



## What should we say NO to?

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### Food culture: the elephant in the room

Born and raised in a family that didn't appreciate nature and animals, I unquestionably embraced the culture of meat-eating and the notion that humans have the right to dominate animals. Over time, I thought I had become an animal lover, a compassionate individual and even an environmentalist, as I volunteered to be a dog-walker, sponsored children in third-world nations, adopted various eco-friendly measures, and supported various social causes. Never did I challenge the incongruity between what I thought I was and what I did, until a friend drew my attention to the following saying by Jane Goodall, renowned for her humanitarian work: *"Thousands of people who say they love animals sit down once or twice a day to enjoy the flesh of creatures who have been utterly deprived of everything that could make their lives worth living and who endured the awful suffering and the terror of the abattoirs."*

As I examined my 'Why love one but eat the other' enigma, I realized that my decision to consume animal products was having a profound (and mostly negative) impact on every aspect of the planet. Trained as an investment professional, I advocated capital preservation as vital to long-term investing. Yet, I failed to recognize the significance of applying the capital preservation principle to the planet's finite resources. As a parent, I sought out the best education and the best healthcare for my son, but what would his future be like without clean air and clean water? My habit of eating animals put me in direct competition for the grains and crops which could have fed the starving children whom I thought I cared about. I professed my desire for social justices and world peace; yet I aided and abetted oppression and violence towards other sentient beings just because I wanted to eat their flesh, eggs and milk.

Hoping to be part of the solution and not part of the problem, I decided to expand my circle of compassion and put the values that define me back into my diet. Along the way, I have gained far more than I have given up. I now fully understand why my physician husband chose to be fuelled by a plant-based diet more than 30 years ago. I know many of you are like me — not wanting to harm our health, animals, people and the environment. I wish to share what I have learned about how our food choices impact various interconnected components of the planetary ecosystems.

### The atmosphere: Polar bears are drowning on our watch!

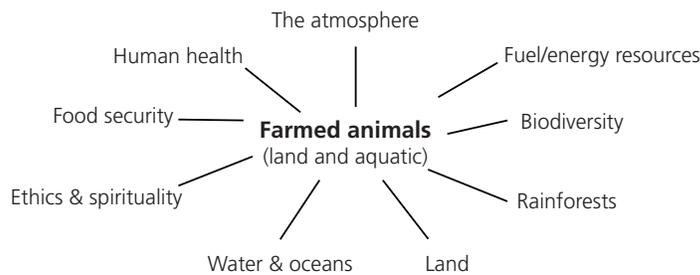
Greenhouse gases (GHGs), such as CO<sub>2</sub>, nitrous oxide and methane, trap heat from leaving the atmosphere, hence resulting in global warming. Global warming increases the frequency and severity of extreme weather events, which have resulted in casualties, social problems and substantial economic losses worldwide.

In 2006, the United Nations reported that animal agriculture accounted for 18% of the world's human-induced GHG emissions, vs. 13.5% from all forms of transportation combined.<sup>(1)</sup> More recently, independent scientific studies put animal agriculture's contribution to global GHG emissions in the more disturbing range of 30-51%. These capture the respiratory CO<sub>2</sub> released by animals raised for food and the CO<sub>2</sub> released to the atmosphere due to land-use change largely triggered by animal agriculture.<sup>(2,3)</sup>

Many climate scientists and policymakers have agreed that, in order to avoid irreversible, catastrophic climate change consequences, the average global surface temperature should not exceed 2°C above the pre-industrial level, and the long-run density of carbon-equivalent GHGs should stay below 350 parts per million (PPM). Worryingly, the atmospheric temperature already increased by 0.8°C two years ago<sup>(4,5)</sup> and may reach the 2°C threshold as early as 2040; and 400 PPM in carbon-equivalent GHG density was recorded in 2013.

There is a silver lining in the bad news. Research shows that each person can reduce the GHG burden on the planet by 1.5 tonnes per year simply by replacing animal products on their plate with plant foods. Greening our diet reduces carbon dioxide emissions much more than driving a hybrid car!<sup>(6)</sup>

### The true cost of animal agriculture and aquaculture is GLOBAL DEPLETION



Credit: Dr. Richard Oppenlander

### Fossil fuel: Do we have the willpower to ease fuel crises?

Animal agriculture and aquaculture are intensively petroleum-based. Large quantities of fossil fuel are needed for the production of fertilisers and pesticides to grow feed crops, transportation of feed, operation of feed mills, transportation of animals (often across continents or oceans) to slaughterhouses and marketplaces, processing, rendering, refrigeration, waste disposal and cleansing.

