4th Note on Critical, Emerging and Enduring Issues
The Vegan Society Response

10. All the issues are interlinked, however, for the purpose of analysis and focus they have been presented separately. Please let us know if in your view some of the issues could be combined, or if the linkages between different issues should be further strengthened in the analysis.

Animal agriculture is a cross-cutting issue, with strong linkages across the different themes identified in the draft note. These linkages should be more explicitly reflected in the analysis.

Animal agriculture is a leading driver of climate change, biodiversity loss, deforestation, pollution, zoonotic diseases and antimicrobial resistance (Pendrill et al 2019, Scarborough et al 2023, Rockstrom et al 2025). As such, it is highly relevant to Issues 2 (climate crises), 3 (three Rio Conventions: Biodiversity, Desertification and Climate) and 8 (One Health). More detail on Issues 2 and 8 is provided in answer to Question 11.

Furthermore, animal-source foods are generally significantly more resource-intensive to produce than plant-source foods (Marlow et al 2014), hence tend to be more vulnerable to systemic shocks and global trade disruptions that affect the supply and price of key agricultural inputs. In addition to the reliance of animal agriculture on feed production (as detailed below), diets high in animal products (defined as more than one serving of meat per week), compared to diets low in animal products (less than one serving of meat per week) have been found to require 515,273 kJ more energy, 9,677 g more fertiliser, 294 g more pesticides and 533,102 litres more water annually (Marlow et al 2014).
For these reasons, the production of animal-source foods is highly relevant to Issues 4 (geopolitical uncertainty and polycrises), 5 (international trade) and 9 (affordability). Further information on Issue 5 is provided in answer to Question 11.

Animal-based food production can also in some circumstances be relevant to SDG 2 (Zero Hunger) – and therefore Issue 1 (post-2030 development agenda) – because of the inherent caloric and land-use inefficiency of feeding human-edible crops to farmed animals (West et al 2026, Poore and Nemecek 2018). Around 83% of global agricultural land is associated

with the production of animal products, yet these foods provide only 18% of global calories and 38% of protein (Poore and Nemecek 2018). A recent study estimated that if all crop calories were instead directly consumed by humans, enough calories would become available to feed an additional 7.2 billion people (West et al. 2026). While hunger is a multi-factorial problem, the greater land use efficiency and (in most circumstances) reduced environmental footprint of plant-based food production provide potential mitigation of hunger in certain contexts.

In regard to Issue 9, because of the reliance of industrial animal agriculture on more inputs, transitioning to a more plant-based food system is therefore expected to deliver affordability benefits in many circumstances. Recent work by The Vegan Society found that, since 2022, the average price of a portion of plant protein in the UK, for instance, has increased by just 14%, compared with an 89% increase for the average price of a portion of land animal protein (The Vegan Society 2026). Structural issues such as trade and direct and indirect subsidies for animal agriculture can, however, put plant-based foods at a price disadvantage. A recent study published in Nature (McRae et al. 2026) found that in other Global North countries – specifically, Finland and Canada - price remains a key barrier to the adoption of plant-forward diets, particularly for financially marginalised people. The authors conclude that equitable and sustainable transitions towards plant-based proteins require policies and retail strategies that reduce cost barriers to a healthy diet and ensure accessibility across socioeconomic groups (McRae et al. 2026).

While existing subsidies can artificially lower the retail price of animal-source foods, such subsidies act against a resilient and sustainable food system. In this regard, the draft note rightly recognises that subsidies that "currently encourage production systems that degrade ecosystems, pollute water, erode soils and do not improve food security and nutrition" should be repurposed.

In conclusion, the draft note does not address the specific impacts of animal-based food production and consumption in its evaluation of many of the individual issues and should do so in more depth. It must also recognise that features fundamental to large scale production of animal-based foods – inefficiencies in calorie conversion and land use, greater reliance than plant-based foods on external inputs, and environmental impacts – are interlinked and should therefore be considered systemically.

