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The new rural land and food question: exploring sustainable pathways of green growth and the bio-economy

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Introduction: new productivism and the bio-economy

It is somewhat remarkable how little debate there is, especially on the political left in the UK, on the types of economic and social growth the countryside so desperately needs. Despite a pressing need, the depth and significance of the combined financial, fuel, food and fiscal crisis has ironically seemed to stifle the debates about new forms of sustainable, 'green growth'. Yet the impacts of the combined resource and fiscal crisis require a radical overhaul of our assumptions concerning the relationships between green markets, the state and civil society. As the food banks and rates of food and fuel poverty across the UK grow, real sustainable thinking still seems also to be marginalized. This is a particular problem for the Labour Party in their quest to represent themselves as potentially responsible fiscal and macro-economic governors at the next election. This wrongly tends to reinforce the restricted zero-sum assumptions about 'jobs versus environment'. Meanwhile the Conservative right, still see growth through a lens of a more de-regulated, and continuing carbonised growth model which embeds 'frack, slash and build' as the harbingers for the next round of speculative economic growth. This paper begins to create a new compass with which to open the space for these debates with regard to the challenges and opportunities around rural land resources and their contribution to more sustainable and national 'green-growth'.

It is in this context where we need to critically explore the potential opportunities of the revolution occurring in the scientific and policy advancement of the bio-economy: the creation of new bio-based resources as a basis for sustainable economic and social development, and the production of plant and animal-based renewable products, goods and services. In Europe the bio-economy already has a turnover of 2 trillion Euro, employs 22 million, or 9% of total EU employment. It includes the interconnected sectors of agriculture, forestry, fisheries, food production, as well as parts of chemical, bio-technological and renewable energy industries. It encompasses the sustainable production and renewable biological resources and their conversion, as well as that of integrating waste streams and bio-based products (like bio-plastics and building materials), bio-fuels and bio-energy (OECD, 2011; EU 2012)³. The EU is expecting that each Euro being invested in bio-economy R&D will generate 10 Euro of value-added. It is clear from a host of authoritative policy documents from the EU, North America, and now Asia, that this involves the potential for significant levels of employment and economic development in areas like bio-refining; in reducing municipal and food wastes by combining heat and power generation; and within the food and forest sector, by using different plant and fibre materials for a wider vector of bio-based markets in food, energy, waste and materials chains.⁴

Whatever the longevity of a declining carbon based energy and food system, it is increasingly clear that, even the large petro-chemical companies (like BP/Shell/Exxon) and many regional authorities , are in parallel developing positive and green growth strategies around progressing their bio-economies (such as the Alberta and British Columbia strategies, 2012)⁵. In addition, in Europe, countries like Finland and Sweden are investing heavily in converting their food and fibre sectors into centres of international innovation in bio-fuels and bio-mass products and services. Germany is busy converting its aging chemical industries in North Rhine Westphalia and in Baden Wurttenburg into 'bio-regions and valleys', developing bio-refinery facilities for the nexus of new demands around heating, energy, transport and waste recycling. In the food sector, second and third generation genetic engineering is moving into the realms of more health related and functional food

¹ See, for instance, the latest National Plan for the UK:from austerity to the age of the new deal. Green New Deal Group, September, 2013. And for a broader macro-perspective see Hall, S, Massey, D and Rustin, M (2013) After neo-liberalism:analysing the present. Soundings Manifesto Online.

² See Sunday Times 'Why we need to Frack, Slash and Build', June 30, 2013.

³ OECD (2009) The Bioeconomy to 2030: designing a policy agenda. Paris. and European Commission (2012) Innovating for Sustainable Growth: a Bioeconomy for Europe. Brussels.

⁴ Stockholm Environment Institute, Understanding the Nexus. Bonn November 2011.

⁵ Alberta Bio-economy Strategy, 2013, and British Columbia BC-Bio-economy, 2013.

