

Poultry and sustainability

Some thoughts from an outsider

Malcolm Bennett



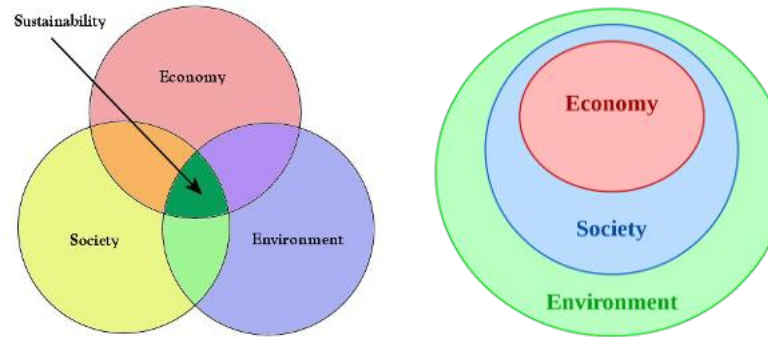
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'sustainability'

► Definitions

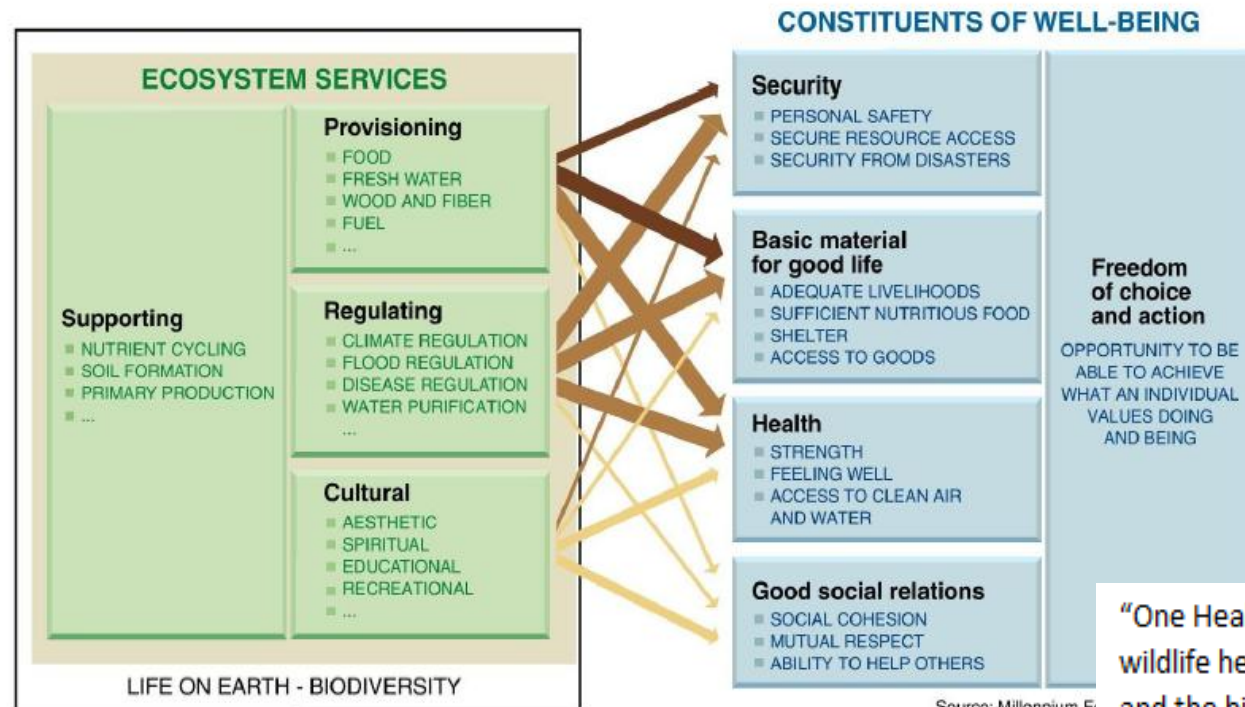
- ▶ *'meeting our own needs without compromising the ability of future generations to meet their own needs.'*
 - ▶ *Two or maybe three pillars or legs*
 - ▶ *Economy*
 - ▶ *Society*
 - ▶ *Environment*
- 
- The first diagram is a Venn diagram with three overlapping circles labeled 'Economy' (red), 'Society' (yellow), and 'Environment' (blue). The central intersection of all three circles is shaded green. An arrow labeled 'Sustainability' points to this central green area. The second diagram consists of three concentric circles. The innermost circle is red and labeled 'Economy', the middle circle is blue and labeled 'Society', and the outermost circle is green and labeled 'Environment'.