On average, producing one calorie of animal protein requires more than 8 times as much fossil fuel energy as producing one calorie of plant protein for human consumption.<sup>(16)</sup> Beef and lamb production is extremely fuel-expensive when compared to plant-protein production with the ratios of 54:1 and 50:1, respectively; turkey production offers little relief at a ratio of 13:1.

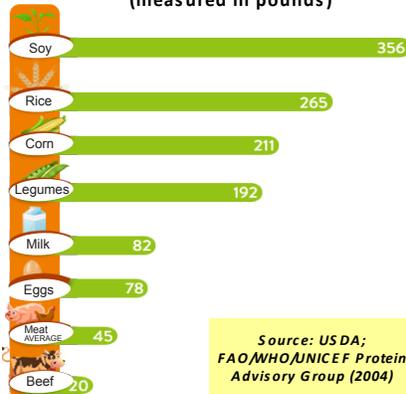
The United Nations has urged that a global shift towards a vegan diet is vital to avoid fuel shortage. Chris Mentzel, a clean energy expert, highlights the potency of greening our diet in his remark - "A 1% reduction in world-wide meat intake has the same benefit as a three trillion-dollar investment in solar energy." Our food choice can ease or even eliminate fuel crises; or it can exacerbate them. What should we choose?

## Land: Standing our ground, scientifically!

Land use by animal agriculture is grossly inefficient in terms of the yield of usable protein. Plant-based agriculture would yield as much as 18 times more usable protein per acre of farmland to feed the world than animal agriculture.<sup>(7)</sup> Each calorie of animal-based food, on average, would require 4.8 times more land than each calorie of plant-based food.<sup>(8)</sup>

Given the increasing global consumption of animal products and the gross inefficiency of land use by animal agriculture, the UN predicts that dietary change may override population growth as the major driver behind land requirements.<sup>(8)</sup>

**Usable Protein Per Acre of Farmland**  
(measured in pounds)



Source: USDA; FAO/WHO/UNICEF Protein Advisory Group (2004)

## Rainforests: What would a world without forests be like?

**Animal agriculture is the worst culprit for loss of rainforests**, among various drivers (such as forest fires and logging).<sup>(9,10)</sup> The scale and rate of forest loss is disturbing. Research data revealed that the world lost a total surface area of 50 soccer fields of forests every minute of every day between 2000 and 2012. To date, 80% of the Amazon rainforests have been cleared for animal-grazing and crop production to yield animal feed, and Zimbabwe has already lost more than 85% of its forests, primarily due to raising livestock.<sup>(9,10,11,12)</sup> Southeast Asian countries now top the chart of nations in terms of the speed of forest loss, largely due to palm oil plantations. Oilseeds, such as palm kernel, are widely used as animal feed.<sup>(13)</sup> Indeed, the vast majority of the Earth's plant food production is fed to animals — not humans!

Deforestation, intensive animal grazing and monoculture have exacerbated soil-degradation through wind and water erosion, nutrient depletion, and chemical pollution. Soil degradation and eventual desertification lead to more deforestation to compensate for the decline in land productivity. This vicious circle will not stop without drastic interventions.

**National Geographic has warned that our meat-consumption culture might leave a forestless planet to future generations.**<sup>(9)</sup> Forests are vital. Forests produce oxygen and contribute immensely to the water cycle, helping to regulate weather patterns and moderate flood and drought cycles. Tropical forests, in particular, are major carbon sinks, offsetting as much as 20% of human-induced GHG emissions annually.<sup>(14)</sup>

## The Earth's biodiversity is jeopardized by one single species — humans!

Loss of forests, peatlands and drylands is the biggest culprit for

loss of biodiversity with detrimental ecological, social and health consequences. Animal agriculture and feed-crop production destroy the natural habitat which many indigenous tribes, plant species and animal species (such as tigers, orangutans and elephants) rely on for their survival, causing species extinction. Loss of plant species jeopardizes wildlife animals' and native people's food source and can potentially result in loss of medicinal and anti-cancer plants beneficial to human health. Wildlife without their natural home faces greater risks of being hunted and conflicts with the human race.

