving as a gateway to information, investment, and commodities'. Three interlocking organisations are analysed: the Inter-American Ethanol Commission (now the International Biofuels Commission); the Florida FTAA, Inc. (now Gateway Florida, Inc.); and the Inter-American Institute for Cooperation on Agriculture, demonstrating the power and reach of the assemblage. What we are seeing, Hollander argues, is 'a global biofuels assemblage that links public entities at a variety of scales – supranational, national, and sub-national (the state of Florida is a case in point) – with universities, international institutions and private transnational corporations, including agribusiness, energy, automotive and biotechnology companies. The political leadership promoting the assemblage is emanating from multiple sources, including the governments of Brazil, US, EU, and China and from numerous places, primarily global cities such as Miami'.

In a similar vein, Gillon (2010, 742) explores the political ecology of ethanol production in the US Corn Belt. He identifies the attempt to create an 'environmental fix' centred on biofuels as a 'socio-ecological project indicative of the contradictory capitalist imperatives to exploit, protect and create new resources for accumulation'. Further, he argues that 'the politicisation of US agrofuels, as a debate over carbon accounting for GHG reduction, energy security and consumer choice, privileges urban and other actors' socio-ecological interests over those of rural places of production'. In a very different context, McCarthy (2010) explores the consequences of 'adverse incorporation' in the oil palm sector in Indonesia, whereby

the social, political and economic conditions on the ground and the nature of commodity relations affect outcomes in widely divergent ways.

Meanwhile, White and Dasgupta (2010, 605) explain that ‘the specific destination of the crops as fuel, food, cosmetics or other final uses in faraway places is probably of less interest than the forms of (direct and indirect) appropriation of their land and the forms of their insertion or exclusion as producers in global commodity chains’.

Thus, while attention to the new global configurations of the biofuel complex is critical, understanding the dynamics of more localised agrarian political economies is equally essential. For here is where processes of exclusion or inclusion occur, resulting in different relationships between producers, labourers and larger capitalist enterprises.

### **Agro-ecological visions**

While much of the emphasis in this collection is on the political-economic configurations of biofuel interventions, the materiality of the feedstock should not be ignored. There are major differences in the biophysical properties and conditions for successful growth of, for example, corn, soy bean, sugar cane and *Jatropha*. There are basic biological requirements – of soil fertility, rainfall and so on – as well as impacts in terms of the effects on system-wide energy flows or carbon dynamics. As Ariza, Lélé, Kallis and Martínez-Alier (2010) show, through a detailed empirical analysis of *Jatropha* production in Tamil Nadu, India, the crop turned out to be neither profitable, nor pro-poor. It proved inappropriate for ‘wasteland’ development and benefited middle to rich farmers who had access to capital. However, White and Dasgupta urge us ‘not to fall into the trap of blaming the crop (or the uses to which a crop is put); it all depends on the manner in which these crops are grown, under which forms of ownership and labour regimes and what kinds of commodity chains’ (2010, 605).

The agro-ecological contexts for biofuel interventions are therefore co-constructed with economic and political pressures. Thus large-scale, plantation-based systems may be a biophysical and economic requirement for some crops, but need not be for others. Equally, certain crops may be hooked into different markets through the structure of a commodity chain, and the ownership and control of different elements of it. There is thus no *a priori* reason why the complex or assemblage should be constructed around nodes which are Northern and metropolitan and controlled by global capital. Instead, it is the way politics intersects with economic processes and ecological conditions that shapes how a biofuel intervention plays out. Across the cases presented, there are examples ranging from village farms in Tamil Nadu or Kenya (Ariza *et al.* and Hunsberger 2010) to massive plantation investments in Indonesia (McCarthy) or Brazil (Wilkinson and Herrera). In each of these systems, the way energy flows, carbon is sequestered or agro-biodiversity affected is hugely different, as are contrasts in poverty, livelihood and social justice outcomes.

For some, biofuels are seen to be driving a ‘new agriculture’, one based on commercial investment and with a high-tech vision. This normative vision of the future is of course premised on numerous, highly contested assumptions about desirable progress. Probing below the surface reveals how such a technocratic vision masks the real interests of corporate agribusiness and investors speculatively

accumulating land, betting on the rising prices of alternative fuel sources (Shattuck 2009). Equally, the notion that biofuels are the 'clean' alternative to 'dirty' fossil fuels and so are part of the vanguard of addressing climate change is challenged. As White and Dasgupta argue, 'first-generation biofuel feedstock are highly inefficient sources of energy. They require very large expanses of land, conversion rates are low and in some calculations there are more carbon dioxide emissions than with fossil fuels', as highlighted in high-profile articles in *Science* during 2008 (Scharlemann and Laurance 2008, Fargione *et al.* 2008). Thus some biofuel investments represent the externalisation of costs to the South of a high-energy consumption culture in the North.

### **Conflicts, resistances and diverse outcomes**

The global biofuel complex is not evolving uncontested. Across the world, politics emerge in particular places where tension and conflicts arise. Drawing on the work of Tsing (2005, 4), a number of papers identify important 'frictions', defined as the awkward, unstable and creative qualities of interconnection across difference. As Franco *et al.* (2010) describe, there are possibilities for mobilisation, protest and resistance at various scales: from the local project or investment to the global setting where financing occurs. In their paper they trace the connections between the European Union and Mozambique and Brazil, showing how government-business alliances in the North are 'acting as the midwife of new policy frameworks and pro-biofuel investments across the global South'. The provision of technical assistance, the brokering of energy supply deals, the facilitation of corporate acquisitions and the promotion of market-oriented land policies all support a particular pathway of development intervention.

