

Giovanni Carrosio

Beyond the Sustainability of Exception. Setting Bounds on Biofuels

(doi: 10.2383/38268)

Sociologica (ISSN 1971-8853)

Fascicolo 2, maggio-agosto 2012

Ente di afferenza:

()

Copyright © by Società editrice il Mulino, Bologna. Tutti i diritti sono riservati.

Per altre informazioni si veda <https://www.rivisteweb.it>

Licenza d'uso

Questo articolo è reso disponibile con licenza CC BY NC ND. Per altre informazioni si veda <https://www.rivisteweb.it/>

Beyond the Sustainability of Exception

Setting Bounds on Biofuels

by Giovanni Carrosio

doi: 10.2383/38268

Introduction

The environmental issue has been mainly subsumed within the paradigm of climate change. Sustainable development agendas are massively investing in initiatives to combat or reduce its impact: they work as pivots around which to build environmental and development policies. Initiatives on climate change reflect a wide range of epistemological approaches incorporating radical and reformist ideas of sustainability: in particular, the multi-scale method involves community-based activities, oriented towards a strong idea of sustainability and massive interventions at global level, with an emerging preference for market-oriented policies and technocratic solutions. However, neoliberal ways to deal with the environmental issue represent the dominant frame for the inclusion of climate change in global policies for sustainable development. A mix of a weak idea of ecological modernization and market environmentalism represents the legitimizing discourse of these global approaches. While attempting to achieve global sustainability, climate agendas clash with the construction of local sustainable systems. This is the case of policies supporting biofuels, which have been framed by many as neo-mercantilist practices proceeding alongside emergent globalizing recombinant corporate/state arrangements. A new global ecology [Sachs 1993] is developing, “whereby planetary resources are to be managed through the application of the market paradigm to the environment” [McMichael 2010, 578] and a corporate management of energy resources is favoured: biofuels are

commodified into global industrial goods at the expense of encouraging local biofuel development for local sustainable systems. The controversy over the sustainability of biofuels starts from their global commodification and develops by interweaving the need to simplify the management of natural systems with the further complexity added by the side-effects of neoliberal policies [Carrosio 2011]. In the literature, this complexity is framed as a constitutive practice of neoliberal governmentality [Heynen *et al.* 2007], which operates through disorder [Pellizzoni 2011] and by maintaining a state of exception [Agamben 2005]. This essay argues that the relocation of biofuels is a possible answer to the controversy because it enables the better management of side-effects and produces a local order that extends beyond a permanent state of exception. This could be possible only by adopting a bounded idea of sustainability which takes the autonomy of local systems into account.

Biofuels in a Neoliberal Frame

Until a few years ago, the prospects for the development of biofuels seemed remote. From the mid-1970s to the mid-1990s, Brazil was the only country in the world with a large production of biofuels and a significant consumer market. In recent years, however, the sector has grown rapidly around the globe. The USA, Europe and Brazil are the largest producers and consumers of biofuels, and many developing countries are involved in the world market for raw materials.

Projects undertaken for the dissemination of biofuels especially involve the United States and Europe. The European Union promotes biofuels policy in several ways. By 2020, 20 percent of the energy used in the EU and 10 percent of each member state's transport fuel will have to come from renewable sources. Instead, in the USA the government has set corn ethanol targets (35 billion gallons by 2017) with large subsidies to the agribusiness giants.

In these countries, biofuels remain highly dependent on public support policies (about USD 15 billion per year). Policies consist of a mix of measures enacted at different levels of governance and at various stages of biofuel production and use. For example, in Europe there are many levels: European directives, autonomous initiatives of member-states, regional policies for rural development in the implementation of the Common Agriculture Policy (CAP), local energy plans. Most of the relevant policies provide budgetary support measures, either as tax concessions for biofuel producers (refineries), retailers or users, or as direct support to biomass supply, biofuel production capacities, specific infrastructure or equipment for biofuel users [Zezza 2007]. Other forms of support are blending or use mandates, which require

biofuels to represent a minimum share or quantity in the transport fuel market [Zezza 2011].

Biofuel targets have effectively created a mandatory market. As said, the EU has set a target of 10% of renewable energy in transports for 2020. Because of the large amounts of biofuel blending, the market has become global. The major industrialized countries have to buy raw materials and finished products from developing countries, thereby triggering a global trade in biofuel commodities.

The emergence of global trading in biofuel commodities entailing a new integrated system of global power relations is recognized by many authors, but it is conceptualized in different ways. Different terms are used to denote the relationships constructed around the biofuels market: alliances, chains, networks and assemblages [Ong and Collier 2005; Hollander 2010]. They all have different connotations and implications, drawing on different literatures. Some authors use the concept of a global biofuel complex [McMichael 2010], others boundless biofuels [Mol 2007], or global biofuels assemblage [Hollander 2010]. Different nuances in concepts depend on different theoretical frameworks, but 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 global process” [Borras, McMichael, and Scoones 2011, 579]. According to Mol, “we can witness the emergence of a global integrated biofuel network, characterized by an increasing transboundary market of commodities for the biofuel production and the decreasing dominance of states and governability on the productive processes, with a dominance of transnational corporations” [Mol 2007, 303].

