# Social implications of the developing bio-economy: the key issues

**Bill Slee**

The James Hutton Institute


Engagement of Life Science Universities in Supporting the Growth of the Bio-economy – the social, environmental and economic implications: Gent 2013

# Why are we promoting the bio-economy?

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- To underpin future prospects for the land-based sector (Sector Support)
- To support economic growth of certain regions with comparative advantage in the bioeconomy? (Growth)
- To support rural areas that have sometimes fallen on hard times? (Equity)
- To address the overarching challenge of climate change and environmental degradation by providing the institutional architecture and technical means for a transition to a post-carbon world with enhanced sustainability? (Environmental Sustainability)

***All of which is not that far from the Europe 2020 thinking***

# A few more questions

- Do we recognise the logic and broadly support the following three principles of economics?
  - The polluter pays principle (e.g. carbon tax)
  - The provider paid principle (e.g. payment for environmental services)
  - The infant industry argument
- Do we accept Nicholas Stern's assertion that climate change is the greatest economic externality ever to confront mankind?
- **If so, our study of the bio-economy (and our teaching about it to undergrads postgrads and in lifelong learning) should be probably be framed as a means to help nurture the transition to a post-carbon more sustainable world**

# Who is taking the lead?

It all depends on which bit of the bio-economy we are looking at

- The geographers and regional economists have captured the bioregionalism/alternative food supply chain field
- The biochemists and cell and microbial biologists are taking over the bio-refinery, sometimes within the old agr/forestry set up sometimes beyond
- The geneticists are busy identifying useful traits and developing new products
- The major research institutes are fully engaged on the high tech bio-economy but largely ignore the 'retro-innovation' bio-economy
- There is a danger that many 'promising areas' of social investigation (and indeed the other science are being occupied by others than the those from the Life Sciences, Agriculture and Forestry schools
- FOR EXAMPLE: Of a £250 million bio-economy research funding package in 2012 in the UK only £13million went to somewhere that teaches Agricultural Sciences!

# A selection of issues for social science

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- Issues associated with definitions of bio-economy
- Issues associated with how we do social science
- Issues associated with institutions, governance and power
- Issues to do with acceptability and acceptance (including risk)
- Issues associated with the geography of difference
- Issues associated with the modernisation project and emergent hybridity

**Our paradigmatic problem sets are framed by these overarching conceptions of bioeconomy, eco-economy, multifunctionality and their associated discourses and ideas**

**… So how we do social science depends on our stance**

# Issue 1 Definitions

- All bio-physical production and processing of bio-materials derived from land and water at a range of scales from cell to catchment
- All biochemical and biological manipulation of organisms to produce new bio-based materials
- All traditional processes of food and beverage production processing and preservation, including ‘retro innovation’
- All use of land and water resources within the land based business (including  bio, wind and water energy)
- All ecosystem services and their management

# Issue 2 : How we do rural social science

- Social science as maidservant: promoting innovation diffusion (Everett Rogers and the diffusion curve)
- Social science as 'critical' and 'reflexive' and fundamentally different from natural science (molecules don't answer back)
- The old model of rural social science as aiding and abetting the modernisation project is now pretty much rejected by most rural sociologists in Europe
  - Friedmann and the survival of the small farm
  - New modes of inquiry: styles of farming and the critiquing of the modernisation project- development not seen as unidirectional
  - Social science as engaged resistance in a pluralistic world
    - Local food systems
    - Land rights
- An increased focus on governance and collaborative natural resource decision making towards sustainability is evident
- Regional sustainability building is emerging as a major project in Europe (Cohesion)

