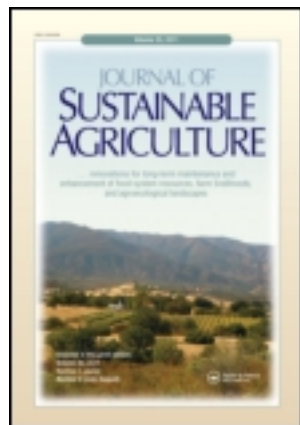


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Manuel Gonzalez de Molina ^a

^a Department of Geography, History, and Philosophy, University Pablo de Olavide, Sevilla, Spain

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Agroecology and Politics. How To Get Sustainability? About the Necessity for a Political Agroecology

MANUEL GONZALEZ DE MOLINA

*Department of Geography, History, and Philosophy, University Pablo de Olavide,
Sevilla, Spain*

Agroecological movements are spreading and many local experiences are being carried out. But agroecology still has not developed instruments and approaches to elaborate state and regional strategies, where the political and institutional aspects play a key role. This text contributes to overcoming these oversights by means of a theoretical foundation that demonstrates why agroecology should engage politics. First, we argue that agroecosystems, as socioecological constructions, are produced through power relations. Second, we show the close relationship between agroecosystem dynamics and politics, and, therefore, the crucial role that political agroecology plays in the agroecological transition. Finally, we evaluate the world food system as the context in which agroecological experiences should be developed.

KEYWORDS *agroecology, politics, agroecological movements, agrarian sustainability, agroecological transition, public policies, food crisis*

The link between politics and agroecology is not new. Many authors have demanded the need for socioeconomic structural reforms in order to be able to achieve sustainable agrarian systems (Buttel 1997; Rosset 2003; Levins 2006; Holt-Giménez 2006; Perfecto et al. 2009; M. Altieri and Toledo 2011). But this link between agroecology and politics is not fully accepted by agroecologists. The agroecological movement is characterized, on the one hand,

Address correspondence to Manuel Gonzalez de Molina, Departamento de Geografía, Historia y Filosofía, Universidad Pablo de Olavide, Carretera de Utrera Km. 1, 41013 Sevilla, Spain. E-mail: mgonnav@upo.es

by the scarcity of political proposals that go beyond the local sphere. The majority of agroecological experiences, linked to nongovernmental organizations, academic institutions, and, to a significantly lesser extent, public governments, continue to be experiences on farms or, in the remaining cases, community experiences, where the research, participatory action and design of sustainable rural development strategies have been the favored tools.

On the other hand, the agroecological movement reveals, especially in the academic field, the increasing influence of a current of agroecology that we could call “scientistic” or “technocratic.” This current considers agroecology almost exclusively as a scientific discipline, producing useful knowledge and technology for sustainable agriculture (Wezel et al. 2009). It promotes technological solutions rather than institutional or social change solutions for the problems considered today by the global agro-alimentary system, based on what Pretty (2010, 455) calls “sustainable intensification.”

Although every scientific and social practice is political by nature, both trends deny politics, although for opposing reasons. The result is, on the one hand, the lack of efficiency and stability of the agroecological experiences that barely reach the required size and expanse of land; and on the other hand, the spread of the false idea that technological innovation alone, without substantial social and economic change, will achieve more sustainable agriculture. The first leads to inefficiency, the second to inactivity, and both sever the possibilities of agroecology being an alternative to the ecological crisis in the field.

Agroecology has a practical dimension, which is inseparable from the scientific one. Agroecology cannot be limited to pointing out unsustainable factors in agroecosystems, followed by proposing management approaches and routes to their implementation that will restore these factors to a sustainable state. As stated by Gliessman (2011), it is also a powerful tool to achieve change in the food system, in other words, a massive redesign of the economic structures that govern our food systems (347). This practical dimension of agroecology requires politics, that is, the disciplines responsible for designing and implementing institutions that make agrarian sustainability possible. In spite of this, agroecology is not yet equipped with the analytical instruments and criteria required to define strategies that could guide said change. Most agroecological experiences are still, with a few exceptions, local and uncoordinated. Agroecology is still closely bound to the scope of the farmer, the farm and the local community. However, the participation of agroecologists in local and even national government is becoming increasingly widespread. Politics must develop within the heart of agroecology. Otherwise, experiences will be condemned to be “islands of success” amid a sea of privation, poverty and environmental degradation (M. Altieri and Rosset 2010). This article examines the need to overcome this shortcoming and discusses some of the reasons that endorse this need.