Many people fail to appreciate that human health depends on the equilibrium of the planet's ecosystems and the wellbeing of various species therein. Scientific evidence shows that a number of fatal infectious diseases emerged and spread in areas where biodiversity was compromised as a result of deforestation. Deforestation makes bushmeat more accessible to humans. It is now known that humans contracted AIDS from eating bushmeat, i.e. wild animals in Africa who carried the dangerous virus - HIV. Deforestation can potentially lead to other human infections and even future pandemics.<sup>(15)</sup>

The good news is that we can take extinction off our plates by adopting plant-based diets.

## Fresh water: Meat is making the planet thirsty.

Water has been termed the 'New Oil' because of its scarcity and significance. Land and aquatic animal-farming is the leading fresh-water user - consuming 70% of global fresh water<sup>(1,17)</sup> - and the worst culprit for water pollution. It is predicted that by 2050 more than 45% of the global population will face fresh water crises for food production. No fresh water - no healthy food.<sup>(18)</sup>

**Water usage:** Calorie for calorie, animal products, on average, need 8 times more water to produce than plant foods.<sup>(1)</sup> The production of animal products leaves a water footprint 7 times that of water use in home.<sup>(17)</sup>

**Groundwater contamination:** Groundwater (i.e. freshwater) systems are damaged by animal waste - often untreated and unsanitized. Like us, land and aquatic animals defecate. Worldwide, 60 billion land animals and a trillion aquatic animals are killed every year for human consumption. The death toll will only go up. In the US alone, farmed animals produce 130 times as much manure as that produced by the entire US human population.<sup>(19)</sup> Leaks, spills and pipe bursts from massive holding tanks or lagoons (often open-air) containing untreated animal waste have caused devastation piling the 1998 Exxon Valdez disaster. As a way of disposal, untreated animal feces is liquefied and sprayed onto the soil. The runoff of animal waste into the groundwater system, through rain and soil seepage, takes with it chemicals, antibiotics, metals (such as copper and arsenic) fed to animals, and pathogens.<sup>(19,20,21)</sup> The U.S. government has reported that factory farms pollute our waterways more than all other industrial sources combined. This is probably true for other parts of the world, especially in developing countries where environmental regulations are lax or even non-existent, enabling water contamination by animal-farming to likely go unreported.

Drastically "greening" our food choice, rather than putting a primary focus on reducing domestic water usage, is more effective in mitigating the most serious water problems in the world.<sup>(17)</sup>

| Global-Average water footprint<br>Crop vs. animal products |                                 |
|------------------------------------------------------------|---------------------------------|
| Food item                                                  | Water footprint<br>(Litre/kcal) |
| Starchy roots                                              | 0.47                            |
| Cereals                                                    | 0.51                            |
| Oil crops                                                  | 0.81                            |
| Vegetables                                                 | 1.34                            |
| Milk                                                       | 1.82                            |
| Pig meat                                                   | 2.15                            |
| Eggs                                                       | 2.29                            |
| Chicken meat                                               | 3.00                            |
| Sheep/goat meat                                            | 4.25                            |
| Bovine meat                                                | 10.19                           |

Data Source: Mekonnen and Hoekstra (2010)

## The oceans are dying to feed us.

Our meat-consumption culture, while wreaking havoc above ground, is also devastating the oceans.

- **Commercial fishing is emptying the oceans indiscriminately** — decimating targeted species and pushing non-targeted ones (e.g. sea turtles, sharks, whales and dolphins) to the brink of extinction. Just one fishery alone in the U.S. was found discarding two-thirds of its total catch in 2010, including more than 400,000 sharks - cruel and wasteful, just like the shark-fin industry!<sup>(22,23,24)</sup>
- **Aquaculture (e.g. fish and shrimp farms), just as water- and petroleum-addicted as land-animal agriculture, pollutes the oceans with animal waste and chemicals, harming fish stock, coral reefs and other marine life forms.** Salmon fish farms on the west coast of Canada, for example, spread sea lice to wild pink salmon, killing 80% of the local salmon population and, thus, destroying the primary food source of wildlife species, such as bears, orcas and eagles.
- **Ocean warming and acidification result from the oceans absorbing human-induced CO<sub>2</sub>.** While slowing down global warming, this causes rising ocean temperatures which harms sea life.
- **Hypoxic dead zones result from runoffs of animal waste into the waterways, causing algae blooms and killing off sea life by depleting oxygen in the water.** There are hundreds of these globally, including Lake Winnipeg in Canada, Northern Gulf of Mexico, and shallow water areas of the South China Sea.<sup>(19,21,25,26,27)</sup>

