

FAKE MEAT DOESN'T FOOL THE CONSUMER
(THE CASE OF PLANT-BASED MEAT VS RED MEAT)

BY

DR PHILIP THEUNISSEN



THE CHARGE

Humankind's appetite is pushing the earth to exceed its planetary boundaries while at the same time creating a health risk. This poses a threat to the survival of both people and the planet. Healthy diets that can be provided by a sustainable food system are therefore urgently required for the growing population, which could reach 10 billion by 2050. In a report issued in January 2019, *Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems*, 19 commissioners and 18 co-authors from 16 countries, working in fields such as health, agriculture, politics, nutrition, economics and environmental studies, jointly established a set of scientifically determined targets to serve as a guideline for producers, consumers and policy makers in creating a food system that would promote the health of both human beings and the planet. This is referred to as the Lancet report.

The compilers of the report believe that worldwide acceptance of their recommendations would improve the intake of most foods across a broad spectrum and that this would result in a drastic decline in greenhouse gas emissions and diet-related deaths. Their models indicate that premature deaths could decrease by between 10.9 and 11.6 million per annum and that adult mortality could also decline by between 19 and 24%. The diet appears in the table below.

TABLE: RECOMMENDED WORLD DIET (2500 KCAL/DAY)		
	Intake	
	Food	Calories
	gram/day	kcal/day
Whole grains(Rice, wheat, corn)	232	811
Tubers/starch (Potatoes, cassava)	50	39
Vegetables (All vegetables)	300	78
Fruits (All fruits)	200	126
Dairy foods (Whole milk or equivalents)	250	153
Protein sources:		
- Beef, lamb, pork	14	30
- Chicken and other poultry	29	62
- Eggs	13	19
- Fish	28	40
- Legumes	75	287
- Nuts	50	291
Added fats:		
- Unsaturated oils	40	354
- Saturated oils	11.8	96
Sugar (All sugars)	31	120

Source: Lancet report

The report still makes room for red meat on its global sustainable menu, but in drastically reduced quantities. The diet allows roughly one tablespoon of red meat per day. This is the equivalent of one decent hamburger per week or one proper steak per month. Dairy is not off the table and the diet makes provision for one glass of milk or an equivalent dairy product per day. The researchers recommend that the remainder of the protein intake should consist of two servings of fish and one-and-a-half eggs per week. The bulk of the calories should come from cereals, specifically whole grain cereals. They would also like to see a 100% increase in the consumption of legumes, nuts, fruit and vegetables in comparison with the amounts we eat at present and say that added sugar should not amount to more than eight teaspoons per day.

THE EVIDENCE

Livestock as a production system is right at the top of the list of the chief contributors to the planet's most serious environmental crises. The findings of the 2006 report by the Food and Agriculture Organization (FAO), *Livestock's long shadow: environmental issues and options*, propose that livestock should be the focus of the deliberations on policy measures around soil degradation, climate change, air pollution, water

scarcity, water pollution and loss of biodiversity. The contribution of livestock to environmental crises is so massive in scale and its impact so significant that this needs to be addressed urgently. According to this report, livestock as a role player are responsible for 18% of the world's greenhouse gas emissions, which is considerably more than the transport sector accounts for. High as this is, it is also said to be growing rapidly because the demand for red meat, milk and eggs is increasing sharply, driven by rises in consumer income, growth in population numbers and continuous urbanisation.

Various policy makers rely on the FAO report and focus mainly on beef production, with good reason. No matter what angle this argument is approached from, the inescapable conclusion from this report is that cattle have the biggest environmental impact of any food source and that the digestive system of these animals is responsible for this. Ruminants, like cattle, sheep, goats, buffalo and even giraffe, have four-compartment stomachs in which plant material is fermented in stages. The by-product is methane, a greenhouse gas which has 28 times the greenhouse potential of carbon dioxide. Consequently, the annual methane emission of 100 kg from one beef or dairy animal is equivalent to the greenhouse emissions from a motor vehicle which burns 890 litres of petrol.