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11. Share your inputs on one or more of the ten CEEI listed. *Are the drivers and trends identified fully capturing the link of each respective CEEI with food security and nutrition (FSN) outcomes?*

CEEI #2: Achieving food security and nutrition in climate crises

While the draft note acknowledges that climate change is "disrupting agricultural productivity, livestock systems, fisheries, and the stability of food supply", it would benefit

from a more explicit consideration of how dietary reliance on animal-source foods exacerbates vulnerability to climate shocks.

Animal agriculture is particularly vulnerable to climate change

Animal-source foods are particularly vulnerable to climate change impacts relative to plant-source foods. Climate change threatens the production of animal-source foods both directly (e.g. farmed animals can experience heat stress, reduced growth and reproduction, and higher risks of disease, parasitism and mortality) and indirectly (e.g. through reduced yields and losses in crops used as animal feed) (Rojas-Downing et al. 2017, Guiné 2024, Bhowmick and Suri 2025). These indirect impacts are amplified by the fact that producing animal-source foods generally requires substantially more crops than producing plant-source foods. Globally, approximately 40% of the calories produced on existing croplands are fed to farmed animals, who return only a fraction of that energy as meat, milk or eggs. Just 11% of the calories and 15% of the protein that a pig is fed over its life is available in the meat it produces; for cows, this is just 5% of the calories and 10% of the protein (CIWF 2025). Consequently, a far lower volume of crops is required to generate protein and calories from human consumption of plant-based foods than is required for feed to produce equivalent nutritional value from animals. See also response on Issue 5, below.

Animal agriculture is a key driver of climate change

In addition to being particularly vulnerable to climate change, animal agriculture is also a major driver of it. While the draft note recognises "agricultural practices" as contributing to greenhouse gas emissions and environmental degradation, the evidence indicates that animal agriculture contributes disproportionately to these impacts relative to its nutritional output. Animal agriculture accounts for an estimated 60% of all agricultural emissions, yet animal products provide only 18% of global calories and 38% of global protein (Wijerathna-Yapa and Pathirana 2022, Poore and Nemecek 2018).

Plant-based foods have consistently been shown to have lower greenhouse gas emissions than animal-based foods. In an analysis of 40 food products representing 90% of global protein and calorie consumption, greenhouse gas emissions from beef (from the beef herd) were 22 times higher than rice, the highest-emitting crop, and 31 times higher than tofu (Poore and Nemecek 2018). Poultry meat had the lowest greenhouse gas emissions of all meats, yet its emissions were still three times greater than tofu and 23 times greater than nuts, which are commonly used in meat substitutes.

Moreover, a shift to a plant-based food system could free up vast amounts of land for carbon sequestration, further mitigating the threat of climate change. Globally approximately 83% of agricultural land is associated with the production of animal products, through grazing animals and growing their feed (Poore and Nemecek 2018). It has been estimated that a global shift to fully plant-based diets by 2050 could enable the sequestration of 332–547 gigatons (Gt) of carbon dioxide, equivalent to 99–163% of the carbon dioxide emissions budget consistent with a 66% probability of limiting warming to 1.5 °C (Hayek et al. 2020).

The Intergovernmental Panel on Climate Change recognises the value of a transition away from animal agriculture, stating that "Where appropriate, a shift to diets with a higher share of plant protein, moderate intake of animal-source foods and reduced intake of added sugars, salt and saturated fats could lead to substantial decreases in GHG emissions" (IPCC 2022).

Transitioning to a more plant-based food system could therefore help buffer nations against climate-related shocks – as well as other systemic risks, such as geopolitical or pandemic-related disruptions – while also reducing the likelihood and severity of such shocks.

Solutions

We welcome the draft note's recommendation of "transitioning to culturally acceptable, resilient, and nutritious foods from diverse crops". Plant-based foods can provide high levels of nutrition to humans but are consistently underutilised, especially in Global North diets.

