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Keywords (separated by '-')	Agroecology - Organic agriculture - Public policy - Sustainable degrowth

Agroecology and Politics: On the Importance of Public Policies in Europe

M. González de Molina Navarro

Abstract In this paper, we discuss about the most appropriate strategy for spreading agroecology and getting agricultural sustainability in Europe, where the agriculture is highly industrialised, very dependent of the public subsidies, and the peasant has disappeared practically. We claimed for a sustainable food system, that they are necessary not only for the health of European agroecosystems and the well-being of the farmers but also for the food autonomy of countries whose production is overturned too much to meet the European demands of animal feeding and to maintain an unsustainable diet. From an agroecological perspective, the most coherent solution is promoting the sustainable degrowth of the European food system. The organic agriculture and the fair consumption could be the most suitable way to achieve it, two proposals that should go indissolubly united. But this will not be possible without a change in public policies and institutional framework.

AU1

Keywords Agroecology • Organic agriculture • Public policy • Sustainable degrowth

1 Introduction

Agroecology arose as a response to the ecological crisis in the countryside, promoting the sustainable management of natural resources and equitable access to those resources.¹ Under its standard, there have been many experiences in production, distribution and consumption, which, being innovative, are the avant-garde of an alternative food system. These experiences in social innovation are the basis on which a more sustainable future will be built, though, in themselves, they are not sufficient to produce changes at a higher scale of social organisation or even for their own survival as successful experiences. The simple sum of these experiences does not guarantee change, given that local experiences depend on the limiting

¹ Guzmán Casado et al. (2000).

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28 capacity of the institutional arrangements that exist at higher scales of social
29 organisation, especially at the national scale.

30 This text asserts the relevance of an agroecological strategy to achieve agrarian
31 sustainability in Europe, which overcomes the limited framework of agricultural
32 activity and concentrates on how the feeding of the people of Europe is organised.
33 This strategy must be based on the sustainable degrowth of the food system as a
34 whole. Individual or collective actions with regard to production or of citizens in
35 the marketplace are not enough to achieve this; it also requires the introduction of
36 public policies that make degrowth possible and, therefore, active participation in
37 the political struggle. Agroecology and politics are, therefore, two terms that should
38 be intimately linked together with law, an essential instrument for the construction
39 of new institutions and regulations that encourage agroecological transition.

40 2 The Food System and Its Environmental Impact

41 The way in which the people of Europe feed themselves has changed very signif-
42 icantly, and these changes are some of the main causes of unsustainability, not only
43 as regards human health but also as regards the health of the ecosystems and the
44 stock of natural resources² and not only for Europeans but also for third countries.³
45 New and increasingly costly processes have appeared between production and
46 consumption. The feeding of the people now involves the use of new and more
47 sophisticated “artefacts” powered by gas or electricity, which have increased the
48 energy cost of food. Food processing and distribution has taken on an importance
49 never before seen. The food market is now global and involves foodstuffs that
50 incorporate high energy and material inputs (transport, processing, logistics, etc.).
51 All of the foodstuffs that we find today on our table have a long story behind them,
52 with high consumption of energy and materials, emissions and imbalanced eco-
53 nomic trading models that turn the food supply into a process with heavy environ-
54 mental loads. A recently published United Nations report recognised that
55 agriculture and the consumption of fossil fuels are the two main sources of the
56 planet’s unsustainability.⁴

57 Meeting the food needs of the people of Europe requires huge tracts of produc-
58 tive land in third countries to be “subordinated” to the food system and the
59 companies that control it. For example, for the people of Spain to be able to
60 consume 3,000 calories per day (3,405 kcal), 109 million tonnes of animal and
61 plant biomass is needed or, to put it another way, 2.43 tm/person/year or 6.65 kg/

AU2

² Alonso and Guzmán Casado (2004), pp. 471–541; González de Molina et al. (2005), pp. 119–144; González de Molina and Guzmán Casado (2006).

³ International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) (2009).

⁴ United Nations Environment Programme (2011), p. 3.

person/day.⁵ Spain has 42.16 million hectares of farmland suitable for the production of biomass, of which only 41 % is cultivated land.⁶ However, although there has been a significant increase in the productivity of the land, the cultivated crop area has paradoxically fallen and domestic production is unable to meet domestic demand. After depopulating the countryside, turning agriculture into a subsidised sector and seeing rural life lose its prestige, the food demands of the Spanish people cannot be met by the country's own agroecosystems. Only by resorting to the international market is it possible to maintain food habits as opulent as those seen in Spain. The basis of the traditional diet, carbohydrates, has lost weighting to fats, which now represent over 40 % of all calories consumed.⁷ Meat, milk and other dairy products are directly responsible for this increase. This has a high territorial cost: to produce 1 kg of vegetables requires 1.7 m² of crop area, whereas 1 kg of meat requires⁸ 7 m².

Over the last decade, Spain has exported 20 million tonnes of foodstuffs, more than half of which were horticultural products, this being the main speciality of Spanish agriculture. This specialisation has a high social and environmental impact.⁹ On the other hand, the country has imported almost 31 million tonnes, giving a deficit of over 10 million tonnes. Just the cereal, seed and animal feed requirements alone equal the total of all exports. Most of these imports are used to feed livestock or are processed by the food industry. Spanish eating habits, like those of rich and developed countries, require large crop areas to be devoted to the production of grain and fodder in peripheral countries in order to breed sufficient livestock to meet the high demand for meat and dairy products. It can, therefore, be understood how ideas such as “unequal ecological exchange”¹⁰ and “ecological debt”¹¹ have proliferated in the political and academic debate. Although Europe has not resorted excessively to “land grabbing”, the subordination of the production of large areas of land in developing countries to the production of food to meet the unsustainable Western diet may be considered, paraphrasing the words of the former Director General of the FAO, Jaques Diouf, to be a new form of colonialism. Witzke and Noleppa¹² estimated the amount of “virtual agricultural land” that Europe imports. The figures are unequivocal: UE-27 countries export around 14.1 million hectares, while soya on its own represents imports of 19.2 million. In total, the deficit is 35 million hectares, approximately the area of Germany.