1. THE DYNAMICS OF AGROECOSYSTEMS: THE PLACE OF POLITICS

The changing dynamics of agroecosystems make the need for power and politics more comprehensible. The search for sustainability implies a change in their dynamics that can only come from social agents by means of institutional mediation. It is this process of creation and establishment that Political agroecology deals with.

As with social metabolism as a whole,¹ the dynamics of agroecosystems are a product of the relationship between the two poles of all socioecological relations: the population and the resources available to them. There are many factors that make up each of the two poles in this relationship and also many variables that alter them. In terms of resources, changes in the quality and quantity of environmental resources and the services offered by agroecosystems are determined by the dynamics of nature itself, dynamics with a long-term temporal dimension, but that do not preclude sudden changes. Similarly, the quantity and quality of the goods and services offered by agroecosystems can be modified by interferences caused by the population itself (i.e., society).

In terms of the population, factors that can alter the relationship with resources are not limited solely to the number of farmers living off agroecosystems. This pole of the relationship must be understood in a broad sense, encompassing not only the human population, but also its levels of consumption and the ease or difficulty with which it can access resources to satisfy them. These three aspects are institutionally conditioned.

For example, social inequality or territorial imbalance can induce changes in agroecosystems. From a physical point of view, it entails the unequal assignation of energy, materials, water and environmental services. Pressure on the resources of agroecosystems can increase if part of the population is deprived of the wealth generated by their appropriation and transformation. The appropriation by one social group through exploitation mechanisms or the forced transfer of income can reduce the amount of biomass available to meet the endo- and exosomatic needs of the rest of the rural population; it may increase social demand over the requirements of most of the population, increasing pressure on the agroecosystems. From the perspective of the *internal equity* of agroecosystems, an unequal distribution of natural resources usually puts pressure on increasing the productive effort.

Over the last century, farmers have been exposed to a new form of inequality which has constituted the most powerful lever for productive intensification and the breaking apart of agroecosystems. We are referring here to the growing inequality that has been generated first in national markets and then in the global market in terms of distributing revenue between the agrarian sector and the other productive sectors, or between different territories (unequal exchange) which we could term *external inequality*.

(Guzmán et al. 2000). The global profitability of farming activity has been progressively declining since the start of the twentieth century as a consequence of the unequal relationship of exchange between the agrarian sector, and the industrial and services sector. Between 1900 and 1998, the cumulative effect was a decline of 62% in that relationship (Zanias 2005; Eisenmenger et al. 2007). This loss of profitability has fostered processes of crop intensification to compensate for the decline in farming revenue. This process has made farmers more dependent on the market and on new technologies to achieve a minimum income threshold; in other words, more dependent on the agro-industrial complex as a whole.²

Social inequality, therefore, from an environmental perspective, constitutes an “ecosystemic pathology,” a permanent source of instability and a powerful stimulus for conflict and socioecological change. This perspective is fundamental in our analysis, since it takes the concept of equity to the terrain of its effects on sustainability (Guzmán et al. 2000). There are numerous cases, both historic and contemporary, in which poverty and the inaccessibility of resources lead to environmental degeneration, deforestation and forest clearing, crop cultivation on steep slopes, overgrazing or the use of agrochemicals, etc. However, in the opposite direction, the struggle for subsistence has often become a struggle to conserve resources and agrarian sustainability (Guha and Martínez Alier 1997)

Undoubtedly, the relationship between population and resources can be altered by technological innovation. Certain technologies can increase the carrying capacity of an agroecosystem beyond its possibilities, increasing metabolic efficiency in the use of energy and materials. However, their adoption and even the very process of innovation depends on institutional arrangements, among them on political power and can be stimulated or not by public policies. Similarly, a rural community can increase the carrying capacity of its territory by importing resources from other countries or regions through economic exchange. This is, therefore, a very significant factor when explaining the dynamics of agroecosystems. The market has been the vehicle through which the subsidization of energy and materials required to maintain the continued growth of agrarian production has circulated in industrialized countries. However, as Karl Polanyi (1989 [1944]) pointed out some time ago, the market is merely a power relation, at times conflictive, which must be regulated by political power.