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designs as well as continuing to create plants which are capable of coping with droughts and a gamut of pests and diseases which are on the increase as a result of climate change.⁶

The UK has been so far less explicit and strategic about the potentials of the bio-economy. There is no overriding strategy despite evidence that the green economy is already worth more than £120 billion, employing nearly a million people, and with over 25,000 jobs being created in 2012. In addition, the UK is committed to obtaining at least 15% of all its energy from renewable sources (including half through bio-energy) by 2020. Despite the fact that the green sector employs more than car manufacturing, aerospace and telecoms, it receives far less political or policy attention.⁷

Whilst renewable energy and reducing wastes and carbon are a major driver it is also recognized now that the UK needs to exploit the huge advances in bio-sciences, agricultural science, technologies and their links to agricultural and forest practices. Rising global demand for food, feed, fibre and fuel is linked to the development of more sustainable farming practices both in the advanced, but especially in the developing countries. This growing demand is emerging across sectors and food and non-food markets. The OECD estimates that the bio-economy could contribute over \$1 trillion of gross value added in OECD countries by 2030, of which 36% could come from what is traditionally known as primary agricultural production.⁸

These bio-based developments are linking science and R&D strategies largely but not exclusively with corporate food, fibre-based and fuel firms, and significant public and private investments. The bio-economy, for instance, is a major feature of the enhanced EU science budget which assumes clear and exponential growth in jobs and gross value added from every Euro invested in its R&D programme.⁹

Such ongoing developments present real opportunities and challenges for the UK economy and polity, and especially for its rural regions. So far the UK, despite some rather restricted and narrow approaches to this agenda (see below, the discussion of the new UK strategy for Agricultural Technologies, July 2013), is failing to comprehensively grasp and deal with these challenges and debates, or indeed rationally discuss in strategic policy terms what sort of approach to adopt to the stimulation and harnessing of this new agenda. The arrival and development of the internationalised bio-economy, I wish to argue, reinforces and brings into sharp relief the public policy need for more effective debate about how the UK can create a sustainable economic strategy. However, it needs to be recognized that there are some significant political and ideological barriers here.

The established political right do not accept the need for new and more integrated economic and regional planning upon which much of the innovative potential of the bio-economy elsewhere now relies. At the same time many environmental interests are now so fractured and fragmented around different aspects of bio-economic, energy and food developments that its overall impact usually starts and ends in a 'NIMBY' condition of veto. Both trends also create the conditions for a lack of public engagement, knowledge, deliberation and social learning which is needed as part- and- parcel of making such bio-economic transitions

⁶ Second and third generation GM is the generic term given to the new raft of bio-technologies, many yet to be commercialised, associated with quality traits, such as flavour enhancing, feed crops tailored to consumer nutritional needs and impoved nutrition of crops like vegetables and rice (e.g rice with additional vitamin A and iron). First generation GM were mainly concerned with rearranging input traits associated with herbicide, insect and disease and water resistance.

BP, Shell and Exxon amongst others are entering the bio-energy fields to an estimated sales of \$400 million per year. Conference on 'Growing the Bio-economy' October 2012, Banff, Alberta, Canada.

⁷ See Green New Deal, 2013 op cit;

⁸ A UK strategy for Agricultural Technologies.. HM Government, July 2013.

⁹ EU, 2012 op cit.

possible. This is leading to further local and national veto's on potential developments (e.g wind farms, mega farms, biomass and bio-refining plants, tidal energy, etc) which need to create more food and energy security and resilience for future generations in the UK.

I wish to explore these sets of conditions with a focus upon their implications for agri-food and rural land issues in the UK, showing how aspects of the bio-economy, especially through a renewed emphasis upon agricultural production, and what is generically labeled as sustainable intensification, are creating new opportunities and challenges for the rural domain. This suggests, in conclusion, the need to broaden a more engaged concept of the bio-economy which allows more diversity of development possibilities to be considered.

Rural Land: a new bio-economic frontier?