In recent works, we have estimated the energy cost of the Spanish food system from six activities of the food chain: the consumption generated by the national and

⁵ González de Molina and Infante (2010), pp. 113–137.

⁶ Ministerio de Medio Ambiente y Medio Rural y Marino (2010).

⁷ Schmidhuber (2006).

⁸ Carpintero (2006), pp. 31–44, 41.

⁹ Delgado and Aragón (2006), pp. 423–474.

¹⁰ Hornborg (1998), pp. 127–136.

¹¹ Martínez Alier and Oliveres (2003).

¹² Von Witzke and Noleppa (2010).

97 international transport of food and agricultural products, their processing, their
98 packaging, their packing, the energy cost of the sale in food outlets and the cost
99 of conservation and preparation in the home. The high food mileage and the
100 duration of the distribution and marketing process require that foodstuffs be kept
101 in a good state of conservation during this period. This need, together with the need
102 to take care of the appearance of the product, which is even more important in our
103 culture than the natural properties of the foodstuff, requires the massive use of
104 packaging and packing.

105 The food eaten in Spain, then, requires a very significant input of energy, the
106 great majority of which comes from fossil fuels and which is used outside the
107 agricultural sector. If we incorporate the rest of the activities necessary to put food
108 on the table in each home, we see that the agricultural sector is responsible for a
109 little over a third of the total consumption of primary energy in the Spanish food
110 system. The transport, industrial processing, packing, sale, conservation and con-
111 sumption of food account for the remaining 66 %. In total, over 1,400 Pj is needed
112 to meet the endosomatic metabolism requirements of the Spanish people, while the
113 energy contained in the foodstuffs consumed only amounts to 235 Pj.¹³ That is to
114 say, for each unit of energy consumed as food, six have been used in its production,
115 distribution, transport and preparation. The inefficiency of the human feeding
116 process is a faithful reflection of its unsustainability.

117 3 Reducing the Metabolic Profile of Developed Societies

118 The metabolic profile of developed societies, including European societies, is
119 impossible to maintain indefinitely, and its environmental and social impacts are
120 extremely serious. Any future economic strategy must aim to reduce this profile to
121 levels compatible with the conservation of the ecosystems, thereby ensuring their
122 long-term survival. In view of the data given in the previous section, such a strategy
123 must, then, pay special attention to how human food requirements are met while
124 achieving two main objectives: (a) the promotion of sustainable ways of managing
125 agroecosystems and (b) the promotion of a food consumption pattern that is less
126 costly in social, energetic and territorial terms. All of this must be achieved without
127 reducing the quality of life of all of the players involved in the process (producers,
128 distributors, consumers, etc.) while avoiding situations in which improvements in,
129 for example, energy efficiency facilitate a new rise in consumption.

130 As regards the first objective, organic agriculture is the starting point for the
131 promotion of sustainable methods of managing European agroecosystems. It is, a
132 priori, the production method that comes closest to agrarian sustainability in
133 Europe, despite being a sector that is not without its problems.¹⁴ The territorial

¹³ Infante and González de Molina (2013), pp. 27–35.

¹⁴ González de Molina et al. (2007), pp. 47–73.

development of organic agriculture in Europe, the agricultural management 134
methods that it promotes, its association with local markets and the consumption 135
of fresh, seasonal products make it particularly suited to deliver significant 136
degrowth of the metabolic profile of the European economy while also improving 137
the quality of our diet. 138

It has seen spectacular growth in recent years and has become a real alternative 139
to the conventional production model. It has gone from little more than 6,000 farms 140
with only 100,000 ha to 197,000 farms and over 7.6 million hectares under 141
cultivation in 2008.¹⁵ In relative terms, this is 4.3 % of the farmland used in the 142
European Union as a whole, and the producers number around 1.9 % of the total 143
number of farmers, an apparently high percentage, but this is explained by the fact 144
that most organic farmers work full time, which occurs to a lesser extent in 145
conventional agriculture. The member states with the largest area devoted to 146
organic agriculture were Spain, Italy, Germany, the United Kingdom and France. 147

The evolution of organic agriculture in the EU as a whole has been strongly 148
influenced by institutional support that has been offered since, in the early 1990s, a 149
regulatory basis was established to govern the sector, Regulation (EEC) 2092/91, 150
and the subsequent introduction of economic support measures (especially agri- 151
environmental measures). Other factors, such as the expectations of new markets 152
and food scandals, have also significantly influenced its development.¹⁶ In 2005, the 153
agri-environmental measures came to €3,830 million in the EU-25, of which €660 154
million were spent on organic agriculture (17.2 %). Over the period 2004–2006, 155
46 % of the total organic crop area in the UE-25 received agri-environmental aid.¹⁷ 156

Meanwhile, consumption is growing at an annual rate of almost 10 % in the main 157
member countries.¹⁸ The sale of organic products in 2007 represented 1.9 % of 158
family food consumption in the Union, with a turnover of €14,381 million, almost 159
€36 per capita. However, 80 % of the market is concentrated in four member states: 160
Germany, the United Kingdom, France and Italy. The organic agriculture market is 161
relevant in Austria (almost 5 % of the total food market), Germany (3.7 %), 162
Denmark and Luxembourg (3.8 %). However, in the more recent members to join 163
the European Union (the UE-12 countries), consumption is below 0.2 %. In all 164
events, new consumers concerned about their health and also about the environment 165
are joining the traditional consumers. 166

Furthermore, the environmental and health benefits afforded by organic agricul- 167
ture increase the quality of life of the citizens, especially as regards their diet, while 168
reducing the energy cost. Available studies speak of organic production reducing 169

¹⁵ European Commission. Directorate-General for Agriculture and Rural Development (2010), p. 1.