So, the decisions that emanate from the State are undoubtedly important in terms of explaining the dynamics of agroecosystems. We are referring here to the set of *stable power relations* (regulation and legal norms) or specific power relations (decisions or public policies), which aim to reproduce both the metabolism between nature and society, and the forms in which it is organized and, therefore, the ways in which energy and materials flow within agroecosystems. Influenced by the other components of change mentioned previously, this factor in turn has a decisive influence on them and,

therefore, on the dynamics of agroecosystems. In this respect, the design of public policies that create a favorable institutional framework for the development of sustainable agroecosystems is fundamental. This is a task that falls within the scope of political agroecology; also to make its application possible through political action and the participation in state institutions.

The scientific or technocratic currents of agroecology strip socioecological change of any collective dimension of human action. However, the distribution of political power and natural resources often gives rise to conflict. Conflicts between social groups and between territories constitute a potential source of socioecological change and, consequently, should be taken into consideration when it comes to studying the evolutionary dynamic of agroecosystems. For example, currently, environmentalist protests are helping to internalize environmental costs, and, even if they do not abruptly change the approaches taken to management, they do lessen their harmful effects and pave the way towards agrarian sustainability (Guha and Martínez Alier 1997).

Agroecology should pay particularly close attention to conflicts in which there are implicit or explicit motivations for changes in the agroecosystem status quo. These kinds of conflicts, which might have very diverse motivations and manifestations, could be classified as environmental conflicts. The resolution of such conflicts has historically been a source of modification or conservation for agroecosystems (González de Molina et al. 2009). For example, the protection afforded by many rural communities to natural resources against attempts to overexploit them by companies or the state, itself, has managed to save natural resources from overexploitation or deterioration. We could say, therefore, that environmental conflict *can* contribute to increasing the sustainability of an agroecosystem or agrarian metabolism as a whole, or to decreasing it. This consideration of environmental conflict as a motor for socioecological change gives social movements a key role in the struggle for agrarian sustainability. In this respect, political agroecology is also a science of collective action in favor of sustainability; a philosophy of action.

2. POLITICAL ECOLOGY AND AGROECOLOGY

Accordingly, the organization and management of agroecosystems is not merely a technical or material question. Agroecosystems are artificialized ecosystems that shape a particular subsystem within the general metabolism between society and nature; therefore, they are a product of the socioecological relations established within. For example, the change in use of a particular crop is a decision that often has socioeconomic roots and, at the same time, environmental consequences. These kinds of socioecological relations are part of social relations in general, in which power and conflict

are present. Consequently, from the simplest societies, technologically speaking, the specific assembly of each agroecosystem responds to different types of institutions, forms of knowledge, worldviews, rules, norms and agreements, technological knowledge, means of communication and governance, and forms of ownership (González de Molina and Toledo 2011). The sustainability of an agroecosystem is not just the result of a series of physical and biological properties, but also the reflection of power relations. So, agroecology must have the theory required to deal with politics.

Of the two most common meanings of the term *politics*, as “an art of domination or an art of integration,” we are especially interested in the latter: politics as “governability” (Foucault 1991, 14), that is, the control and governance of a social group settled in a specific territory. From this perspective, the fundamental objective of politics is to provide public goods by collective action (Colomer 2009). Considering the provision of said public goods is out of the citizens’ reach individually, a coordinated effort is required, whether through voluntary or coercive means, or whether via collective action or public government institutions which execute public policies. For example, sustainability is a public good that citizens cannot achieve individually. To achieve it, social movement, public policies, or a combination of both is required. Political ecology focuses on the study of this concept.

There is no agreement as to what political ecology is (G. Peterson 2000; Blaikie 2008). The term gives rise to many meanings and ways of understanding its objectives. But all of them have in common their political economy approach of natural resources and their preferential application to developing countries (Blaikie 2008). Our interpretation is the same as that of Gezon and Paulson (2005) for whom “the control and use of natural resources, and consequently the course of environmental change” are shaped by “the multifaceted relations of politics and power, and the cultural constructions of the environment” (10). In this sense, political ecology combines political and ecological processes in the analysis of environmental change and it could be understood also as “the politics of environmental change” (Nigren and Rikoon 2008, 767). Paraphrasing Blaikie and Brookfield (1987), we could say that “political ecology [is] an approach for studying ecological and social change” (17), but *together*. In other words, political ecology is an approach for studying socioecological change in political terms.

