# The case for veganism

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## Summary

Veganism sits at the intersection of the solutions to many of the most pressing challenges presently facing humanity, and the rest of the animals with whom we share our planet. It is therefore remarkable, and sociologically intriguing, that this dietary and lifestyle option has not yet been adopted with greater enthusiasm. This paper briefly summarises the case for treating animals in accordance with a moral status justified by their morally-relevant characteristics. It then reviews the global public health, economic, environmental and animal welfare benefits conferred by vegan diets.

Animals should be especially valuable to us. They matter because of their many practical, aesthetic and cultural uses, but also because they are intrinsically valuable, independent of any utility they may have for human beings.

## Respect for life

The multiplicity of species of animals with which we share the Earth exhibit a truly remarkable array of characteristics and biological adaptations. Many of them are sentient, have complex emotional and social lives, and exist within ecological webs of intricate complexity. Animals such as primates, cetaceans and corvids have demonstrated surprising linguistic and other communicative abilities, exhibit complex, socially-transmitted behaviour, and have advanced cognitive capacities (Benz-Schwarzburg and Knight 2011).

Whichever characteristics we might reasonably consider necessary for justifying moral consideration, it seems that some animals possess them, at least to some morally significant degree. The more we learn from studies in ethology, cognition and related fields, the more it appears that the differences between us and many other animal species are merely differences of degree, rather than fundamental differences of kind.

All animals have an interest in continuing to live and in avoiding harm, danger and death, regardless of cognitive abilities. The uncomfortable truth is that animal farming and killing causes widespread animal suffering, and that this occurs primarily to satisfy human dietary preferences, rather than to fulfil essential needs. The annual farming of over 70 billion terrestrial animals globally (FAO 2017), and up to three trillion fish and other marine animals (Anon. 2014), violates their moral rights to exercise their own preferences, in pursuit of their own interests, and indeed – when they are killed – to live at all.

Why, then, is there not wider recognition of the need for human dietary change? Vegan diets are solely plant-based, eschewing animal products such as meat, milk and eggs. They have a remarkable ability to concurrently address many of the most serious problems presently facing humanity, and the other species at the mercy of our lifestyle choices.

**Carnism and social justice**

One of the main reasons why veganism – although rapidly growing – is not yet mainstream, is because of carnism. Joy (2018) has defined this as the underlying belief system, or ideology, that conditions people to eat certain animals, such as cows, pigs and chickens, but not others, such as cats and dogs. According to Joy (2018):

> "… people rarely realize that eating animals is a choice, rather than a given. In meat-eating cultures around the world, people typically don't think about why they eat certain animals but not others, or why they eat any animals at all. But when eating animals is not a necessity, which is the case for many people in the world today, then it is a choice – and choices always stem from beliefs. […] Carnism is structured like other systems of oppression, such as racism, sexism, and heterosexism. While the experience of each set of victims of oppressive systems will always be unique, the systems are similar because *the mentality that enables the oppression is the same*.
>
> "Ultimately, cultivating compassion and justice is not simply about changing behaviors; it is about changing consciousness so that no "others," human or nonhuman, are victims of oppression. To bring about a more compassionate and just society, then, we must strive to include all forms of oppression in our awareness, including carnism."

The systemic exploitation of non-human animals also entraps many humans, for example those who work in slaughterhouses, or in oppressive conditions in the fishing industries of certain nations.

**Global public health**

Food consumption is not only a basic activity necessary to sustain individual life, but also an important cultural activity. Preparing and sharing food are social events. However, the nature of food production and consumption has changed significantly over the past 40 years: from traditional family meals to food on the go, from slow to fast food, and from a largely unrefined complex carbohydrate diet full of fibre, micronutrients, sufficient protein and small amounts of fat and sugar, to one in which foodstuffs have been stripped of their nutritional

content and processed into calorie-dense and nutrient-poor items. The addition of unhealthy fats, salt, sugar, additives, and the replacement of plant proteins with animal proteins, have turned many food and drink items into serious risk factors for human health.