In the UK, for example, a number of underutilised, nutrition-dense protein crops have been identified as having potential for human consumption at scale, including faba beans, peas, soya, hemp and lupins (UK Agri-Tech Centre 2024). Hemp, for example, contains all 20 amino acids used by the human body and is rich in essential fatty acids, polyunsaturated fatty acids, vitamin E and minerals including calcium, iron and zinc. It is also highly effective at sequestering carbon dioxide and requires low inputs of fertiliser, herbicides, pesticides and water (The Vegan Society 2015). Faba beans are also very nutrient dense; 100g of faba beans contains 7.6g protein, 110 calories and 5.4g dietary fibre. They are also rich in beneficial phytonutrients, B vitamins, iron, calcium and potassium, among other micronutrients. In addition to their nutritional value, faba beans fix nitrogen in soils and provide food for beneficial insects, delivering important agroecological benefits (The Vegan Society 2015). Faba beans grown in the UK are, however, primarily used for animal feed.

Alternative proteins similarly offer significant promise, including those produced via precision fermentation. Precision fermentation uses genetically modified microbes to produce animal proteins or fats that are bioidentical to those produced through animal agriculture. Preliminary research suggests the technology has the potential to drastically reduce land use, water use and greenhouse gas emissions relative to conventional production methods (Järviö et al 2021). Another promising technology is vertical farming, which improves resilience to climate change, reduces land and water use and enables year-round production (Fischer Farms 2023).

We also agree that "agroecology and other sustainable models" have a role to play in a more sustainable food system. However, the need to shift away from animal agriculture should be explicitly acknowledged; according to the largest meta-analysis of food systems to date, the "environmental impacts of [ruminant animals converting grass to human-edible protein] are immense under any production method practiced today" (Poore and Nemecek 2018).

We agree that existing subsidies that "currently encourage production systems that degrade ecosystems, pollute water, erode soils and do not improve food security and nutrition" should be repurposed. In 2020-2022, global agricultural subsidies represented around US$851 billion per year. But around one third of agricultural subsidies have no public health benefit, and could be repurposed. For example, 82% of subsidies in the European Union (EU) support the farming of animals. These could be used instead to invest in adopting agri-ecological practices, diversify protein production and repurpose grazing land, promoting healthy, sustainable dietary change (Rockstrom et al 2025).

CEEI #5: International trade for food security and nutrition

We agree that "the accumulation of systemic shocks has renewed attention to food sovereignty, domestic production capacity, and regionalized trade as strategies to enhance resilience". Most recently, ongoing violence in South-West Asia has laid bare the fragility of the global agri-food system. Oil and gas prices surged following air strikes on shipping and energy infrastructure and the effective closure of the Strait of Hormuz, through which one fifth of global oil supplies and 25–35% of fertiliser raw materials pass (FarmingUK 2026).

Animal-source foods are particularly vulnerable to trade shocks

It is important to highlight that animal-source foods are generally more vulnerable to systemic shocks that disrupt global supplies and prices of key agricultural inputs than plant-source foods. This is because animal-source foods are generally significantly more resource-intensive to produce and require higher levels of agricultural inputs. Compared to diets high in animal products (defined as more than one serving of meat per week), diets low in animal products (less than one serving of meat per week) have been found to require 515,273 kJ less energy, 9,677 g less fertiliser, 294 g less pesticides and 533,102 litres less water annually (Marlow et al 2014).

Self-sufficiency as an indicator of food security

It is also important to note that meeting demand for animal-source foods through domestic production is not, in itself, indicative of food security. For example, in the UK, self-sufficiency is commonly measured using the production-to-supply ratio, defined as the farmgate value of raw food produced divided by the value of raw food available for human consumption (Defra 2024). Based on the UK government's latest food security assessment, the UK appears largely self-sufficient in poultry (96%) and moderately so in pork (69%) (Defra 2024). However, these figures do not account for dependence on imported agricultural inputs, such as soy used for animal feed (see below). When imports of soy for animal feed are factored in, self-sufficiency falls to 54% for chicken and 41% for pork (CAWF 2025). Fully onshoring pig and poultry feed production is estimated to require a 60% expansion in cropland devoted to pig feed and a 78% expansion in cropland devoted to poultry feed (The Landworkers' Alliance et al. 2023).

