Working paper

Identifying civil society's research priorities on sustainable livestock and protein

A collaboration between the Food Climate Research Network,
the Livestock, Environment and People programme,
and the Eating Better Alliance

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1. Introduction

Civil society organisations play an important role in shaping debates about food, livestock and sustainability. Embroiled in day-to-day discussions about livestock problems and futures, they are often ahead of the curve when it comes to identifying important questions, and in highlighting areas of uncertainty and disagreements between stakeholders which can cause confusion, block action or boil over into hostilities.

This working paper is part of a project run by the FCRN, the Eating Better alliance and the Wellcome Trust-funded LEAP project, who has also funded this work. The project aims to identify livestock- and protein-relevant questions, contestations and misunderstandings that the NGO community feels to be important, and that merit further research. **Ultimately, the goal for this project is to come up with a short set of societally-relevant priority topics that could form the basis of interdisciplinary research and wider public engagement.**

This paper sets out the insights gained from a series of 14 semi-structured interviews that we have conducted. During the interviews, we asked senior staff members from a variety of NGOs about their perceptions of debates around sustainable livestock and protein: issues that they expect to become critical over the next few years, knowledge gaps where NGOs would benefit from more research, contentious debates where different values clash, and areas of frequent misunderstanding. We have clustered their comments and insights into five broad themes, which are set out and discussed in Section 2, below.

The aim of the workshop on 21 April 2020 is to further explore the perspectives we heard during the interviews and then distill the uncertainties, confusions and knowledge gaps **into a shortlist of priority research questions,** to be set out in a final document, that could inform the direction of future academic research.

2. Knowledge gaps: five clusters

The clusters below reflect our understanding of how the concerns raised by the 14 interviewees relate to each other. We have outlined the main categories into which the points fall, and also set out some potential research questions relevant to each cluster. These should only be regarded as starting points for further exploration during the workshop. **We ask you, the reader, to ask yourself: are these research questions the right questions, the only questions, and the questions of highest priority?**

2.1 Good protein, bad protein? Society, economy, and health

The social, economic and health dimensions of different types of protein rich foods dominate current stakeholder discussions about what constitutes healthy and sustainable food systems. There was a tendency and preference among interviewees to think about the idea of "What is good protein?" in a holistic, interconnected manner. That is, they stressed the importance of looking at all aspects of "goodness" – health, livelihoods, environment, and so forth, and the interactions between all of these – rather than focusing on each issue in isolation.

Nevertheless, questions relating to specific issues did arise and – for the sake of discussion – can be classed into the following broad categories:

- **Health:** the comparative health effects (including both nutritional content and issues such as antibiotic resistance) of different protein sources.
    - There is uncertainty about how the health impacts of **plant-based foods** compare with those of red meat and poultry (although poultry was generally mentioned less than red meat). One interviewee suggested that it is difficult to make sense of the evidence because stakeholders often cherry-pick evidence to suit their position.
    - There are also questions about the health risks associated with **different types of red and processed meat** (for example bacon versus lamb chops), as well as with **similar products from different livestock systems** (for example, pasture versus feedlot beef).
    - There are uncertainties around the health impacts of **highly processed** meat substitutes (such as **plant-based burgers and cultured meat**). The FCRN's reflection on these concerns is that they mirror – and may partially result from – concerns about the health impacts of 'ultra-processed' and 'junk' foods. They relate not only to the nutritional characteristics of individual foods (e.g. their salt or fat contents), but also to the role of these foods in overall dietary patterns that are considered unhealthy.
    - Several interviewees expressed discomfort with the way **epidemiological research** on red and processed meat is sometimes summarised (or communicated) as 'red meat gives you colorectal cancer'. They argued that the results of cohort studies may be confused by **confounding factors** and that it is

difficult to make sense of the exact level of **risk** that people experience when they consume red meat.

