atf animal task force
A European Public-Private Partnership

EAAP
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4th one-day symposium of the Animal Task Force & the EAAP Commission on Livestock Farming Systems:

Livestock are more than food

Beyond Edibles: Unveiling the Full socio-economic Value of Animal Production through Non-Food Products in Circular Economy Designs

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Outlines

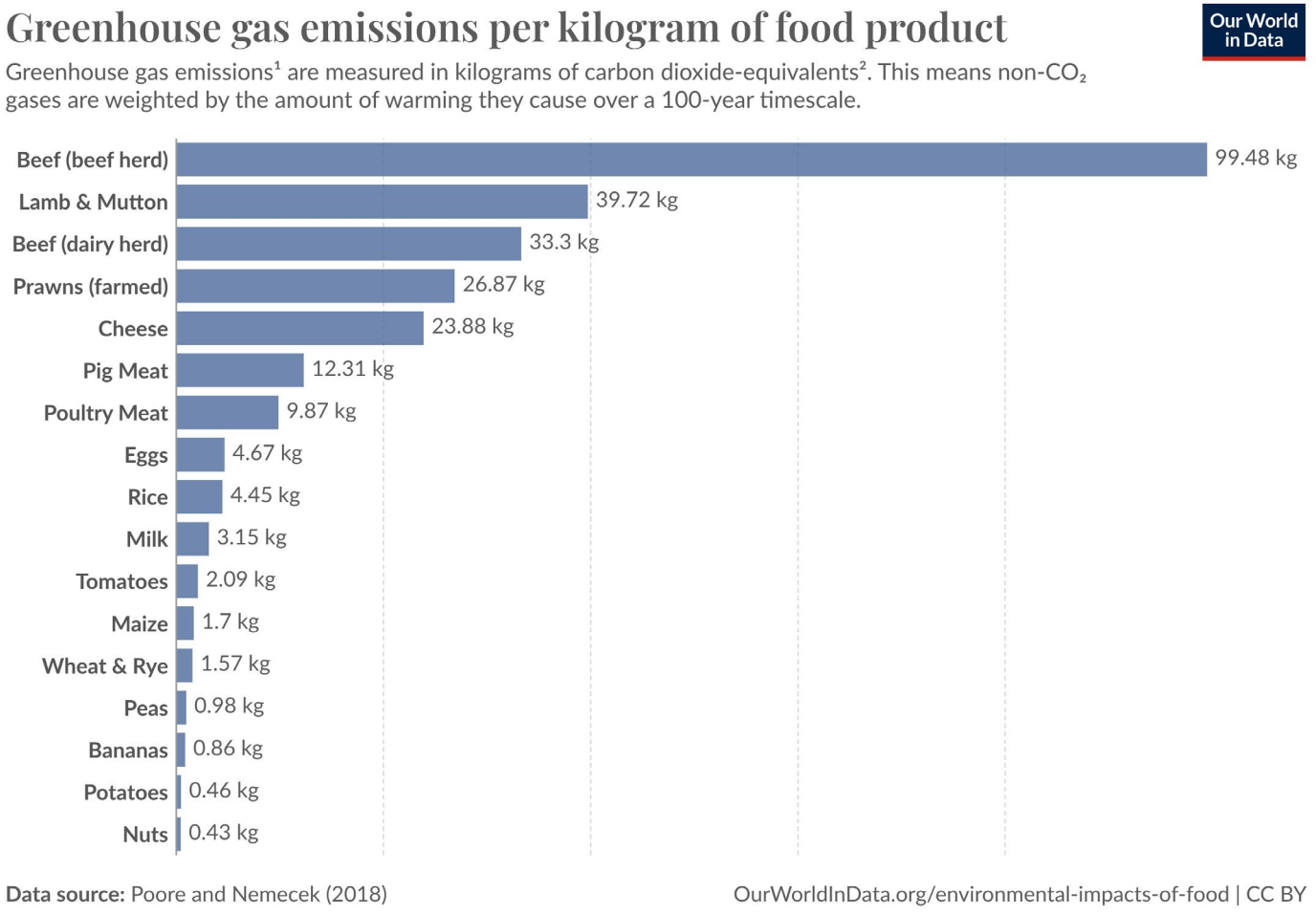
- Revisiting the current debate between animal production/consumption *vs* «protein transition» politics pressures
- Exploring the contribution of those two polarized discourses in relation to the new international agenda on transforming food systems toward a more sustainable (*circular)* future
- Combine classical political economy analysis introducing the «beyond edibles» value/role, with a more sociological approach

- Wicked nature of the problem: is it possible to reconcile the tensions?
- Use of the Reflexive Integrative Comparative Heuristic (RICH) conceptual framework

Problem framing

«Protein transition» falls into the whole food system transformation literature.