As a consequence of pro-biofuels policies, many global economic actors are investing massively in biofuel production [Pons 2008]. The emerging way to organize biofuels increases the power of corporations, marginalizes control by states, and excludes regional/local concerns [Franco et al. 2010]. According to Biofuelwatch [2008], the global biofuels industry is formed of the largest agribusiness corporations, the oil industry, financial companies, landowners in the South of the world, the largest US producers of maize, automotive, biotechnology and petrochemical industries. It is the largest global business alliance [Houtart 2010] engaged in lobbying international organizations and national states, but at the same time it has been created by policies when they began to set goals, incentives and subsidies.

These combined elements are creating an emergent global biofuel assemblage: a system that “mix[es] technology, politics, and actors in diverse configurations that do not follow given scales or political mappings” [Ong and Collier 2005, 338]. The concept of assemblage [Sassen 2006] refers to a complex network linking public entities at a variety of scales – supranational, national, and sub-national – with corpora-

tions and international organizations. This global complex is multi-headed, involving North-South and South-South networks of governments. The way of assembling different and diversified territorial levels and involving several actors implies the construction of a complex system in which territories and actors relate to each other “in cumulative, conflictive, neutral, or disjunctive modes, both internally and across the national-global divide” [Sassen 2006, 380]. According to Harvey [2010], the production and reproduction of new intertwined territorial assemblages represent the way in which capital, in the neoliberal phase, gives continuity to flows. Reassembling actors and territories in new ways means constantly redrawing the boundaries of sustainability. They can sometimes be integrated, but in the case of biofuels there are conflicts between global and local assemblies.

Suspending Sustainability for Sustainability: the State of Exception of the Global Biofuels

Governmentality works through the continued reproduction of states of exceptions [Arienzo 2006]. I refer here to Giorgio Agamben’s concept, according to which a state of exception is an extraordinary suspension of law deployed in order to preserve law itself [Agamben 2005]. Accordingly, in our case we could say that an exception that denies sustainability is implemented in order to achieve sustainability. Because of the inscription of the environmental issue in the paradigm of climate change, environmental policies have been geared almost exclusively to the fight against climate change. But according to many experts, policies promoting biofuels “may actually worsen global warming, increase car travel, reduce biodiversity, consume scarce water supplies and worsen water quality” [Sexton and Zilberman 2008, 7]. They produce a state of exception whereby the search for sustainability is suspended by its very application.

The production of a state of exception, with its spatial and organizational dynamics, involves a stabilization of the exception itself. With time, this exception becomes the rule. The assemblage of global biofuels follows this same pattern: it produces an economic and spatial order that increasingly becomes stable. Evidence of this sedimentation is the creation of a system of rules aimed at regulating the state of exception. The attempts to provide social and environmental certifications to biofuels constitute striking examples of such strategies. The state of exception is given by the paradox that biofuels, intended as a partial solution to the problem of climate change, in fact may even increase it. Certification proposals are designed to make the diffusion of global biofuels more sustainable while awaiting the arrival of a second

generation of biofuels. In this way, certification is a standardization device able to stabilize the state of exception.

Global biofuels are not evolving uncontested. Across the world, scientific controversies and social conflicts have arisen. The real effectiveness of reducing greenhouse gas (GHG) emissions in fighting climate change is contested [Carolan 2009; *contra* Farrell *et al.* 2006; Ninni 2008]. Possible positive effects on the greenhouse gas balance during the combustion of biofuels are reversed by N₂O emissions (with a GHG potential 296 times higher than CO₂) from fertilizer application, high CO₂ emissions from deforestation and soil carbon offset. Doubts have been raised about the compatibility between energy production and food [Fanfani and Montresor 2008; Fao 2008; Flammini 2008; Malagoli 2008; Oecd 2008; Escobar and Lora 2009]. Some scholars have pointed to the re-emergence of North-South [Cotula *et al.* 2009], rural-urban conflicts for the procurement of commodities.

Between 2007 and 2008, coinciding with the food crisis due to the rising prices of agricultural commodities, objections against biofuels increased. The institutional discourses on the legitimization of strong pro-biofuel public policies were questioned. A fierce controversy on the sustainability of biofuels arose among analysts.

In the countries of South, affected by the further diffusion of monoculture because of bioenergy cultivations, social tensions have erupted. Many observers and researchers argue that now emerging is a new and disruptive agrarian question [van der Ploeg 2008a; Shiva 2008; Houtart 2010] linked with the expulsion of peasants from the land where they live and work, and to the intensification of exploitation in large estates.