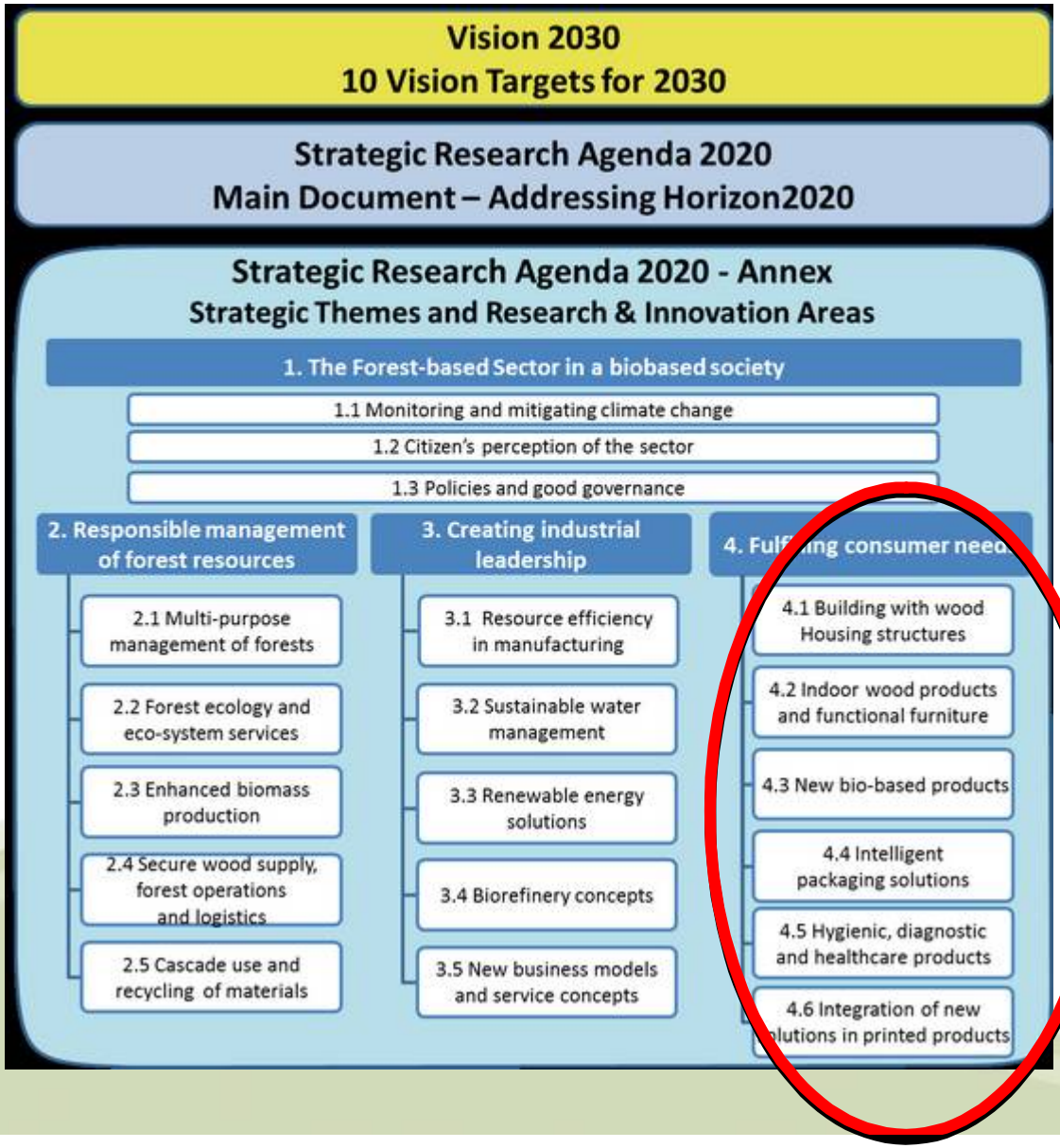
# What does this mean about social science and the bio-economy?

- Whereas the social was historically more purely social it is now geographical, cultural and political too; and it often engages with environmental issues as well
- A more critical perspective of the bio-economic model is likely from a social perspective (See Birch, Levidow and others)- the modernisation project (which in many ways embodies the dominant bio-economy paradigm) is not uncritically accepted and is often challenged as creating second round problems
- Engaged advocacy is evident in some parts of the academic community in support of alternative food movements (e.g. La Via Campesina) and in resistance to some facets of the bio-economy thought (driven by affective reason?)
- New transdisciplinary approaches to (inter alia) transition/change/ adaptive management  are often facilitated by social scientists

# Issue 3: Institutions, governance and power

- How power is distributed along supply chains has become a major object of concern and inquiry- Numerous examples of farmer weakness in contemporary food supply chains- will these be replicated (or even exacerbated) in the new bio-economy?
- Multi scale institutional approaches supporting innovation are evident
  - European Technology Platforms (ETPs) - public private partnerships to promote innovation (and Canadian parallels)
  - Retro-innovation and revitalised local food systems are part of European rural innovation through LEADER
  - New partnership models for environmental management and food sectors, often mediated by local state
- New institutions are often considered necessary to facilitate change. We probably need institutional innovation as well as technical innovation.

# The European Forestry TP's research agenda




**But this 'old world' perspective ignores the wider socio-econ values of forests woods and trees**

**It is limiting**

**A broader conception of innovation, including institutional innovation may be needed**

# What implications for the bio-economy?

- New coalitions and sustainability partnerships constitute an alternative development strategy to that of the bio-economy as modernisation project- a plethora of 'alternative' projects in food, water management, biodiversity management and climate change/renewable energy are evident
- Corporate power of agribusiness seen as excessive by some groups: the state (at national and transnational levels) can be seen as an intermediary force (especially in the old world) in regulating corporate agribusiness (e.g. of GM)
- Trust needs to be rebuilt between industry and consumer after some serious 'own goals' such as BSE

# Issue 4: Acceptability, acceptance, risk

- There are very different ways of exploring risk
  - Objective risk
  - Affective risk (after Slovic)
- Acceptability and acceptance of e.g. GM is likely to be framed by biases and the balance of System 1 vs System 2 thinking (Kahneman)
  - Favourable disposition leads to belief in high benefits
  - Unfavourable disposition leads to belief in low benefits
- The availability effect : people draw on what is there
- There is little point in addressing objective risk without thinking though the multiple drivers of affective risk

# Issue 5 The geography of difference

- Marsden et al.'s typology of rural areas in UK (Europe?): preserved, paternalistic, contested, clientelistic.