- **Socioeconomic concerns:** particularly regarding the livelihoods of livestock farmers, the relative levels of investment in (less processed) pulses versus processed plant-based foods and cultured (lab-grown) meat, and the balance of power between stakeholders in the supply chains of different protein sources.
    - Some interviewees were concerned that messages to completely avoid red meat do not reflect the nuances of health research and can present **a challenge to farmers' livelihoods.**
    - Concerns were raised over the **power structures and degree of consolidation** in the supply chains of plant-based meat substitutes compared to ruminant products – the fear being that a few large corporations may control the supply chain, undermining rural livelihoods and food sovereignty in the UK and globally (see also the section 'Just transitions: fairness for farmers' below).
    - One interviewee, however, argued that plant-based and cultured meat alternatives could potentially help to **redistribute power to smaller producers** by making use of local agricultural produce. This interviewee called for further technical research on how to manufacture and scale-up the production of plant-based meat analogues, cultured meat and also protein-rich foods based on fermentation (e.g. production of synthetic dairy proteins in bioreactors).
    - Several interviewees suggested that the enormous amount of attention (and funding) directed towards processed meat alternatives overshadows **(unprocessed) pulses,** which may (they argue) both be better for health and generate lower environmental impacts. They called for more research on new and traditional pulse types suited to various climate and soil conditions.

Finally, it should be noted that some interviewees queried the focus on protein in the first place, given that most people in the Global North already eat more protein than necessary.

Potential research questions:

- How do different types of plant-based or cultivated meat substitutes (both new and 'traditional') impact on **public health?** How do these impacts compare to risks associated with different types of red meat or poultry? What do we mean by 'impact' (e.g. nutrient content versus health outcomes?) and what are the most useful ways of measuring it?
- What are the differences between the nutritional characteristics of products (animal or plant) when produced by **different farming systems?**
- How are **supply chains** for processed, plant-based meat substitutes organised? What **socioeconomic changes** may result from a growth in the production and consumption of cellular and plant-based meat substitutes?
- How can the health, environmental, and socio-economic impacts of production systems be understood in an **integrated way?**

2.2 Measuring methane: GWP* and its implications

The research and communications that have recently come out of the University of Oxford about GWP* and the implications for thinking about methane, have intensified discussions about the role of ruminants in our diets. This was a major area of interest for interviewees, particularly as regards the UK context. The questions and concerns interviewees raised included the following:

- **Methane in context:** The issue of methane and GWP* is just one aspect of the livestock debate. It sits within wider concerns about the sustainability of ruminant farming, such as land use change (both direct and indirect through feed imports), nitrogen leakage, animal welfare, nature conservation, and farmers' livelihoods.
    - Several interviewees pointed out that the **methane focus has led to other issues being ignored** in debates and communications about ruminants. One said *"it is also important to recognise that we have got some really really big decisions to make anyway – and [methane and GWP* are] are part of the story but [are] not the whole story".*
    - Land use came up multiple times in relation to this. One interviewee advocated a '**national land use strategy**' that considers the potential for freeing up pasture land for tree planting, restoring peat soils, as well as options for reintegrating trees and agroforestry into livestock systems. Another interviewee pointed out that many calculations on the carbon impacts of meat and livestock do not consider the **carbon opportunity cost of not using the land to grow trees**.
- **Temporal dynamics:** The second area of concern raised is that communications on GWP* may have a **bias towards the status quo**.
    - One interviewee said: "*As a metric it might be […] interesting but it strikes me that it has embedded within it a **status quo bias**. [W]hat I'm seeing is that there are a number of livestock farmers who have picked it up and said 'we're not part of the problem […] as long as we're reducing our herds by 0.3% a year, leave us alone, go after the frequent flyers'. And kind of they are right […] but we really haven't hashed out what the difference between those [emissions] are. [M]y understanding of the science is that livestock are responsible for about a quarter of a degree of temperature at the moment. [**T]he fact that we're choosing to hold a quarter of a degree when we have the option not too, obviously has lots of negative consequences**."*
    - Another pointed out that the research on GWP* is likely to lead to more discussion about reductions in **ruminant farming** as a potential **short-term option to mitigate global warming**.
- **Comments on the use of GWP* in advocacy**
    - Some interviewees were pleased to see that the development of the new GWP* metric has shown the ruminant sector's contribution to climate change to be, historically, as well today, **minor compared with that of the fossil fuel industry**. Others were more sceptical that this is the appropriate conclusion to

draw, and were of the view that ruminants' contributions are **still very significant**.
    - Overall, our (the FCRN's) reflection is that there is confusion within the NGO community about how the research on GWP* should be **interpreted** and a sense of uncertainty stemming from the fact that **the potential policy implications of GWP* have received little attention from the research community**. Members of the NGO community are concerned that GWP* will be **misused in advocacy and policy making if the research is not interpreted carefully**.
    - We (the FCRN) also found that in the way interviewees discussed GWP*, they **focused mostly on the UK context**, even though there are also questions about GWP* and equity in relation to other areas of the world and globally.