- ▶ *‘environmental sustainability: meeting the resource and services needs of current and future generations without compromising the health of the ecosystems that provide them*
 - ▶ *and more specifically, as a condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity.*



ecosystem services (valuing nature and one health)



ARROW'S COLOR
Potential for mediation by socioeconomic factors

Low
Medium
High

ARROW'S WIDTH
Intensity of linkages between ecosystem services and human well-being

Weak
Medium
Strong

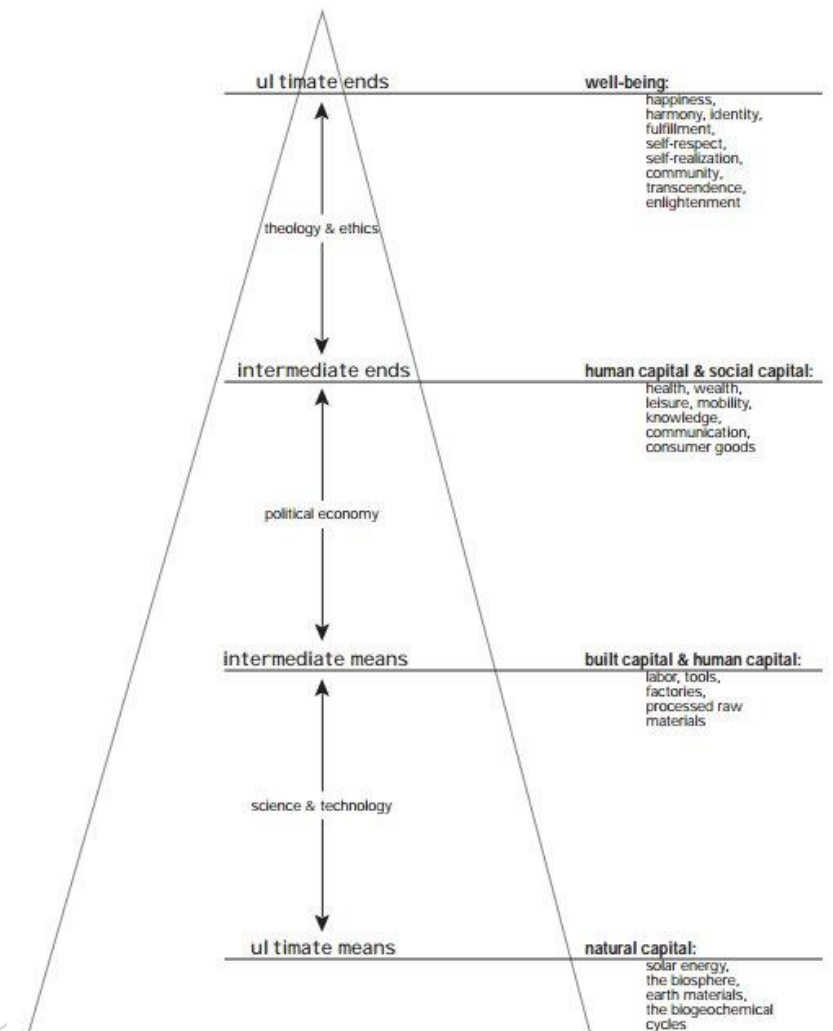
Source: Millennium E

‘Valuing Nature’: developing ways in which the plurality of values people hold for the natural environment are presented and advocated for in terms that capture their many and diverse expressions: this is a valuation world that accounts for nature in both monetary and non monetary, and quantitative and qualitative terms...

