

Why Pope Francis Wants You to Eat Veggies: A Look at the Encyclical *Laudato Si'**

On May 24, 2015, Pope Francis published his ambitious encyclical *Laudato Si'* ("Praise be to You").¹ It is his clarion call to save Earth from the environmental catastrophe that we, the human family, have inflicted upon it.

Passionately written, the document lays out nature's woes – symptoms most of us have heard of but fail to take seriously -, and analyzes the spiritual, economic, and technological developments that have driven nature to the brink. To heal the environment, Pope Francis develops two moral imperatives: Individually we must examine the choices we make in our daily lives with respect to their environmental impact and have the courage to change them if necessary; collectively we must take political action to reduce the pervasive externalities which the economy and technocracy are imposing on the planet.

Laudato Si' amounts to a trenchant critique of corporate capitalism. Even those who benefit from this system must acknowledge that the pope's arguments are powerful.

The blog SweetOnion.Net examines how whole plant foods contribute to individual and environmental health. *Laudato Si'* hardly addresses this topic, and yet it has much to say about the way we nourish ourselves. That's why this long-form post will reconstruct the pope's reasoning, focusing it on the way we produce, sell, buy, and consume both food and drink. Its goal is to convey the pontiff's argument in all its coherence and urgency, while applying it to an important aspect of human life.

The analysis will place the message of Pope Francis in the context of Catholic Church teaching, to show just how innovative the encyclical is. Then it will examine what the pope has to say about the ethical and environmental impacts of livestock agriculture, the management of our water resources, the connection between eating and access to nature, and companies that sell food. Lastly, we will look at the solutions he presents, both at the international and the individual level.

If you are among the many people who have read *Laudato Si'*, this reconstruction may offer you new ways of relating the papal letter to your own personal circumstances. If you have not read the encyclical but are interested in food politics, animal welfare, or the environment, this overview will give you an idea of how these topics intersect with each other and how they tie into the latest and most progressive thoughts coming out of the Catholic Church.

Laudato Si' is a plea for allies eager to repair a deeply scarred environment. My hope is that this essay will further the cause, by connecting Pope Francis and his followers with nutrition experts, advocates for animal welfare, environmentalists, and other thought leaders eager to mend this beautiful planet.

*Saleh, Nivien. 2015. "Why Pope Francis Wants You to Eat Veggies: A Look at the Encyclical *Laudato Si'*." SweetOnion.Net. Online: <http://sweetonion.net/wp-content/uploads/2015/08/laudato-si-and-food.pdf>.

Contents

The big thesis: Reckless consumerism causes environmental crisis-----	3
A message for Christians and non-Christians alike-----	3
Know that Earth is not an object but a sister in distress -----	4
The encyclical extends - and breaks from - past Church teachings -----	4
Industrial animal production is unethical-----	7
We must repair our common home. Now.-----	8
How did we reach this impasse? “Rapidification”! -----	8
Global warming is real-----	9
Our passion for beef and dairy heats up the planet -----	10
We are destroying tropical forests-----	11
We are losing tropical animal and plant species -----	13
Let’s phase out fossil fuels -----	13
We need to preserve our fresh water sources-----	15
Make fresh water available to the poor -----	15
Access to nature for all, like in the blue zones -----	16
Become kinder to animals, and you become kinder to your neighbor -----	17
Corporations tend to profits and stockholders, not the environment -----	18
Company structure privileges profits over social goals -----	18
Negative externalities pervade our food system-----	19
Acts of philanthropy are just sporadic -----	20
We must protect the rights of the poor -----	20
Our society is a technocracy-----	21
The economy embraces technology without concern for its negative effects -----	21
Technology has empowered the already powerful-----	22
The technological mind sees nature as cold body of facts -----	23
Overcome the specialization of technocracy and reclaim the big picture -----	24
We <u>are</u> the environment -----	24
Experts, please debate!-----	25
A global, high-level consensus is called for-----	26
The grassroots have an important role to play-----	26
Replace consumerism with serenity-----	27
About the author -----	28
Works cited -----	28

The big thesis: Reckless consumerism causes environmental crisis

Pope Francis tells us that humanity, by sharply increasing its per capita consumption, has imposed great strain on the planet (*Laudato Si'* 50).