Methane is not the only charge against cattle. There is also the issue of fecundity. Cows can only produce one calf per year at most, which means that the carbon costs of each productive cow must include the calf's gas emissions for one year. In contrast, pigs can farrow twice a year and may produce ten or more piglets per litter. The associated feed conversion means that it takes 6 kg of feed to produce 1 kg of beef as against 3,5 kg for pork and 2 kg for chicken. In view of the methane, the fecundity and the feed conversion, it is clear that ruminants, especially cattle, do far more damage to the environment than their monogastric farm friends like pigs and chickens.

The arguments in favour of a vegetable-based, planet-friendly diet are therefore self-evident: instead of animals eating the plants and humans eating the animals, humans could just as well eat the plants themselves, thereby restricting damage to the planet. Consequently, vegetable-based meat substitutes that imitate the flavour, nutritional value and even the cooking experience of meat should be developed on a large scale. The aim of this would be to provide the consumer with a product that is like meat in all respect except one: the impact it has on the planet!

EXPERT WITNESSES

Misrepresentations

An expert on air quality and professor of animal science, Dr Frank Mitloehner of Davis University in California, differs with the findings of the FAO report for various reasons. He explains that although methane gas can trap 28 times as much heat as carbon dioxide, the atmospheric life of this gas is only ten years whereas that of carbon dioxide is 1 000 years. In ten years methane gas is reabsorbed by plants through a process of hydroxyl oxidation, converted into cellulose and then eaten by animals again. To put this in context, 558 million tons of methane gas are produced in the world annually, of which 188 million tons come from agriculture. Almost this entire quantity, 548 million tons, is broken down annually by the oxidation process. This means that the red meat industry is not adding new greenhouse gases to the atmosphere but simply recirculating existing gases.

Mitloehner also contends that there is a fundamental comparison error in the FAO's report. It misleadingly compares the greenhouse emissions from the complete life cycle for red meat with only the exhaust gases produced by the transport sector. This underestimation exaggerates the greenhouse effect of livestock. In an interview with the BBC, one of the compilers of the FAO report, Pierre Gerber, accepted Mitloehner's criticism and said the following: *"I must say honestly that he has a point - we factored in everything for meat emissions, and we didn't do the same thing with transport, we just used the figure from the Intergovernmental Panel on Climate Change (IPCC)..."*.

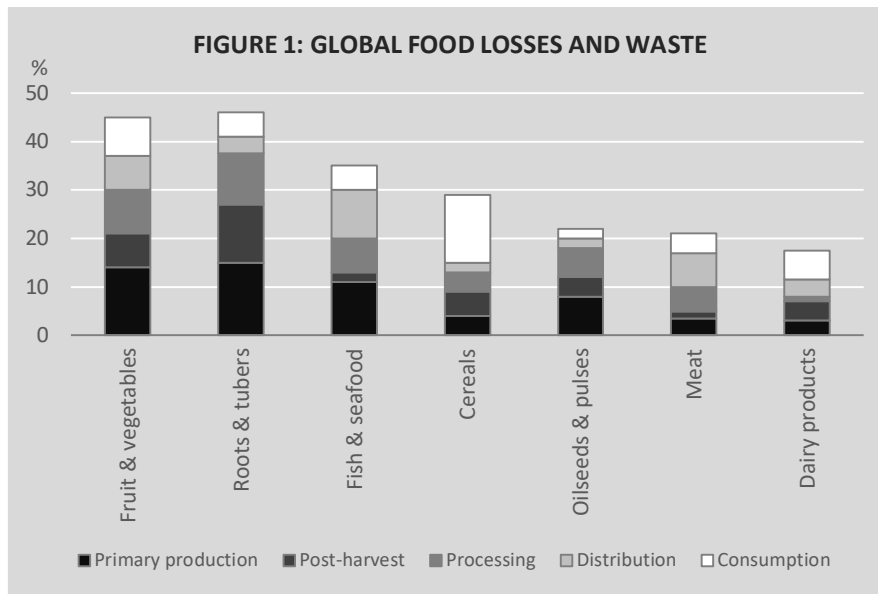
The IPCC also admits that although a full life cycle would be the most systematic and comprehensive method of determining the environmental impact of any industry, no life cycle approach exists for the transport sector on a global scale because there is simply not sufficient information available. Various studies, including those of the IPCC, do show that greenhouse gas emissions by the transport sector increase considerably when the life cycle of fuel and vehicle manufacture and the destruction of worn-out vehicles are also considered. Despite this, the death knell which the FAO report has sounded for the red meat industry cannot be un-sounded and it is still echoing and pealing, as illustrated by the *Lancet* report.