¹⁶ Lampkin and Padel (1994).

¹⁷ European Commission. Directorate-General for Agriculture and Rural Development (2010), p. 3.

¹⁸ European Commission. Directorate-General for Agriculture and Rural Development (2010), p. 41.

170 carbon dioxide emissions by between 40 and 60 % in the transition from conven-
171 tional to organic agriculture, depending on the orientation of production, since
172 nitrogen-based fertilisers and chemical pesticides are not used and potassium and
173 phosphorus-based fertilisers and concentrated foodstuffs are used very little.¹⁹ To
174 this must be added the savings that can be achieved through the on-farm production
175 of biofuels (bioethanol, for example, which is compatible with most mechanical
176 technologies) and the introduction of photovoltaic solar energy to pump irrigation
177 water. We shall address this point below. Studies of organic agriculture agree that
178 this method of production, if used correctly, avoids contamination of agricultural
179 origin (by eliminating the use of fertilisers and synthetic pesticides and by better
180 water management). It also avoids illness related to the use and handling of
181 pesticides, which affect the population in general but, more specifically, the
182 farmers. Organic agriculture, moreover, maintains the genetic biodiversity of the
183 agrarian system and its surrounding area, including the protection of the habitats of
184 wild flora and fauna.

185 The impressive development of organic agriculture in Europe is due in large part
186 to the crisis suffered in the agricultural sector, especially in those agroecosystems
187 that have difficulty in competing with intensive production, production under
188 plastic or intensive housed livestock farming. Organic agriculture has become a
189 profitable alternative for farmers whose land is found in these territories and who, if
190 it were not for the market opportunities and greater subsidies associated with it,
191 would probably have abandoned farming. This is particularly evident in extensive
192 livestock farming and in many traditional crops, both herbaceous and ligneous.
193 According to the recently published European Union report on organic agriculture,
194 organic production is strongly present in regions with extensive livestock farming
195 systems based on permanent pastureland. The importance of organic agriculture is
196 generally lower in flat regions where conventional intensive production
197 predominates.²⁰

198 Organic agriculture is also producing a rejuvenation of the agricultural sector
199 since the age of organic producers is lower than the average. Fifty-six percent of
200 conventional farmers are over 55 years of age, while in organic agriculture, the
201 percentage is only around 36 %. Farmers under the age of 55 represent 64.3 % of the
202 organic sector.²¹ In the same way, the incorporation of women as full-time farmers
203 was greater than the average in the sector as a whole. There are no studies on the
204 impact that organic agriculture is having on rural development other than the
205 increase in agricultural income that it appears to generate. In other countries,
206 such as Italy and in some districts of Andalusia, organic agriculture appears to be
207 a very good complement to and a stimulus for rural tourism and, therefore, for the

¹⁹ Alonso and Guzmán Casado (2004), pp. 471–541; Stolze et al. (2000); Aguilera et al. (2010).

²⁰ European Commission. Directorate-General for Agriculture and Rural Development (2010), p. 13.

²¹ European Commission. Directorate-General for Agriculture and Rural Development (2010), p. 22.

diversification of economic activities in the rural world. A recent study maintains that organic agriculture is allowing the generation of positive socioeconomic impacts within the framework of European rural development,²² adding to the generation of income and additional employment with respect to conventional agriculture.²³ According to a study by the Sustainability Observatory in Spain and the Biodiversity Foundation, the organic agriculture sector generated 49,867 jobs in 2008, which represents 0.25 % of the working population in the whole Spanish economy.²⁴

Organic production, furthermore, is at the centre of some strategies that are structured around short marketing circuits or channels offering traditional varieties that are better adapted to local taste and that are leading to the resurgence of seasonal consumption.²⁵ Part of the increase seen in the consumption of organic products in Spain that is still difficult to quantify is that part due to the rise of short marketing channels, that is, the increase in sales that involve direct contact between the producer and consumer and the growing presence of organic products in local markets. In recent years, there has been an increase in the number and membership of associations of producers and consumers, consumer cooperatives organised around groups of producers, retail outlets, home delivery of fresh and even processed foods, and the supply of local foodstuffs to health and educational institutions.²⁶ It would be useful to evaluate the positive impact that short channels are having on the configuration of an alternative food system with much lower energy costs and that is healthier from the environmental and human health point of view. The benefits that this type of channel bring to the farmer, in terms of income, and the consumer, in terms of final price, should also be assessed, but it appears clear that experiments with direct consumption lead to lower final prices and higher, surer profits for the farmer.

However, the reduction of the metabolic profile of the European food system requires a drastic reduction in intensive livestock farming (which is, incidentally, facing increasing problems of falling profitability), which will only be possible through a change in the regulations governing the food markets and in the public policies that encourage the consumption of meat and dairy products. Extensive livestock farming, especially ecological livestock farming, can meet only part of the demand for foodstuffs of animal origin, and so a change in consumption patterns towards a more vegetarian diet is essential in this respect.²⁷ This change is advisable not only because of the incapacity of European agroecosystems to feed a much smaller livestock pool sustainably or to reduce the energy consumption of the food

²² Van der Ploeg et al. (2002).