To get a sense of just how dramatically this aspect of our lives has changed in a short time, consider this scene from the Frontline documentary *The House of Saud*.² In the late 1940s Hassan Yusif Yassin was a boy in Saudi Arabia's Eastern Province. The kingdom's national oil company ARAMCO had just given his father and other Saudi government officials some of the latest U.S. household technologies. Here is how he remembers them:

[ARAMCO] started building these camps. It was new to us. Air conditioning was new to us— all these things. And then what was good about ARAMCO is they shared it. They used to get canned food. We had never seen canned food at the time

I remember the first time when we had a refrigerator that was supplied by ARAMCO to a number of people, and my father was one of them. We, as kids, were sitting there for maybe 16 hours to see how ice was being formed within this refrigerator. ... It was magic when we saw a cube of ice. We didn't really know the world of technology. We just thought that it was different and it is America.

In Hassan's childhood, Saudi citizens had neither air conditioners nor canned food nor ice boxes. Seventy years later Saudi Arabia is awash in consumer products.

Rising levels of consumption require proportional increases in raw material extraction, and they lead to mountains of waste. As humanity follows capitalism's paradigm of infinite growth, it produces global environmental calamity.

Pope Francis draws a clear link between our desire for more and more things, driven by the "me" focus of consumerism, and the decline of the ecosystem. His thesis is that consumerism has alienated us from our natural environment and diminished our concern for the poorer members of society. The result is a widening separation between man and God. How are we to change this? That is the topic of this encyclical.

A message for Christians and non-Christians alike

My exploration of *Laudato Si'* started with little enthusiasm. Past Church documents, which I had read during my time as a professor at the University of St. Thomas in Houston, Texas, openly assumed that non-Catholics like myself were spiritually misguided. The Church described non-Catholic Christians smugly as "our separated brethren,"³ and I expected similar language from this encyclical. To my surprise I found that Pope Francis was speaking to all of us. He began:

I wish to address every person living on this planet. (*Laudato Si'* 3)

Earth, he says, is a global common – a home that all humans share. Caring for it requires everyone's participation. The encyclical therefore urges each of us, regardless of

our faith tradition, to restore the health of our planet and its ability to regenerate.

Know that Earth is not an object but a sister in distress

It is customary that cardinals who ascend to the papal throne choose a new name for themselves. When Argentina's Cardinal Jorge Mario Bergoglio was elected pope in 2013, he took the name of a man whose life's work he deeply admired: St. Francis of Assisi. Born in 1182 to a wealthy silk merchant family, St. Francis opted to leave his life of luxury and frivolity and serve society's abandoned. A voluntary pauper and mystic, he intuited that God's infinite beauty was revealed in nature. That's why he befriended animals and at times even preached to them.⁴

St. Francis's embrace of the simple life, his concern for the poor, and his regard for nature inspire the pope. That is why he calls Earth a sister. Here are his words:

Saint Francis of Assisi reminds us that our common home is like a sister with whom we share our life and a beautiful mother who opens her arms to embrace us. "Praise be to you, my Lord, through our Sister, Mother Earth, who sustains and governs us, and who produces various fruit with coloured flowers and herbs". (*Laudato Si'* 1)

The pope grapples with the tragedy that many of us view Earth as an inert and inferior object we exploit at will – by building on her, extracting minerals and hydrocarbons, dumping human refuse, and converting natural habitat into livestock ranches, permanently altering ecological niches that took millions of years to evolve.