Net contribution

Dr Sara Place, a senior director of sustainable meat production at the *National Cattlemen's Beef Association (NCBA)*, supports Dr Mitloehner to some extent and contends that when it comes to the red meat industry, the correct figures are ignored for the sake of convenience. She says, with reference to a new study by the FAO, that livestock are essentially net contributors to the world's sources of protein and are not in competition with man for those sources of protein. She is convinced that a healthy and sustainable food system is equally dependent on plants and animals. A food system that eliminates livestock would reduce global greenhouse gas emissions by 0.36% in the short term but according to her it would fundamentally disturb the balance of the food ecosystem at the same time and deprive humanity of important nutrients. She bases her position on the fact that ruminants play an important role by upgrading inedible plant material and unutilised crop residues or grain siftings to high quality protein for human consumption. In this way, livestock produce 19% more edible protein than they consume. Place also contends that 85% of the world's arable land that is utilised by livestock is not suitable for field cultivation but is able to form part of the food system through the agency of livestock.

Waste

The FAO is of the opinion that 1.3 billion tons of food produced for human consumption is lost each year because of losses and wastage. Figure 1 shows that this takes place at every point in the food system.



Source: FAO

According to Figure 1, 45% of the fruit and vegetables produced, 46% of the starchy vegetables and 30% of cereals produced are wasted because of losses or wastage. Only 21% of meat products and 17% of dairy products are wasted. Losses and wastage of vegetable foods are therefore considerably greater than those of animal foods. According to the Department of Atmospheric Sciences, University of Illinois, Urbana, waste and composting account for 17% of total global methane emissions. Plant-based foods therefore make a major contribution to these emissions.

Nutritional value

In their book, *Sacred Cow: The Case for (Better) Meat*, Diana Rodgers and Robb Wolf contend that diet really comes down to personal choice and that consequently Eurocentric assumptions cannot form the basis for a uniform, colonialised diet for the whole world. Plants have constituted an important part of the human diet throughout history, but they have certain shortcomings and cannot meet all human nutritional needs. Consequently, there is more than sufficient scientific evidence that there is a high risk of nutritional deficiencies in diets based solely on plant foods. Confirmed cases have been documented.