Potential research questions:

- How should we think (and communicate) about **methane emissions from ruminants in the context of other concerns** related to ruminant farming, such as nitrogen leakage, land use change, biodiversity loss, animal welfare, and farmers' livelihoods?
- In what ways could research communications on methane and GWP* be improved to avoid **the impression of bias, or actual bias, towards a status quo** in ruminant farming?
- What are the possible implications of the GWP* metric for equity in relation to **burden sharing in international climate policy?**
- How could the GWP* metric be used as a tool in **policy and decision making** as well as in climate communications, **given the fact that GWP* is inherently dynamic** (i.e. it measures a *change* in emissions)?

2.3 Salvation by soils: are soils and trees a climate solution?

The FCRN tried to add clarity to the debate around whether grazing livestock can sequester carbon via its *Grazed and Confused* report. Nevertheless, the issue of carbon sequestration – both in soils and in above-ground biomass – remains contentious and was identified by many interviewees as a major area of confusion.

Questions clustered around the following points:

- Does **regenerative agriculture** offer a climate solution? Several interviewees said more research is needed on the benefits and drawbacks – both for **climate and for soil health** – of different farming systems that fall under the umbrella of "regenerative" (also known as "restorative) agriculture. One said *"We need to embrace [restorative agriculture] or we need to kill it, and can't do either because the evidence isn't there."* Note from the FCRN: none of the interviewees clearly defined regenerative or restorative

agriculture. It could be useful to seek greater clarity on how stakeholders use the terms and which specific farming practices they perceive as falling into this category.

- Knowledge gaps around how **soils** behave under different conditions.
    - Can **soil depth** increase rapidly enough to sequester significant amounts of carbon? *Grazed and Confused* concluded that soil carbon – measured as a percentage – often **plateaus** after a few decades, but many in the grass-fed livestock community argue that soil *depth* continues to increase indefinitely, offering **ongoing carbon sequestration** as the total quantity of soil (and the carbon it contains) grows.
    - How is **soil carbon sequestration** affected by variables such as **climate, grazing, crop rotations, agroforestry, soil microbes or ploughing?** One interviewee pointed out that the argument that cows can sequester carbon is often made by people from drier climates, such as South Africa, and that the argument doesn't necessarily apply to wetter climates such as Scotland.
    - Two interviewees mentioned **wood chip fertiliser** as a potential carbon sink and suggested a need for more research here.
- The contribution of **trees** to carbon sequestration.
    - One interviewee said there are evidence gaps around the carbon implications of planting trees, particularly during the **first ten years** after planting. More evidence is needed on the impact of factors such as **tree spacing, the presence or absence of livestock such as sheep, microbial interactions, the albedo effect and the underlying land type** (e.g. Sitka spruce plantations are not suitable for peatland).

Potential research questions:

- How quickly and consistently does **soil depth** increase (if at all) under different livestock and farming systems, and how does this affect the total amount of carbon that can be taken up and retained in a stable form by soil over a given time period?
- What are the short- and long-term carbon impacts of **planting trees** (or letting trees and other vegetation regrow naturally) in different contexts and conditions and what are the opportunity costs as regards food production foregone?
- **What is regenerative agriculture?** Is a clear definition possible?
- How do **different types of regenerative agriculture** (e.g. agroforestry, holistic grazing or stockfree organic) affect carbon and soil health?

2.4 Just transitions: fairness for farmers

The concept of – and the need for – a just transition was raised by many interviewees. This issue broadly relates to how transitions in patterns of production, distribution and consumption – including, but not limited to livestock and animal products – can be achieved in a way that treats people fairly. Most of the concerns expressed were around how livestock farmers can be supported. The focus was mainly on the UK, although concerns were also raised about global North-South fairness for both farmers and consumers.

The rationale for a 'just transition' centred on two main considerations:

- **Fairness:** how can those across the world whose livelihoods will be affected by changes in the food system best be supported?
- **Acceptability:** fear of loss causes many stakeholders to resist change in the system. How can those people be supported in order that the necessary changes become widely acceptable to both the public and to most stakeholders?