²³ Offermann and Nieberg (2000).

²⁴ Observatorio de la Sostenibilidad en España, Fundación Biodiversidad (2010), p. 87.

²⁵ González de Molina (2009).

²⁶ Consejería de Agricultura y Pesca de la Junta de Andalucía (2007).

²⁷ Erb et al. (2009); Dutilh and Kramer (2000), pp. 98–101; Jones and Crane (2009), p. 18; Kramer (1996), pp. 289–293.

244 system as a whole but also because of the criteria of social equitability and the
245 redistribution of wealth on a world scale, reducing the enormous amounts of grain
246 that Europe imports in order to feed its livestock and which represents the removal
247 of a very significant amount of land from feeding human beings, thereby prejudic-
248 ing countries that suffer serious food security problems.

249 **4 The Risk of “Conventionalisation”**

250 However, a very wide range of situations are to be found under the umbrella of
251 European Regulations that govern ecological production (ECR 834/2007): from
252 agroecosystems that are effectively managed in a sustainable way to situations in
253 which there is merely a substitution of inputs. In these cases, the environmental
254 benefits of organic production tend to become diluted, and the optimum provision
255 of environmental services suffers.

256 The greater profitability of organic farms has encouraged the entry into the
257 sector of a type of producer who is more concerned with subsidies and the price
258 premium than with the way in which the food is produced. As they do not seek a
259 substantial change in the way their land is farmed, they have become or are
260 becoming a captive market for large commercial suppliers of inputs that have
261 already created a specific “bio” sector. The regulations allow the use of natural
262 pesticides and authorised fertilisers that, in certain circumstances and with certain
263 crops, allow the soil to be worked more intensively, with shorter rotations, etc. And
264 so, for example, in organic woody crops grown on sloping ground, the soil can be
265 over-tilled, causing soil erosion problems that can be just as serious as those caused
266 by conventional tilling and the use of herbicides. This is no different from the
267 essence of the conventional agricultural model, the cause of evident
268 unsustainability: reduction of the energy efficiency of farms, external dependence
269 and loss of farming profitability as a result of significant costs outside the sector,
270 maintenance of the opening up of the energy and nutrient cycles, etc.²⁸

271 The result is usually an increase in “conventionalisation”. This is understood to
272 mean the process by which organic agriculture becomes a version that mirrors
273 conventional agriculture, reproducing the same path and sharing the same social,
274 technical and economic characteristics.²⁹ Conventional food market logic pressures
275 organic producers towards intensification if the pressures are not counteracted by
276 the action of the administrations.³⁰ By means of the control of food marketing and
277 processing and through the introduction of industrial inputs, farmers are obliged to
278 adopt conventional farming techniques if they are to survive.

²⁸ Guzmán Casado and Alonso (2008), pp. 167–176.

²⁹ Buck et al. (1997), pp. 3–20; Hall and Mogyorody (2001), pp. 399–422; Darnhofer et al. (2010), pp. 67–81.

³⁰ Guthman (2008).

Organic agriculture as it is practised in Europe is, to a certain extent, 279
“decoupled” from its corresponding agroecosystems. Farmers with greater aware- 280
ness face serious difficulties in closing the cycles, given the lack of organic matter, 281
with livestock farmers suffering a shortage of organic feed and raw materials for its 282
production. The divide between crop farming and livestock farming is a phenom- 283
enon that strongly affects organic agriculture and reduces its level of sustainability. 284
In the same way, the lack of machinery adapted to ecological farming practice that 285
maximises energy efficiency in the use of fossil fuels and the lack of incentives to 286
use biofuels (on the farm) mean that organic agriculture is today contributing less 287
than it could to sustainable degrowth. 288

Furthermore, a quantitatively relevant part of organic agriculture also contrib- 289
utes to maintaining unsustainable marketing channels, with very high energy costs 290
and a considerable loss of added value and of farmers’ autonomy. A significant 291
portion of the growth in demand comes from the generic supermarket sector 292
(non-specialised, including *discounters*), which sells products that have travelled 293
long distances. The fact that the countries that consume most are not those that 294
produce most gives an idea of the active “internal” trade that takes place within the 295
Union. The case of Andalusia is paradigmatic: the greater part of organic produc- 296
tion, over half, is destined for export. Horticultural and citrus products have the 297
highest export levels, with percentages of 73 % and 78 %, respectively, of the 298
products put on the market.³¹ 299

These channels unnecessarily raise the price of the product, and decision-making 300
is very far removed from the producer. These channels also tend towards the 301
homogenisation of varieties of plants and breeds of livestock, encouraging the 302
loss of genetic diversity. The preferences expressed by these markets differ little 303
from those of conventional markets and attract buyers with a high disposable 304
income, with the result that a substantial part of the population is unable to access 305
this type of healthy food and, in turn, the price tends to prevent its popularisation. 306
But perhaps the most worrying aspect is that, in general and in practical terms, the 307
absence of social initiatives in the field of distribution and the lack of associations in 308
the sector could undo the efforts that are being made to encourage local consump- 309
tion. The imbalance between growing demand and insufficient, poorly organised 310
supply encourages the entry of large-scale distributors and reproduces the same 311
conventional model in which a ridiculously low percentage of the final price is 312
earned by the farmer.³² The risk that distribution ends up in the same hands as in the 313
conventional system, with the same unsustainable mechanisms of operation, exists 314
and cannot be ignored. This is a field in which a choice between two food supply 315
models is still possible: the conventional model and another alternative model, 316
based on short channels and different patterns of consumption. 317

³¹ Soler et al. (2009), pp. 135–148.

³² European Commission. Directorate-General for Agriculture and Rural Development (2010), p. 42.