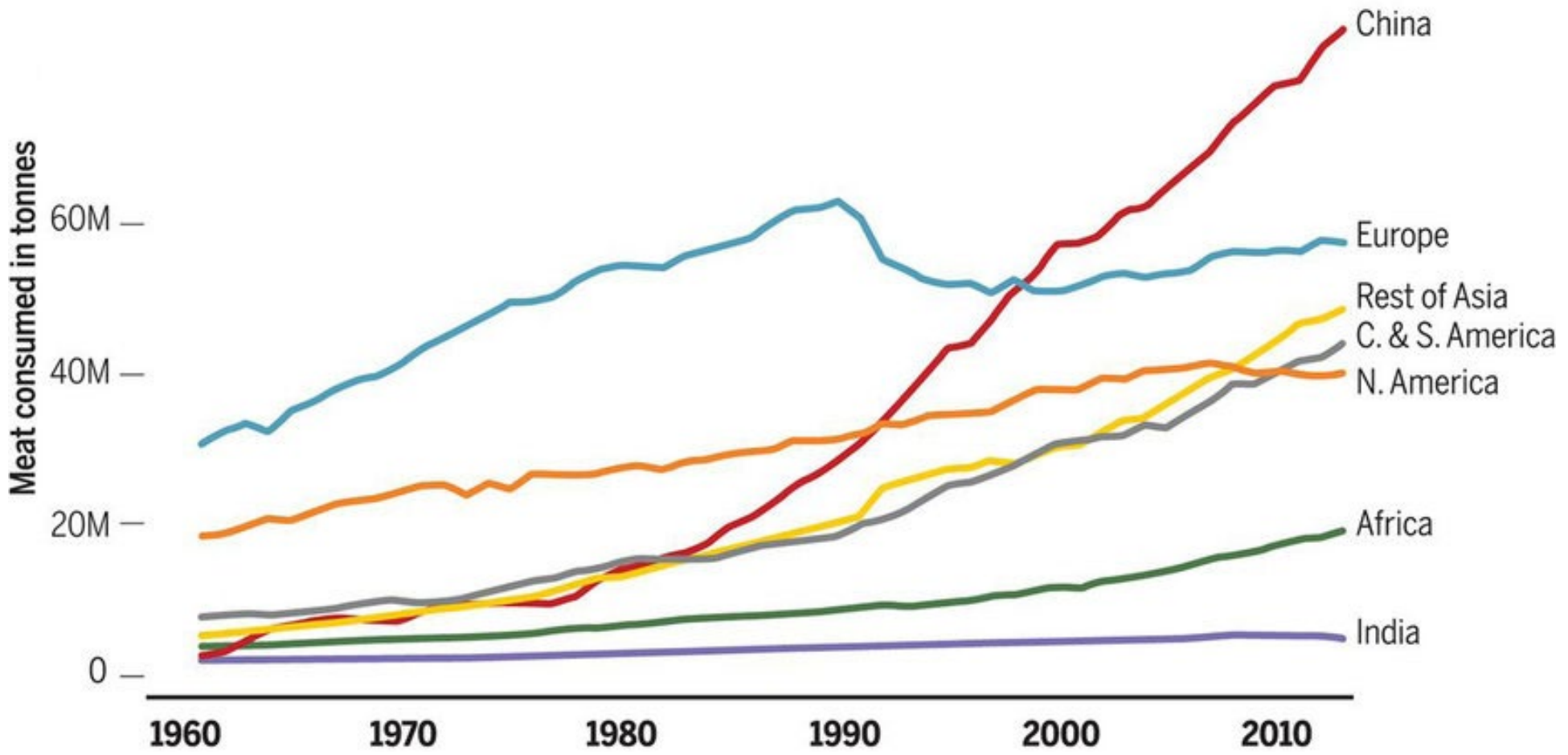
- The livestock sector is estimated to contribute 14.5% of our global GHG emissions, and under some conditions to increase land degradation, air and water pollution, and decline in biodiversity
- It is also well established that animal-based foods provide source of vitamins and minerals (e.g. iron) particularly valuable on low-income countries whose diet is otherwise poor: a modest increase in meat in the diets of the poor in sub-Saharan Africa would produce a large benefit
- The livestock sector provides livelihood to million of smallholder. Clearly, more animal-based food, not less, would be beneficial to many.



Source: Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*, *360*(6392), 987-992.