European policy, Franco *et al.* argue, is conditioned by a combination of managerialism (wrapped up in conditions, protocols and targets, and the assumption that everything will be OK) and technological optimism (new breakthroughs and next-generation inventions will iron out the problems). However, the contradictions between policy at the European level and the practices on the ground open up the possibility of questioning biofuel investments and have become a focus for the mobilisation of movements pushing a more localised perspective based on 'energy sovereignty' (Borras and Franco 2010a).

As Vermeulen and Cotula (2010) discuss, demand for biofuels is driving major investments in land, particularly in the global South, what many have dubbed a 'global land grab'. Proponents of such investments argue that the land is under-utilised or even 'idle'. This narrative justifies the appropriation of land for new investment, transforming 'wastelands' into green and productive landscapes (Borras and Franco 2010b). Yet, as Ariza *et al.* show for Tamil Nadu in India, these areas are very far from lying idle. These are areas that are used for a variety of purposes, often valuable common property resources which generate livelihoods for the poor, and especially women. As Pye (2010) and McCarthy show for cases from Southeast Asia, displacement and dispossession are very often part of the story, and ones that the positive visions of biofuel development are keen to hide. Dauvergne and Neville (2010, 631) conclude that, 'the emerging biofuel alliances are reinforcing processes and structures that increase pressure on the ecological integrity of tropical forests and further wrest control of resources from subsistence farmers, indigenous people and people with insecure land rights'.



While proponents of the biofuel complex argue for a new commercial agriculture on underused land, based on clean, green feedstocks, offering potential for global energy security and a transition from a high-carbon energy system, there are others who argue that the biofuel complex represents the worst of the corporate-capitalist model, undermining local livelihoods and economies and erasing the emergence of alternative pathways of development, based on food or fuel sovereignty. In the former vision, biofuels may play a role for local energy provisioning, but controlled by local communities and rooted in local economies. Fernandes *et al.* develop this perspective, using the case of São Paulo state in Brazil. The paper analyses the territorial disputes between expanding sugar cane plantations and agrarian reform settlements, as well as biodiesel production projects developed by the landless workers movement and family farmer associations. While joint-venture and partnership approaches with agribusiness failed, the more localised, farmer-led biofuel experiments offered ‘seeds for the possible creation of larger political spaces that could transform into larger, more potent territorial development models’ (Fernandes *et al.* 2010, 816).

Yet the polarised stances which counter-pose a corporate-controlled monoculture with a diverse, locally generated alternative are of course not so black and white. Instead, various shades of grey exist where negotiations over rights, access, labour and livelihoods take place in the unfolding of a particular initiative. For example, based on a detailed examination of oil palm projects over time in Indonesia, McCarthy argues that, contrary to the simplistic narratives of inclusion or exclusion, outcomes depend very much on the *terms* under which incorporation into the oil palm economy occurs. Factors identified included the presence and functioning of smallholder development schemes, the degree of democratic control over village institutions, the spatial location of villages and investments, and the workings of land tenure systems and informal land markets.

For southern Africa, Richardson argues that biofuel investments for ethanol come on the back of a long history of unequal development. He argues that ‘references to a “Middle East of biofuels” emerging in Africa have clearly let rhetoric run ahead of reality’ (Richardson 2010, 934). Focusing on the case of Zambia Sugar and the investments by Illovo, he shows how the economic power wielded by the investor ‘enabled them to limit their tax contribution and prevent further investment and lower consumer prices by hindering competition. Moreover, the dependence of the company on skilled expatriate staff and service suppliers stands in contrast to its casualisation of unskilled workers and limited uptake of smallholder outgrowers. Where these people have been employed, it has been as much to curry political favour as support the agrarian labour force’. In trying to attract foreign capital into the agricultural sector, governments must offer expensive guarantees, with no certainty of rural development benefits arising.

For Brazil, Novo, Jansen, Slingerland and Giller (2010) expose the complex trade-offs that exist as a biofuels sector develops. They show, for example, how in São Paulo state, sugar-cane expansion for biofuels has displaced extensive cattle ranching to the north in what Wilkinson and Herrera call a radical ‘respatialisation of production’ in Brazil (Wilkinson and Herrera 2010, 763). A careful historical analysis of technical-economic dynamics by Novo *et al.* shows how ‘the relationship between biofuel and beef/dairy is not simply a result of recent global market demand but has been strongly mediated by strong, long-term government support for the biofuel chain and a corresponding lack of support for small-scale dairy farming’ (Andre Novo *et al.* 2010, 788). The decline in dairy production in São Paulo state

was affected dramatically by the shift in the 'milk frontier' thanks to technological innovations that allowed the production and marketing of milk in places further and further away from urban demand concentrations. Thus the 'competing claims' on land by different types of production must be located in longer-term trajectories of change and forms of state support.

This is the case even within the biofuel sector. As Wilkinson and Herrera show for Brazil, the ethanol and biodiesel sectors started off as highly distinct, with ethanol being driven by agribusiness expansion and biodiesel supported as a regional development strategy with a strong push towards social inclusion and incorporation of family farming. However, over time there has been increasing convergence, with the biodiesel programme exposing the structural weakness of the family farm sector as soy takes over as the dominant crop, sponsored by large-scale agribusiness interests.