The issues raised included:

- **Financial concerns.** Transitions towards more healthy and sustainable food systems will involve changes in production patterns. These will include shifts in the types of food that must be produced – e.g. a shift from livestock towards crop production – and also shifts in the methods of farming – e.g. towards grass-fed and away from grain-fed meat. Patterns of employment and livelihoods are therefore likely to change. Farmers may worry that they might earn less or lose their job entirely. In response, they may seek to shift to new products or alternative farming models such as agroecology. However, there are financial risks in switching business models, particularly as there is limited information on the financial viability of many alternative farming systems, and since it can take a long time for investment in crops such as nut trees to pay off (since it may be several years before the first harvest). Therefore, said one interviewee, farmers need financial support if they are to change their production patterns.
- **Cultural barriers.** Farmers may not want (or be able to) to give up their present way of life, particularly if their families have been farming the same land in the same way for generations. They are also part of rural communities, and one interviewee spoke of farmers being rejected by their neighbours after giving up their livestock. Such worries may be exacerbated by a perception that researchers are anti-livestock or anti-farmer.
- **Access to knowledge.** Farmers who want to switch to alternative products or methods – e.g. growing legumes – often find it hard to find the knowledge, training or research results they need to successfully transition. This is especially the case for alternative farming methods with relatively low chemical or mechanical inputs, for which there may be relatively little information available. In contrast, said one interviewee, information on farming 'conventionally' abounds, with manufacturers of (say) pesticides or farm machinery often posting tutorials on YouTube and elsewhere. One interviewee said that farmers often assume it is impossible to grow organic crops without animal manure, while noting that examples of stockfree organic farms nevertheless do exist in the UK.
- **Global justice.** Interviewees spoke of the need for fairness and cultural sensitivity when discussing transitions in livestock production. What is true of the Global North may not apply in the Global South. For example:
    - To what extent should **shifts in livestock production take place in the North or South,** particularly given the differences between typical livestock production systems in low-income countries (often extensive grazing) and high-income countries (often intensive production). Some farmers (and academics) may have internalised a **"feed the world" narrative** whereby they feel they have to keep

on producing even if consumption of a particular product in their own country is low (e.g. Scottish lamb and mutton).
    - How can everyone across the globe who wants to eat **"less and better meat"** access and afford it?
    - One interviewee emphasised that academics and civil society organisations need to **be careful in how they talk about plant-based meat alternatives in relation to the Global South,** as this can easily be interpreted as patronising in the sense of telling people what to eat – especially since at the same time the Global North imports large amounts of feed crops from the Global South, e.g. soy from Brazil.

Potential research questions

- How **many and what type of jobs would be created or destroyed** by different policies aimed at achieving a transition away from livestock production? One interviewee said it would be "an absolute gamechanger" to have this information, which already exists for the energy sector.
- **What policies would help farmers** to make the necessary changes to their farming systems? For example, what mix of **regulations, financial incentives/penalties and access to practical information on alternative farming systems** would support farmers most effectively?
- What are the implications of a single country transitioning given the interconnectedness of the global economy and what would need to be done to avoid **negative rebound or leakage effects?**
- How are different communication styles from NGOs around plant-based meat alternatives perceived by **audiences in the Global South?**

2.5 The public: attitudes and actions around protein shifts

Many interviewees felt that researchers don't understand how change actually happens in the real world. They feel that researchers may underestimate the importance of how research is communicated to the public (as well as to policymakers), and how people's values and belief systems influence how they interpret a message.

The points raised by interviewees fell into the following categories:

- **Politics and stereotypes.**
    - Debates about food are often **polarised and tribal.** One interviewee suggested that this could partly be because food is strongly linked to the emotion of disgust, which has been shown to be a strong predictor of whether people hold broadly left-wing or right-wing views.
    - **Stereotypes** often influence debates. For example, particular diets may be associated with particular political stances ("vegans are urban liberals who like