A major implication of the move towards a post-carbon economy, and the bio-economy more specifically, is a re-definition and new premium being placed upon the use and potential multi-functionality of rural land and property rights (as well as water and aquatic resources). As soon as it becomes unprofitable or unacceptable to mine for geologically deep, non-renewable resources (such as coal, oil and gas), the emerging post – carbon world has to face a renewed challenge of obtaining the bulk of its energy as well as its food needs from the land surface. This was ever the case in pre-industrial times when horse 'power' meant that draught animals had to be fed and catered for from the same land resource (as in early settler agricultures in North America and Australasia). The difference today, some two centuries later is that: (i) populations are of a significantly greater scale and urban complexity; and (b) we have found during the carbon period all sorts of other things and amenity functions for the exclusive use of land, such that is in now no longer an extendable but very limited resource; coming with high social and economic costs. Hence the onset of the bio-economy, continued urbanization, and growing land-based demands for both food, fibre and energy are now creating more intensity of land use. This is being expressed in the speculative 'land grabbing' experienced in Africa, but as we shall we here it is also occurring closer to home.

In the UK, particularly after the food and fuel price hikes of 2007-8 and the ensuing financial and fiscal crisis, we have seen a renewed political and economic need to intensify the demand and use of rural land. This is reflected in the persistently high price values accorded to it, and, as in the economic crisis of the 1970s, the attractive option of rural land as an investors 'safehaven' for individual and institutional surpluses and bonuses. The British countryside, as the financial crisis has unfolded, has become a major location for surplus investment which has ratcheted up the positional good and market value of land and rural housing far beyond the reach of the majority of Britain's urban and especially rural populations. This has further rendered much of the British countryside as a positional and exclusive space- a 'consumption countryside' where the economy is dominated by ex-urban lifestyle spending.

One measure of this is the number of rural homes bought as 'cash purchases' without mortgage or loans. This was significantly higher in sparse rural areas (26.9%) compared to urban areas (19.1%) in 2007. This differential increased by 4% as the recession in 2008 ensued, and despite an overall nationally slower housing market. ¹¹ Similarly, agricultural land prices rose as the recession hit in 2008, the first time for a decade, rising

¹⁰ I concentrate here specifically upon the terrestrial land base. But it is important to recognise that important bioeconomic developments around protein and energy innovation also relate to the aquatic environment, not least the use of algae and sea grass as rich bio-economic resources. See: Houses of Parliament, Parliamentary Office of Science and Technology Post Note. Biofuels from Algae, no.384, July 2011.

¹¹ See Commission for Rural Communities (2010) State of the Countryside Report; and given historical depth in the volume: Constructing the Countryside. Murdoch, J Marsden, T.K.Lowe, P and Ward, N (2003) The Differentiated Countryside. Routledge. London.

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by 28% and fuelled not least by city bonuses. In 2013 prices are forecast to continue to rise both for agricultural and forestry land at 5% per year.

Unlike the 1970's and 80's rounds of this, however, when we lived through a period of food surpluses and generally decreasing households costs for food and energy, we now witness the need to again see the rural land base as an intensive production *and* consumption space.

Since the food crisis hit in 2007-8 we have also witnessed the not unrelated emergence of a new scientific and policy-bio-economic- paradigm around the concept of 'sustainable intensification'. That is farming the land base in such a way as to further intensify production and productivity, whilst also attempting to reduce environmental and ecological costs and externalities. 'Having more for less' goes the mantra. This bio-economic paradigm is now at the centre of the UK Government's agri-food and green growth agenda. In England and Wales this is re-opening the door for the development of 'mega farms' (especially in the dairy, pig and poultry sectors); and the less dramatic intensification process in the conventional agricultural sector. The latter is taking many forms including the reduction in the actual number of family run farms; the amalgamation of holdings with some 'farmers' only keeping their registered status for tax purposes; and the growth of contract farming of amalgamated parcels of land. In Wales over 250 dairy holdings were lost between 2009 and 2012, yet average head size increased from 76 to 84.

This allows both agri-business interests and the cash rich-ex-urban incomers to create a new Faustian bargain, whereby whole farmsteads can become converted for residence, whilst the surrounding farm-land becomes further intensified for production purposes. This dislocation of farms and farmland is further polarizing the rural communities across England and Wales; allowing a particularly more intensified model of the bioeconomy to develop on the one hand, whilst furthering the more exclusive gentrification of the rural housing and estates on the other.