In this regard, political agroecology would be the application of political ecology to the field of agroecology, or the close association between these (Toledo 1999; Forsyth 2008). Using Paulson et al. (2003) and Walker (2007), we could say that political agroecology should “develop ways to *apply* the methods and findings [from political ecology research] in addressing” (Paulson et al. 2003, 208) socioecological change in agroecosystems.

But political agroecology is not only a research subject. It has another practical dimension closely linked and considered as a central goal: achieving agrarian sustainability. Many agroecologists are involved in a

“‘popular political ecology’ that ties research directly to activist efforts to improve human well-being and environmental sustainability through various forms of local, grassroots activism and organization” (Walker 2007, 364). In this respect, political agroecology should develop in two directions: as an ideology which, in competition with others, is dedicated to dissemination and turning the organization of agroecosystems based on an ecological and sustainable paradigm into the dominant system (Garrido 1993); but also as a disciplinary field responsible for *designing and producing actions, institutions, and regulations aimed at achieving agrarian sustainability*.

Political agroecology is based on the fact that agrarian sustainability cannot be achieved using only technological (agronomical or environmental) measures which help to redesign agroecosystems in a sustainable manner. Without a profound change in the institutional framework in force it will not be possible for successful agroecological experiences to spread and for the ecological crisis in the field to be combated effectively. Consequently, political agroecology examines the most suitable way to participate in these movements and to use those tools that render institutional change possible. Such a change, in a world still organized around nation states, is only possible through political mediation. In democratic systems, for example, it implies collective action through social movement, electoral political participation, the game of alliance between different social forces to build government majorities, etc. In other words, it calls for the creation of essentially political strategies. The design of institutions that favor the achievement of agrarian sustainability (Ostrom 1990, 2001, 2009) and the way to organize agroecological movements in such a way that they can be implemented comprise precisely the two main objectives of political agroecology.

Political agroecology is, therefore, more than a specific proposal for a program. For example, the demand for alimentary sovereignty, promoted by La Via Campesina and other social movements is *a* specific proposal for a program that *can* emerge from applying political agroecology to the current conditions of the global agro-alimentary system. But, like any specific proposal for a program, it can change depending on the social and political scale and context to which it is applied. Political agronomy is responsible for establishing it. Political agroecology is a new branch of agroecology, not a political proposal or program to get agrarian sustainability.

Political agroecology employs the concept of autonomy, an attribute of sustainability (M. A. Altieri 1995; Gliessman 1997), which in addition has its roots in agroecological epistemology. It is this use of the concept of autonomy that leads the agroecological political discourse to demand alimentary sovereignty, as a current expression of this attribute, that is, as the best way to strengthen the autonomy of agroecosystems and those who manage them. In other socioenvironmental and political contexts, the principle of autonomy can have other specific dimensions. Political agroecology is not a new

alternative term for alimentary sovereignty. It seeks to produce knowledge that renders agroecology and alimentary sovereignty something that can be practiced, exploiting the knowledge accumulated by political ecology and the experience of social movements and green political parties.

3. THE SCALES THAT MAKE ECOLOGY “POLITICAL”

The process of agroecological transition, from a spatial point of view, takes place at different scales which, although interrelated, display different characteristics. At least five can be identified: crop, farm, community or village, national, and global. Although other intermediate levels can be considered (districts, watershed, regions, etc.), at more aggregated scales, agroecology has to deal with emerging properties that do not emerge at lower levels.

At the scale of individual crops and farms, agroecology has developed a complete arsenal of technical solutions which have made it possible to design sustainable systems. The next level at which the transition occurs corresponds to the organization of the agroecosystem. In this case, during the industrialization of agriculture, there has been a growing segregation in land uses and the losses of production and functional synergies generated by agro-silvo-pastoral integration. The result has been the loss of spatial heterogeneity. With it, flows of energy and materials, which tended to be local and closed (renewable), have become global, provided by fossil fuels. This is one of the most underdeveloped aspects of agroecology, which has led to a lack of focus on landscape agroecology. It is at this level that decisive aspects of the agroecological transition are revealed; for example, which territorial arrangements will be required for agriculture to be sustainable (Guzmán-Casado and González de Molina 2009; Guzmán-Casado et al. 2011). At a national or global level, the industrialization of agriculture has entailed the constitution of a global agrarian market and a single global food system, in which agroecosystems also tend to integrate in a specialized way.