CLOSING ARGUMENTS

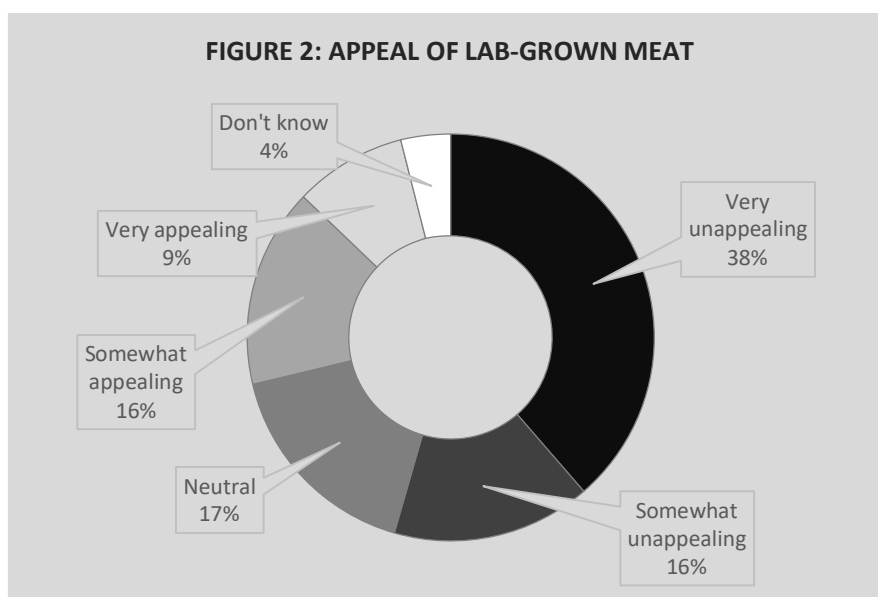
A small vegan elite is desperately trying to convince the population of the rest of the world that the production of livestock is having a destructive effect on the health of both people and planet. The agenda behind this is probably the market for vegan foods which is said to be growing by 10% per annum and may reach US\$24.3 billion by 2026. Numbers like that are attracting the attention of food processors and creating the opportunity to add more value to cheap raw materials under the readily marketable label of a healthier lifestyle. It is simply more convenient to buy plant-based ingredients in the global commodity markets where there are large offerings and prices can be manipulated at the expense of the farmer. Consequently, it is becoming increasingly clear that this agenda is based on propaganda in which red meat simply does not fit into a perfect diet. The vegan debate is therefore being deliberately co-opted into

political programmes with the aim of replacing small-scale traditional stock farming with large-scale industrial grain farming so that multinational food processors can manipulate the meat market with fake meat.

In overpopulated and highly industrialised Western Europe and North America this may seem a small price to pay for the sake of the health of the planet, but elsewhere it is a different story. In India and Africa, for example, animal protein is the crucial lifeline in diets that would otherwise be deficient in nutritional value in areas where the agricultural potential is exceptionally low. Livestock therefore play a fundamental role in affording a degree of food security in large parts of the world.

DELIBERATIONS

It is estimated that there are about 75 million vegans in the world. This is 0.1% of the global population, which should already provide an indication of the popularity of plant-based meat. The British publication, *The Grocer*, conducted a survey and found that the acceptability of such products is open to question. Figure 2 showed that 38% of the respondents found plant-based meat very unappealing and 16% found it somewhat unappealing. Another 17% were neutral and only 9% found it very appealing.



