

## Healthy Lives from Sustainable Food Systems October 2022

### A Global Health Perspective on the Future of Meat

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#### Background

Questions about what the future of meat should look like encompass all of the typical food systems problems as well as some unique ones. People have different levels of access to healthy, nutritious and culturally appropriate foods. Some parts of the global population are eating too much, and others are severely undernourished. Overproduction and food waste lead to many harmful impacts on the environment, including increased greenhouse gas emissions, deforestation, and reduced soil and water quality. To meet these challenges and create a sustainable, resilient and just food future, we have to tackle big questions, including: What is a sustainable, healthy diet, and how much land should be devoted to animal agriculture?

Outlining these problems and identifying that meat and livestock are at the centre of many environmental challenges, such as increasing greenhouse gas emissions and biodiversity loss, does not readily bring us to simple solutions. Livestock are incredibly important and beneficial to people and ecosystems in a variety of ways. Meat consumption provides many essential nutrients including iron, zinc and B vitamins. It is estimated that more than one billion people across the world have livelihoods dependent on or related to livestock production<sup>1</sup>. Livestock are also important contributors to sustainability, as they can graze on non-arable lands and convert non-edible by-products of agriculture into food. They act as landscape managers and play a role in the nutrient cycling of ecosystems and agroecosystems<sup>2</sup>. There are also debates surrounding whether livestock can be used to manage soils to increase and store additional carbon to mitigate the impacts of climate change<sup>3</sup>. Ultimately, meat production and consumption can be seen as either part of the problem or part of the solution.

#### Objectives

What type of future for meat and livestock do you desire? Does a sustainable future look the same in Nordic countries as it does in Brazil or India? During the workshop we explored four different futures for meat and livestock (adapted from Garnett (2015) Gut feelings essay): a plant-based meatless

future without animals, an alternative “meat” future without “traditional meat” but with insects and meat produced in labs instead, a less meat future that favours animals on pasture and decreased consumption of meat, and an efficient meat 2.0 future that reduces the environmental impact of livestock production and maintains or increases current levels of consumption. What are the drivers and vulnerabilities of each future? What is important to consider if this is the future we desire?

#### What we aimed to achieve in the workshop

In our workshop, we explored these issues connected to the future of meat in different ways. We started the workshop by addressing our values, cultures and the personal responsibilities we bring to these debates. All participants were offered the possibility to explore their view of the future of meat using a values-based quiz developed for this purpose. We invited two speakers, whose talks inspired discussions organized as a Café model workshop. First, Elin Rööös, researcher in the field of sustainable food production and consumption at SLU, outlined the big picture problems and benefits of livestock and then explored whether the arguments for livestock in sustainable food systems held up to ethical scrutiny. After lunch, Nicole Rocque, senior innovation specialist at The Good Food Institute India, drew our attention to the context of the global South, zooming in on India and laying out the promise of ‘smart’ proteins. Following that inspirational talk, the participants were invited to a round table discussion about the drivers and vulnerabilities of the four different future scenarios.

#### Approach

##### Call to action: Drivers and vulnerabilities for the four futures.

Identifying drivers and vulnerabilities of the four different futures at a regional and a global level will help us move towards the positive aspects or away from the negative aspects of a particular future. What are the key drivers that can make the desired future achieve an equitable and healthy food system at a regional level and an equitable and healthy food system at a global level? Important also to consider here is what the health vulnerabilities are if we only commit to a single future.



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Listed below are the drivers and vulnerabilities of the four scenarios identified by the workshop participants.

### Future scenario 1

New and novel foods are produced in indoor settings to free land from agriculture while providing protein and nutrition. “Meat” produced in these labs gradually replaces the meat that is sold at markets, grocery stores and restaurants

#### Drivers

Zoonoses is a constant threat to public health, and the meat industry is one of the greatest sources of it. The need to eliminate the risk for zoonoses is a driver for substituting meat from animals with meat from labs. (The risk for zoonoses from insect production may need further exploration.)

Ethical reasons, e.g., mental health, constitute an important driver for substituting meat from animals with lab-grown meat. Concerns about animal suffering and welfare as well as poor working conditions in some meat production plants would be reduced by building out an alternative ‘meat’ sector.