Against this backcloth of both sustainable intensification and the increasingly exclusive ex-urban colonisation of much of the countryside, it is important to recognize the more fledgling development of the growth of urban- based food movements and alternative food networks over the past decade. Indeed , as partly a consumer response to the intensification processes, and the growing disenchantment of sizable proportions of the British urban population about the provenance and adulteration of their foods, there has been a growth in alternative and community-based food growing and consumption (farmers markets, food hubs, community land trusts etc). Whilst these have been so far mainly urban-based, and they have largely been ignored by rural residents and farmers, they are posed to play a more significant role not least in demanding land and property rights in rural areas, as demand for short-supply chains proliferate, but the supply of productive land to meet these demands remains restricted. For instance, the Community Land Advisory Service is a collaborative brokering service aiming to increase community access to land across the UK; and it liases with community groups, local authorities, private landowners and other institutional land owners about providing more land for community-based food and energy initiatives. In the US and Canada, these 'back to the land' movements are proliferating through such mechanisms as Community-supported Agriculture (CSA's) schemes and city-based food councils.

We can witness then three highly varied but nonetheless significant trends all leading to the current and future intensity of demands being placed upon UK rural land and its existing property rights: ex-urban cash-

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¹² It is difficult to put a figure on how large the alternative and community-based food sector is in the UK in relation to the conventional food system given the lack of systematic data. But see :Marsden, T.K and Sonnino, R (2012) Human health and well-being and the sustainability of urban-regional food systems. Current Opinion in Environmental Sustainability, 4,4,427-431; and Marsden, T.K and Morley, A (2014, in press) Sustainable Food Systems: a new paradigm. Earthscan/Routledge, London/ New York.

rich investment opportunities, ongoing sustainable intensification of agri-food; and the proliferation of alternative- more eco-economic community-led food and energy developments. As land, food and energy resources get tighter and urban and suburban populations grow, so will these multiple demands upon the UK rural land base. We need a national level policy debate about how to capture and indeed spread the sustainable value and opportunities these trends provide.

Towards a Sustainable Bio economy strategy for the UK?

Unlike during the Blair and Brown governments when a succession of crises, such as Foot and Mouth Disease, lingering concerns over BSE, and the food and energy price increases in 2007-8, led to a raft of policy strategy documents in the form of Rural White papers and Food strategy documents, we now see a paucity of strategic public policy concern in the agri-food policy, and rural nexus. This is perhaps surprising given that both former Liberal and Conservative governments have more traditionally given what might be regarded as exceptional attention to the British rural realm given their own electoral geographies. A new rural and wider spatial strategy for the UK is long overdue, as is the need for a redefining debate about food policy and the role of rural land in it. As well as a series of public-private initiatives (e.g 'Responsibility deals' on obesity etc), one significant development is the recently published: 'UK Strategy for Agricultural Technologies' (published, July, 2013), which explicitly espouses a bio-economic paradigm of science and technologically-led 'sustainable intensification'. 13 A Leadership Council made up of mainly corporate food industry representatives and science research funding bodies has been formed to oversee and review this strategy towards its implementation. It is argued that the strategy: 'is not about championing any particular type of farming or food, we want consumer choice to be the driver of investment through the supply chain. It is about ensuring the UK has a vibrant sector developing a wide range of new innovations across the supply chain whether using organic, conventional or GM techniques' (p16).

However, there is no further mention of the alternative or agro-ecological sector, or the significance of the urban-based consumer movements; and the definitions of success are narrowly focused upon the increased productivity through applying more rapid take up of technologies in food supply chains. The strategy gives a strong green light for more intensification of production at the same time relating this to the need to fit this within some parameters and metrics of sustainability. This is the challenge it sets for the industry and the science sector with more public-private investments being encouraged to achieve this.