Too often the simplistic, generalised framings of 'good' or 'bad' biofuels construct narratives of development that act to obscure the real issues. Only when unpacked and located in particular settings are the real trade-offs exposed. These cut across political, social, economic and ecological domains, and too often it is impossible to see how these dimensions interact. Biofuel politics and knowledge politics are thus intimately intertwined. The battle over biofuels is thus a battle over visions of the future, and the different discursive framings suggest a very different set of commitments and politics.

In an ambitious attempt to explore these issues through an ecological economics and political ecology lens, Ariza *et al.* show the gross mismatch between 'the results in the field and the continued promotion of *Jatropha* by regional and national policy makers and researchers in India' (Ariza *et al.* 2010, 876). Farmers' yields, for example, are only one-tenth of those predicted by research station trials, making the crop economically unviable in the village settings studied. Yet, as McCarthy explains, highly divergent outcomes can result from very similar interventions, and this depends largely on the interactions of micro-processes operating at the village level with wider dynamics. In some cases local people may benefit through improved possibilities of employment, for example. In others, they lose out as land is removed from local production and only highly exploitative labour relations emerge on the new plantations.

### **State, capital and society relations**

The impact and consequences of the new biofuel revolution are thus predicated on complex relationships between the state, capital and society, often highly specific to a particular locale. As the murky politics of land grabs unfolds, new interactions are in evidence between state actors (providing and sanctioning land acquisitions), private companies (investing in new agribusiness operations, often involving biofuel feedstocks), and finance (including sovereign funds, speculative investors and others). We witness these in various parts of the world today, including Africa (Cotula *et al.* 2009), post-Soviet Eurasia (Visser and Spoor, forthcoming), Asia (Li 2010), and Latin America (Zoomers 2010). These players may often be far removed, part of a much larger biofuels complex, linked through often fragile and tenuous connections. As Dauvergne and Neville argue, there is much blurring of the public and the private, the local, national and global, and the implementers and regulators of investments. They note a 'surge in alliances between MNCs and local firms and governments'. This, they argue, will make it 'more difficult for states and local communities to derive diffuse public (instead of concentrated private) benefits from

production'. Much depends on the nature of the state and its capacities, locally and nationally. According to Dauvergne and Neville, the timing of market entry, the nature of existing institutions and historical state-society land tenure relations will be particularly important. Where there are strong incentives for the state to act in a predatory way, allying with multinational capital for private gain, rather than as an 'embedded', 'developmental' state, the risks of negative outcomes increase.

A number of papers in this collection highlight how particular bureaucratic practices help drive policy processes, creating a particular biofuel politics. These practices have become enveloped in an increasingly labyrinthine set of procedures dealing with carbon credits, offsetting and accounting, for example. As carbon becomes commodified, these marketised metrics push a particular style of commodification, whereby all sorts of games can be played to gain maximum advantage. Thus, tangible field commodities are sold together with their carbon credits, linked to particular production techniques, in different markets creating new incentives, not always to the benefit of local peoples or environments. No-till soy, for example, may sell as a biofuel feedstock and an animal feed and gain credits in carbon markets, pushing its value ever higher. Add on the extraordinary array of subsidies, tariffs, targets and preferences in different markets and the often bizarre and contradictory incentives pushing policies in particular ways are, at least partially, comprehensible. Interactions with the European Union push this to the highest plane, as Franco *et al.* and Pye explain: mandatory targets set for 'renewable energy' led to a frenzy of activity across the world.

The opportunities of local people, or even wider social movements, to penetrate and influence such policy processes remain limited. An elite, often patrimonial, politics dominates, where connections, backhanders and shady deals undermine any form of transparency or accountability. This is, in turn, compounded by the bureaucratic pressures of an audit culture which pushes targets and defines preferences in ways that are often unclear or contradictory. This may happen equally in processes of international investment in the biofuel sector as well as in small-scale projects. As Hunsberger describe, a project in Kenya, a well-meaning intervention premised on a commitment to local development and mitigating climate change, can result in a variety of unforeseen consequences. The drive to push *Jatropha* as a catch-all solution, while initially welcomed, soon faltered.

### **Mobilising opposition, creating alternatives**

Different state, corporate, as well as civil society and rural social movement groups view biofuels and subsequent land transactions differently. These positions range from outright opposition to unconditional embrace, with varying shades in between. These differences can be seen within civil society at different levels (local, national and international), and within local communities. The differences are not always trivial. Many of these are linked to competing social class perspectives and/or ideological and political standpoints that have strategic implications for politics (Borrás *et al.* 2008). This is important to underscore so as not to lump together civil society groups and social movements as having the same position on biofuels, as is implicitly suggested in many literatures.