Land use would shift dramatically, as arable land used for livestock production could be transitioned to other uses. Additionally, without the need to feed livestock, less land would be used to grow animal feed and less forested land would need to be deforested to provide grazing areas.

Health aspects of red meat consumption; Recommendations from WHO as well as many national public health organizations clearly state that overconsumption of red meat is a health risk. Lab meat could be produced to contain less fat and cholesterol, making it a healthier food.

Test kitchens/ restaurants; There is a growing market for new, tasty and sustainable food as well as for innovators and entrepreneurs who are interested in producing novel foods and associated technologies.

Private sector; Continued investment from this group can jumpstart the development of this sector and work to disrupt existing animal agriculture.

Subsidies in the form of public funding to lab meat and/or insect production could be a powerful driver, serving as an economic incentive to shift production to alternative protein sources. Public funding could establish a foundation for sharing knowledge around safety protocols and research, thus enabling private companies to develop safer food products faster. Finding ways to ‘make it special’ could possibly attract many to eat lab-grown meat and/or insects, as food is a way for people to express their values and personal choices in their consumption decisions.

#### Vulnerabilities

Lack of knowledge; Compared to mankind’s history of eating meat and its experiences of meat as good, nutritious food for us, there is a lack of research on and public acceptance of ‘new foods’. There will be many sceptical comparisons with “the real thing” a long time after introducing lab-grown meat as an alternative/replacement.

Expensive; Lab-grown meat requires science, labs, specialist facilities to grow the meat cells, etc.; thus, the economical drawbacks are initially great, especially when food is produced on a smaller scale.

Energy consuming; Processing plants that produce lab-grown meat require a great deal of energy. While the environmental impacts of land use and animal feed are reduced, cultivating meat in these ways is an energy-intensive process.

Acceptable culture vs traditional meals; In some parts of the world, insects are a perfectly normal part of daily food; in others, the “yuck factor” may be the main obstacle to introducing insects as a sustainable source of protein. Moreover, in no traditional cuisine has there been a place for lab-grown meat.

Food safety- lack of regulations; Lab-grown meat as well as insects present challenges in relation to food safety, and new products may need new regulations and impact human nutrition and health in ways that we are not yet aware of.

Demand; Who wants to start eating lab-grown meat? It will depend on the pricing, the taste and the wider cultural acceptability of these products.

### Future scenario 2

Livestock are being raised in environments that resemble the animals’ natural habitat. People in high-income countries consume less meat. Civil society and governments are calling for smaller-scale, localized systems of farming and are urging people to eat foods that can be grown in their area rather than foods imported from abroad.

### Drivers

**Health;** With less meat produced, less meat will be consumed. In high-income countries, there are numerous health problems related to overnutrition (e.g., often from eating too much animal-sourced foods) rather than undernutrition.

**Zoonoses;** With intensive, efficient meat production where animals live closely together, there may be an increased risk of zoonosis spreading. If livestock are allowed to roam in larger pastures, sick animals can potentially be isolated before a disease spreads.

**Land use;** Grazing ruminants do not directly compete with land that can be used to grow food for human consumption. Free-range cattle add value to areas that could otherwise not be farmed and convert landscapes that are not directly edible for human consumption into protein. Moreover, they may be of crucial value in preserving and promoting biodiversity.

**Acceptability;** Many people may want to eat meat, but not with the associated negative environmental and social costs of production. Systems that centre on animal welfare, use fewer antibiotics, and raise animals in landscapes that better resemble their natural habitats are desirable to some consumers.

**Farmers livelihood;** In many parts of the world, animal farming is a substantial part of people's livelihoods; additionally, animal farming needs continue to not risk impacting hundreds of millions of livelihoods across the globe.

**Differentiated global consumption;** If consumption decreases in the global North, that can allow for increased consumption of meat in the global South, where the inclusion of some meat into diets can assist in addressing undernutrition.

### Vulnerabilities

**Loss of farmers;** With less production, profits go down and animal farming may no longer provide enough income for families and societies.

**Expensive meat;** If the cost of meat increases, people who already have trouble affording sufficient calories and nutrition for their family will struggle more with increased food prices.

### **Future scenario 3: Plant based**

Environmental sustainability and animal welfare campaigns catch on globally. People turn to plant-based diets as they reconsider their relations with animals and animal agriculture. Land that produces animal feed now grows food for humans or is converted into wildlands.