The disputes concern various issues:

a) according to some authors, the energy balance of biofuels would be negative or not sufficiently positive to warrant incentive policies and mix objectives set by states [Pimentel and Patzek 2005; Giampietro *et al.* 2006; *Seedling* 2007; *contra* Farrell *et al.* 2006; Rabobank 2008];

b) there is then the issue of carbon emissions. The global organization of the production and consumption of global biofuels implies that GHG emissions during production and transportation of commodities and finished products are such to nullify the ability of biofuels to save CO₂ [Pimentel and Patzek 2005; Searchinger *et al.* 2008; Fargione *et al.* 2008]. Moreover, deforestation for farmland is counterproductive in terms of emissions;

c) other authors highlight that the massive diffusion of biofuels is undermining the defence and reproduction of biodiversity [Crutzen *et al.* 2007; Eggers *et al.* 2009] not only because of deforestation but also because of the occupation by monoculture

of marginal lands and traditional areas of protection for animals and plants [Money and Hobbs 2000; De Fraiture, Giordano and Liao 2008];

d) much of the debate is centred on food-fuel competition. During the food crisis, biofuels were considered the main causes of the rising prices of agricultural commodities [Flammini 2008; Fao 2008]. Until 2008, growth in prices and increased consumption of biofuels went hand in hand. Later, as the new prices declined, the role of biofuels was scaled down [Fanfani 2008; Malagoli 2008; Sivini 2008; Pirrello 2009]. However, there are many authors who foresee an imminent structural competition between food and energy;

e) many research reports by international organizations highlight that the growth of biofuels is producing neocolonial processes for the hoarding of land [Action Aid 2008; Fao 2009; Houtart 2010; Shiva 2008; Cotula *et al.* 2009]. Biofuels are now the main drivers of large-scale purchases of farmland or “land grabbing” in the global south, with almost 53% of the 71 million hectares involved [Anseeuw *et al.* 2012] being used for biofuels;

f) there is a close relationship between the spread of energy crops and GMOs. Critics argue that as a consequence of energy crops, technologies tend increasingly to concentrate in the hands of large agribusiness firms, causing the exhaustion of local and traditional knowledge and increasing the dependence of farmers on the agribusiness companies [Biofuelwatch 2008]. Local control over rural production systems and autonomy in management of the production process are being replaced with an agricultural modernization model closely integrated into the global market [van der Ploeg 2007; 2008a].

All the supposed benefits of biofuels (reducing emissions, energy independence of western countries, rural development) are questioned. Environmental balances are uncertain, and biofuels are strictly connected with oil and its derivatives, and they require a global geography of dispossession [Harvey 2010] for the procurement of raw materials.

These shortcomings are the results of the globalization of biofuels. To be questioned are not biofuels in themselves: the criticism is against the socio-technical and organizational models by which the global market is formed. According to the most critical opinions, the model of the global biofuel complex is structured in such a way as to increase the problems of agribusiness [McMichael 2010] and to undermine the environmental benefits of bioenergies.

The controversy lies in the conflict between two divergent approaches to the energy and environmental issue. On the one hand, there is the globalist way in which climate policies are articulated so that they respond to a global project for ecological

modernization of the capitalist world economy. On the other hand, there is the idea that climate change should be tackled by building local sustainable systems.

Following the globalist approach, some actors involved in the global biofuel complex are working on certifications. Certification schemes are beginning to be established as a proposed solution to sustainability problems. They are predominantly driven by the need of some companies to control reputational risks, and by the willingness of institutions to find a solution to the controversy. In particular, states and international organizations are influenced by the bad reputation of biofuels in public opinion.

However, the certification criteria with which to define sustainable biofuels are far from being unanimously accepted [Mohor 2004]. Various approaches to the evaluation of sustainability exist and compete with each other [see Geibler 2007; Lewandowski and Faaij 2006; Stupak *et al.* 2007]. According to Gulbrandsen [2008, 538], the certification criteria accepted by the European Union are entirely inadequate to solve issues raised by global biofuels because “industry-dominated schemes adopt popular and fashionable accountability recipes to divert criticism of their activities instead of acting responsively to external constituents such as environmental and social groups.” To overcome a problem of legitimacy in regulation [Partzsch 2011] *private systems of regulation* [Gale 2004] and *nongovernmental market-based regulations* have been adopted also for biofuels [Klooster 2005]. Global regulations require transnational settings and standardized products, and they do not fit with the heterogeneity of local systems. Voluntary market-based instruments cannot replace a more direct government role in environmental regulation and development projects. The main actors involved in the formulation of certification schemes are the same stakeholders that are lobbying to increase mandatory blending requirements. Although sustainability criteria are applied, the sheer amount of blending required is a barrier to sustainability. Simulations on biofuels consumption above 5% of transport fuel show that unsustainability can rapidly increase and frustrate the objectives of certifications [Al-Riffai *et al.* 2010]. According to NGOs, the only way to make biofuels production sustainable is by keeping the level of demand at sustainable levels. Sustainability schemes do not address this issue, instead accepting the mixing rates imposed by the pro-biofuels policies. A second criticism is the “inability of certification schemes to solve indirect issues such as rising commodity prices or displacement. Expanding crops to meet new demand replaces previous uses of that land, whether it was nature, pastoral or agricultural land. The latter is often displaced elsewhere and is one of the major concerns in relation to the production of biofuels” [BioRes 2008, 9]. A new plantation could be certified as sustainable, but if it has simply pushed other farming activities into sensitive areas, this makes any certifica-

tion scheme futile. This is a major failing that is unlikely ever to be solved by certification schemes. The problem is coded by the literature as Direct land use change (dLUC) or Indirect land use change (iLUC). Scientists are debating how to integrate these phenomena into system certification [Zanchi, Pena and Bird, 2010; Gawel and Ludwig 2011]. While dLUC can be observed and measured, iLUC occurs as an unintended consequence of land use decisions taken elsewhere, and cannot be directly observed and measured. There is the risk, for example, that the use of crops for biofuels might displace other agricultural production activities onto land with high natural carbon stocks (resulting in significant greenhouse gas emissions from land conversion).