Whilst many (such as wide-ranging groups like the Association of Agricultural Engineers, and many within the agro-ecological movement) may criticize this strategy as adopting a far too narrow definition of innovation, technology and bio-economic led sustainable innovation. For instance, there is no mention of investment in agro-ecological or organic research and development infrastructure. It does express is a renewed national attempt to reposition the UK as leader in agri-tech innovation and development, and indeed, by default, to upgrade the political and economic status of the land-based sector and its somewhat fragmented skills base. In this sense it calls out for a range of sister strategy statements on rural development and integrated agrifood policy so as to address *all* of the key dynamics and challenges identified above. The question is, is the very idea of renewed national food and rural planning too ideologically indigestible for the Coalition government? It clearly should not be for an aspirant centre- green-left government, as the 'National Plan for the UK: from austerity to the age of the new green deal' published by the Green New Deal Group now suggests.¹⁴

¹³ A UK strategy fro Agricultural Technologies. HM Government. July 2013.

¹⁴ See Green New Deal Group op.cit.

Conclusions: Towards a broadened sustainable bio-eco-economy?

In earlier papers in this journal I have made the distinction between the bio-economy and the eco-economy in relation to current agri-food and rural developments.¹⁵ It is important to see the latter as a radical variant of the former in that it starts with the premise of generating social and economic goals for our agri-food system based upon wider definitions of agri-ecological productivity, social justice and food sovereignty. The onset of 'the bio-economy' does not necessarily have to suggest one dominant technologically driven and framed paradigm around sustainable intensification, but could pressage more of a plurality and diversity of approaches based upon a range of ecologically and socially grounded agri-food initiatives and movements.

In this regard it will be important-given the public and private demands ensuing on rural land- to take this more pluralistic and diverse approach in shaping bio/eco-economy developments on the one hand and more sustainable land-based management on the other. In conclusion we can identify some key research and policy desiderata which need attention in informing these strategic debates.

- 1. Consider how to open up and manage rural land and aquatic resources as part of the wider demand of eco-system goods and services. This will entail developing the national eco-system assessment of rural resources, which encompasses a wider definition of both production and consumption of these resources and links these to urban as well as rural needs. 16
- 2. Create socially- based objectives which harness the new bio-economy design technologies in ways which create social, ecological and economic diversity. Critical here is catering for low income and working poor households, the young and the elderly who still reside in rural regions. Can they benefit from more distributive and localized forms of energy and food/fibre production in terms of employment and consumption?
- 3. Create more flexible rural landholding arrangements for urban-based consumption actors and players: use of rural resources for alternative urban based food and energy groups. Here there is a growing need for more land 'sharing' and community land initiatives which engage both urban and rural groups.
- 4. Vision a far wider R&D and extension farm and forest-based system which encourages diversities in the bio and eco-economies: a plurality of approaches for diverse and place-based bio-economy. This needs to encourage more mixed and bio-diverse farming practices through demonstration farms and facilities.
- 5. Invest in the 'missing middle' of food supply chains, not just food but the nexus of fibre, timber, energy and waste. Create more infrastructure and spaces for short-supply chains, including community food hubs, local markets and food processing plants.
- 6. Increase multi-level state procurement of all of the above such as it overcomes trade rules and competition policy on the basis of place-based economic development and more health related food production and consumption. This is particularly necessary concerning the stimulation of the regional horticultural systems of provision, linking sustainable production with institutional procurement of healthier food options.
- 7. Promote and evaluate the balance between 'mega-farms', multifunctional and the stimulation of mini/ecological farms. This needs to consider the farm structures question in the UK context and how a more effective balance between intensive and potentially exporting sectors (like dairy and lamb) can be developed whilst at the same time enhancing 'economies of scope' rather than just scale on smaller and more multifunctional holdings.

¹⁵ Marsden. T.K (2012)Towards a real sustainable agri-food security and food policy: beyond the ecological fallacies? Political Quarterly. 83,1, Jan-Mar, 2012, 139-145.

¹⁶ See National Eco-system assessment: follow on study. DEFRA/UNDP. Cambridge, UK.

