

The Bioeconomy: Risk to Food Security, Biodiversity and the Climate

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What is the Bioeconomy?

- **replace** non-renewable, **fossil** sources such as petroleum and coal and their products **with a “renewable” one: biomass**
- derive energy, chemicals and raw materials from biomass
- Central to the bioeconomy is the biorefinery
- Here biomass can be “cracked” into different products, just as crude oil is in a refinery

Bioenergy's role in Bioeconomy

- Bioenergy is the gateway to the new bioeconomy: replacing fossil energy resources with biomass energy
- Governments do not want to address current “economic growth” model
- Bioenergy is the easiest option for “renewable” energy: least adaptation involved for power and transport industries

The biorefinery

- Central to the bioeconomy
- Biomass can be “cracked” into different products, like crude oil in a refinery
- According to Europabio, Europe’s biotechnology industry organisation (speaking as if it was all happening already):
 - The biomass comes from a variety of sources such as trees, energy crops such as switchgrass and agricultural products such as grain, maize and waste products such as municipal waste.

Biomass an even greater problem than biofuels/bioliquids

- Biomass includes so-called wastes, residues and even sewage, but main interest now is in **wood chips and wood pellets**
- Companies developing their own criteria for biomass

Explosion in demand:

- If all proposed UK biomass power plants built, some 48.3 MT of biomass would be needed each year
- Comparison: whole EU imported approx 36 MT (incl. logs) to end 2010!

Major promotion of the bioeconomy in 2012

- In the US, the **Obama Administration** released its **Bioeconomy Blueprint**: US technological lead in agriculture, biotechnology, health sciences and entrepreneurship
- The **European Commission** launched its strategy: **"Innovating For Sustainable Growth: A Bioeconomy For Europe"**
- **Major industrial interests:**
 - Pulp & paper, timber, motor vehicles, biotechnology, synthetic biology, oil refining, oil byproducts, chemical, pharmaceutical, agribusiness

Fundamental flaws with biofuel and biomass (1)

- **Claimed to be carbon neutral because it will grow again**
 - but emissions from burning the biomass and the impact of removing plants/trees/soils that would **otherwise have absorbed carbon** are NOT taken into account
- **Carbon debt**
 - Carbon emissions from land conversion to grow crops may be higher than emissions saved by biofuel use

Fundamental flaws with biofuel and biomass (2)

- Time lag from burning to re-growth**
 - when wood is burnt for energy it releases carbon emissions that take 35-50 years to be captured by the re-growth of the forest
- Using biomass actually causes an up-front spike in carbon emissions**
- at exactly the time when we should be reducing emissions**

Impacts on land and people

EU certification criteria exclude from biofuel exploitation:

- Land with “high biodiversity value”, highly biodiverse grasslands, and generally “land with high carbon stock” as well as forests and peatland
- There is no consideration of the interaction between people and land

Marginal, idle, degraded, unused land: the last refuge of people and biodiversity?

- “Marginal, idle, degraded, unused land”, often used by communities, sometimes **seasonally**, or on a long cycle that enables it to recover in between
- It is frequently **managed collectively**, sometimes according to well-defined rules. eg: pastoralists
- Under EU law, the production of biofuels on “degraded” or contaminated land actually attracts a **bonus** – they would like to include idle land
- We need a good definition of marginal and degraded land that does **not leave it as an open space for investors**

Some marginal land in Ghana



A woman with a full basket of shea-nuts to sell or to supplement the family diet. However, shea-nut groves have been cleared by biofuel interests

photos by Sulemana Abudallai







Different types of land-grab

1. Emergent Asset Management:
speculative capital invested
for returns on commodities, land
2. African agricultural growth corridors:
supported by World Bank, governments
and corporations
3. Individual companies that may or may
not work with the above

Emergent Asset Management's **African AgriLand Fund**

- Illustrates dangers of **entry of speculative private equity capital** based on **increasing land prices**
- Promises **25% p.a.**
- Based on **commodities and expected increase in land values** in Africa
- “Higher **volatility** should provide excellent **trading opportunities** on a consistent basis over an extended period”

Agricultural Growth Corridors of Tanzania and Mozambique

- Launched at the World Economic Forum and backed by the **World Bank**
- **The Southern Agricultural Growth Corridor** of Tanzania (SAGCOT) public-private partnership: 7.5 million ha, “2 million ha farmed by smallholders”
- **The Beira Agricultural Growth Corridor (BAGC)** Mozambique private sector and international community: 10 million ha, “15% farmed by subsistence farmers”
- Likely to focus on flexcrops for food or fuel, carbon credits, GM crops for international market

Bioeconomy's powerful industrial promoters

- Industries: pulp & paper, timber, motor vehicles, biotech, oil refining, oil byproducts, chemical, agribusiness
- Industry development opportunities
 - the bioeconomy as a “green economy”: replacing all fractions of fossil with biomass derived products
 - also shifting industrial processes from fossil to biomass, eg: pulp and paper industry
- Biotech: GM trees and crops, synthetic biology to build new organisms to break down cellulose
- Agribusiness and global land-grab: flex crops/trees for food and/or fuel/and or specialty chemical markets

Risky agricultural technologies for the bioeconomy

Experiences with no till / conservation agriculture

- Herbicides replace tilling for weed control
- Herbicide-resistant GMOs developed – 70% of conservation agriculture
- Weeds became tolerant to herbicides
- Additional types and quantities of herbicides – human health risks increased
- Superweeds developed – back to mechanical control

Risky agricultural technologies for the bioeconomy (2)

Experiences with genetically modified crops

- Outcrossing of patented plants – farmers were sued
- Patented technologies more expensive, incl. in the South
- Number of patents on conventional crops increasing
- Risks for pollinators, soil biota, livestock feed...

Contamination

**A single contaminated seed of beet can
make your beet soup 100% GMO**



**Yet, the US government has deregulated GMO
sugarbeets and other crops**



How viable is the bioeconomy?

- Many of its claims are highly questionable
- Its development, like that of biofuels, will depend on incentives, targets and public funding for research
- It will accelerate the global land-grab
- It will massively increase biomass-related imports to the EU such as woodchip
- Reducing consumption is vital, yet policy decisionmakers does not accept this
- In spite of implying that the bioeconomy can go beyond all “Limits to Growth”, it cannot deliver the endless growth our current development models are based on because there isn't enough biomass -

There are limits - even to biomass

- Each year natural photosynthesis and reproductive processes build up biomass on the planet
- Each year we use these at an increasing rate: “human appropriation of net primary productivity”
- According to the Global Footprint Network, we are already using the equivalent of 1.5 planets to provide our resources and deal with our waste
- We are therefore already in a state of what they describe as overshoot
- Waste biomass: the idea that there is enough to feed this industry is not based in fact

Last word on EU bioenergy policy

“For now the proposal (to make adjustments to the EU policy) remains stuck in the corridors of an EU that appears equally frightened of the political consequences of admitting a policy mistake, and the environmental consequences of denying it.”



Thank
you!