Between civil society and/or farmers' groups, these differences can be seen in the competing views and positions taken by the two largest and politically most important farmer's coalitions, namely, La Via Campesina and the International

Federation of Agricultural Producers (IFAP). IFAP is composed of commercially oriented small, medium and rich farmers. Groups from the industrial world have dominated its leadership historically. Its ideological position on key agricultural issues tends to be influenced by middle-rich farmer commercial class interests within the global federation. Via Campesina is an international movement of poor peasants and small farmers in the developing and industrialised worlds. Peasant movements from developing countries have an important voice within Via Campesina. Its ideological position on key agrarian issues is shaped by the class interest of its mass base among poorer peasants and small-scale farmers (Martinez-Torres and Rosset 2010). IFAP and Via Campesina represent the two main polar positions on biofuels. Where one sees an opportunity, the other sees a threat (Borras and Franco 2010b, 5–6). For IFAP,

The production of food and feed remains paramount for the farmers of IFAP; however, biofuels represent a new market opportunity, help diversify risk and promote rural development. Biofuels are the best option currently available to bring down greenhouse gas emissions from the transport sector and thus to help mitigate climate change . . . The proportion of agricultural land given over to producing biofuels in the world is very small . . . and so biofuel production is a marginal factor in the rise of food prices. The misconceptions about biofuels are important to overcome for a farming community that has long suffered from low incomes. Bioenergy represents a good opportunity to boost rural economies and reduce poverty, provided this production complies with sustainability criteria. Sustainable biofuel production by family farmers is not a threat to food production. It is an opportunity to achieve profitability and to revive rural communities. (Borras and Franco 2010b, 5–6)

By contrast, for Via Campesina,

The current massive wave of investment in energy production based on cultivating and industrial processing of . . . corn, soy, palm oil, sugar cane, canola, etc., will neither solve the climate crisis nor the energy crisis. It will also bring disastrous social and environmental consequences. It creates a new and very serious threat to food production by small farmers and to the attainment of food sovereignty for the world population. It is claimed that agrofuels will help fight climate change. In reality, the opposite is true . . . If we take into account the whole cycle of production, transformation, distribution of agrofuels, they do not produce less greenhouse gases than fossil fuels, except in some cases. Meanwhile, the social and ecological impacts of agrofuel development will be devastating . . . They drive family farmers, men and women, off their land. While TNCs and investment funds increase their profits, a large part of the world population does not have enough money to buy food. Agrofuels are estimated to be responsible for 30 percent of the current [2008] food price crisis. (Borras and Franco 2010b, 5–6)

As Franco *et al.* explain, the competing views and positions of these two transnational farmers' groups on the question of biofuels complicate the politics around biofuels globally. While Via Campesina and its allies are critical of the corporate-controlled European Biofuels Technology Platform (EBFTP), IFAP European affiliates, namely, COPA-COGECA (Committee of Professional Agricultural Organisations; General Confederation of Agricultural Cooperatives), sits on this body, representing the farming sector.

There are of course important fault lines within these two broad coalitions that are rooted in social class base and ideological perspectives that have important implications for the movement's issue-framing and demand-making political

dynamics (Scoones 2008). Franco *et al.* explain how UNAC (União Nacional de Camponeses Moçambique), a key member of Via Campesina, does not want to see the issue of biofuels from a ‘black or white’/‘good or bad’ perspective, but takes a more nuanced position. Meanwhile, Fernandes *et al.* tell us about an important split within Brazil’s MST (Movimento dos Trabalhadores Sem Terra) centred on competing views and positions on biofuels within the national movement. MST is a key pillar in Via Campesina-Brazil and Via Campesina-International. Such diversity in political positioning within large international coalitions of course is not distinct to biofuels, as studies on other issues reveal (see, for example, Scoones 2008 on GM crops; Peluso *et al.* 2008 on agrarian-environmental movements and national-global levels).

Pye identifies the frequent mismatch between global campaigns by civil society and rural social movements and local concerns by villagers in the context of Indonesia. While globally, biofuel debates are framed in terms of biodiversity conservation and climate justice, local concerns focus on land rights and employment conditions, for example. As Pye argues, the discontents of palm oil smallholders and plantation workers (and especially trans-migrant workers) are conspicuously absent at the international level of civil society and social movement campaigns. However, the ground on which movements emerge is highly differentiated. An idealistic vision of ‘rooted cosmopolitans’ (Tarrow 2005) mobilising internationally has to be qualified. As Pye observes for Indonesia,

The palm oil boom is creating multiple and ambiguous social formations and is affecting different classes in different ways. Independent peasants in the frontier areas where plantations are to be introduced might welcome them as a development option or might resist them and defend their land and forests against encroachment by oil palm corporations. Palm oil smallholders in the inti-plasma system have accepted oil palm but have new issues relating to prices, debt and infrastructure. Plantation workers within the palm oil industry have different contestations concerning wages, working conditions and the right to organise.

There are thus multiple livelihoods and multiple interests associated with biofuel expansion, and while this may become the basis for interconnected struggles and social organisation, the disconnects and ‘frictions’ are clearly evident.

This reminds us of the importance of being wary of concepts such as ‘local people’ or ‘local community’ that dominate the current literature on biofuels and land-grabbing today. In most places in the world today, ‘local people’ or ‘local communities’ are made of social groups (gender, ethnicity, race) and classes that have competing views on and interests around biofuels. They include local chiefs, elites and landlords, as well as working classes; they include small farmers and landless rural labourers. The highly differentiated character of communities has profound implications for politics around biofuels, as discussed by Pye, McCarthy, and Fernandes *et al.*, among others. Any rigorous analysis of the politics of biofuels – at the inter-connected local, national and international levels – should take serious consideration of the fault lines between social groups and classes.