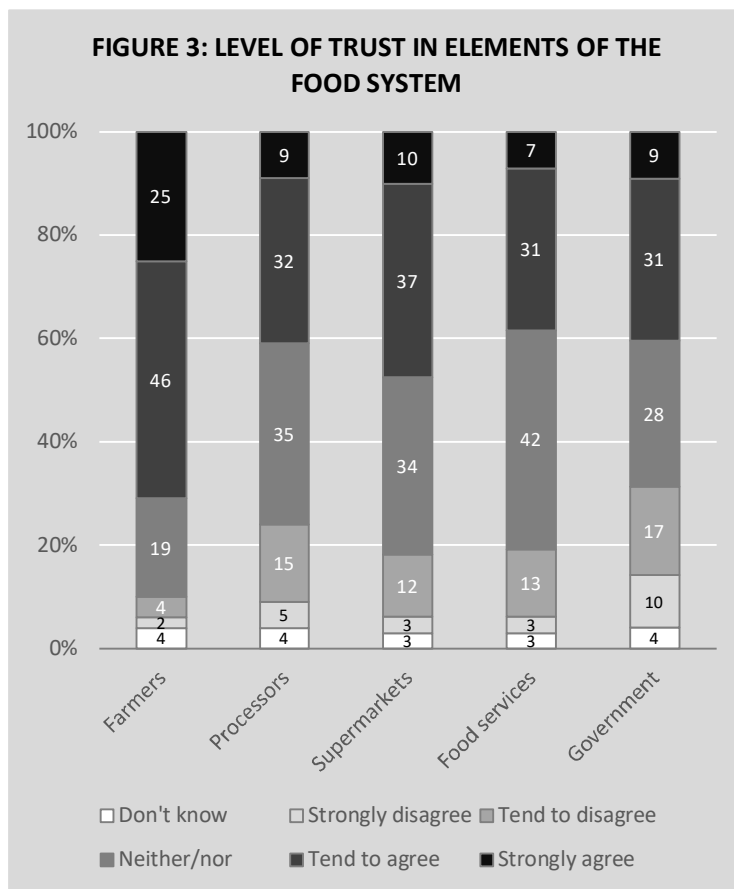
Source: YouGov/AHDB

The Agriculture and Horticulture Development Board in the United Kingdom are of the opinion that agriculture is facing a major challenge in meeting a diverse range of consumer needs and expectations. Continual adjustments to agricultural practices are required to retain the confidence of consumers. The question is: can farmers succeed in making these adjustments?

Figure 3 shows that 25% of a British sample of consumers 'strongly agree' that farmers can be trusted when it comes to food production. A further 46% of the respondents replied that they 'tend to agree' with

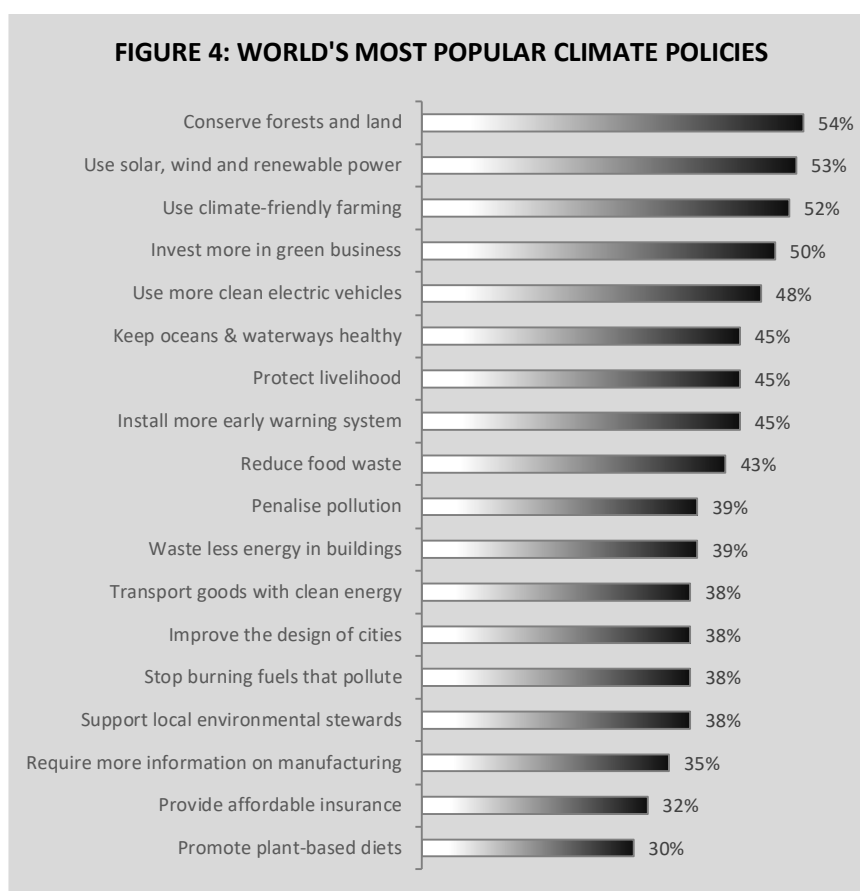
the statement. Of this sample, 19% indicated that they do not agree and 2% said they do not agree at all.