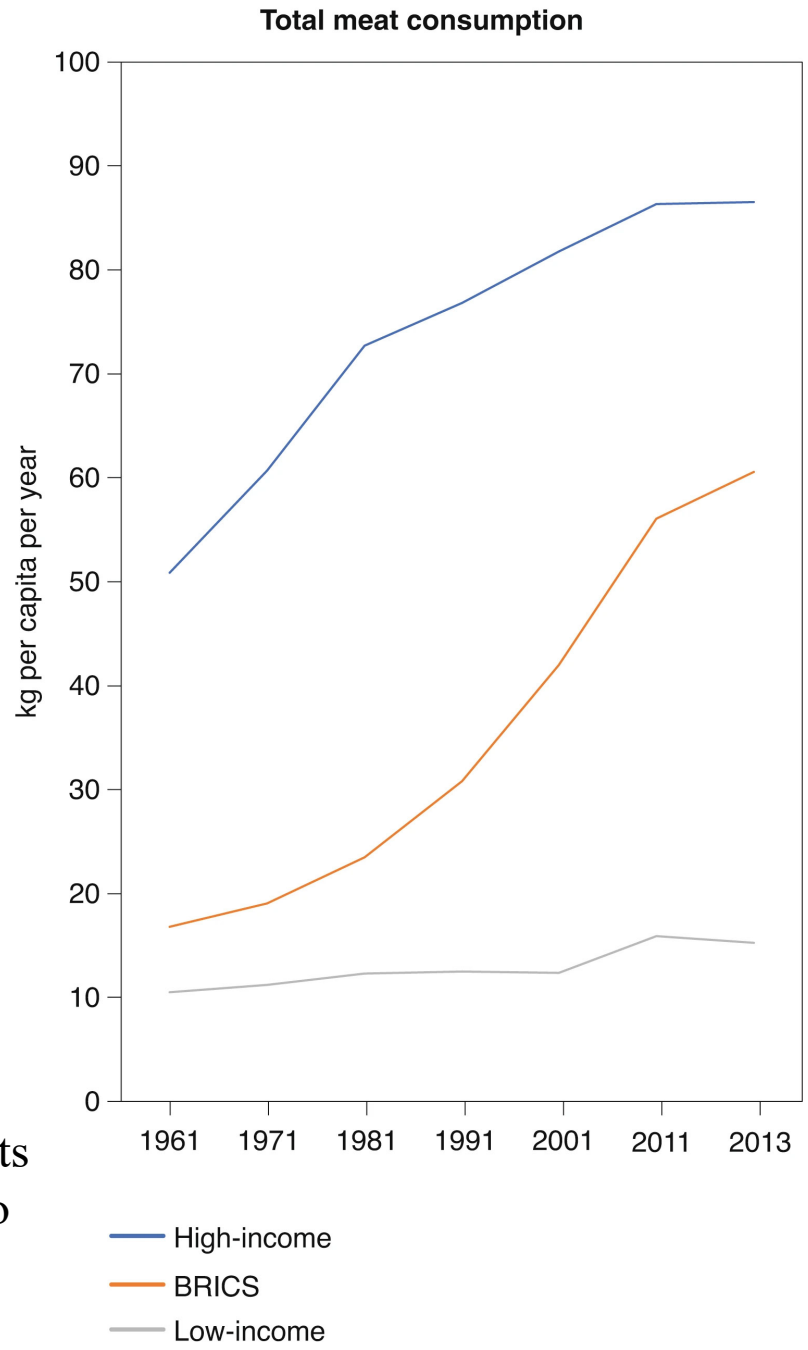
Problem framing

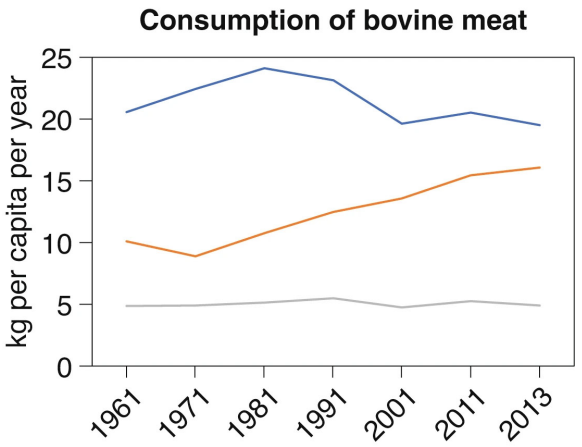
Total meat consumption (in million metric tons) in different regions from 1961 to 2013 – (Godfray et al., 2018)

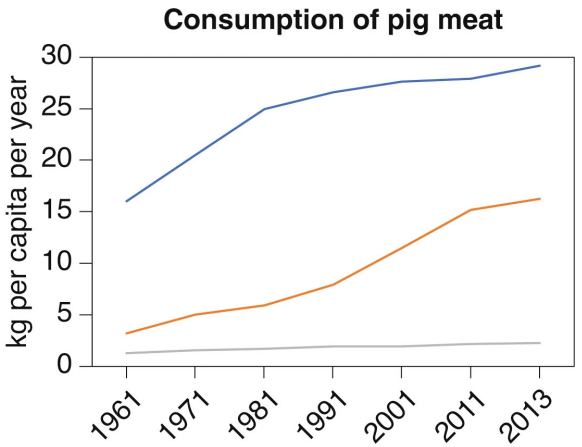


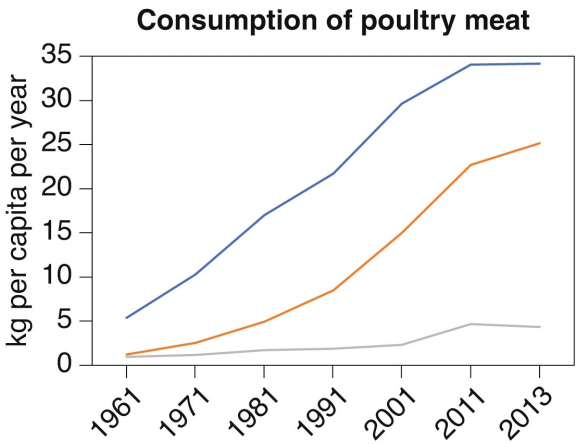
Problem framing

Per capita meat consumption in different regions and type of meat from 1961 to 2013 (Kajsa et al., 2024)