At the scale of the crop or farm, changes in farmers' attitudes could be sufficient to drive a transition, as could changes in patterns of consumption which can be achieved at an individual level when expressed by turning to the market or other institutions to procure food. But when talking about community and particularly the State and the world, political power and collective action are two properties that emerge and with them the need for political action (Zimmerer and Basset 2003; Swyngedouw 2004; Paulson et al. 2003; McCarthy 2005; Paulson et al. 2005; Rangan and Christian 2009). Political agroecology appears then as an urgent need to which practically no attention has been paid thus far. Many essays have been published on peasant movements and food sovereignty (among the latter, see Holt-Giménez 2006, 2011; M. A. Altieri 2009; Holt-Giménez and Patel 2009; Perfecto et al. 2009; Petersen 2009; Martínez Torres and Rosset

2010), but there has not been a systematic and articulated reflection from agroecology.

A brief review of the attributes of agrarian sustainability should illustrate this need. The first refers to productivity, which is often only considered at the scale of the individual crop or farming estate, without taking into account the interrelations which, from the perspective of land uses, take place at the level of the agroecosystem or in relation to nearby agroecosystems. The possibility of closing cycles and using locally generated energies depends on territorial planning and organization. These tasks fall to local government or the state and depend on public policies.

The same can be said of stability, referring to the capacity of an agroecosystem to maintain its productivity over time. As maintained by M. A. Altieri (1995), certain properties of an agroecosystem, such as climate conditions, have very prolonged cycles over time, and a farmer's capacity to influence them is fairly limited. However, a farmer can try to maintain and even increase the biological stability of an agroecosystem or a specific estate by improving practices such as irrigation or the integration of agriculture and livestock farming. These properties and practices, owing to their territorial impact and economic cost, exceed the scope of the community and are the responsibility of the State or its regional planning bodies. The formation of product pricing, inputs used, subsidies and incentives and, therefore, the economic stability of farming businesses are dependent on established decision-making and regulatory spheres that are often far removed from rural communities.

The resilience of an agroecosystem does not depend solely on its productive arrangements. State institutions, responsible for managing natural and socioeconomic disasters, can create favorable or adverse conditions for the recovery of the productive capacity of an agroecosystem. In this respect, there are institutions that favor the resilience of an agroecosystem more than others. In contrast to private or simply state property, communal forms of ownership, characteristic of traditional rural cultures, result in management approaches that adapt more easily to surprises or changes experienced by ecosystems (Holling et al. 1998; Holt-Gimenez 2001). In this respect, agroecology must provide an analytic approach regarding forms of organization for decision-making and institutional design that increase the resilience of agroecosystems.

One of the attributes of sustainability considered fundamental by agroecology is social equity. Access to resources and the distribution of agrarian revenue are organized by institutions that, like ownership or the market, can significantly condition the sustainability of an agroecosystem. The rules and regulations that ensure sufficient income for farmers are the responsibility of the state, just as an unequal distribution of property can also be modified by the political power of government actions such as agrarian reforms. It is also the responsibility of the State to reverse the sustained

deterioration experienced through the relationship of exchange between food and agricultural raw materials, and the inputs and manufactured products consumed by agrarian businesses or farming families. It falls to the political institutions to establish the opportune regulations in markets that guarantee sufficient income for farmers; or to establish the necessary compensations by means of subsidies and fiscal incentives that redress market imbalances. It is also the responsibility of political authorities to establish a fair assignation of resources for future generations. Political institutions must guarantee, by imposing regulations regarding management, the right of those who are not yet born to an agroecosystem in good physical and biological condition.

Finally, the level of autonomy is an essential attribute of sustainability and is closely related to the internal capacity to supply the flows of energy and materials required for production. The current model of agriculture generates high external dependence through an unbalanced relationship of mercantile exchange that is damaging for farmers, especially for small farmers. The growing integration of farmers into the world market and the food system has stripped them of their decision-making capacity about the type of crops they grow, their management and guiding knowledge or the final destination of production. Hence, the concept of food sovereignty has been proposed as an alternative to the classic concept of food security. In short, the mission of political agroecology is producing knowledge that makes possible the establishment of institutions and social movements favorable to the development of agrarian sustainability.

Similarly, at more aggregated scales of the transition, properties emerge regarding the relationship with other metabolic processes; for example, the link that has been established in recent decades between agrarian production, the processing and transformation of foods, transportation, distribution and the ways in which foods are conserved, cooked and finally consumed. This has compelled agroecologists to adopt a much broader vision, adopting an approach that focuses on the food system (Francis et al. 2003; González de Molina and Infante 2011), which also necessarily requires politics and collective action.