“One Health asks that we recognize the essential link between human, domestic animal and wildlife health and the threat disease poses to people, their food supplies and economies, and the biodiversity essential to maintaining the healthy environments and functioning ecosystems we all require.”

- The Manhattan Principles on “One World, One Health”*

- ▶ *sustainable agriculture means an integrated system of plant and animal production practices having a site-specific application that will, over the long term:*
 - ▶ *satisfy human food and fiber needs;*
 - ▶ *enhance environmental quality and the natural resource base upon which the agricultural economy depends;*
 - ▶ *make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls;*
 - ▶ *sustain the economic viability of farm operations; and*
 - ▶ *enhance the quality of life for farmers and society as a whole."*
- ▶ *Herman Daly:*
- ▶ *Sustainable development is..., qualitative improvement without quantitative growth beyond the assimilative and regenerative capacities of the ecosystem.*
- ▶ *Three Rules*
 - ▶ *The sustainable use of renewable resources requires that consumption not be greater than the rate at which resources regenerate.*
 - ▶ *The sustainable use of non-renewable resources requires that the rate of consumption not be greater than the pace at which renewable substitutes can be put into place.*
 - ▶ *The sustainable pace of pollution and wastes requires that production not be greater than the pace at which natural systems can absorb, recycle, or neutralize them.*
- ▶ *Lack of a precise definition of the term 'sustainable development' is not all bad. It has allowed a considerable consensus to evolve in support of the idea that it is both morally and economically wrong to treat the world as a business in liquidation.*



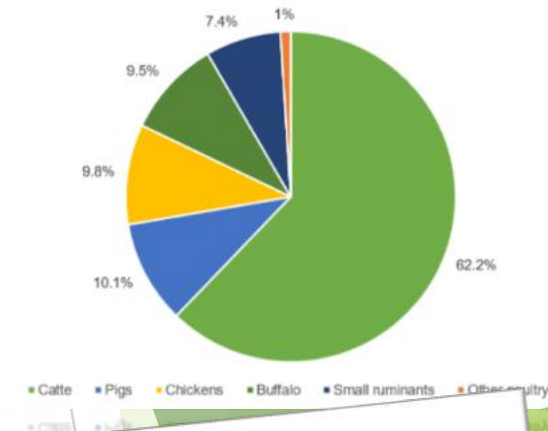
Let's talk chicken

- ▶ **Very efficient and small GHG/unit compared to red meat (for example)**
- ▶ **But efficiency isn't the best measure if you're efficiently doing the wrong thing...**
 - ▶ 'despite efficiency gains made by using fast-growing birds, chickens remain the greatest consumers of feed crops such as soy, corn and other grains on the planet'
 - ▶ And we can always do better
 - ▶ Poultry/eggs can be C-neutral?
- ▶ **Around half C-footprint and GHG emissions associated with chicken and egg production associated with growing (processing and distributing) feed**
 - ▶ Poultry feed, unlike most ruminant feed, of grown on land that could produce direct plant food for human consumption
 - ▶ Increasingly imported feeds requiring high nitrogen and giving rise to high N₂O emissions
 - ▶ Environmental damage done to that land and biodiversity
 - ▶ 30-40% of N₂O emissions associated with manure
 - ▶ 5-10% GHG emissions are methane from anaerobic storage of manure.