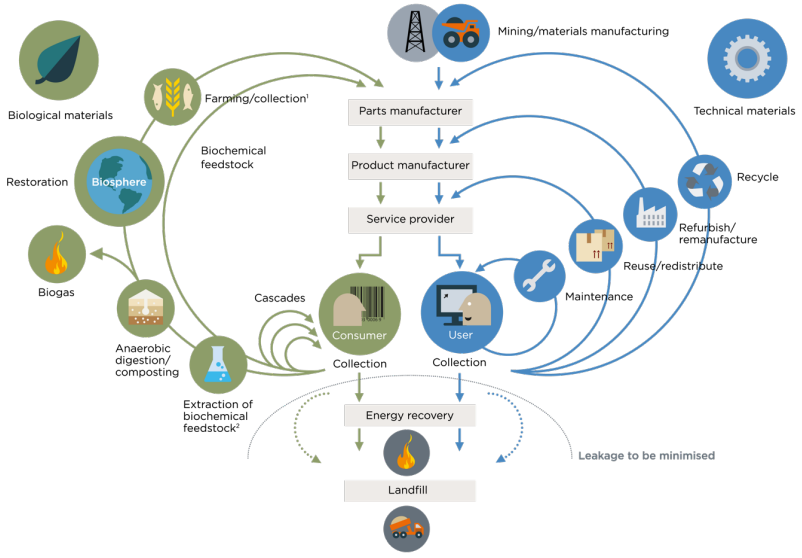


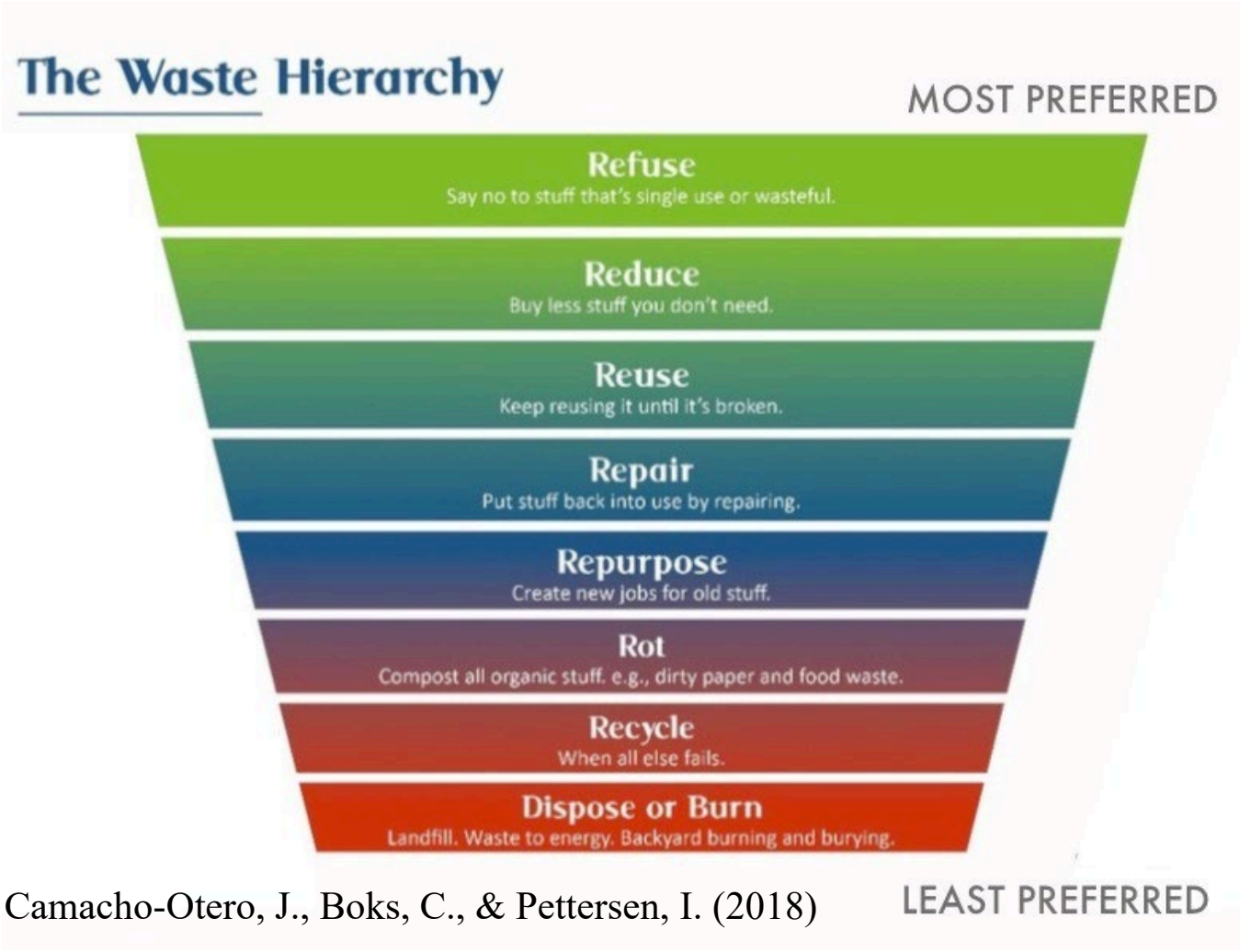
Bennet's law: **as people become wealthier**, their diets change from being largely based on starchy staples to diets that incorporate **increasing amounts** of refined grains, fruit, vegetables, **meat, and dairy**

Problem framing

Circular Economy, a definition:

The circular economy is an industrial ECONOMY that is restorative or regenerative by intention and design - (Ellen MacArthur Foundation, 2012)





