





From trade-offs to synergies between food security and biodiversity conservation: an outlook

VS.

Joern Fischer

Email: jfischer@leuphana.de Blog: http://ideas4sustainability.wordpress.com/ Twitter: @ideas4sust

Image source: http://ecodrift.blogspot.de/



The topic of food

- Many influential papers have focused on "food"
- This focus is of interest to at least three bodies of scholarship, namely on:
 - Food production
 - Food security
 - Food sovereignty

- How has the food-biodiversity nexus been approached?
 - What are some of the deeper challenges ?



Food sovereignty: people-focused

- Deliberative governance
- Political equity & autonomy
- Emphasis on local scale

Food production: *agriculture-focused*

- Productivity increases
- Often specialized landscapes
- Distribution handled by markets

Food security: states-focused

- Enough quantity, quality, culturally appropriate
- Often top-down or national

Fischer et al. 2014, Conservation Letters



Among ecologists, a production framing dominates

- Examples: agroecological intensification, sustainable intensification, land sparing vs. land sharing, yields of organic farming ...
- Even when smallholders are involved, discussions are dominated by production

- What about here, at this conference?
- Thanks to Josefine Glamann and Jan Hanspach we can test it!
 For the first 22 talks, the topics covered were systematically coded into a spreadsheet by Josefine
 - Jan then ran some multivariate analyses





Why to look beyond production

"In a world where obesity and hunger co-occur, it seems beside the point to argue about yield increases" (Chappell and LaValle 2011)



http://www.pthbb.org/natural/footprint/img/cartogram.gif



Why to look beyond production



Barrett 2010, Science



Key drivers of un-sustainability and biodiversity loss: consumption and population

- 1971, Ehrlich and Holdren: Impact = f (P, A, T)
 - Population, Affluence, Technology



- Despite this, consumption and population increases are regularly seen as inevitable:
 - "With the human population predicted to rise to between 8 and 10 billion and with rapidly increasing ... consumption, overall food demand is expected to increase two- to threefold by 2050." (Green et al. 2005)



One driver of demand: per capita consumption

- Ever increasing expectations of choice, comfort and availability
 Wants are increasingly expressed as "needs"
 - But does this make us happier? (Or just more unhealthy?)





The other driver of demand: population growth

- Partly inevitable, given massive demographic momentum
- But "... easy access to family planning could make a difference of billions in the world in 2050" (Prata 2009)



Prata 2009; UN projections, courtesy IBA 2014, Greece; see also Bradshaw in press, PNAS



Production or education?





Production or education?





Production or education?

Secondary education for more women would mean lower fertility rates.

This, in turn, would mean:(1) more food per capita;(2) less pressure on land (= biodiversity)



So if we wanted to focus on a single issue, perhaps it should be education

e.g. Cohen 2008, Nature



Or even better: taking a systems approach



http://www.foodsecurityalberta.org/blog/wp-content/uploads/2011/11/shiftn-global-food-system-page_1.jpeg



Biodiversity

A systems approach

 Consider Ostrom's question:
 Are there social-ecological system properties that benefit sustainable management of the commons?

In a food/biodiversity context: Are there social-ecological system properties that benefit at the same time food security and biodiversity?

Social-Ecological System Properties

- Capital assets (social, human, financial, physical, natural)
- Socioeconomic and ethnic composition
- Crop diversity
- Role of women
- Agrochemical inputs
- Native vegetation prevalence and size of "spared" areas
- Field sizes
- Foreign ownership
- Imports and exports
- ... and others!

Food Security



A systems approach





The sustainability gap



Source: Fischer et al. (2007). Mind the sustainability gap. Trends in Ecology and Evolution 22, 612-624.



What kinds of things are we trying?

- Meetings, 'strategies', 'action plans', conventions
- Ambitious targets (e.g. "no loss of biodiversity" by 2020; reduction in greenhouse gas emissions; etc.)
- Sustainable intensification' of land use
- Advocating market solutions (trading carbon, biodiversity)

Implicit assumption appears to be:

The same methods applied more rigorously will lead to success



The elephant in the room!

What are the core values of our society? Are they growth, constant comfort and consumption?



Source: http://absolutecytron.com/wp-content/uploads/2010/04/Elephant2.png



The elephant in the room!

What are the core values of our society? Are they growth, constant comfort and consumption?

- Assume for a moment, our analysis has indicated that society's core values are a large part of the problem. If that is the case:
- What is the role of scientists?
- Objective generators of information? ... or ...
- Honest brokers with an explicit and reflected normative stance?



Conclusion

- The intersection of food security and biodiversity conservation can be approached in many different ways
- Among ecologists, agricultural production has regularly received most attention
- It would be equally possible to single out other cross-cutting "solutions" that may benefit food security and biodiversity – e.g. secondary education of women
- To move forward, a systems perspective could be promising
 But even then, to change systems in major ways, it is necessary to reflect on the paradigms they are built upon

Thank you for your attention

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"... starvation is the characteristic of some people not having enough food to eat. It is not the characteristic of there not being enough food to eat. While the latter can be a cause of the former, it is but one of many possible causes" – Sen 1981

"Earth provides enough to satisfy every man's needs, but not every man's greed." — Mahatma Gandhi



http://www.huffingtonpost.com/2012/04/21/earth-day-2012-quotes-on-_n_1443065.html



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