Filled with distress, he says, Sister Earth is weeping:

This sister now cries out to us because of the harm we have inflicted on her by our irresponsible use and abuse of the goods with which God has endowed her. We have come to see ourselves as her lords and masters, entitled to plunder her at will. The violence present in our hearts, wounded by sin, is also reflected in the symptoms of sickness evident in the soil, in the water, in the air and in all forms of life. (*Laudato Si'* 2)

The encyclical extends - and breaks from - past Church teachings

Pope Francis bolsters his position on environmental stewardship by invoking the teachings of other recent Church leaders who cared about our natural surroundings: Pope John Paul II, Pope Benedict XVI, and the Orthodox Archbishop of Constantinople, Patriarch Bartholomew. This has led conservative *New York Times* columnist David Brooks to conclude that his message is amazingly consistent with past teachings of the Church.⁵

That conclusion misses just how innovative *Laudato Si'* is. Placing the encyclical in the context of the Catechism of the Catholic Church⁶ ("CCC"), the authoritative summary of Church teachings, helps make this clear. As we shall see, the CCC contains two contradictory understandings of nature. One is aesthetic, the other instrumental. The strain between these two perspectives weakens the Catechism's guidance on how we should relate to animals and plants. As a result, there is now a great divergence of opinion within the Church over humanity's role as environmental stewards. Some influential writers represent a heavily instrumental

outlook. The view of Pope Francis, in contrast, is strongly aesthetic.

Let us first look at the Catechism's aesthetic passages – those that attribute nature's value to its beauty and to the ideals this beauty conveys to its onlookers. The Catechism explains that nature, by its mere existence, exalts God, just as an attractive sculpture exalts its maker:

God speaks to man through the visible creation. The material cosmos is so presented to man's intelligence that he can read there traces of its Creator. Light and darkness, wind and fire, water and earth, the tree and its fruit speak of God and symbolize both his greatness and his nearness. (CCC 1147)

Understanding God's message therefore requires that we protect the environment. Humans are welcome to use of it what they need for their sustenance and development, but they should not wantonly exploit or destroy what God has created. The Catechism explains,

Man must therefore respect the particular goodness of every creature, to avoid any disordered use of things which would be in contempt of the Creator and would bring disastrous consequences for human beings and their environment. (CCC 339)

God's creatures, continues the Catechism, are not only perfect (CCC 339), they are also interdependent, forming an integral system worthy of protection:

God wills the interdependence of creatures. The sun and the moon, the cedar and the little flower, the eagle and the sparrow: the spectacle of their countless diversities and inequalities tells us that no creature is self-sufficient. Creatures exist only in dependence on each other, to complete each

other, in the service of each other. (CCC 340)

Since God willed creation as an interdependent system, mankind must protect not only its individual elements, but also the relationships and balances among them.

Let's turn to the instrumental aspects of the Catechism. Beginning in the Middle Ages, the Church arranged the world into a strictly hierarchical system, where higher life forms were destined to rule over lower ones and use them for their purposes. This Great Chain of Being placed minerals at the bottom rung. They were ruled over by plants, which in turn were dominated by animals. Next came humans, then angels, and, at the highest rung, God the creator. Consistent with this heritage, the Catechism places man at the summit of creation:

The hierarchy of creatures is expressed by the order of the "six days", from the less perfect to the more perfect. God loves all his creatures and takes care of each one, even the sparrow. Nevertheless, Jesus said: "You are of more value than many sparrows", or again: "Of how much more value is a man than a sheep!" (CCC 342)

Man is the summit of the Creator's work, as the inspired account expresses by clearly distinguishing the creation of man from that of the other creatures. (CCC 343)

Humanity is so central to God that he created the entire universe – yes, all one hundred billion galaxies of it⁷ – for the exclusive use of mankind:

The universe, created in and by the eternal Word, the "image of the invisible God", is destined for and addressed to man (CCC 299)

There is a striking tension between the *aesthetic* view of creation – as a magnificent book that communicates to us the Creator’s invisible beauty – and the *instrumental* view – as a resource that is to be used for the life and growth of human beings. The first conceives of creation as an interdependent web of life forms, of which humanity is a part and where all creatures serve and balance one another. The second treats creation as a strict hierarchy, where lower-ranking life forms serve those at higher ranks, and the latter exploit the former.