While all countries have their own particular influencing factors regarding domestic production and trade, the national food security value of domestically produced animal-based foods will in many cases be significantly compromised when imported inputs are considered.

Feed dependence

Animal agriculture at scale is highly dependent on trade in feed. Feed is in turn highly vulnerable to external shocks. Inflation in grain prices arising from the war in Ukraine in 2022 drove cost increases in compound feed that were so significant that they forced UK farmers to reduce farmed animal numbers (Defra 2024).

China, the European Union, Argentina, Mexico and Egypt together account for 78% of global soybean imports, with China alone responsible for 60% (Klipstein 2025). Over three

quarters of global soy is fed to livestock, with pig and poultry farming both highly dependent on it – particularly poultry production, as soy cannot easily be substituted in chickens' diets (WWF 2025b, University of Oxford 2021). The high dependency of animal farming on soy is especially concerning given that just three countries – Brazil, the United States and Argentina – produce nearly 80% of global soybeans (Klipstein 2025). The expansion of soybean farms to feed farmed animals has driven extensive deforestation and habitat loss in some of the world's most biodiverse regions, including the Amazon and the Cerrado in Brazil. The imposition of EU and potential UK import restrictions on products linked to deforestation, including soya beans, poses a risk to both supply and prices (WWF 2025a).

Transitioning to a more plant-based food system would therefore strengthen food security by reducing nations' reliance on imported feed, fertiliser and energy.

CEEI #8: "One Health" as an integrating framework for food security and nutrition

The draft note rightly recognises that "food systems are central to interconnected risks spanning human health, animal health and welfare, ecosystems, and food security and driven by current production and consumption patterns". These interconnected risks are particularly pronounced in food systems characterised by high levels of animal-source food production and consumption, and many could be substantially reduced through a transition towards more plant-based food systems, as discussed below.

Planetary health

Animal agriculture has profound impacts on ecosystems. It is the single largest driver of tropical deforestation, with pasture expansion for beef alone responsible for an estimated 41% of tropical deforestation (Pendrill et al. 2019). Plant-source foods generally require fewer agricultural inputs than animal-source foods, which translates into more favourable environmental outcomes. A study of more than 55,000 vegans, vegetarians, pescatarians and omnivores found that vegan diets were associated with a 75% reduction in land use and greenhouse gas emissions, a 73% reduction in eutrophication, a 66% reduction in biodiversity loss and a 54% reduction in water use, when compared to high-meat diets (over 100g of meat a day) (Scarborough et al. 2023).

Human health

Plant-based diets also have significant human health benefits. There is a strongly evidenced association of plant-based foods and plant-rich diets with lower risks of cardiovascular disease, some forms of cancer and type 2 diabetes, among other conditions (Almuntashiri et al. 2025). The latest EAT-*Lancet* Commission report reaffirmed the health benefits of consuming more fruit, vegetables and other plant-based foods, as well as consuming less meat. A global shift to their predominantly plant-based reference diet is expected to avert approximately 15 million deaths per year (27% of total deaths worldwide) (Rockström et al. 2025). In England, a nationwide adoption of plant-based diets could prevent 2.1 million cases of diet-related disease annually and generate more than 170,000 additional quality-adjusted life years (Henderson and Sampson 2023). Moreover, a global shift to plant-based diets could prevent up to 236,000 premature deaths due to improved air quality (Springmann et al. 2023).

It has been estimated that healthcare savings and avoided climate damages resulting from a global shift to plant-based diets could total $2–31 trillion USD per year, equivalent to 4–13% of projected global gross domestic product (GDP) in 2050 (Springmann et al. 2016). Enhanced labour productivity arising from improved air quality associated with a shift to a plant-based food system could increase global economic output by $1.3 trillion USD in 2030, equivalent to 1.1% of projected global GDP (Springmann et al. 2023). Such substantial savings could enable greater investment in sustainable, resilient and secure food systems.