Regarding food processors, 35% indicated that they do not agree that food processors in the food system can be trusted and 15% said they do not agree at all. Regarding supermarkets, 10% said they strongly agree that they can be trusted in the food system and 37% indicated that they tend to agree. Consumer sentiment in respect of who they trust in the food system therefore overwhelmingly favours farmers, followed by supermarkets, but consumers are sceptical about food processors.



Source: AHDB/Blue Marble

With 1.2 million respondents, the United Nations Survey “Peoples’ Climate Vote” is the biggest survey to date to test public opinion on climate change. This survey covered 50 countries with a total population that represents 56% of the global population. Questions were set in 17 languages and the respondents represented all genders, ages and educational levels.



Source: United Nations Development Programme

Participants were asked to answer questions on climate crises in six categories, namely energy, the economy, transport, agriculture and food, protection of people and nature, and to indicate in which respects they feel their governments should get involved with policy. Sixty-four per cent of the participants said they felt that climate change was a crisis and clearly expected their governments to ramp up their policy in this regard. Four aspects emerged as the most popular solutions to the climate crisis, namely 'Invest in green business' (50%), 'Farm in a climate-friendly way' (52%), 'Use renewable energy' (53%) and 'Conserve forests and land' (54%). 'Promote plant-based diets' (30%) was the least popular option accepted by the participants as the most important policy for averting the climate crisis.

The verdict

The anti-meat campaigns are not going to end soon. This is confirmed by, among other things, aggressive worldwide campaigns such as 'Veganuary' and 'Meatless Monday' through which a ridiculously small minority are trying to prescribe to the rest of the world what they should and should not eat. Nevertheless, confidential opinions and opinions on the climate have confirmed that consumers will probably not allow themselves to be intimidated and that by choice red meat will make up a large part of their staple food.

JUDGEMENT

There is no substitute for red meat. At best, a watered-down alternative can be offered and all the talk about uniform plant-based diets for the world is essentially an attempt to control and disrupt the food market. It is simply easier for the big food processors if they can manipulate the political rhetoric to decide on behalf of humankind what we should eat. The creation of a negative perception around livestock therefore fits conveniently into a social "rescue culture" by which the planet can be saved at the expense of red meat.

A world-wide plant-based diet may possibly reduce greenhouse gases but so too would an effective livestock production system. A superior prescriptiveness regarding what should be served on our plates will not get us anywhere in the end and urbanised social advice to farmers on which production system is best for the planet is not the solution. The world's growing population needs a free choice of sustainable, affordable and nutritious products, whether derived from plants or animals. The greater opportunity lies in improving the sustainability of the food system for the benefit of the population through soil health, animal welfare, reduced gas emissions and more carbon sequestration, without compromising the nutritional value of the human diet.

Bethlehem, South Africa. June 2021

SOURCES:

FAO. *Livestock's long shadow: Environmental issues and options*. 2006.

Flynn, C & Yamasumi, E. *Peoples climate vote*. United Nations Development Programme (UNDP). February 2020.

Haspel, T. *Vegetarian or omnivore: The environmental implications of diet*. March 2014.

Leroy, F & Cohen, M. *The dark side of plant-based food – it's more about money than you may think*. December 2019.

Mottet, A & Steinfeld, H. *Cars or livestock: which contribute more to climate change?* FAO. September 2018.

Place, S. *Latest study confirms an animal-free food system is not holistically sustainable*. March 2018.

Stannard, S. *Consumer focus: The rise of plant-based food products and implications for meat and dairy*. Consumer Insights. July 2018.

Stannard, S & Randall G. *Trust, transparency and traceability in agriculture: The consumer perspective*. Consumer Insights. July 2018.

The EAT-Lancet report on how to transform the global food system - Stockholm Resilience Centre. 2019.