The iLUC problem introduces the last point: there is high uncertainty about the determination of environmental and energy balances, and more generally about the economic, social and environmental sustainability of biofuels. According to Pellizzoni [2011], “what look like calculations are highly speculative evaluations.” Scientists do not agree on the same mode of calculation (what variables to take into account) and the definition of the requirements for certification. Many types of contradictory certification are springing up.

For these reasons, certification is an instrument for the legitimation and stabilization of the state of exception. Identifying private mechanisms of governance strengthens the socio-organizational model of global biofuels. The state of exception is normalized by establishing procedures able to delegitimize oppositions and by identifying contradictory practices of sustainability accepted by the dominant actors in the production chain. The ideas of sustainability now emerging from certification present themselves as the legal forms of what is ontologically an exception to sustainability.

Beyond the State of Exception: Setting Bounds on Biofuels

In the social sciences, the debate on biofuels began a few years ago. Inquiry focused, in particular, on models of development and governance [Mol 2007; Carolan 2009; Houtart 2010; McMichael 2010], policies [Duffield and Collins 2006; Pons 2008; Franco *et al.* 2010] and socio-technical innovations [Stamboulis and Papachristos 2009]. More recently, studies have focused on social conflicts [Borras, McMichael and Scoones 2010; Hollander 2010; Vermeulen and Cotula 2010] and community perceptions of the benefits and burdens of localization of the global ethanol industry [Selfa *et al.* 2010]. Whilst much has been written on the expansion of global biofuels, much less analysis has been devoted to the alternatives.

Beyond the state of exception represented by global biofuels and what I have called the “suspension of sustainability for sustainability,” there are practices of territorial resistance to the global biofuel complex. I use the term ‘resistance’ [Gills 2000; Stiglitz 2002; van der Ploeg 2008b] to the global biofuel complex to indicate all those practices aimed at organizing locally the production and consumption of biofuels: schemes intended to preserve local control over resources and which attempt to be environmentally and socially friendly because they are able to integrate different policies at a territorial level (e.g. energy production and food production). In their relation to the state of exception, community-based biofuels represent resistance. The latter does not consist in overt struggle but can be found in a wide range of heterogeneous and increasingly interlinked practices whereby a community constitutes itself as distinctively different. Community resistance resides in the multitude of responses continued or created anew in order to confront neoliberal rule as the principal mode of ordering nature [Hardt and Negri 2009]. The neoliberalization of nature is countered by practices of decommodification comprising new hybrid combinations of commodity and non-commodity patterns into a wide range of actions. In face of the standardizing uniqueness of the global biofuels, there occur an “irreducible multiplicity and heterogeneity of singularities” [*ibidem*, 171] adapting to local socio-ecological systems and producing a localized form of socio-environmental sustainability.

Close territorial integration can lead to very different models of production and consumption. Resistance to the state of exception consists in a continuous diversification of territorial practices. The diversification and multiplicity of models represents the strength of alternative. It is because of heterogeneity that sustainability practices beyond the sustainability of exception to sustainability are possible.

What are the distinctive features of community projects and technology installations that make them different from global biofuels projects? What should the term “community-based biofuels” mean and include? According to Walker and Devine-Wright [2008], we can find a panoply of different interpretations of community energy experiences, but to set order on the definitions, they identified two key dimensions: first, “a process dimension, concerned with who a project is developed and run by, who is involved and has influence”; second, “an outcome dimension concerned with how the outcomes of a project are spatially and socially distributed” [*ibidem*, 498].

Community-based models are those in which local communities are organized to produce biofuel while maintaining control over the production and consumption sectors. They follow a local sovereignty model as opposed to the global one. Although local territorial experiences are small in comparison with the global biofuels, they are an interesting object of study. Starting from this case, we can identify an alternative

idea of sustainability able to overcome the conflicts and competitions arising from the global biofuel model.

I call this “bounded sustainability” as opposed to the boundless sustainability of the state of exception. Whilst boundless sustainability is the controversial result of a governance mechanism aimed at disabling conflict triggered by global biofuels, bounded sustainability is a set of geographically localized practices. In the former case, sustainability is embodied in certification in order to legitimize a contested approach to the environmental issue. In the latter case, sustainability is embodied in a local system of practices and relationships where producers and consumers are able to maintain control over side-effects [Khan, Chhetri and Islam 2007a].