junk food", "meat-eaters are right-wing and macho", and so forth). Similarly, consumers might think that "all farmers are the same".
    - People may perceive suggested dietary changes to be an **affront to personal identity,** particularly if meat-eating plays an important role in their culture (e.g. BBQ culture in Texas or a fondness for "traditional" (grazed) landscapes in, say, the Lake District or the Scottish Highlands).
- **Effective communication.**
    - **Personal values** such as attitudes towards individual freedom and choice play a role in how messages from researchers and NGOs are perceived. For example, discussions about food taxes or dietary recommendations may be seen as a manifestation of the "nanny state" or, alternatively, a necessary correction of market failure.
    - Communication can sometimes make the public feel **alienated.** One interviewee suggested that debates about diet are often led by the "elite" – in this case meaning environmentalists, parliament and the meat industry – rather than by the general public. Another said that it is important to find ways of communicating that do not trigger **mental "blocks"** (thoughts or assumptions that cause a person to disengage from a message or debate) and that don't appear elitist, know-it-all or uncaring.
    - An interviewee suggested that a way around the problem of alienation is to **recognise people's concerns** (e.g. "What about my local farmers?") and try to **find a way forward that addresses these concerns** while still making the required changes.
- **Effective research on behavioural change interventions:** an interviewee said that, according to some NGO research, researchers often neglect the types of interventions that might be most useful to industry – such as training food service staff to prepare plant-based foods – in favour of those that are easy to study but not perceived to be as effective by industry, such as food labelling.

Potential research questions:

- What ways of communicating about food and diets are **least likely to alienate** people?
- How can researchers **gain a clearer sense of how their messages are likely to be interpreted** by stakeholders with different sets of personal values, beliefs and assumptions?
- How can policies that address the concerns of a range of diverse stakeholders be identified? In other words, what engagement **processes can researchers use to find win-win solutions?**
- Further research into behavioural interventions that are assessed as likely to be both feasible and impactful by the food industry that have a limited evidence base (see the report Playbook for guiding diners toward plant-rich dishes in food service for specific examples, particularly pages 62-63 for conclusions).

3. Reflections on the influence and limitations of scientific research

A recurring concern, which cross-cuts all the themes from the interviews, is that research often focuses on a narrow subset of the issues, whereas the NGO community's interest lies in an **integrated understanding of food system challenges** and the relations between them.

Several interviewees welcomed studies such as the **EAT-Lancet report** for providing an overview of various issues that makes it easier for the NGO community to identify their priorities. Others, however, stressed that there is a great **need for more granularity**, that is, for research that assesses the **characteristics of specific or local (livestock) systems, rather than relying on broad averages**. There was broad unanimity that an integrated, more systemic understanding of the issues and concerns around livestock and protein, *needs to be sensitive to* the specificities of different production systems and production contexts.

Important in this respect, is **the gap that most interviewees perceive to exist between the research and farming communities**. Collaboration between researchers and farmers could contribute to a more detailed understanding of local factors and differences between farming practices. They might also increase researchers' practical knowledge of farming and their understanding of the different priorities farmers need to balance.

Some interviewees were concerned by how research and research communications often **report only single environmental issues** and compare solutions in terms of environmental efficiency (e.g. **GHG/kg food**). In part this may be a direct consequence of the (necessary) reductionism that is inherent in the scientific method, but some interviewees emphasised that, nevertheless, **researchers should be more aware of the context in which their articles and reports get interpreted**, and how their findings may influence the debate – including the risk of **findings being cherry-picked** to support a particular position. One interviewee said:

> *"I get frustrated that some papers are so narrow in their scope. That while they present their findings clearly, they don't properly think about the wider relevance and context of their findings. [Y]ou can read a paper about [say] the carbon footprint of [something], but in the absence of actually contextualising that in the broader picture of how significant their answers really are […] - I think [this] gets in the way of clear thinking, and it* ***allows people to use a kind of partial or incomplete picture of the evidence****. That's probably the area that is most difficult."*

This speaks to the need for reporting research findings carefully when they concern just one aspect of a complex and contentious issue. Several interviewees stressed that **easy messages** such as 'veganism is the answer' or 'cows don't cause climate change', and **biases against livestock farmers**, are very unhelpful in this respect - **especially when they come from researchers**, which some interviewees felt to be the case.

In addition to this, some interviewees emphasised that they **struggle to keep on top of the enormous amount of research** that gets published in this area, and that there remains a great need to bring all of this together and make it comprehensible to a broader audience. For example, one interviewee said it would be invaluable to map the main recommendations of the top reports in the area, pointing out where reports agree and disagree.