Camacho-Otero, J., Boks, C., & Pettersen, I. (2018)

Problem framing

«Protein transition» involves conflicting trade-offs between economic, ethical, societal and environmental objectives and priorities

In a nutshell, two coalitions of actors are facing burning arguments:

1. Pro-livestock supporters
   - **Academics and experts**, some of the largest **agri-food corporations**, such as JBS, Tyson Foods, Cargill and Smithfield who invested billions of dollars in the sector**. Millions of smaller actors** with their livelihood depending on livestock raising
2. Pro-alternative-protein supporters
   - International **environmental or conservation organizations** that push for a drastic cut in the production/consumption of animal-based-protein, mainly meat: EAT-Lancet report advocates for 50% reduction of meat consumption worldwide. Protein transition is promoted in **Germany, South Korea, UK, the Netherlands**.

Current debate between pro-livestock and pro-alternative seems to be deadlocked

Problem framing

No general consensus on how to address this thorny problem and to navigate the necessary trade-offs between human health, nutrition, economic and environmental impacts seems to emerge.

Navigating between those two positions, when it comes to food and especially animal products, it is not just about the interests of the private sector (with power, connections and money) vs. considerations of public health or environmental conservation, even if those two are critical components of the same equation. Instead, a more appropriate way to comprehend this problem is to adopt a more nuanced interpretation of the current discourses and narratives contributing to this lock-in

(Bènè and Lundy, 2023).

We have to refer to this as a **Wicked problem**

Problem types

Tame: the elements are well defined, and the solutions can be verified. Everybody involved will agree on why, what and how the problem should be solved (King, 1993)

Messy: the problem is confusing and constantly changing, causes and effects are ill-defined and solutions are difficult to describe (Fergusson, 2019)

Wicked: problems become more complex because there is no agreement on the definition of the problem, nor an obvious approach to solving it (Rittel and Webber, 1973)

Problem types

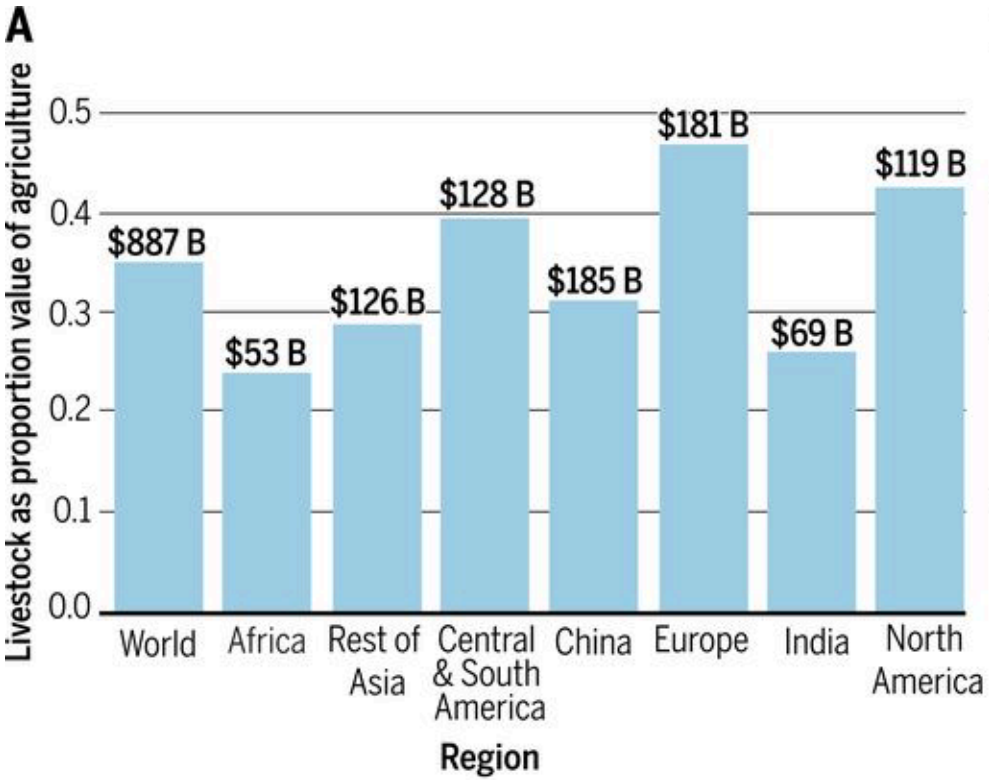
To identify a Wicked problem (Alford and Head, 2017):

- Structural complexity
- lack of knowability
- knowability fragmentation
- knowledge framing
- interest differentiation
- power distribution