4. THE POLITICAL DIMENSION OF CHANGE

The global food system is currently incapable (Dixon et al. 2001) of feeding the human population, although there is sufficient raw material available. It has made little progress in the eradication of rural poverty and is starting to show clear signs of exhaustion (Food and Agriculture Organization of the United Nations [FAO] 2007a). Furthermore, the functioning of the markets and the subordinate role played by agricultural activity in economic growth have caused an acute loss of profitability. According to the FAO, the

real prices of major agrarian products have decreased by 50% since 1983 (FAO 2007a). This decline is the cause of abandonment in rich countries and hunger, rural depopulation, and poverty in poor countries. Paradoxically, prices have experienced a significant increase over the last three years. The sustained increase in the consumption of grain, the increase in the consumption of meat, particularly in Asia, the rising price of oil, and the scarcity of land which has been highlighted by the expansion of agro-fuel crops, are expressions of the structural crisis in the world food system. In relation to the increasing scarcity, a dense speculative web has also been weaved which has accentuated inflationist tension even further (Hossain and Green 2011). To all of this we must add the environmental damage caused by the predominant model of chemical agriculture. This damage is diminishing—and will do so more seriously in the future—the capacity of agroecosystems to produce food and raw materials, and to offer environmental services.

In view of the crisis, the two objectives of an agroecological strategy are to eradicate hunger and malnutrition and raise the income of farmers, especially in countries with a higher index of poverty, and to reduce or possibly eliminate environmental damage, all through the promotion of sustainable management approaches for agroecosystems. But how can this be achieved? The scientific and political consensus (FAO 2007b; De Schutter 2010) is that agroecological methods can significantly increase production and yield by combining new technologies with the development of agronomics, and local knowledge and resources.

However, if eating habits do not change in rich countries—reducing the consumption of meat, eggs, and dairy products—and the demand generated by this diet continues to increase, pressures on importing food from countries with food security and hunger problems will intensify. Hence, the advances that might be made run the risk of proving insufficient. In the West, the adoption of an agroecological approach should, therefore, give rise to a different strategy based on *degrowth* in their food systems (Infante Amate and González de Molina 2013).

All of this entails change in several dimensions. First, citizens must individually change their eating habits, especially in Western countries. But that is not enough; the implementation and multiplication of collective experiments in sustainable production and responsible consumption through the creation and strengthening of production and consumptions groups, associations of producers and consumers, among other, constitutes a second dimension that is essential. Throughout the planet, a good number of agroecological experiments have arisen, both rural and urban, for production and consumption, providing the avant-garde for a new food system.

However, for these experiments to reverse the ecological crisis in the countryside, they must be expanded and achieve a sufficient quantitative and qualitative dimension. The development of public policies and the dynamic action of social movements are crucial in this task

(Altieri and Toledo 2011). Within this context, the role of the state and social movements becomes fundamental, as does the decision-making process of democracy itself. This raises the question of how to achieve a strong presence in government to promote public policies that favor rural sustainability, either alone or by partnering up with other social and political forces. The experiments developed in Andalusia, Spain (González de Molina 2009), and Brazil (Caporal and Petersen 2012) prove this. The debate around how to make this possible is one of the most urgent tasks facing agroecology.

Agroecology has focused on small farmers as subjects since they possess high agroecological potential. Among other reasons, they can be closer to rural rationality and practices that make the sustainable management of agroecosystems possible (M. Altieri and Toledo 2011). But other subjects become relevant when dealing with food systems, especially consumers. No agroecological transition will be fully successful without a major alliance between producers and consumers. But to ensure the majority participation of these groups, a partnership is required in turn with the green movement in its broadest dimension. This will not be achieved without political and institutional mediation; in other words, without the development of public policies that drive the transition forward.

NOTES

1. In relation to the concept of social metabolism and its application to agriculture, see Fischer-Kowalski and Hüttler (1999); Toledo and González de Molina (2007) or González de Molina and Toledo (2011).

2. See, for example, part three of the Food and Agriculture Organization of the United Nations (FAO) report for 1993: "Agricultural trade: entering a new era?" (http://www.fao.org/es/esa/es/pubs_sofa.htm).

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