OPEN Socioeconomic and environmental effects of soybean production in metacoupled systems

Ramon Felipe Baccaro da Silva^{1,2,3}, Andrei Vilu^{1,2}, Emilio F. Moran¹, Yue Dou¹, Matheus Bastardo^{1,2,3} & Joerges Lou¹

Human-environment interactions within and across borders are now more influential than ever, posing unprecedented sustainability challenges. The framework of metacoupling interactions within and across adjacent and distant coupled human-environment systems provides a useful tool to evaluate them at diverse temporal and spatial scales. While most metacoupling studies have so far addressed the impacts of distant interactions (telecouplings), few have addressed the complementary and interdependent effects of the interactions within coupled systems (intraecouplings) and between adjacent systems (paraecouplings). Using the production and trade of a major commodity (soybeans) as a demonstration, this paper empirically evaluates the complex effects on deforestation and economic growth across a globally important soybean producing region (Mato Grosso in Brazil). Although this region is influenced by a strong telecoupling process (i.e., soybean trade with national and international markets), intraecouplings pose significant effects on deforestation and economic growth.



Let's redefine sustainability

'It is significantly more sustainable to buy British (and support home grown production) than to rely on imported alternative proteins from food systems that neither observe our high standards of production nor share our environmental ambitions.'

'The Cerrado, Brazil's second major biome, is suffering severe clear-cutting and irreversible losses of its original vegetation and biodiversity... the extent of the destruction of the Cerrado is now evident. Two-thirds of its original vegetation has already been destroyed or severely degraded. Cultivation of soybeans in the Cerrado has since 1970 risen from 20 000 to 29 million tonnes - an increase in Brazilian soybean production from 1.4 percent to 58 percent. As state planning on land use - determining where and how much primary vegetation should be converted to land for agricultural use - exists only in a rudimentary form, soybean expansion is one of the main factors threatening the Cerrado ecosystem.'

Let's talk chicken

- ▶ Difficult to understand how/where some of these figures come from
 - ▶ System context/ scale / environment
 - ▶ What's counted and what isn't - e.g. do the figures for eggs include the 50% newly hatched birds that are dispatched? Or the layer hens at the end of the first lay?
 - ▶ Slaughter house and processing (and waste from there)
 - ▶ Do the figures take account of when things go wrong?
 - ▶ Environmental risks of drugs etc
 - ▶ Social link between human wellbeing and animal welfare?
 - ▶ Food waste by consumers

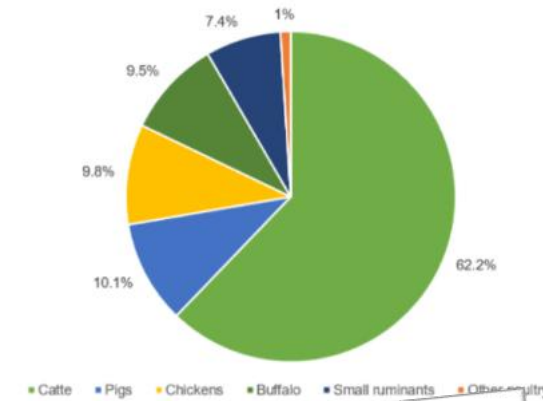
scientific reports

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Percentage contribution of global GHG emissions by livestock species



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Clueless shoppers waste 235,000 chickens a day



A campaign found that four in ten young people did not know chicken could be safely frozen

Gamification

- ▶ *At the other extreme the game bird industries*
 - ▶ *Promoted as highly sustainable*
 - ▶ *Ignoring for the moment lead shot issues*
 - ▶ *Around 50 million individuals pheasants (an alien species) released into the (manged) wild each year*
 - ▶ *>40,000 tonnes of biomass*
 - ▶ *Greater by >10-fold than any wild bird species*
 - ▶ *Mainly imported as day old chicks, captive reared indoors before moving to pre-release pens*
 - ▶ *High protein feed*
 - ▶ *Might include soy/fish meal*
 - ▶ *Intensive husbandry systems require veterinary interventions to control parasitic and other infections*
 - ▶ *Positive and negative effects on native wildlife and habitats*
 - ▶ *Only around 35% actually shot*
 - ▶ *Not clear what proportion of those shot are eaten- maybe 50% ie <20% of those released*

conclusions

- ▶ *Definitions of sustainability vary according to why the question is being asked*
- ▶ *Statistics often summary and difficult to contextualise*
- ▶ *For me more questions than answers*

- ▶ *What is the veterinarians and veterinary profession's role /responsibilities in this?*