As a number of papers observe, where the basic requirements for effective governance – transparency, accountability, responsiveness and legitimacy – are absent, the chances of negotiating equitable and sustainable outcomes are limited. Many realise this problem: from multi-national companies, to international finance institutions to campaigning NGOs. However, simple governance measures – based

for example on voluntary standards or codes of conduct – are grossly inadequate in assessing the prospects of a more democratic and accountable system. In the current context of the global land grab debate, advocacy for a code of conduct has been spearheaded by the World Bank, and is often labelled as ‘responsible agricultural investments’ (RAI) in land (World Bank *et al.* 2010). This framework has been criticised not only by civil society and social movement groups, such as La Via Campesina, but also by the UN Rapporteur for the Right to Food, Olivier de Schutter, who argues that such a framework suggests that ‘accelerating the destruction of the global peasantry could be accomplished responsibly’ (De Schutter 2010, n.p.). Borras and Franco (2010a) argue that a code of conduct will facilitate, not prevent, further land-grabbing. Similarly naïve pleas to the win-win rhetoric of corporate social responsibility (CSR), roundtable processes and certification schemes may fall on deaf ears, or quickly unravel, as pointed out in recent key studies on CSR more broadly (see, for example, O’Laughlin 2008).

Dauvergne and Neville (2010, 654) argue that ‘states with weak bureaucratic capacity look set to lose control of partnerships between local firms and MNCs . . . In the absence of state oversight, voluntary measures seem unlikely to realise the positive potential of biofuels, especially given past failures of CSR to enhance sustainability in the agrifood and forestry sectors’. At present, self-regulation around standards setting operates through organisations such as the Roundtable on Sustainable Palm Oil (RSPO), which is chaired by Unilever and includes corporations along the supply chain, from ADM through Cargill to Cadbury’s, Nestlé, Procter and Gamble, and Tesco – accounting for 40 percent of the global production and use of palm oil (Greenpeace 2007, 6). But traceability, beyond processors to the plantation level, is difficult to establish, especially for the palm oil industry (p. 7). International trade and environmental management protocols privilege corporate actors over small-scale actors, as both producers and stakeholders. Thus, for example, a Southern African Development Community (SADC) biofuel feasibility study claimed small-scale projects would negatively affect standards (GRAIN 2008, 42). And carbon accounting methods, working from an input-output market model, enable a false economy for the biofuels project, concealing subsidies and omitting a full ‘lifecycle analysis’ of the impact of biofuels (TNI 2007, 10).

Vermeulen and Cotula (2010, 913) ask whether improved rights over land provide the necessary bargaining power for local land users to achieve better outcomes from the deal-making process with incoming investors. Their short answer is ‘no’. While necessary, land rights are not sufficient. Drawing on cases from Mozambique and Tanzania they show how, even when policies are relatively progressive, procedural rights remain weak, with few effective mechanisms for land users to either reject or shape deals. Current practice, they conclude, ‘falls well short of global normative standards for consultation, consent and recompense, as framed by the principle of free, prior and informed consent’. Overarching legal frameworks, supported by agreed codes of conduct, are insufficient. A focus on the processes by which land allocation and investment decisions are made and a much more direct, inclusive and engaged involvement of affected social groups in communities are clearly required. Vermeulen and Cotula argue that ‘current procedures lock affected people into unfavourable negotiation and development pathways’. While acknowledging the importance of the structural impediments to change, they focus instead on the potentials of changing the mechanisms of negotiation and thus ‘the administrative procedures and attendant opportunities for tactical small wins’.

Such changes will, however, not emerge automatically. As Dauvergne and Neville (2010, 655) argue, as currently structured, ‘the production and consumption patterns of biofuels will benefit, at the international level, states with existing experiences of success in the global economy, and, at the domestic level, groups already integrated into commercial production systems. States and rural and indigenous people already struggling to cope with globalised markets and industrialised production will be left even further behind, with even well-intentioned efforts to mitigate climate change and support development through biofuels likely to accelerate deforestation and further marginalise vulnerable people and ecosystems’.

But is the biofuel future necessarily so negative? Several papers identify the significance of citizen action in defining future pathways for biofuels interventions. Biofuels have long been part of local livelihood and energy systems across the world. Second- and third-generation biofuels offer some hope, where conversion rates are improved and demands on extensive land areas decline. However, as already noted, it is not the technology *per se* that matters, but the ‘terms of incorporation’ and the resulting relations of production. Wilkinson and Herrera, for example, show how in Brazil a decentralised biodiesel programme based on integrated food and fuel production on smallholder farms contrasts dramatically with a largely unregulated agribusiness ethanol system based on large-scale commercial production of sugarcane. In the Brazilian biodiesel programme, the preferred feedstock varies according to region – palm oil in the North, castor oil in the Northeast, soy and other oil crops in the remaining regions. Tax exemptions are offered to biodiesel producers who contract with family farmers, and market access to biodiesel auctions is sanctioned by the state for those who comply. Additionally, targets for family farm participation were established for each region, and state support is provided to family farmers. Thus, policy incentives, including the regulation of biofuel production by the state, were seen as key to a more locally rooted, integrated and sustainable system. However, as Wilkinson and Herrera (2010, 759) document, expectations were not matched by realities. They conclude, ‘market-style incentives on their own are insufficient and must give way to the systemic construction of a new agro-industrial production chain, where technical, organisational, logistical and marketing features were equally decisive’. In the absence of this sort of coordinated support, soy has become the default crop, with all the attendant consequences of land alienation and concentration, driven by large-scale capital-intensive farming. Thus the ideals of a family farm-oriented biodiesel programme look far from being realised, despite sustained state support, and some pockets of serious engagements from organised local groups, as discussed by Fernandes *et al.*