## Human health:

### Will we eat ourselves to death?

Many medical and national health authorities have advised that appropriately-planned plant-based diets are healthful and nutritious for all age groups (including infants, pregnant mothers and athletes) and can prevent and treat chronic diseases. Biologically we do not need animal products for survival or optimal health. Conversely, the global meat-eating habit harms our health and unnecessarily stresses public healthcare systems.<sup>(28,29,30)</sup>

Most food-borne, air-borne and water-borne diseases (e.g. E-coli and Salmonella outbreaks, drinking-water crises) and many food-related pandemics (e.g. swine flu, avian flu and mad cow disease) can be traced back to pathogens from animal agriculture — whether they be in animal feed, manure, or animal bodies, (e.g. E-coli in beef; salmonella in chicken & eggs and tapeworms in pork). These have been linked to neurological, respiratory and gastrointestinal illnesses, childbirth defects, certain types of cancer and even deaths in farming-intensive communities.<sup>(19,21)</sup> and in the general public.

Medical studies have connected the consumption of animal products — meat, egg and dairy — to many lifestyle diseases (i.e. non-communicable diseases (NCDs), such as heart disease, obesity, diabetes (Type II), various types of cancers, and osteoporosis). Numerous clinical cases have proven that many NCDs can be treated, cured and even prevented by plant-based diets. NCDs follow the pattern of meatification of diets to developing countries. The World Health Organization reports that NCDs are by far the leading cause of death, killing more than 36 million people (i.e. >60% of deaths) every year worldwide.<sup>(31)</sup>

Animal-farming (land and aquatic) is the biggest drug-abuser. In Canada and the U.S., > 80% of antibiotics — same antibiotics needed to treat human diseases - are used on livestock, primarily to accelerate unnatural growth. Globally, antibiotic usage in animal-farming, albeit lower, is still in the disturbing 40% range. Health authorities have repeatedly sounded the alarm over

the threat of superbugs or loss of antibiotic efficacy in treating human illnesses. Bacteria's resistance to antibiotics has cost tens of thousands of human lives and many billions in healthcare dollars, a lot of which could have been saved had we not abused antibiotics in animal-farming.<sup>(20,32,33)</sup> Imagine the 'post-antibiotic' world where antibiotics could no longer be dispensed for simple procedures, such as child birth and dental surgery. This threat is more real than we realize.

## Food security: Nature has enough to meet our needs, but not our greed.

Nothing is more wasteful than animal agriculture.<sup>(8,34)</sup> Every year, one-third of the world's cereal harvest and 90 percent of the world's soy harvest are fed to animals raised for food, not humans. It takes up to 16 pounds of grain to produce just one pound of meat<sup>(35)</sup> and 5 pounds of wild-caught fish to produce one pound of farmed fish flesh.<sup>(25)</sup>

Livestock cannot survive in droughts, but drought-resistant crops can. It is absurd for relief-funding projects, such as Heifer International and Oxfam, to encourage animal husbandry in impoverished, drought-prone countries. Ethiopia is the world's 10th largest livestock producer. Yet, 6 million Ethiopians need emergency food aid. Animal agriculture not only fails to lift third-world nations out of poverty and hunger, but also enables meat-hungry developed nations to continue to exploit heavily stressed resources in impoverished nations. Meanwhile, plant-based agricultural initiatives in Northern Kenya are making ecologically and economically sustainable livelihoods possible for former animal farmers who lost their animals to drought.<sup>(36)</sup>

Every year 6 million children predominantly in third-world nations die of starvation.<sup>(8)</sup> The growing global population and meatification of diets worldwide will exacerbate food insecurity or world hunger, especially for third-world nations. Every time we consume animal products, we are in essence reducing the chance of grains and crops being fed to starving people in other parts of the world. We can connect the dots between world hunger and our food choice or we can shrug off our responsibility by attributing world hunger to everything else but our meat-eating habit.