This begs the question: Which uses of nature are legitimate and which are illegitimate? The Catechism says:

Animals are God's creatures. He surrounds them with his providential care. By their mere existence they bless him and give him glory. Thus men owe them kindness. We should recall the gentleness with which saints like St. Francis of Assisi or St. Philip Neri treated animals. (CCC 2416)

God entrusted animals to the stewardship of those whom he created in his own image. Hence it is legitimate to use animals for food and clothing. They may be domesticated to help man in his work and leisure. Medical and scientific experimentation on animals is a morally acceptable practice if it remains within reasonable limits and contributes to caring for or saving human lives. (CCC 2417)

It is contrary to human dignity to cause animals to suffer or die needlessly. It is likewise unworthy to spend money on them that should as a priority go to the relief of human misery. One can love animals; one should not direct to them the affection due only to persons. (CCC 2418)

The passages come down to: Use animals, but not too much. Love them, but not too

much. Does some golden mean exist? How we answer this question has existential implications for the global capitalist order and, more specifically, the food system embedded within it. Much of our food involves the use and potential abuse of animals and plants, raising questions such as: Is it permissible to hold livestock in large factories that some have likened to Nazi concentration camps, if doing so is the cheapest way of securing an abundant supply of meat?

The Catechism’s vagueness explains why there is considerable divergence within the Catholic community over just how humans should approach the other elements of creation.

Let’s take Joseph Kirwan, who contributed the chapter “Greens and Animals” to the 1996 book *The Cross and the Rainforest*.⁸ Kirwan writes that animals are instruments:

Sometimes pain inflicted on an animal (assuming for the moment that an animal can feel pain as we do) will be for the benefit of the animal. More often than not, such pain (if it is indeed what we know as pain) is entirely for our benefit and not for that of the animal. House training a puppy requires treatment that the puppy certainly does not like. Breaking a horse to wear harness, or to be ridden, or to answer to the reins, involves treatment that is not to the animal’s liking. Actions such as these are licit because we stand to an animal as user to used.

...
Dominion of man over man is licit only when it is for the common good, that is, a good which both orderer and ordered share. The case of man’s dominion over creatures is different. The dominator of an animal has to consider only human good. (emphasis added)

Peter Laird, who writes for the magazine *Religion & Liberty*,⁹ agrees with this instrumentalist view when he emphasizes the superiority of humans and states that creation is, essentially, a gift to mankind:

Notwithstanding the truth that every creature, rock, and flower bears its own excellence, Saint John Chrysostom articulates the Christian ordering succinctly: “Man - that great and wonderful living creature, more precious in the eyes of God than all other creatures! For him the heavens and earth, sea and all the rest of creation exists”.

Pope Francis’s view of animals stands in stark contrast with Kirwan and Laird. With this encyclical he is pushing the Church in a new direction. Emphasizing the aesthetic rather than the instrumental role of nature, he tells us:

Saint Francis, faithful to Scripture, invites us to see nature as a magnificent book in which God speaks to us and grants us a glimpse of his infinite beauty and goodness. (*Laudato Si’* 12)

We saw earlier that the pope views Earth – a vast system composed of humans, plants, animals, fungi, microbes, and inorganic matter that is calibrated into complex subsystems - as capable of experiencing distress. That he assigns emotions to a *system* of beings, even if he only does so allegorically, suggests that unlike Kirwan and Laird, he views animals as feeling creatures.

Pope Francis rejects the notion that God gave us Earth as a resource to use as we please. While granting us the garden of the world, God also handed us the responsibility of caring for and preserving that garden:

Although it is true that we Christians have at times incorrectly interpreted the Scriptures, nowadays we must forcefully reject the notion that our being created in God’s image and given dominion over the earth justifies absolute domination over other creatures. The biblical texts are to be read in their context, with an appropriate hermeneutic, recognizing that they tell us to “till and keep” the garden of the world (cf. Gen 2:15). “Tilling” refers to cultivating, ploughing or working, while “keeping” means caring, protecting, overseeing and preserving. This implies a relationship of mutual responsibility between human beings and nature. (*Laudato Si’* 67)

Unlike his precursors, Pope Francis thus tells us: The environment has the responsibility of providing for humanity. But in drawing their sustenance from nature humans also incur a duty: Respect and protect the integrity of this beautiful, fragile system.