“One thing that’s changed over time is my definition of what it means to be a sustainable fuel provider,” says Kumar Plocher, president of a community-based biodiesel cooperative located in Northern California. “What I realized is that it’s all based on local resources. Once we can effectively source all our resources locally, and deal with our wastes by getting value from them locally as well, it’s at that point we become insulated from the petroleum market and the pressure all of that exerts on us” [Kotrba 2010]. Global market forces drive commodity prices up and down, so that one of the few ways in which small producers can exercise any semblance of control over their margins is to become integrated at the local level.

Bounding the area of supply of the raw material and distribution of biofuels, and retrieving a set of by-products, is a way to reduce the side-effects of biofuels. Community-based schemes use not only energy crops but also local waste products that can be exploited [Chhetri, Watts, and Islam 2008]. Their collection chains include numerous restaurants providing used cooking oil feedstock. Plants are never greater than the local availability of resources. “We did not want to build a plant scaled significantly greater than the amount of feedstock we can collect ourselves (...) That’s been our growth model since inception, and it’s what’s allowed us to stay in business” [*ibidem*].

According to important scholars and organizations [van Dyne, Weber and Braschler 1996; Bender 1999; FAO 2008], community-based biofuels are an effective response to the growing contradictions of global biofuels for a wide variety of reasons:

a) the local supply of raw materials and the short chains of production and consumption reduce carbon emissions due to transport and the energy expenditure incurred by a very complex infrastructural system (storage sites, ports, railways, naval fleets, road connections); in this way energy and environmental balances are positive, as evidenced by the Italian S.I.E.n.A. project, where the Life Cycle Assessment (LCA) procedure has been applied to monitor the local biodiesel chain [Carrosio 2011];

b) through local planning it is possible to identify different types of land, some more suited to growing food, others for energy crops. In this case, the local level allows the active participation of local players in defining sustainability criteria for the choice of land;

c) the protection and reproduction of biodiversity are favoured by a local approach. Community-based schemes are able to maintain a balance among different environmental issues, without reducing environmental problems to climate change alone;

d) the local supply enables farmers to diversify products and to find new markets. In this way bioenergies become drivers of local development and opportunities for disadvantaged areas where agriculture deactivates because of pollution or a lack of competitiveness [van der Ploeg 2008a];

e) the local dimension makes it possible to control the relationship between energy and food production, balancing their use and preventing competition for land;

f) territorialized systems of production and consumption increase autonomy from external markets and make it possible to achieve real energy independence margins. Making biofuels local means empowering communities and releasing biofuels from oil dependence [Khan, Chhetri, and Islam 2007b].

The community based-model, however, collides with the mandatory blending quota system. Every state must fulfill its required quota. In the Italian case, 10% of fuel must come from biomasses by 2020. About ten million hectares would be required to achieve this goal, compared with a theoretical potential of 600 thousand hectares [Nomisma Energia 2008]. There is not, therefore, enough land to fulfill the obligations defined by the policies. Furthermore, the increasing consumption of fuels suggests a substantial increase in the absolute amount of the biofuel required.

Community-based schemes cannot be a quantitative alternative to global biofuels. It is not possible to imagine their complete replacement with local biofuels without a concurrent project for the radical socio-ecological conversion of mobility. Organizing local markets would be necessary to provide a variable quota system by drastically reducing the mixture objectives. In order to achieve a sustainable local system, each area must maintain a balance with the available resources. Therefore, each territory has its own production capacity which cannot be standardized.

Conclusion

Setting bounds on biofuels means creating local production and consumption systems in which actors exercise control over a wide range of side-effects. Not on-

ly does a structural difference in organizing production and consumption exist so that self-containment of flows positively resolves controversies on energy and environmental balances, but the involvement of local communities determines the local definition of sustainability criteria differentiated according to the biocapacity of the local systems.

Finding a match between policy objectives and practices on the ground, on the community/local dimension, is a way to go beyond the state of exception by reducing the complexity of global flows and establishing a local order.

In the case of biofuels, the state of exception is not a direct creation of policies; rather, it is a consequence of the instruments adopted to implement those policies (e.g. percentage of mandatory blending, free or protected trade agreements, fiscal support to big corporations, carbon-pollution market). In other words, the mechanisms of governance produce and are based on the state of exception.

According to Pellizzoni [2011], the neoliberal way to handle environmental issues is based on a “redefinition of the ontological quality of the biophysical world.” Relationships between ecosystems are reassembled at different levels of governance as interacting areas located in different parts of the planet due to the commodification of environmental goods through market-oriented arrangements. Based on a different spatial dimension is the dyscrasia between boundless and bounded sustainability. In the former case, bio-products are commodities travelling the world. They move in a global network linking poor places of production with rich places of consumption, mixing very distant and different ecologies, shifting emissions from place to place. Sustainability is represented by a unlimited number of generalized rules and parameters administering any part of the global assemblage. These requirements subsequently define the resources that are to be used and the way in which they are to be combined. Certification, as embodied sustainability, operates as control at a distance. It is a kind of control exerted through the specification of the socio-environmental-technical requirements at every interface in the global network. Global controllability is a way ceaselessly to reorder and re-spatialize the social and the natural.