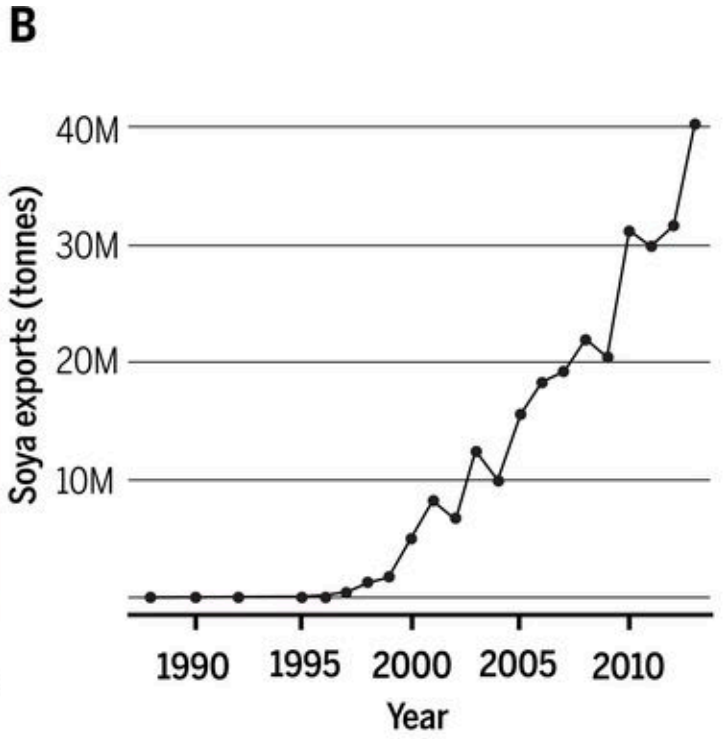
This problem cannot be resolved by aquiring more data

Economics of animal productions

Total economics of meat production - (Godfray et al., 2018)

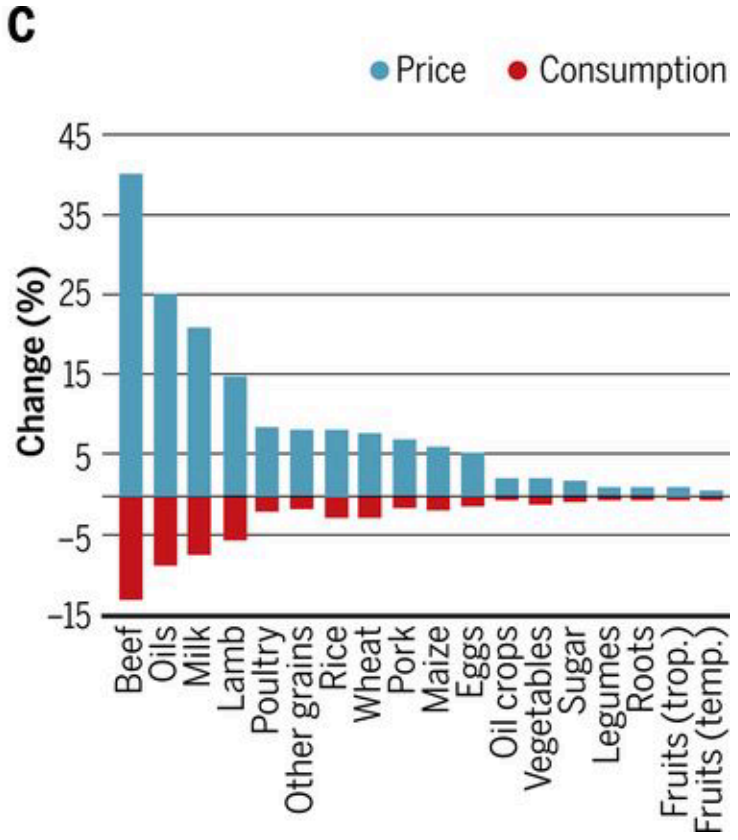


The value of livestock (globally and by region)