Animal health

We welcome the draft note's recognition of the CFS' role in addressing animal rights. Animal ill health, restriction of natural behaviours, compromised welfare (including profound and widespread suffering) and slaughter is inherent to the farming of animals. Reduction in the scale of animal-based agriculture will reduce the number of animals affected by these negative impacts.

Transitioning to a more plant-based food system would also reduce the risk of disease outbreaks in farmed animals, which, in addition to causing animal suffering, can devastate farmers' livelihoods, cost taxpayers millions in culls and cause sharp fluctuations in food prices (CAWF 2025). This was demonstrated during the 2018 African Swine Fever epidemic in China, which resulted in the deaths of so many pigs that global pork production declined by 24% and pork prices doubled, lasting for 14 months (CAWF 2025).

A plant-based food system would not be immune to disease outbreaks; as noted in the draft note, "plant health challenges, including crop losses, declining genetic diversity and

increasing global reliance on just a few species of staple crops, and climate stress, reduce food availability and diet quality". Nevertheless, a plant-based food system is expected to be more resilient overall than the current system. Vulnerabilities within crop systems already affect animal agriculture, as the vast majority of farmed animals consume feed crops. As a result, animal agriculture is exposed to dual risks from both crop disease and farmed animal disease. Fewer crops would also be required under a plant-based food system, thereby reducing exposure to crop disease risk (CAWF 2025). Moreover, a major driver of low diversity in global crop production is the dominance of feed crops such as soy and maize. In contrast, plant-based meat, dairy and egg substitutes are derived from a variety of crops: ten protein crops are currently in widespread use, with a further 25 actively being researched. A transition to a plant-based food system is therefore expected to diversify the global protein supply, enhancing system resilience and strengthening food security (CAWF 2025).

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13. Is there any missing reference to key literature and data?

Poore J and Nemecek T (2018) Reducing food's environmental impacts through producers and consumers. *Science* **360**: 987–992, https://doi.org/10.1126/science.aaq0216

- This is the largest meta-analysis of food systems to date. The findings highlight how meat and dairy production disproportionately drive environmental damage; for example, the study found that 83% of global agricultural land is associated with animal agriculture, yet animal products provide only 18% of global calories and 38% of global protein. The authors concluded that avoiding animal products is the "single biggest way" to reduce an individual's environmental footprint.

Rockström J, Thilsted SH, et al. (2025) The EAT–*Lancet* Commission on healthy, sustainable, and just food systems. *The Lancet*, **406**: 1625–1700 https://doi.org/10.1016/S0140-6736(25)01201-2

- This is the most recent EAT-*Lancet* report from 2025. The draft note references the previous EAT-*Lancet* report from 2019.

Scarborough P, Clark M et al. (2023) Vegans, vegetarians, fish-eaters and meat-eaters in the UK show discrepant environmental impacts. Nature Food 4: 565–574, https://doi.org/10.1038/s43016-023-00795-w

- This publication forms part of the EPIC-Oxford study, and involved more than 55,000 vegans, vegetarians, pescatarians and omnivores. The authors found that vegan diets were associated with a 75% reduction in land use and greenhouse gas emissions, a 73% reduction in eutrophication, a 66% reduction in biodiversity loss and a 54% reduction in water use, when compared to high-meat diets (over 100g of meat a day).

West PC, Gerber JS et al. (2026) Only half of the calories produced on croplands are available as food for human consumption. *Environmental Research: Food Systems* **3**, https://doi.org/10.1088/2976-601X/ae4f6b

- This study found that approximately 40% of the calories produced on existing croplands are fed to farmed animals, who return only a fraction of that energy as meat, milk or eggs. If all crop calories were instead directly consumed by humans, enough calories would become available to feed an additional 7.2 billion people.