318 Organic production is the strongest bastion of an alternative to the current
319 configuration of the European food system. But, as we have seen, some important
320 aspects of the way it currently works, which are heading in the wrong direction,
321 need to be corrected. Above all, its farming area and territorial impact on
322 agroecosystems must be enhanced so that it can be a real alternative to conventional
323 agriculture. It must be as sustainable as possible. Only then will it be able efficiently
324 to provide the environmental services that society demands. Organic production,
325 though, will not be an efficient alternative bringing degrowth if it is not accompa-
326 nied by a significant change in food consumption habits and the values that drive
327 them. If these do not change, bringing about a reduction in the consumption of
328 meat, eggs and dairy products, even if they were organic, the pressure to import
329 foodstuffs from countries with food security problems and shortages will intensify
330 and the progress achieved will be insufficient. Solidarity with the poorest, then,
331 requires a change in the way in which Europeans meet their endosomatic needs.
332 Organic production and responsible consumption are, therefore, the two fundamen-
333 tal pillars on which a more sustainable food system must be based.

334 **5 How Can This Be Made Possible?**

335 Firstly, a change is essential in our individual and family food consumption
336 patterns. This change should favour local, seasonal products and should tend
337 towards a more vegetarian, less carnivorous diet, which takes health and quality
338 as the main criteria in food purchases. The preferences of European consumers are
339 already being expressed through the existence of green markets, among them the
340 market for organic products. But without political and social intervention (above
341 all, by the State and also by the political parties, movements and social networks), it
342 will not be possible to guide the growth of the market and of green markets (so that
343 these appear and develop) along the path of sustainability.

344 The food market, where organic products must compete, is a good example of
345 this. Food market forces, among which the strength of the concentrated, large-scale
346 distributors prevails against a fragmented agricultural sector, generate a trend
347 towards “conventionalisation” in organic agriculture. The pressure for prices that
348 are perceived as being lower stimulates a response among organic farmers towards
349 greater externalisation of territorial costs (less rotation, less crops, high-response
350 seeds, more plant health products, etc.) and, therefore, greater dependence on
351 external inputs and higher energy costs. In this way, organic products are encour-
352 aged to take a shortcut in order to generate more profits at the cost of sustainability.
353 This trend is encouraged by a regulatory structure (European regulations) that
354 allows and even encourages the use of external resources.

355 An individual change in production and consumption patterns is not, therefore,
356 sufficient. The market is a reflection of the balance of power, and this can only be
357 confronted by presenting an organised front in order to compete within its limits or
358 to resist outside it. In this regard, it is essential to undertake and multiply collective

experiences in ecological production and responsible consumption through the creation and strengthening of production and consumption groups, producers and consumer associations, etc. Many of these experiences, which are fortunately already under way, demonstrate that another food system is possible without losing quality of life. Throughout Europe, numerous agroecological experiences have been seen, in both rural and urban areas, in production and consumption, and these are the vanguard of this new food system.

It should, though, be asked whether it is possible for sustainable food consumption *per se* to become a relevant percentage. The two action plans, both individual and collective, are certainly essential, but they are not sufficient. Sustainable food experiences, created by social networks and movements, will not be able to develop, expand or even survive in more favourable conditions without an appropriate institutional framework. In the same way, the food consumption patterns of the first world may change voluntarily but too slowly, and it is also possible that in a fairly large segment of the population, they do not change at all. In this regard, the role of the State and of political agroecology, as an inspiration for public policies, is essential.³³ In a society such as European society, it is to be expected that degrowth will not enjoy wide social support, especially among the European middle class, which is the majority social class and which has benefited more than any other from the post-war model of economic growth and from the Welfare State. Degrowth appears to be a threat to their lifestyle. The processes of individualisation described by Beck and consumer selfishness will make it difficult.³⁴ The role of the State and of social movements in the field of ecology and responsible consumption are, then, vital for the introduction of institutional changes that encourage change in consumption patterns, whether this be through new regulations or tax burdens and stimuli or other instruments.

But, moreover, on a wider social scale, sustainability problems arise that can only be addressed by the State. For example, territorial planning, which directly affects agroecosystems, falls outside the scope of individual decisions or of social movements. The design of public policies on this scale is the exclusive competence of the administrations involved (state, regional, local, etc.). This brings up the problem of how to achieve presence in those administrations, either alone or through alliances with other social and political forces, in order to promote public policies for degrowth. The debate about how to make this possible is, perhaps, one of the most important debates pending, and it could take place not just within the field of political ecology but also in the field of agroecology. Until this debate takes place, we can propose some criteria for the design of such policies with an agroecological focus that will facilitate sustainable degrowth.

With regard to production, policies of this type should try to close the nutrient cycles and reduce direct energy consumption. It is no coincidence that these are the main consumers of primary energy in the agricultural sector. The encouragement of

³³ González de Molina (2013), pp. 45–59.

³⁴ Beck (1998).

400 composting, with the creation of networks of local facilities, promoting the self-
401 sufficiency of farms in the replenishment soil fertility, is an essential policy. Such a
402 policy has already been applied successfully in Andalusia.³⁵ The creation of these
403 networks promotes the integration of producers, encouraging them also to group
404 together for other purposes such as integrated pest treatment, joint marketing, the
405 exchange of seeds, etc. In all events, greater and better integration between crop and
406 livestock farming can be encouraged through relatively simple measures. For
407 example, the establishment of priorities based on ecological livestock farming on
408 public pastureland and forests, favouring the production of organic matter (natural
409 parks, common land for livestock, etc.) through networks of manure storage
410 facilities and local organic matter banks.