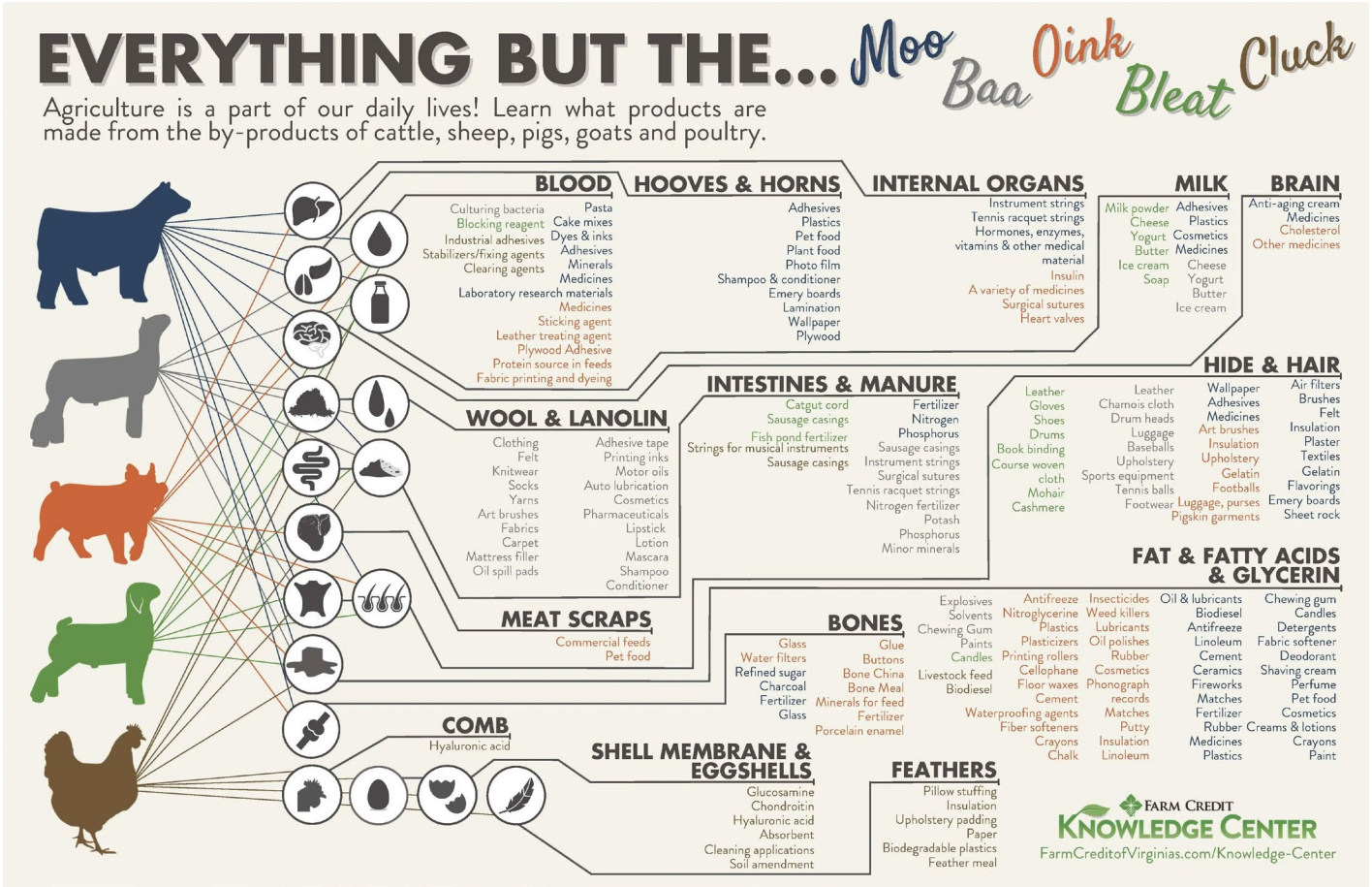


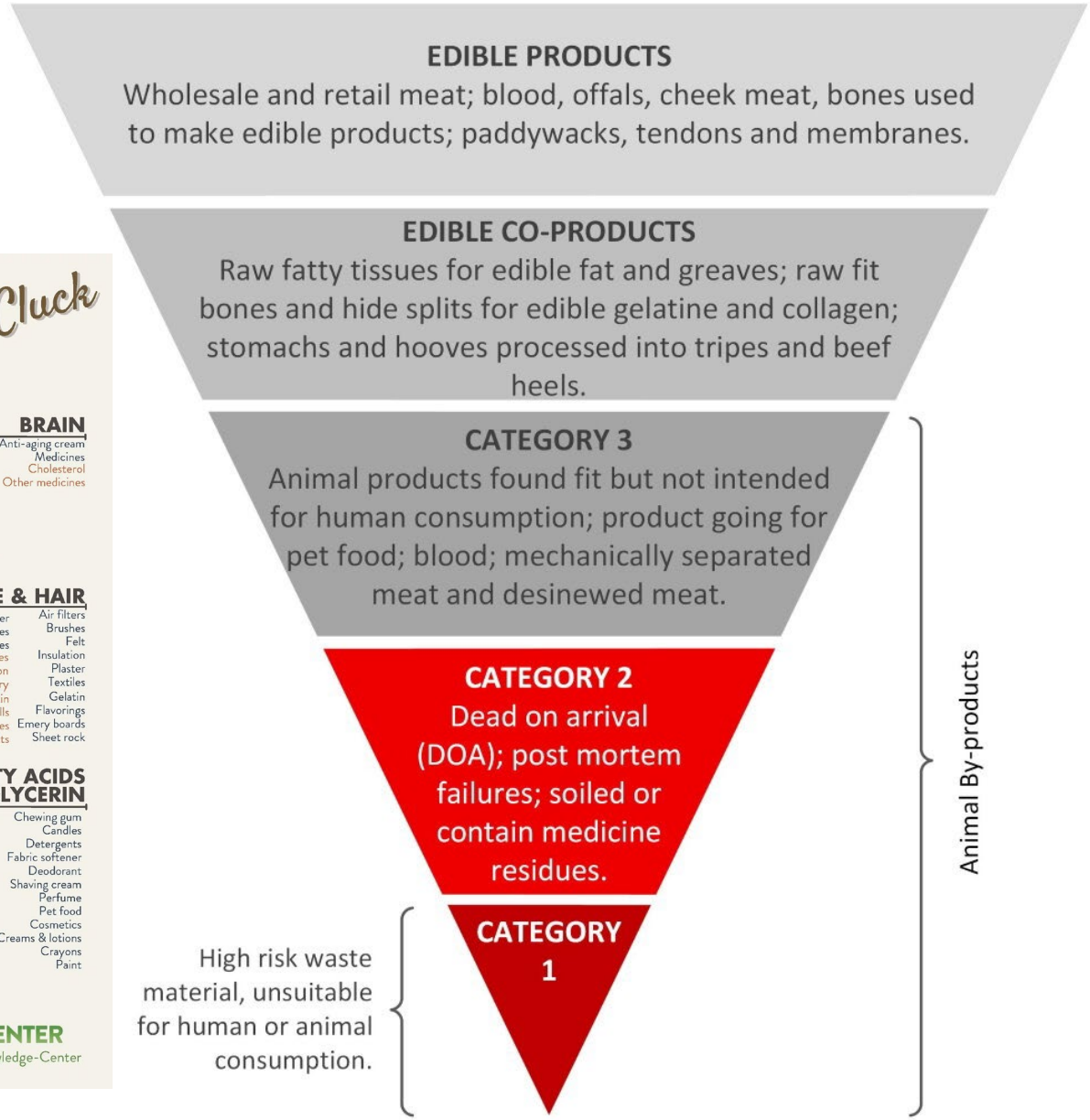
Growth of exports of soya feed for livestock