In the latter case, bio-products are goods traded locally. Their life cycle remains within a local system. The amount of biofuel produced is proportional to the local biocapacity, and the environmental balance is localized: in this way the emissions saved are not marketable in the global carbon credit market. Sustainability is not a standardized set of rules. It represents a set of local practices arising bottom upwards, based on the local co-evolution between humans and nature. Different sustainability criteria are present for every place according to the socio-ecological features of the local systems.

Whilst for the global biofuels sustainability criteria imply the inclusion of the local space in, and its dependence on, a global space of exception, for community-based biofuels sustainability is a matter of autonomy.

References

Actionaid

2008 *Food, Farmers and Fuels: Balancing Global Grain and Energy Policies with Sustainable Land Use*. London: Actionaid.

Agamben, G.

2005 *State of Exception*. Chicago: The University of Chicago Press.

Al-Riffai, P., Dimaranan, B., and Laborde, D.

2010 *Global Trade and Environmental Impact Study of the EU Biofuels Mandate*. IFPRI, mimeo.

Anseuw, W., Alden, L.W., Cotula, L., and Taylor, M.

2012 *Land Rights and the Rush for Land: Findings of the Global Commercial Pressures on Land*. Rome: ILC Research Project

Arienzo, A.

2006 "Il governo delle emergenze e la conservazione politica: ragion di stato democratica e security governance internazionale." Pp. 35-58 in *Eccezione*, edited by V. Dini. Napoli: Dante & Descartes.

Bender, M.

1999 "Economic feasibility review for community scale farmer cooperatives for biodiesel." *Bioresource Technology* 70: 81-87.

Biofuelwatch

2008 *Who Is Behind the Agrofuel Industry in UK?* Londra: Biofuelwatch.

BioRes

2008 "Biofuels and sustainability: is certification the answer?" *BioRes – Trade and Environment Review* 4: 9-10.

Borras, S. Jr., McMichael, P., and Scoones, I.

2011 *The Politics of Biofuels, Land and Agrarian Change*. London: Routledge.

Carolan, M.

2009 "A Sociological Look at Biofuels: Ethanol in the Early Decades of the Twentieth Century and Lessons for Today." *Rural Sociology* 74: 86-112.

Carrosio, G.

2011 *I biocarburanti. Globalizzazione e politiche territoriali*. Roma: Carocci.

Chhetri, A.B., Watts, K.C., and Islam, M. R.

2008 "Waste Cooking Oil as an Alternate Feedstock for Biodiesel Production." *Energies* 1: 3-18

- Cotula, L., Vermeulen, S., Leonard, R., and Keeley, J.
2009 *Land Grab Or Development Opportunity? Agricultural Investment And International Land Deals In Africa*. London/Rome: Iied/Fao/Ifad.
- Crutzen, J., Mosier, A.R., Smith, K.A., and Winiwarter, W.
2007 “N₂O release from agro-biofuel production negates global warming reduction by replacing fossil fuel.” *Atmospheric Chemistry and Physics Discussions* 7: 11191-11205.
- De Fraiture, C., Giordano, M., and Liao, Y.
2008 “Biofuels and Implications for Agricultural Water Use: Blue Impacts of Green Energy.” *Science* 10: 67-81.
- Duffield, J. A., and Collins, K.
2006 “Evolution of Renewable Energy Policy.” *Choices* 21: 9-14.
- Van Dyne, D.L., Weber, J.A., and Braschler, C.H.
1996 “Macroeconomic effects of a community-based biodiesel production system.” *Bioresource Technology* 56: 1-6.
- Eggers, J., Tröltzsch, K., Falcucci, A., Maiorano, L., Verburg, H., Framstad, E., Louette, G., Maes, D., Nagy, S., Ozinga, W., and Delbaere, B.
2009 “Is biofuel policy harming biodiversity in Europe?” *GCB Bioenergy* 1: 18-34.
- Escobar, J., and Lora, E.S.
2009 “Biofuels: environment, technology and food security.” *Renewable and Sustainable Energy Review* 13: 1275-1287.
- Fanfani, R., and Montresor, E.
1991 “Filiere multinazionali e dimensione spaziale nel sistema agroalimentare italiano.” *La Questione Agraria* 41: 87-108.
- Fao
2008 *Soaring food prices: facts, perspectives, impacts and actions required*. Rome: Fao.
2009 *Small-scale Bioenergy Initiatives: Brief Description and Preliminary Lessons on Livelihood Impacts from Case Studies in Asia, Latin America and Africa*. Rome: Fao.
- Fargione, J., Hill, J., Tilman, D., Polasky, S., and Hawthorne, P.
2008 “Land Clearing and the Biofuel Carbon Debt.” *Science* 319: 1235-1238.
- Farrell, A.E.R., Plevin, J., Turner, B.T., Jones, A.D., O'hare, M., and Kammen, D.M.
2006 “Ethanol can contribute to energy and environmental goals.” *Science* 311: 506-508.
- Flammini, A.
2008 *Biofuels and the underlying causes of high food prices*. Rome: Global Bioenergy Partnership.
- Franco, J., Levidow, L., Fig, D., Goldfarb, L., Honicke, M., and Mendonca, M.L.
2010 “Assumptions in the European Union biofuels policy: frictions with experiences in Germany, Brazil and Mozambique.” *The Journal of Peasant Studies* 37: 661-98.
- Gale, F.
2004 “The consultation dilemma in private regulatory regimes: negotiating FSC – regional standards in the United States and Canada.” *Journal of Environmental Policy & Planning* 6: 57-84.