411 Public agroecological policies should pay special attention to energy. There has,
412 to date, been little development of mechanical technologies adapted to the needs of
413 organic agriculture. Nevertheless, there is a wide margin for improvement, for
414 example, in the use of solar energy to extract and transport irrigation water or in
415 the local production of biofuels (ethanol).³⁶ Another important consumer of energy
416 is livestock farming. Here, greater efforts are required to achieve degrowth. The
417 feeding of livestock with animal feed is responsible for a very high percentage of
418 the consumption of primary energy within the food system as a whole. The only
419 type of livestock farming that can be sustainable is extensive livestock farming, but
420 this can only support relatively limited livestock loads. European livestock farming
421 is maintained mainly by its own pastureland and fodder, limiting its growth.
422 Obviously, it is not possible to maintain the number of animals currently farmed
423 in Europe since they are fed mainly through massive imports of feed and fodder and
424 are kept in a stabled regime.

425 Although they may not have an obvious direct impact on organic production,
426 some institutional regulations are fundamental. The right of organic producers to
427 continue to be organic producers must be guaranteed. To do so, regulations must be
428 introduced and actions implemented to combat direct and diffuse contamination of
429 organic farms by chemical products and, of course, to prevent contamination by
430 GM crops, today the most direct threat to organic production.

431 Public degrowth policies must also pay special attention to distribution. Trans-
432 port, processing, packing and sale in shops, that is to say, the distribution chain, is
433 responsible for 47.5 % of the primary energy used in the Spanish food system. The
434 administrations must become actively involved in the expansion and consolidation
435 of other shorter and more sustainable distribution and marketing channels. There
436 are many possible measures. Agroindustry can be encouraged to locate in areas
437 close to farms, the use of renewable energies can be encouraged, legislation can be
438 changed to favour artisan industries, the use of recyclable materials and, above all,
439 the minimisation of the amount of materials used can be promoted, etc. But the
440 main battleground for degrowth is transport. Transport is responsible for almost

³⁵ Consejería de Agricultura y Pesca de la Junta de Andalucía (2007).

³⁶ Guzmán Casado et al. (2011), pp. 825–835.

18 % of the direct consumption of primary energy of the Spanish food system. This figure does not include the cost of manufacture and the maintenance of the vehicles and the necessary logistics. Public policies affecting transport should be oriented towards encouraging short distribution channels that require less transport. This has been called the “kilometre zero” strategy. Many measures may be taken to favour shorter circuits (reduction in VAT and other tax exemptions for activities such as home-delivered organic produce parcels, bio-fairs, consumer cooperatives, municipal markets, supply to restaurants and public catering establishments in the area, etc.) or to penalise high food mileage (a tax on every mile travelled by a product or simply the labelling of the product with that information).

As regards consumption, public policies should favour a change in food habits: less meat and livestock products that have received animal feed, less out-of-season products, local foodstuffs, etc. Here, incentives are required to encourage this type of behaviour, especially incentives that affect the final purchase price. The measures described in the previous paragraph, which tend to promote local products and local consumption, will have a positive effect on the final price and, almost certainly, on the diversity and security of supplies. But, by means of publicity and public information campaigns, public policies can also do a lot to change consumers’ habits and values. The public administrations are, moreover, the largest consumers in a country. In this regard, they can make a very relevant contribution by implementing responsible procurement policies. The introduction of organic food in public institutions (hospitals, primary and secondary schools, universities, armed forces, etc.) has an important bandwagon effect. As well as providing a healthy, residue-free diet to users of these services, it is also a powerful instrument for dietary education and for the dissemination of the virtues of organic foodstuffs among patients and their families, schoolchildren, parents, etc. But it can also serve as a valuable instrument to stimulate production and shorter channels if priority is given to procurement from small and medium-sized organic producers located close to the centres of consumption. This has been demonstrated by the Andalusian experience.

It is supposed that organic agriculture undertaken with agroecological criteria will reduce out-of-sector expenditure and raise the net added value. At the same time, organic production does not necessarily mean a reduction in productivity per hectare at farm level, and there are even some crops with a greater yield than with conventional production. However, on a larger scale, this new sustainable coupling of crop and livestock farming in the territory requires a diversification of land use that is clearly contrary to monoculture, to over-specialisation and, in general, to the orientation of sowing decisions in line with market price and expected profits. The application of a number of practices that make agriculture, and especially organic agriculture, more sustainable could bring an increase in costs for the farmer or, in other words, a reduction of income. Such costs must be appropriately compensated by the beneficiaries of the services provided, in this case, society. The way in which they could be compensated may be through payment for environmental services (PES). These payments also represent a necessary paradigm change with respect to agricultural activity: the consumer remunerates the farmer through the markets for

486 agricultural products but does not pay anything for the provision of environmental
 487 services.³⁷ It is also a question of equitability in the damaged relationship that exists
 488 in exchanges between the agricultural sector and other economic sectors. In short,
 489 this and other instruments that we have mentioned demonstrate that it is possible to
 490 achieve degrowth in the food system without destroying jobs, losing income or
 491 diminishing the quality of life and without harming the expectations of develop-
 492 ment and food security in third countries.