### **Change and continuity**

In many ways there are important continuities with previous episodes of globalisation and the extension of agrarian capitalism into the countryside. New biofuel plantations bear many similarities to plantations established in the colonial era by multinational companies supported by colonial states (Beckford 1972, Little and Watts 1994). As White and Dasgupta note, large-scale plantations and areas where smallholder contract farming is practised are typically not zones of prosperity for ordinary people, but zones of poverty. This was the case in the past and remains so today. Yet, as the papers that follow show, there are important differences that characterise the biofuel revolution, including the rapidity of expansion, the sources

and locations of finance and investment, and the discourse of environmentalism associated with biofuels. However, as White and Dasgupta remind us, the long-standing classic issues of agrarian political economy still arise. Changes in social relations of production and reproduction, processes of accumulation and dis-accumulation and transformations of agrarian structure and resulting patterns of social differentiation emerging from biofuel expansion remain remarkably similar to past experiences.

Yet, as the detailed case studies from places as diverse as the plains of Iowa in the United States and the forests of Indonesia show, the emerging dynamics of agrarian change are not singular, homogenous or linear. They are always of a particular time and place, even if wider patterns have important resonances. As a number of papers highlight, processes of commodification and marketisation of land and nature that are driving these changes are sometimes open to negotiation. This requires knowledge, understanding, organisation and influence, capacities not always available to those most likely to be impoverished and dispossessed. Connections across foci for mobilisation – around climate justice, labour rights, agro-biodiversity protection, land rights and gender equality – are required, yet too often campaigns and movements remain narrowly focused. As Pye argues, linking food and energy transitions implies taking on bigger challenges across multiple frames, and so deepening and extending coalitions and alliances.

The papers in this collection demonstrate that a political economy of biofuels is essential to understanding how the production and consumption of biomass has become a new agro-industrial frontier. What has been integral to centuries-old agricultural practice is now increasingly separated out as a specialised form of agriculture itself. Whether and to what extent a ‘biofuels sector’ can actually serve the cause of local energy sovereignty and environmental sustainability is a question generated by the industrialisation of biofuels. The social and ecological implications of this new form of agro-industrialisation are far-reaching, but take different forms across different landscapes, with particular class, gender, ethnic, livelihood and environmental consequences. An engaged agrarian political economy, combined with global political economy, international relations and social movement theory, provides an important framework for analysis and critique of the conditions, dynamics, contradictions, impacts and possibilities of this emerging global biofuels complex. Our hope is that this collection demonstrates the significance of a political economy of biofuels in capturing the complexity of the ‘biofuels revolution’, and at the same time opens up questions about its sustainability in social and environmental terms that provide pathways towards alternatives.

## References

- Altieri, M. 2009. The ecological impacts of large-scale agrofuel monoculture production systems in the Americas. *Bulletin of Science, Technology & Society*, 29(3), 236–44.
- Ariza-Montobbio, P., S. Lele, G. Kallis and J. Martinez-Alier. 2010. The political ecology of *Jatropha* plantations for biodiesel in Tamil Nadu, India. *The Journal of Peasant Studies*, 37(4), 875–97.
- Beckford, G. 1972. *Persistent poverty: underdevelopment in the plantation economies of the Third World*. New York: Oxford University Press.
- Bernstein, H. 2010a. *Class dynamics of agrarian change*. Halifax: Fernwood; MA: Kumarian.
- Bernstein, H. 2010b. Introduction: some questions concerning the productive forces. *Journal of Agrarian Change*, 10(3), 300–14.