According to the World Health Organisation (WHO) (2017a), the number one cause of death worldwide is ischaemic heart disease and stroke, accounting for a combined 15 million deaths in 2015.

As early as the 1960s, the link between high saturated fat and blood cholesterol and the prevalence of coronary heart disease (CHD) became apparent. In 1958, Dr Ancel Keys launched a comparative study in seven countries to study the effect of diet on CHD. Dr Keys and colleagues demonstrated the health protective effects of the 'Mediterranean' diet, i.e. one high in fruit and vegetable intake, grains and legumes, with some olive oil and nuts, and some small amounts of fish and alcohol. Later studies confirmed that the main benefits to reducing the risk of CHD were derived from the plant-based components of the diet rather than the olive oil or fish (e.g. as summarised in Esselstyn 2017).

Another global epidemic is obesity, which frequently causes secondary health problems, such as type 2 diabetes and hypertension. According to the WHO (2017b) more than 1.9 billion adults, 18 years and older, were overweight in 2016. Of these over 650 million were obese. 41 million children under the age of 5 were overweight or obese in 2016, and over 340 million children and adolescents aged 5-19 were overweight or obese in 2016. Obesity is preventable. Nearly a billion people worldwide are malnourished or underweight.

Additionally, studies consistently demonstrate that those eating plant-strong diets generally have:

- lower blood pressure, and lower incidence of cardiovascular disease (e.g. Leenders *et al.* 2013)
- lower cholesterol levels (e.g. Bradbury *et al.* 2014)
- lower body mass index (BMI) (e.g. Spencer *et al.* 2003, Tonstad *et al.* 2009) and lower risk of obesity
- lower chances of developing type 2 diabetes or better management of the disease (e.g. Trapp and Barnard 2010, Sabaté and Wien 2010)
- reduced risks of developing some cancers (e.g. Key *et al.* 2014)
- and lower mortality (e.g. Oyebode *et al.* 2014)

It is the position of the American Academy of Nutrition and Dietetics (2016) that:

> "appropriately planned vegetarian, including vegan, diets are healthful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases. These diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes."

**Economic benefits of plant-based diets**

In 2015, diets low in fruit and vegetables or high in sugar, processed foods or sodium were estimated to be directly responsible for 37% of all deaths globally, and just over a quarter of

the total disease burden (disability-adjusted life years: DALYs) (GBD 2015 Risk Factors Collaborators 2016).

As public health costs are spiralling out of control in multiple countries, plant-based diets have the potential to confer very significant economic benefits. Springmann and colleagues (2016) estimated that 1–31 trillion US dollars, which is equivalent to 0.4–13% of global gross domestic product in 2050, could be saved by adopting plant-based diets.

Around 70% of global antibiotics use is applied in farmed animals, who are largely kept in intensive conditions where disease risk is high. This has significantly increased the risk of antimicrobial resistance (AMR). When there are fewer effective antibiotic treatments for humans, the costs to healthcare and risks to human lives could be significant in the not too distant future.

Finally, the growth in plant-based products and plant protein innovation companies is a multibillion dollar business, which makes it an attractive proposition for investors. The vegan protein market is expected to be worth $16.3 billion by the end of 2025, according to market research (Persistence Market Research) from 2017.

**Environment impacts of the livestock sector**

Agriculture covers around 37% of the planet's ice-free land surface (13.4 billion ha) (FAO 2018). Twenty six per cent is used for livestock grazing, and the remaining 11% is used for crop production. Approximately 33% of all croplands are used for livestock feed production.

The production, transport, storage, cooking and wastage of food are substantial contributors to greenhouse gas (GHG) emissions (Intergovernmental Panel on Climate Change 2007, Garnett 2008, Committee on Climate Change 2010). Carbon dioxide is produced from fossil fuels used to power farm machinery, and to transport, store and cook foods. The clearing of forests for pasture and feed crop production is also a substantial source. Methane is produced from enteric (intestinal) fermentation within ruminant livestock such as cows and sheep. Nitrous oxide is released from livestock manure and fertiliser. Both methane and nitrous oxide are many times more potent GHGs than carbon dioxide. When measured by consumption (that is, all GHG emissions related to products consumed in the UK, regardless of where they were produced), food is responsible for approximately one fifth of all UK GHG emissions (Garnett 2008, Berners-Lee *et al.* 2012).