Predicted change in price and consumption of different food types after the introduction of a globally uniform tax related to GHG emissions



Economics of non-edible animal productions





Economics of leather industry in Italy

- 64% of gross revenue of the Italian agricultural sector is generated by farms with animals
- Non-food products account for only 1% of production
- More than 1,100 companies
- About 18,000 employees
- Annual turnover of 4.3 billion euros
- 99.4 million square meters of finished leather (3 times the area of Italy)
- 7.2 thousand tons
- Leading sector in the world: 63% at EU level, 24% of world total
- 2.9 billion euro export

Economics: power and ditribution of value generated

- From 1961 to 2014 global meat production had increased (in constant US$ 2004-2006 of more than 500% (FAO, 2019)
- This economic value is not spread evenly among farmers, workers, and corporations, or even between countries
- This massive increase in meat production has mainly benefitted big international corporations in the Global North and in some large industrializing countries (specifically, Brazil and China).
- Big corporations do not only control the production, but also the required inputs (upstream sector) and the processing of meat products (downstream activities).
- They also benefited from substantial help from their respective governments.
  - In the US Tyson, between 1997 to 2005 managed to save an estimated US$288 million per year (Starmer et al., 2006), while Smithfield saved the equivalent of US$284 million per year for the same period (Starmer and Wise, 2007).

Economics: power and ditribution of value generated

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- In China, the pork industry has also received massive support (Schneider, 2017) accounting for an estimated US$ 22 billion during the early 2010s, which would represent the equivalent of a US$ 47 subsidy per pig
- Same pattern in Brazil where JBS benefited from substantial financial supports from federal feed subsidies

Economics: power and ditribution of value generated

- Howard (2016) and Schneider (2017) provide detailed accounts of various interferences of national/federal governments in the economics and finance of the “Big Meat” industry.
- Financial interests and political agenda of those governments have become so entangled with those of the industry that it is now very difficult for those governments to reverse the tide and engage in the types of drastic policy changes that would be necessary to maintain the global food system within planetary boundaries

Economics: power and ditribution of value generated

- Another piece of the puzzle of this political economy analysisi is the failure of the so-called «livestock revolution».
- It was meant to benefit smallholder all around the world, mainly in less developed countries, but empirical data demonstrate that did not and the beneficiaries have been mainly the big companies

Alternative protein movement

- The meat substitute market is expected to reach annual sales of US$12 billion by 2025 and $17 billion by 2027, with an annual growth rate of 15–18% projected from 2020 to 2025 (Meticulous Research, 2020)
- Europe is currently the largest market for these products, particularly high in Germany, France, the Netherlands, the United Kingdom, Italy, and Sweden, even if Asia is currently estimated to be the fastest growing market (Mordor Intelligence, 2020, cited in Howard et al., 2021)

Alternative protein movement

- Unknown impacts of plant-based meat alternatives on long-term health (Akila SRV and Henry, 2022)
- The image of the smart and friendly start-ups striving to find a solution to the unsustainability of our food systems needs to be replaced by the cold reality of a growing market, worth billions of dollars, being appropriated and now almost entirely controlled by some of the largest corporations of the global food system.
- Completely underestimated the effect on local community and the needs of smallholders in the global south (mainly sub-Saharan Africa and part of South Asia (Gibson, 2021)

Concluding remarks

- Meat industry in both high and lower-income countries, is rapidly changing, but perhaps more importantly, those changes have been driven, and continue to be driven, by markets forces and powerful actors.
- A rebalanced discussion of the roles of livestock in society is needed
- Researches are demonstrating the incompatibility of current and projected levels of consumption of animal products with the imperatives of bringing humanity's economy within the planetary biophysical limits, that is, making it sustainable.

Concluding remarks

- It seems that reducing animal base production is what we have to face in the future
- Global adoption of the so-called modern Western diets, to which the world is rapidly transitioning, is both quantifiably unachievable within the planetary resource base
- Modern research on the role of livestock in human diets and livelihoods is not about accumulating more evidence to support the above, but about the best pathways to just transitions to sustainable food systems

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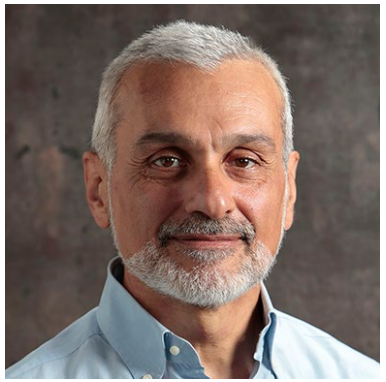
Questions and comments are welcome



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