- Gawel, E., and Ludwig, G.
2011 "The iLUC dilemma: How to deal with indirect land use changes when governing energy crops." *Land Use Policy* 28: 846-856.
- Geibler, J.
2007 "Biomassezertifizierung unter Wachstumsdruck; Wie wirksam sind Nachhaltigkeitsstandards bei steigender Nachfrage? Diskussion am Beispiel der Wertschöpfungskette Palmöl." *Wuppertal Papers* 168.
- Giampietro, M., Mayumi, K., and Munda, G.
2006 "Integrated assessment and energy analysis: Quality assurance in multi-criteria analysis of sustainability." *Energy* 31: 59-86.
- Gills, B.K.
2000 *Globalization and the Politics of Resistance*. New York: St. Martin's Press.
- Greenpeace
2007 *How the Palm Oil Industry is Cooking the Climate*. Greenpeace: mimeo.
- Gulbrandsen, L.H.
2008 "Accountability Arrangements in Non-State Standards Organizations: Instrumental Design and Imitation." *Organization* 15: 563-583.
- Hardt, M., and Negri, A.
2009 *Commonwealth*. Cambridge: Harvard University Press.
- Harvey, D.
2010 *The Enigma of Capital and the Crises of Capitalism*. Oxford: Oxford University Press.
- Heynen, N., McCarthy, J., Prudham, W.S., and Robbins, P.
2007 *Neoliberal Environments: False Promises and Unnatural Consequences*. New York: Routledge.
- Hollander, G
2010 "Power is sweet: sugarcane in the global ethanol assemblage." *The Journal of Peasant Studies* 37: 699-721.
- Houtart, F.
2010 *Agrofuels: Big Profits, Ruined Lives and Ecological Destruction*. London-New York: Pluto Press.
- Kotrba, R.
2010 "The Resilient Community Producers." *Biodiesel Magazine*. URL: <http://www.biodieselmagazine.com>
- Lewandowski, A., and Faaij, A.
2006 "Steps towards the development of a certification system for sustainable bio-energy trade." *Biomass and Bioenergy* 30: 83-104.
- Khan, M.I., Chhetri, A.B., and Islam, M.R.
2007a "Analyzing Sustainability of Community-based Energy Technologies." *Energy Sources, Part B: Economics, Planning and Policy* 2: 403-419.
2007b "Community based energy model: a novel approach to developing sustainable energy." *Energy Sources, Part B: Economics, Planning and Policy* 2: 353-370.

Klooster, D.

2005 "Environmental certification of forests: The evolution of environmental governance in a commodity network." *Journal of Rural Studies* 21: 403-417.

Malagoli, C.

2008 "Prezzi del cibo e fame nel mondo." *Aggiornamenti Sociali* 59: 491-500.

McMichael, P.

2010 "Agrofuels in the Food Regime." *The Journal of Peasant Studies* 37: 609-629.

Mohor, A.

2004 *Correcting biofuel policies through environmental and social standards. How are environmental and social aspects governed by multi-stakeholder processes?* Freie Universität Berlin.

Mol, A.

2007 "Boundless Biofuels? Between Environmental Sustainability and Vulnerability." *Sociologia Ruralis* 47: 297-315.

Mooney, H.A., and Hobbs, R.J. (eds.)

2000 *Invasive Species in a Changing World*. Washington DC: Island Press.

Ninni, A.

2008 *Problematiche generali dello sviluppo dei biocarburanti di prima generazione*. Speech held at the conference "Le ricadute economiche e industriali di una politica di sviluppo dei biocarburanti," Milan, 24 November.

Nomisma Energia

2008 *I biocarburanti in Italia. Opportunità e costi*. Nomisma.

Ong, A., and Collier, S.

2005 *Global assemblages: technology, politics and ethics as anthropological problems*. Malden MA: Blackwell.

Partzsch, L.

2011 "The Legitimacy in Biofuel Certification." *Agriculture and Human Values* 28: 413-425.

Pellizzoni, L.

2011 "Governing through disorder: Neoliberal environmental governance and social theory." *Global Environmental Change* 21: 795-803.

Pimentel, D., and Patzek, T.W.

2005 "Ethanol production using corn, switchgrass and wood; biodiesel production using soybean and sunflower." *Natural Resources Research* 14: 65-76.

Pirrello, M.