- Borras, S. Jr. and J.C. Franco. 2010a. From threat to opportunity? Problems with the idea of a 'code of conduct' for land-grabbing. *Yale Human Rights and Development Law Journal*, 13(1), 507–23.
- Borras, S. Jr. and J.C. Franco. 2010b. Towards a broader view of the politics of global land grab: rethinking land issues, reframing resistance. *ICAS Working Paper Series 001*. Amsterdam: Transnational Institute (TNI).
- Borras, S. Jr., M. Edelman and C. Kay. 2008. Transnational agrarian movements: origins and politics, campaigns and impact. In: S. Borras, et al., eds. *Transnational agrarian movements confronting globalization*. Oxford: Wiley-Blackwell, pp. 1–36.
- Borras, S.M. Jr., P. McMichael and I. Scoones. 2010. The politics of biofuels, land and agrarian change: editors' introduction. *The Journal of Peasant Studies*, 37(4), 575–92.
- Cotula, L., et al. 2009. Land grab or development opportunity?: Agricultural investment and international land deals in Africa. London: International Institute for Environment and Development (IIED).
- Dauvergne, P. and K.J. Neville. 2010. Forests, food, and fuel in the tropics: the uneven social and ecological consequences of the emerging political economy of biofuels. *The Journal of Peasant Studies*, 37(4), 631–60.
- De Schutter, O. 2010. Responsibly destroying the world's peasantry. Project Syndicate: a world of ideas. Available from: <http://www.project-syndicate.org/commentary/deschutter1/English> [Accessed 20 July 2010].
- Fargione, J., et al. 2008. Land clearing and the agrofuel carbon debt. *Science*, 319(5867), 1235–8.
- Fernandes, B.M., C.A. Welch and E.C. Gonçalves. 2010. Agrofuel policies in Brazil: paradigmatic and territorial disputes. *The Journal of Peasant Studies*, 37(4), 793–819.
- Franco, J., L. Levidow, D. Fig, L. Goldfarb, M. Hönigke and M.L. Mendonca. 2010. Assumptions in the European Union biofuels policy: frictions with experiences in Germany, Brazil and Mozambique. *The Journal of Peasant Studies*, 37(4), 661–98.
- Gallagher, E. 2008. The Gallagher review of the indirect effects of biofuels production. London: UK Government, Renewable Fuels Agency.
- Gillon, S. 2010. Fields of dreams: negotiating an ethanol agenda in the Midwest United States. *The Journal of Peasant Studies*, 37(4), 723–48.
- Gouverneur, E. 2009. The palm oil land grab. *Le Monde diplomatique*, 5 Dec. p. 5.
- GRAIN. 2008. Seized. The 2008 land grab for food and financial security. Grain Briefing. Available from: [www.grain.org](http://www.grain.org) [Accessed 15 June 2010].
- Greenpeace. 2007. How the palm oil industry is cooking the climate. Available from: [www.greenpeace.org](http://www.greenpeace.org) [Accessed 8 January 2010].
- Harvey, D. 2003. *The new imperialism*. Oxford: Oxford University Press.
- Hollander, G. 2010. Power is sweet: sugarcane in the global ethanol assemblage. *The Journal of Peasant Studies*, 37(4), 699–721.
- Holt-Giménez, E. 2007. Biofuels: myths of the agro-fuels transition. *Food First Backgrounder*, 13(2). Available from: <http://www.foodfirst.org/node/1711> [Accessed 19 February 2009].
- Houtart, F. 2010. *Agrofuels: big profits, ruined lives and ecological destruction*. London: Pluto; Amsterdam: Transnational Institute.
- Hunsberger, C. 2010. The politics of *Jatropha*-based biofuels in Kenya: convergence and divergence among NGOs, donors, government officials and farmers. *The Journal of Peasant Studies*, 37(4), 939–62.
- Li, T. 2010. To make live or let die? Rural dispossession and the protection of surplus population. *Antipode*, 41(supplement 1), 66–93.
- Little, P. and M. Watts, eds. 1994. *Living under contract: contract farming and agrarian transformation in sub-Saharan Africa*. Madison: University of Wisconsin Press.
- Magdoff, F. 2008. The political economy and ecology of agrofuels. *Monthly Review*, July–August, 34–50.
- Martinez-Torres, M.E. and P. Rosset. 2010. La Vía Campesina: the birth and evolution of a transnational social movement. *Journal of Peasant Studies*, 37(1), 149–75.
- Mathiason, N. 2010. Shell hooks up in Brazil on biofuels. *The Guardian Weekly*, 12 Feb., p. 43.
- McCarthy, J.F. 2010. Processes of inclusion and adverse incorporation: oil palm and agrarian change in Sumatra, Indonesia. *The Journal of Peasant Studies*, 37(4), 821–50.
- McMichael, P. 2009. The agrofuels project at large. *Critical Sociology*, 35(6), 825–39.