## Ethics toward Earthlings: Do unto others as you would have them do unto you.

**Science has revealed that non-human animals have intelligence, awareness, languages, family structures and the ability to feel emotions (pain and suffering included).** For example, pigs and chickens have been found to be smarter than dogs and even 3-year old children. Like human mothers, cows give birth to calves after 9-month pregnancies. Maternal grief for cows and maternal deprivation for calves, and the same for any other animal species, are as unjust and heartbreaking as they are for human mothers and babies.

Almost all farmed animals are artificially brought to the world to suffer from the moment of birth to the moment of death. They are forced to live in a cramped and toxic environment, fed drug-laden diets (sometimes of their own species), brutally mutilated, subjected to physical, mental and sexual violence, and slaughtered for human consumption when they are only babies or at most adolescents.

Food movements — local, organic or humane — fall short on addressing the ethical and sustainable aspects of eating animals. These food movements are at best self-regulated; and "greenwashing" is commonplace. 'Free-range' chickens have been found to have rarely ventured out of crowded barns and 'pasture-fed' cattle allowed on pastures only very briefly in their lifetime. Would farmed animals, IF humanely raised, volunteer to be killed to be our food? John Robbins, who gave up the Baskin

*Animals do  
not 'give'  
their life to us*

Robins empire, says, "Animals do not 'give' their life to us, as the sugar-coated lie would have it. No, we take their lives. They struggle and fight to the last breath, just as we would do if we were in their place."

Our food choice reflects key moral values. The real test of one's ethics lies in the showing of unreserved compassion for the weakest and most vulnerable. Cruelty to any being is the same. The only difference is the victim. Interestingly, no religion mandates meat-eating and there are plant-based eaters in every faith. Eliminating animal products from our diets complements all spiritual belief systems and puts in action our refusal to partake in avoidable oppression, violence and injustice to human and non-human animals.

## A culture with cruelty, violence and injustice is not a culture worth keeping

Animal-based diets are simply not possible without the following elements: (a) premeditated, unprovoked and systematic killing of sentient non-human animals, however humanely raised we claim they were; (b) stealing farmed animals' offspring, milk, eggs and freedom; (c) exploitation of sentient beings' reproductive organs to induce unnaturally high output beyond biologically sustainable limits; (d) injustices towards our fellow human friends, especially the marginalized populations<sup>(37,38)</sup>, (e) ecological nightmare for wildlife, native people and our future generations, and (f) consumers' willful ignorance.

Today, animal products are like coins, costing more to make than their worth. We pride ourselves on environmental, social justice and humanitarian awareness. Let's extend our circle of compassion and leave the NIMBY (not in my backyard) syndrome and the 'I've done enough' attitude at the door.

As we hold our governments and businesses accountable for their actions, where do we stand on personal accountability? We all eat every day. Choosing plant-based diets allows us to vote 3

times a day against violence towards the planet, our health, and sentient beings, without the hassle of political lobbying. It is the single most potent behavioural adaptation to advance humanity and simultaneously minimize our water, carbon and ecological footprint at every scale from local to global.

It is considered socially responsible, just, and heroic to protect the vulnerable (e.g. children and animals) from harm and abuse, but it is often considered intolerant, impolite, or even extreme to try to end the senseless violence inflicted by our meat-eating habit. Is it more extreme to encourage healthful and vibrant plant-based diets, or to harm and kill when we don't need to? Do we want to be part of the problem or part of the solution? Is it still a personal choice to demand animal products, which have been scientifically proven to be unnecessary for a healthy human life, when one-fifth of the global population face food and freshwater crises? If we see our diet as a personal choice, we would want to choose compassion and morality over cruelty and environmental destruction, wouldn't we?

Taking animal products off their plates will become easy if or when we place our focus on the victims who are forced to bear the hidden cost and injustices inherent in the animal-eating culture.

Let's transcend beyond cultural programming and ask ourselves the question posed by the award-winning author, Jonathan Safran Foer:

"The question is, if we don't say no to this, what do we say no to? If we don't say no to something that systematically abuses 50 billion animals, if we don't say no to the number one cause of global warming, and not by a little bit, but by a lot, if we don't say no to what the UN has said is one of the top two or three causes of every significant environmental problem in the world, locally and globally, if we don't say no to something that is clearly a prime factor in the generation of avian and swine flus, if we don't say no to something that's making our antibiotics less effective and ineffective, if we don't say no to something that causes 76 million cases of food-borne illness every year, **just what do we say no to?**"



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