493 References

- 494 Aguilera E, Lassaletta L, Gimeno B, Porcuna JL (eds) (2010) GHG emissions and C sequestration
 495 in Mediterranean croplands: available information and gaps (preliminary results). In: Paper
 496 presented at the round table on organic agriculture and climate change first workshop FiBI;
 497 Frick, 10–11 May 2010. [http://www.organicandclimate.org/fileadmin/documents_orca/orca-](http://www.organicandclimate.org/fileadmin/documents_orca/orca-centres/orca-centre-6/meetings-events/2010-05-10/Input3_LasalettaRTOACCWorkshop_10_5_2010.pdf)
 498 [centres/orca-centre-6/meetings-events/2010-05-10/Input3_LasalettaRTOACCWorkshop_10_](http://www.organicandclimate.org/fileadmin/documents_orca/orca-centres/orca-centre-6/meetings-events/2010-05-10/Input3_LasalettaRTOACCWorkshop_10_5_2010.pdf)
 499 [5_2010.pdf](http://www.organicandclimate.org/fileadmin/documents_orca/orca-centres/orca-centre-6/meetings-events/2010-05-10/Input3_LasalettaRTOACCWorkshop_10_5_2010.pdf). Accessed 28 April 2014
- 500 Allen P, Kovach M (2000) Capitalist composition of organic: the potential of markets in fulfilling
 501 the promise of organic agriculture. *Agric Hum Values* 17:221–232
- 502 Alonso A, Guzmán Casado GI (2004) Sostenibilidad y Agroecología: Oportunidades para el sector
 503 agrario andaluz. Informe Anual del Sector Agrario en Andalucía, 2003. Unicaja, Málaga, pp
 504 471–541
- 505 Beck U (1998) *La sociedad del riesgo: hacia una nueva modernidad*. Editorial Paidós, Barcelona
- 506 Buck D, Getz C, Guthman J (1997) From farm to table: the organic vegetable commodity chain of
 507 Northern California. *Sociologia Ruralis* 37:3–20
- 508 Carpintero O (2006) La huella ecológica de la agricultura y la alimentación en España, 1955–2000.
 509 Áreas. *Revista Internacional de Ciencias Sociales* 25:31–44
- 510 Consejería de Agricultura y Pesca de la Junta de Andalucía (2007) *II Plan Andaluz de Agricultura*
 511 *orgánica (2007–2013)*. Consejería de Agricultura y Pesca de la Junta de Andalucía, Sevilla
- 512 Darnhofer I, Lindenthal T, Bartel-Kratochvil R, Zollitsch W (2010) Conventionalisation of
 513 organic farming practices: from structural criteria towards an assessment based on organic
 514 principles. A review. *Agron Sustain Dev* 30:67–81
- 515 Delgado M, Aragón MÁ (2006) Los campos andaluces en la globalización. Almería y Huelva,
 516 fábricas de hortalizas. In: Etxezarreta M (ed) *La agricultura española en la era de la*
 517 *globalización*. Ministerio de Agricultura, Pesca y Alimentación, Madrid, pp 423–474
- 518 Dutilh CE, Kramer KJ (2000) Energy consumption in the food chain. Comparing alternative
 519 options in food production and consumption. *AMBIO* 29(2):98–101
- 520 Engel S, Pagiola S, Wunder S (2008) Designing payments for environmental services in theory and
 521 practice: an overview of the issues. *Ecol Econ* 65:663–674
- 522 Erb KH et al (2009) Eating the planet: feeding and fueling the world sustainability, fairly and
 523 humanely – a scoping study. *Social ecology working paper* 116, Wien
- 524 European Commission. Directorate-General for Agriculture and Rural Development (2010) *An*
 525 *analysis of the EU organic sector*. European Commission, Brussels
- 526 Food and Agriculture Organization (2007) *Annual report*. FAO, Rome
- 527 González de Molina M (ed) (2009) *El desarrollo de la agricultura orgánica en Andalucía*. Crónica
 528 *de una experiencia agroecológica*. Editorial Icaria, Barcelona







³⁷ Allen and Kovach (2000), pp. 221–232; Lomas et al. (2005); Wunder (2005); Food and Agriculture Organization (2007); Engel et al. (2008), pp. 663–674.