- McMichael, P. 2010. Agrofuels in the food regime. *The Journal of Peasant Studies*, 37(4), 609–29.
- Mol, A.P.J. 2007. Boundless biofuels. *Sociologia Ruralis*, 47(4), 297–315.
- Monsalve Suárez, S., et al. 2008. Agrofuels in Brazil. Report of the Fact-finding Mission on the impacts of public policies encouraging the production of agrofuels on the enjoyment of the human rights to food, work and the environment among the peasant and indigenous communities and rural workers in Brazil. FIAN-International, Misereor, Bread for the World, ICCO&Kerkinactie, EED, HEKS and FIAN Netherlands, Heidelberg.
- Novo, A., K. Jansen, M. Slingerland and K. Giller. 2010. Biofuel, dairy production and beef in Brazil: competing claims on land use in São Paulo state. *The Journal of Peasant Studies*, 37(4), 769–92.
- O’Laughlin, B. 2008. Governing capital? Corporate social responsibility and the limits of regulation. *Development and Change*, 39(6), 945–57.
- Ong, A., and S. Collier. 2005. *Global assemblages: technology, politics, and ethics as anthropological problems*. Malden, MA: Blackwell.
- Oxfam. 2008. Another inconvenient truth: how biofuel policies are deepening poverty and accelerating climate change. Briefing Paper 114. Oxford: Oxfam International.
- Peluso, N., S. Afiff and N. Fauzi Rachman. 2008. Claiming the grounds for reform: agrarian and environmental movements in Indonesia. In: S. Borras, et al., eds. *Transnational agrarian movements confronting globalization*. Oxford: Wiley-Blackwell, pp. 209–38.
- Pye, O. 2010. The biofuel connection – transnational activism and the palm oil boom. *The Journal of Peasant Studies*, 37(4), 851–74.
- Richardson, B. 2010. Big Sugar in southern Africa: rural development and the perverted potential of sugar/ethanol exports. *The Journal of Peasant Studies*, 37(4), 917–38.
- Rosset, P. 2009. Agrofuels, food sovereignty and the contemporary food crisis. *Bulletin of Science, Technology and Society*, 29(3), 189–93.
- Sachs, W. 1993. *Global ecology*. London: Zed Press.
- Sassen, S. 2006. *Territory, authority, rights: from medieval to global assemblages*. Princeton, NJ: Princeton University Press.
- Scharlemann, J. and W. Laurance. 2008. How green are agrofuels? *Science*, 319(5859), 43–4.
- Scoones, I. 2008. Mobilizing against GM Crops in India, South Africa and Brazil. In: Borras, et al., eds. *Transnational agrarian movements confronting globalization*. Oxford: Wiley-Blackwell, pp. 147–76.
- Shattuck, A. 2009. The agrofuels Trojan horse: biotechnology and the corporate domination of agriculture. In: R. Jonasse, ed. *Agrofuels in the Americas*. A Food First Book, Oakland: Institute for Food and Development Policy, pp. 89–101. Available from: [http://www.foodfirst.org/files/pdf/Agrofuels\\_in\\_the\\_Americas.pdf](http://www.foodfirst.org/files/pdf/Agrofuels_in_the_Americas.pdf) [Accessed 15 June 2010].
- Tarrow, S. 2005. *The new transnational activism*. Cambridge: Cambridge University Press.
- TNI 2007. Agrofuels: towards a reality check in nine key areas. Amsterdam: Transnational Institute. Available from: <http://archive.corporateeurope.org/docs/AgrofuelsRealityCheck.pdf> [Accessed 19 February 2009].
- Tsing, A. 2005. *Friction. An ethnography of global connection*. Princeton, NJ: Princeton University Press.
- Vermeulen, S. and L. Cotula. 2010. Over the heads of local people: consultation, consent, and recompense in large-scale land deals for biofuels projects in Africa. *The Journal of Peasant Studies*, 37(4), 899–916.
- Vidal, J. 2007. Climate change and shortages of fuel signal global food crisis. *The Guardian Weekly*, 11 September, p. 3.
- Visser, O. and M. Spoor. Forthcoming. Land grabbing in post-Soviet Eurasia: the world’s largest agricultural land reserves at stake. *Journal of Peasant Studies*, 38(1).
- Von Braun, J. and R. Meinzen-Dick. 2009. ‘Land grabbing’ by foreign investors in developing countries: risks and opportunities. IFPRI Policy Brief 13, April. Washington DC: IFPRI.
- Weis, Tony. 2010. The Accelerating Biophysical Contradictions of industrial capitalist Agriculture. *Journal of Agrarian Change*, 10(3), 315–341.
- White, B. and A. Dasgupta. 2010. Agrofuels capitalism: a view from political economy. *The Journal of Peasant Studies*, 37(4), 593–607.
- Wilkinson, J. 2009. The emerging global biofuels market. *REVIEW*, 32(1), 91–112.

- Wilkinson, J. and S. Herrera. 2010. Biofuels in Brazil: debates and impacts. *The Journal of Peasant Studies*, 37(4), 749–68.
- World Bank, FAO, IFAD and UNCTAD. 2010. Principles for responsible agricultural investment that respects rights, livelihoods and resources. Washington, DC: World Bank.
- Zoomers, A. 2010. Globalisation and the foreignisation of space: seven processes driving the current global land grab. *Journal of Peasant Studies*, 37(2), 429–47.

**Saturnino M. Borrás Jr.** is Canada Research Chair in International Development Studies in Halifax, Nova Scotia. He is an Adjunct Professor at the College of Humanities and Development (COHD), China Agricultural University, Beijing. He is a Fellow of the Amsterdam-based Transnational Institute (TNI) and of the California-based Food First/Institute for Food and Development Policy. Key publications include: *Transnational agrarian movements confronting globalization* (2008, co-edited with Marc Edelman and Cristóbal Kay) and *Pro-poor land reform: a critique* (2007). He is joining the Rural Development, Environment and Population Studies of the International Institute of Social Studies (ISS) in The Hague, Netherlands, starting in January 2011. Email: junborras@yahoo.com

**Philip McMichael** is a Professor of Development Sociology at Cornell University. His research focuses on food regimes, agrarian movements, and climate change. Key publications include: *New directions in the sociology of global development* (co-edited, 2005), *Development and social change: a global perspective* (2008), and *Contesting development: critical struggles for social change* (2010). Email: pdm1@cornell.edu

**Ian Scoones** is a Professorial Fellow at the Institute of Development Studies, University of Sussex, UK. He has a background in agricultural ecology and his interdisciplinary research links the natural and social sciences and focuses on the relationships between science and technology, local knowledge and livelihoods and the politics of policy processes. He has worked on issues such as pastoralism and rangeland management, soil and water conservation, biodiversity and environmental change, land and agrarian reform, dryland agricultural systems, crop biotechnology and animal health science policy, mostly in Africa. He is currently co-director of the ESRC Social, Technological and Environmental Pathways to Sustainability (STEPS) Centre at Sussex and Joint Convenor of the Future Agricultures Consortium. Key publications include: *Science, agriculture and the politics of policy: the case of biotechnology in India* (2006) and *Science and citizens: globalization and the challenge of engagement* (ed. with M. Leach and B. Wynne, 2005). Email: I.Scoones@ids.ac.uk