### Drivers

**Health concerns - humans, animals and planet;** Plant-based diets are in many contexts presented as healthier than those including meat.

**Greenhouse gas emissions;** As meat production is often mentioned as one of the main drivers of greenhouse gas emissions, a paradigm shift to a plant-based diet globally could potentially be a game changer. It is a more efficient type of production (no need to cycle crops through an animal), and there would be a significant decrease in methane production.

**Lack of land and water resources;** Because meat production requires a great deal of land and water, food for humans could be produced more sustainably without meat. This of course depends on the crops.

**Innovation;** Plant-based diets are already a wide field of innovation, with entrepreneurs launching new products and creating or catering for plant-based food preferences.

**Tasty and healthy alternatives;** Meat often carries the tastes of the plant-based cuisine; i.e., if a meat-like texture can be achieved, tasty and healthy vegan alternatives are in abundance.

**Momentum;** At this point in history, with an increasing awareness of global problems like climate change, environmental pollution and biodiversity loss, there is momentum for change.

**Cost;** Providing food on a plant-based basis for the global population can be achieved at a lower cost, economically, socially and ecologically.

**Net protein efficiency;** Turning plant proteins into animal proteins will always be a detour.

**Ethics;** Eating plant-based food could be an ethical choice for anyone concerned with environmental issues or animal welfare.

**Social norms are changing in parts of the world.** Where meat has a long-standing position as "high status food", social norms may be changing in favour of plant-based diets, which are sustainable, responsible and tasty choices to make.

### Vulnerabilities

**Employment;** A major shift to plant-based consumption can severely impact the economies of livestock farmers around the world.

**Nutrition;** This could lead to some dietary health problems, especially for young children and elderly populations, as meat is better at delivering essential nutrients, including iron, zinc and B vitamins.

**Feasibility;** Meat is part of many cultural traditions, and there have been few examples historically of populations drastically reducing their meat consumption once they can afford it.

### **Future scenario 4**

Technological innovation and sustainable intensification pave the way for a more efficient livestock production system. These

innovations reduce negative environmental impacts, free up land for conservation, and improve animal health. People continue to consume meat at the same rate (or more) and at the same price as they are used to.

#### Drivers

Precision or climate-smart agriculture; As in all fields of agriculture, the meat industry has the potential to develop new methods and technologies to increase production to meet a growing demand, at the same time as mitigating greenhouse gas emissions through an improved feed-conversion ratio, better living conditions and veterinary care for animals, and improved genetics.

Nutritional quality; Meat is food of high nutritional value, including vitamin B12 and other nutrients that are vital to our wellbeing.

Global food security; There has been significant investment in highly efficient production and distribution of animal products across the world. Through research and development, as well as animal feed subsidies, livestock production has contributed to low prices and improved productivity.

Healthy animals; Large-scale animal production can afford technologies and veterinarians to track animal health. Unhealthy animals are bad for business, meaning that the incentives are towards raising healthy and productive livestock.

Traceability; With modern technologies enabling consumers to track the meat they eat back to individual farmers, it is possible to keep eating meat if origin and animal welfare are important to you. With increasing transparency in these products, consumers can choose to purchase meat that has not contributed to global deforestation.

#### Vulnerabilities

Market concentrations; Due to the large numbers of animals raised together, there are increased risks if there are disruptions to transportation routes and ports or if diseases spread on large farms.

Social and environmental costs; In the pursuit of economic gain and achieving the highest output per unit of animal or land, the wellbeing of humans working in processing plants or animal welfare may not be prioritized.

## Recommendations

The aim of this workshop was to explore different pathways for the future of meat and livestock. Despite having smart people in the room who have approached this issue from different sectoral, cultural and global perspectives, we were not able to solve the problem the future of meat and livestock from a global health perspective in three hours.

Instead, we advise politicians, CEOs, sustainability managers, civil society organizations, researchers and citizens to neither completely swear off animal agriculture nor invest all of our food and climate solutions in it. There is a need and an appetite to invest in a diverse set of solutions related to the four futures. We recommend that food and agriculture decisionmakers be more self-reflective and nuanced when approaching this highly complex topic.

There are no simple solutions, but there is potential for finding more common ground and agreements moving forward – regardless of one's starting point. At least in this workshop, it was clear that having better dialogues is an important tool in depolarizing this burning global issue.

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