2009 *Food or fuels: biofuels?* Seminar held at Dipartimento di Economia dei Sistemi Agro-Forestali, University of Palermo, 25 March.

van der Ploeg, J.D.

2007 *Oltre la modernizzazione. Processi di sviluppo rurale in Europa*. Soveria Mannelli CZ: Rubbettino.

2008a *The New Peasantries. Struggles for Autonomy and Sustainability in an Era of Empire and Globalization*. London: Earthscan.

2008b "The imperial conquest and reordering of the production, processing, distribution and consumption of food: a theoretical contribution." *Sociologia Urbana e Rurale* 87: 48-63.

- Pons, E.
 2008 *A review of policy measures supporting production and use of bioenergy*. Paris: Oecd Publishing.
- Rabobank
 2008 *The Boom Beyond Commodities. A New Era Shaping Global Food and Agribusiness*. Hong Kong: Rabobank International.
- Sachs, W.
 1993 *Global Ecology: a new Arena of Political Conflict*. London: Zeed Books.
- Sassen, S.
 2006 *Territory, authority, rights. From Medieval to Global Assemblages*. Princeton: Princeton University Press.
- Searchinger, T., Heimlich, R., Houghton, R.A., Dong, F., Elobeid, A., Tokgoz, S., Hayes, D., and Yu, T.
 2008 "Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land Use Change." *Science* 319: 1238-1240.
- Seedling*
 2007 *Agrofuels special issue*, July.
- Selfa, T. Kulcsarb, L., Bains, C., Goeb, R., and Middendorfb, G.
 2010 "Biofuels Bonanza? Exploring community perceptions of the promises and perils of biofuels production." *Biomass and Bioenergy* 35: 1379-1389.
- Sexton, S.E., and Zilberman, D.
 2008 *Biofuels impact on climate change, the environment and food. Report to the Renewable Fuels Agency*. University of California, Berkeley.
- Shiva, V.
 2008 *Soil Not Oil*. Cambridge: South End Press.
- Sivini, G.
 2008 "La crisi alimentare e la speculazione finanziaria sulle materie prime." *Sociologia Urbana e Rurale* 87: 63-80.
- Stamboulis, Y., and Papachristos, G.
 2008 "Investigation and Modelling Framework of Biofuels as a New Socio-Technical Regime." *Proceedings of the 26th International Conference of the System Dynamics Society*. Albany: System Dynamics Society.
- Stiglitz, J.
 2002 *Globalization and its discontents*. London: Penguin Books.
- Stupak, I., Asikainen A., and Jonsell M.
 2007 "Sustainable utilisation of forest biomass for energy – Possibilities and problems: Policy, legislation, certification, and recommendations and guidelines in the Nordic, Baltic, and other European countries." *Biomass and Bioenergy* 31: 666-684.
- Vermeulen, S., and Cotula, L.
 2010 *Making the Most of Agricultural Investment: A Survey of Business Models that Provide Opportunities for Smallholders*. Rome/London/Bern: Fao/Ifad/Iied/Sdc.

Walker, G., and Devine-Wright, P.

2008 “Community renewable energy: what should it mean?” *Energy Policy* 36: 497-500.

Zanchi, G., Pena, N., and Bird, N.

2010 *The upfront carbon debt of bioenergy*. Graz: Joanneum Research.

Zeza, A.

2007 “Le politiche pubbliche per i biocarburanti: analisi degli effetti redistributivi.” *Politica Agraria Internazionale* 3: 14-36.

2011 “Le politiche per i biocarburanti nei principali paesi produttori.” *Agriregionieuropa* 7: 9-12.

Beyond the Sustainability of Exception

Setting Bounds on Biofuels

Abstract: The article discusses two alternative approaches to sustainability – boundless and bounded sustainability – focusing on the example of biofuels as means to fight climate change.

To date, social research on biofuels has focused mainly on the growth of a global market of production and consumption – boundless biofuels – highlighting emerging issues. While pro-biofuels policies pursue virtuous environmental objectives, the structuring of a global market is creating numerous and much debated side-effects. Across the world, scientific controversies and social conflicts have arisen: boundless biofuels benefits are strongly contested. Most researchers focus on the sustainability certification of global biofuels as a governmental device which to settle disputes. The article argues that, beyond the global biofuels controversies, the localization of biofuel production and consumption is increasing. These are schemes that seek to preserve local control over resources and attempt to be environmentally and socially friendly because they are able to integrate different policies at a territorial level (e.g. energy production and food production). these practices, the article develops an alternative conception of sustainability as the careful socio-ecological balance of local systems.

Keywords: Boundless biofuels, state of exception, sustainability, governmentality, neoliberalism, climate change.

Giovanni Carrosio, Ph. D in Sociology at the International University Institute for European Studies, is a research fellow at the University of Trieste. He teaches Sociology of Community and Territory at the University of Padova, Italy. His main research works deal with energy transition, rural development, and environmental issues. He has published several articles on energy matters. The monograph *I biocarburanti. Globalizzazione e politiche territoriali* (Rome, 2011) is among his most relevant publications.