González de Molina M (2013) Agroecology and politics. How to get sustainability? About the necessity for a political agroecology. <i>Agroecol Sustain Food Syst</i> 37:45–59	529 530
González de Molina M, Guzmán Casado GI (2006) Tras los pasos de la insustentabilidad. Agricultura y medio ambiente en perspectiva histórica. Icaria, Barcelona	531 532
González de Molina M, Infante J (2010) Agroecología y crecimiento. Una alternativa sostenible a la configuración del actual sistema agroalimentario español. <i>Revista de Economía Crítica</i> 10:113–137	533 534 535
González de Molina M et al (2005) Sobre la sostenibilidad de la agricultura andaluza. In: Moreno L, Calvo M (eds) <i>Introducción a la sostenibilidad en Andalucía</i> , Consejería de Medio Ambiente. Junta de Andalucía, Sevilla, pp 119–144	536 537 538
González de Molina M, Alonso A, Guzmán Casado GI (2007) La agricultura orgánica en España desde una perspectiva agroecológica. <i>Revista Española de Estudios Agrosociales y Pesqueros</i> 214:47–73	539 540 541
Guthman J (2008) <i>Agrarian dreams. The paradox of organic farming in California</i> . University of California Press, Berkeley	542 543
Guzmán Casado GI, Alonso A (2008) A comparison of energy use in conventional and organic olive oil production in Spain. <i>Agric Syst</i> 98:167–176	544 545
Guzmán Casado GI et al (2000) <i>Introducción a la Agroecología como desarrollo rural sostenible</i> . Ediciones Mundi-Prensa, Madrid	546 547
Guzmán Casado GI et al (2011) The land cost of agrarian sustainability: an assessment. <i>Land Use Policy</i> 28:825–835	548 549
Hall A, Mogorodoy V (2001) Organic farmers in Ontario: an examination of the conventionalization argument. <i>Sociol Rural</i> 41:399–422	550 551
Hornborg A (1998) Towards an ecological theory of unequal exchange: articulating world system theory and ecological economics. <i>Ecol Econ</i> 25(1):127–136	552 553
Infante J, González de Molina M (2013) Sustainable de-growth in agriculture and food: an agro-ecological perspective on Spain's agri-food system (year 2000). <i>J Clean Prod</i> 38:27–35	554 555
International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) (2009) <i>Agriculture at a crossroads. Global report of the International Assessment of Agriculture Knowledge, Science and Technology for Development</i> . Island Press, Washington DC	556 557 558 559
Jones P, Crane R (2009) <i>England and Wales under organic agriculture: how much food could be produced?</i> CSA report, p 18	560 561
Kramer KJ (1996) Energy consumption in food products life cycles. In: <i>Proceedings international conference of life cycle assessment in agriculture, food, non-food agro-industry and forestry: achievements and prospects</i> . Ceuterick D, Flemish Institute for Technology Research [VITO], Mol, Belgium, pp 289–293	562 563 564 565
Lampkin NH, Padel S (eds) (1994) <i>The economics of organic farming. An international perspective</i> . CAB International, Wallingford	566 567
Lomas PL, Martín B, Louis C, Montoya D, Montes C, Álvarez S (2005) <i>Guía práctica para la valoración económica de los bienes y servicios ambientales de los ecosistemas</i> . Publicaciones de la Fundación Interuniversitaria Fernando González Bernáldez, Madrid	568 569 570
Ministerio de Medio Ambiente y Medio Rural y Marino (2010) <i>Estadísticas 2009. Agricultura orgánica. España</i> . Ministerio de Medio Ambiente y Medio Rural y Marino, Madrid 2010	571 572
Martínez Alier J, Oliveres A (2003) <i>¿Quién debe a quién? Deuda ecológica y deuda externa</i> . Icaria, Barcelona	573 574
Observatorio de la Sostenibilidad en España, Fundación Biodiversidad (2010) <i>Informe Empleo verde en una economía sostenible</i> . Fundación Biodiversidad, Madrid	575 576
Offermann F, Nieberg H (eds) (2000) <i>Economic performance of organic farming in Europe</i> . University of Hohenheim, Stuttgart	577 578
Schmidhuber J (2006) <i>The EU diet – evolution, evaluation and impacts of the CAP</i> .: FAO working paper, Rome. http://www.fao.org/fileadmin/templates/esa/Global_persepectives/Presentations/Montreal-JS.pdf . Accessed 31 March 2014	579 580 581

- 582 Soler M, Pérez D, Molero J (2009) Cuentas económicas de la agricultura y ganadería ecológicas en
583 Andalucía 2005. In: González de Molina M (ed) El desarrollo de la agricultura orgánica en
584 Andalucía. Crónica de una experiencia agroecológica. Editorial Icaria, Barcelona, pp 135–148
585 Stolze M, Piorr A, Härin A, Dabbert S (2000) Environmental impacts of organic farming in
586 Europe. In: Offermann F, Nieberg H (eds) Economic performance of organic farming in
587 Europe. University of Hohenheim, Stuttgart
588 United Nations Environment Programme (2011) Decoupling natural resource use and environ-
589 mental impacts from economic growth. A report of the working group on decoupling to the
590 international resource panel [Fischer-Kowalski M, Swilling M, von Weizsäcker EU, Ren Y,
591 Moriguchi Y, Crane W, Krausmann F, Eisenmenger N, Giljum S, Henricke P, Romero
592 Lankao P, Siriban Manalang A, Sewerin S], United Nations Environment Programme, Le
593 Mont-sur-Lausanne
594 Van der Ploeg DJ, Long A, Banks J (eds) (2002) Living countrysides. Rural development
595 processes in Europe: the state of the art. Elsevier, Doetinchem
596 Von Witzke H, Noleppa S (2010) EU agricultural production and trade: can more efficiency
597 prevent increasing “Land Grabbing” outside of Europe? OPERA Research Center, University
598 of Piacenza, p 14. http://www.appgagscience.org.uk/linkedfiles/Final_Report_Opera.pdf
599 Wunder S (2005) Payments for environmental services: some nuts and bolts. Bogor: CIFOR,
600 Occasional paper no. 42

Author Queries

Chapter No.: 20 335081_1_En

Query Refs.	Details Required	Author's response
AU1	Please check if the changing of 'two proposals they should go indissolubly united' to 'two proposals that should go indissolubly united' is correct.	
AU2	Please check whether the edit made in the sentence "For example, for the people of Spain to be able..." is appropriate.	
AU3	So that the "six activities" would be clear, the following changes were done to this text: 'the consumption generated by the national and international transport of food and agricultural products, their processing, their packaging, their packing, the energy cost of the sale in food outlets and the cost of conservation and preparation in the home'. Please check if acceptable.	
AU4	The citation "Alonso and Guzmán Casado (2000)" has been changed to "Alonso and Guzmán Casado (2004)". Please check if appropriate.	
AU5	Please check if the following modified sentence is correct: 'However, a very wide range of situations are to be found under the umbrella of European Regulations that govern ecological production (ECR 834/2007): from agroecosystems that are effectively managed in a sustainable way to situations in which there is merely a substitution of inputs'.	
AU6	Please check whether the edit made to the citation in Fn. 35 is appropriate.	

AU7	Please check if the changing of 'However, on a larger scale, this new sustainable coupling of crop and livestock farming with the territory requires a diversification of land use which is clearly contrary to monoculture' to However, on a larger scale, this new sustainable coupling of crop and livestock farming in the territory requires a diversification of land use that is clearly contrary to monoculture' does not change its intended meaning.	
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Uncorrected Proof