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- 8. Foster and reinforce emerging webs of social capital and skills in land-based practices. This holds important implications for educational provision, from primary to higher education, and in the development of entrepreneurial and land-practice based skill development.
- 9. Create social conditions which promote economic resilience and dynamism, rather than vulnerability and exclusion. This could build upon local and community-based 'sustainable place-making' initiatives, whereby community groups begin to vision and redefine their communities according to their particular sustainable assets and opportunities. Across the UK and much of Europe these types of alliances are forming with differing degrees of arms-length support from local councils and municipalities.
- 10. Create urban-rural green infrastructures which recognize the urban demands on rural land. This recognizes the need for a more integrated planning process which create opportunities for 'green corridors' between urban and rural areas (for instance, through the canal and rivers networks). This could create more healthy lifestyles and jobs.

Current policies and politics need to urgently turn their attention to and foster a more expansive and inclusive paradigm of 'green growth' around the new bio-economy. The question and challenge is what does this look like and on what principles should it be based, given the new arena of economic vulnerability, post carbonism, and in the UK especially, increasing urbanisation which is set to be demanding more rather than less from rural land-based resources. There are ways of shaping this agenda which could create a double dividend of healthier urban consumers and a more diverse value-added rural production of goods and services. These are the challenges for the macro economic policy agenda and, more broadly, for locating the UK and especially its rural regions at the vanguard of the sustainable development transition.

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A fundamentally contested concept, food sovereignty has —as a political project and campaign, an alternative, a social movement, and an analytical framework —barged into global agrarian discourse over the last two decades. Since then, it has inspired and mobilized diverse publics: workers, scholars and public intellectuals, farmers and peasant movements, NGOs and human rights activists in the North and global South. The term has become a challenging subject for social science research, and has been interpreted and reinterpreted in a variety of ways by various groups and individuals. Indeed, it is a concept that is broadly defined as the right of peoples to democratically control or determine the shape of their food system, and to produce sufficient and healthy food in culturally appropriate and ecologically sustainable ways in and near their territory. As such it spans issues such as food politics, agroecology, land reform, biofuels, genetically modified organisms (GMOs), urban gardening, the patenting of life forms, labor migration, the feeding of volatile cities, ecological sustainability, and subsistence rights.

Sponsored by the Program in Agrarian Studies at Yale University and the Journal of Peasant Studies, and co-organized by Food First, Initiatives in Critical Agrarian Studies (ICAS) and the International Institute of Social Studies (ISS) in The Hague, as well as the Amsterdam-based Transnational Institute (TNI), the conference "Food Sovereignty: A Critical Dialogue" was held at Yale University on September 14-15, 2013. The event brought together leading scholars and political activists who are advocates of and sympathetic to the idea of food sovereignty, as well as those who are skeptical to the concept of food sovereignty to foster a critical and productive dialogue on the issue. The purpose of the meeting was to examine what food sovereignty might mean, how it might be variously construed, and what policies (e.g. of land use, commodity policy, and food subsidies) it implies. Moreover, such a dialogue aims at exploring whether the subject of food sovereignty has an "intellectual future" in critical agrarian studies and, if so, on what terms.

The Yale conference was a huge success. It was decided by the organizers, joined by the Land Deal Politics Initiative (LDPI), to hold a European version of the Yale conference on 24 January 2014 at the ISS in The Hague, The Netherlands.

ABOUT THE AUTHOR

Terry Marsden currently holds the established chair of Environmental Policy and Planning in the School of Planning and Geography at Cardiff University. He is Director of the Sustainable Places Research Institute at Cardiff. He is also Dean of the University Graduate College. I research the interdisciplinary social science and applied policy fields of rural geography, rural sociology, environmental sociology, geography and planning. I have published over 150 international journal articles, book chapters or books. This includes 20 research monographs and edited collections. This body of work ranges from original theoretical work in the field, through to empirical analysis and emerging policy impacts and analysis. It includes wide ranging work on: the socio-economic restructuring of agriculture; theorisations and empirical investigations of rural development; analysis of agri-food chains and networks; and critical commentaries in the emerging fields of environmental sociology and environmental planning. The empirical work has extended from the UK, Europe, Brazil, the Caribbean and now China.