  N.B. No room for a productivist countryside plain and simple

  **Within these different areas, institutional and power differences will exist and governance arrangements will vary**

- A shift from countrysides of production to countrysides of consumption in many areas – solid economic evidence of consumption-driven rural economies in many long settled densely populated countries

- The productivist heartlands are 'out of sight out of mind' for many metropolitan consumers but still vulnerable to exposure by critical media (e.g. if biofuels are damaging the environment)

# Implications for the bio-economy

- Different places create different possibilities and different forms of engagement with people, rural land and nature
- The narrow bioeconomy model fails to embrace adequately new rural geographies and new rural economies and the centrality of multifunctionality
- Sustainability imperatives require an engagement with the whole natural resource base: e.g. Bio-energy competes with wind and water, so we need to embrace the whole natural resource base
- Historic institutional and technical path dependencies hinder the room for manoeuvre: but the demographically thinned and environmentally compromised productive spaces need a lifeline and may be more accepting of the technocratic bio-economy solutions

# Issue 6: The modernisation project and hybridity

- The modernisation project has been boosted by the discourse of the perfect storm, generally upward commodity price volatility and the plea for sustainable intensification
- But, there is substantial resistance from some stakeholders to some of its contemporary features and impacts (environmental, social, even economic)
- An alternative locally grounded response (transition towns, Climate Challenge Fund Projects, local food projects) is addressing similar issues
- **AND in practice hybridity is the norm in most rural space-**Most rural space is neither wholly productivist nor consumption-oriented

# Implications for the bio-economy

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- The often technocentric model of bio-economy needs adjustment to variant sensibilities of other actors and stakeholders and to other activities promoting sustainable solutions
- Engagement with consumers and wider stakeholders is essential to overcome (i) path dependencies and (ii) rebuild trust which has often been seriously eroded
- Solutions developed collaboratively under new forms of governance and embedded in actions and behaviours are more likely to be durable and sustainable
- Beware turning the European research arena into a ‘tax-paid clinic for agribusiness’ with a focus on the technocratic bio-economy

# Some conclusions (1)

- The technocratic bio-economy discourse necessarily appeals to policy makers who find it hard to bite the bullet and condemn excessive consumption
- Required decarbonisation of current and anticipated levels of consumption is still seen as too difficult a challenge to embrace
- Green growth is something of an oxymoron; green substitution or stabilisation is a more realistic strategy and hope
- A stronger recourse to the renewable natural resource base, to relocalised food, energy and leisure seems essential (alongside high tech innovation in the bioeconomy) to reduce the carbon footprint and create a sustainable bio-economy, but these might not deliver the scale of change needed
- Equally there is a need for high level innovation and large-scale business engagement but this needs to be regulated
- The re-localisation and bio-economy discourses almost certainly need to intersect and hybridise
- Institutional and technical innovation associated with new modes of reflexive governance will be essential to realise these changes

# A take home message

- The bio-economy is not just a technical challenge, though of course there are major technical challenges
- Its development is contingent on entrepreneurs, markets, the state, civil society working within an appropriate institutional architecture
- **Its deepening/expansion will require a multiplicity of actions and behaviours**
  - It is a challenge to policy makers as to whether they are prepared to introduce carbon taxes and make other key changes to the institutional architecture to challenge the 'un-green' (all seem too timid)
  - In nurturing changes there are significant risks because of the pace of technical change and the scale of the challenge and those risks could become even greater
  - The bio-economy cannot just be an adjunct to the 'ungreen' and without a tougher challenge to the 'ungreen.' Progress towards a deeper green economy is almost certainly too slow to meet the climate change challenge
- The biggest challenge in the social dimension is exploring the capacity of the myriad coalitions, partnerships and initiatives under way: local, regional and global, industrial and civic, producer and consumer, to effect substantive changes to meet the overarching challenge of climate change
- This may well also require a new transdisciplinary way of doing science to meet it

# Thank you

**Thanks also to the organisers for inviting me to Gent…….**

**and to Lois Wright Morton of Iowa State, my co-chair in the Banff, Canada meeting in 2012, for initiating a rich exchange of ideas**