Intensive livestock systems may generate fewer GHG emissions per unit of product than extensive systems such as pasture systems, but they have other significant social and environmental impacts, including higher withdrawals of freshwater, more pollution, greater use of antimicrobials with the associated risks of increased antimicrobial resistance, and potentially more outbreaks of zoonotic diseases (FAO 2016a). Also essential in underpinning the modern revolution in food production have been oil and nitrogen-based fertilisers. Without these, intensive agriculture would not have been possible. However, the environmental impacts of utilising finite resources such as oil are well-known, and are ultimately unsustainable at present levels (Joy 2017).

The overproduction of food, and of animal production in particular, and the associated environmental impacts, have led to severe ecological risks. In 2009, 28 scientists developed the Planetary Boundaries Framework (Stockholm Resilience Centre 2015), which has since

been updated. It defines nine planetary boundaries that must not be exceeded in order to protect people and the planet, as Katherine Richardson has explained in Chapter One of this book. The nitrogen cycle (part of the 'biogeochemical flows' boundary) has exceeded the high-risk upper limit (three times the safe limit). Phosphorus is not far behind. Two other boundaries, climate change and land system change, have progressed well into the zone of uncertainty. Animal farming and agriculture are responsible for 70% of freshwater consumption globally, compared to only 22% of water used by industry and 8% for domestic purposes (World Watch Institute 2004).

In fact, the agricultural sector is among the top three global causes of all major environmental problems, including climate change, environmental degradation (pollution, erosion, etc.), and habitat and biodiversity loss (Steinfeld *et al.* 2006). Due to the inefficiency of converting plant resources into animal-based calories for human consumption, diets rich in animal protein have higher environmental costs.

Increasing human consumption patterns are likely to increase environmental impacts of the livestock sector still further. Tilman and Clark (2014) noted that:

> "From 2009 to 2050 global population is projected to increase by 36%. When combined with the projected 32% increase in per capita emissions from income-dependent global dietary shifts, the net effect is an estimated 80% increase in global GHG emissions from food production (from 2.27 to 4.1 Gt per year of $CO_2$-Ceq). This increase of 1.8 Gt per year is equivalent to total 2010 global transportation emissions. In contrast, there would be no net increase in food production emissions if

by 2050 the global diet had become the average of the Mediterranean, pescetarian and vegetarian diets."

Similarly, Springmann and colleagues (2016) analysed the health and climate change co-benefits of dietary change to healthier, more plant-based diets on a global level. In line with results from other studies, they found that adopting plant-based (i.e. vegan) diets had the potential to reduce the most GHG emissions (up to 70%). 'Healthy global diets' that consisted of lower meat consumption could reduce up to 29% of GHG emissions compared to the FAO reference scenario. When analysing the diets of over 50,000 UK residents, Scarborough et al. (2014) similarly found that dietary GHG emissions of meat-eaters were approximately twice as high as those in vegans.

Researchers may use slightly different definitions for diets, and apply different methodologies to calculate $CO_2$-equivalent emissions, but the relative difference between diet types is consistent within all studies, with vegan diets providing the greatest environmental benefits.

**Animal agriculture and animal extinction**

We are currently living through the sixth mass extinction event since fossil records began (Ceballos *et al.* 2017). Human activities have increased extinction rates to around 1,000 times that of background levels (Pimm *et al.* 2014, Ceballos *et al.* 2015, Ceballos *et al.* 2017), and one fifth of all vertebrate species are now threatened with extinction (Hoffmann *et al.* 2010).

The multiple causes for this unfolding tragedy are primarily anthropogenic. Land clearing for cities and farms, pollution, over-hunting, over-fishing, human overpopulation and climate

change, have all taken their toll. However, one key factor can be identified which underpins most of these causes: excessive human consumption patterns.

It must surely be considered a tragedy of the highest order, when so many animal species become extinct, never again to walk, fly or swim, above, on or within the Earth or its oceans. Additionally, many of them are important for the maintenance of the ecosystem services – including the clean water, air and healthy environments – upon which all of us depend (Daily 1997).

**Welfare of 'food' animals**

As mentioned, more than 70 billion terrestrial animals are slaughtered annually (FAO 2017), along with one to three trillion fish (Anon. 2014). To meet growing demand, the number of animals farmed for food is expected to substantially increase in the coming decades, with world meat production projected to double by 2050 (FAO 2016b).

Unfortunately, welfare compromises are prevalent within the modern farming of most animal species. Welfare challenges are created by management factors, such as space and environment, by nutrition, husbandry, access to veterinary care, and limited opportunities to express normal behaviour, including social behaviour. They're also created by animal factors such as genetics and temperament. Many of these factors are exacerbated as farming is intensified to meet growing demand, as described in Joyce D'Silva's chapter xx in this book.

Welfare problems may also occur when animals are farmed, transported and slaughtered. Finally, most animals farmed for food are killed at a very premature stage of life –

foreclosing any future opportunities for achieving positive welfare states, or goals that might matter to them.

The space required for feed crop production, or for grazing farmed animals, has also encroached on the natural habitats of wild animals – habitats that are concurrently threatened by pollution, introduced species, hunting and climate change. As mentioned, agriculture now covers around 37% of the planet's ice-free land surface (FAO 2018). As species become endangered or extinct, the individual members of those species may suffer from the effects of habitat destruction and degradation, experiencing hunger, lack of shelter, weakness, disease, increased predation, and loss of socially affiliated animals.

**Variance in consumption patterns**

Lifestyle choices vary substantially in their ecological footprints. Take grain consumption, for example. Among the most consumptive are the US and Canada, where people consume on average 800kg of grain annually (most of it indirectly as beef, pork, poultry, milk and eggs). Among the least consumptive is India, where people consume less than 200kg each (Brown 2009) and, therefore, must ingest nearly all of it directly. Not much of the grain is used for conversion to animal protein, which is an intrinsically inefficient process. As Baroni *et al.* (2006) put it:

> "If animals are considered as 'food production machines', these machines turn out to be extremely polluting, to have a very high consumption and to be very inefficient. When vegetables are transformed into animal proteins, most of the proteins and energy contained in the vegetables are wasted; the vegetables consumed as feed are

used by the animals for their metabolic processes, as well as to build non-edible tissue like bones, cartilage, offal and faeces (Moriconi 2001).

> "If we only take into account fossil fuel consumption, production of one calorie from beef needs 40 calories of fuel; one calorie from milk needs 14 fuel calories, whereas one calorie from grains can be obtained from 2.2 calories of fossil fuels (Pimentel and Pimentel 2003, Reijnders and Soret 2003)."

In fact, the Earth already provides enough food for all, and could feed at least three billion additional people if the grains fed to animals were used to nourish people directly (Nellemann *et al.* 2014). Using those grains to produce animal products for wealthier people, whilst others suffer from malnutrition, is a substantial social justice concern.

**Conclusions**

Diets high in animal products increase health risks and are responsible for high GHG emissions. In contrast, well-balanced plant-based diets have the potential to substantially save animal and human lives and improve health (e.g. Tilman and Clark 2014), reduce GHG emissions (e.g. Hedenus *et al.* 2014, Scarborough *et al.* 2014), preserve water and land (e.g. Stehfest *et al.* 2009), and biodiversity.

It may once have been necessary to kill other sentient animals in order to survive. In modern, developed societies, and particularly given the ever-increasing array of animal product alternatives available, this is no longer the case. Vegan diets and lifestyles offer a practical alternative. The Vegan Society (n.d.) defines veganism as: "… a way of living which seeks to

exclude, as far as is possible and practicable, all forms of exploitation of, and cruelty to, animals for food, clothing or any other purpose."

Aspiring toward such a lifestyle will allow virtually all of us to maximise our health and wellbeing, whilst concurrently minimising adverse impacts on the environment, and on the other sentient animals with whom we share our planet.

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