One does not need to be Catholic or even Christian to find value in these words. All that is needed is a genuine desire to care for nature.

Industrial animal production is unethical

Without explicitly saying so, Pope Francis comes down against the industrial animal production that is widely practiced in the industrialized world. That’s because it embodies the sort of absolute domination of animals he categorically rejects.

Take the United States as an example. It is widely known that animals are separated from their parents before they become naturally independent. If they are chickens, their beaks are amputated, and they are

bred to produce a weight their legs cannot support. Factory-farmed animals are housed in unnaturally tight conditions that fill them with aggression towards one another. They are injected with growth hormones that increase the marbling of their flesh while doing nothing for the creature's wellbeing.¹⁰ Cows are fed a diet of corn, to which their rumens are not adapted¹¹ and which requires them to ingest sub-therapeutic levels of antibiotics. At the end of their lives, they are terminated in ways that famously prompted Paul McCartney to say, "If slaughterhouses had glass walls, everybody would be vegetarian".¹²

A model of animal husbandry that is far more in keeping with Pope Francis's call for care, protection, and preservation, and with treating nature as an interdependent system is that practiced by Joel Salatin at Polyface Farms in Virginia. Food writer Michael Pollan made this farm famous in his book *The Omnivore's Dilemma*.¹³ Here, livestock are granted a life that is full and protected but cut short for the purpose of meat production. In nature animals live outdoors, and so they do at Polyface Farms. Through the careful rotation of cows, goats, chickens, and pigs on pasture Salatin ensures that whatever his flock take from the Earth gets replenished.

What does this mean for consumers? The meat produced at Polyface and farms like it may be somewhat more expensive than what is sold by factory systems. But given that the average U.S. consumer spends only ten percent of his or her income on food, compared to 23 percent in 1929,¹⁴ many Americans can afford meat raised under a philosophy of stewardship. Similar circumstances hold for other industrialized nations.

By purchasing only ethically produced meat, consumers can greatly reduce the suffering of livestock.

We must repair our common home. Now.

Laudato Si' states that we have brought our common environment, our common home, into disarray. The good news is that repairing it is feasible, if we work on it together.

The urgent challenge to protect our common home includes a concern to bring the whole human family together to seek a sustainable and integral development, for we know that things can change. (*Laudato Si'* 13)

The time, we are told, is now.

How did we reach this impasse? "Rapidification"!

If you know how a problem arose you become more able to solve it. We therefore need to ask ourselves: How did we drift into the crisis of a suffering planet? One factor stressed in the encyclical is that the pace of life across the planet has accelerated enormously. Imagine yourself in twelfth-century Italy with Francis of Assisi. Back then everything unfolded with the rising and setting of the sun. When the sun went down activity ceased - other than stargazing and imagining fanciful stories about the Zodiac, people could really do very little at night.

With the invention of electricity, activity became independent of the sun, and the pace of life got faster. Since the Internet has

become a commercially usable network, things have sped up even more. Virtual corporate teams now work on projects around the clock – when teammates in New York are sleeping, those in Mumbai and Taipei carry the ball. Consumers can buy anything they want from the comfort of their homes – no longer is it necessary to schedule a trip to the store. As more and more purchases move online, the velocity of money and the volume of commerce increase. The same is true for the volume of information that is pumped through our brains. Pope Francis calls this increased pace of life “rapidification” (*Laudato Si’* 18).

A rapid pace of life means rapid consumption and disposal, which translates into the quick accumulation of waste. Perhaps this is why the pope is wary at the speed at which we are moving:

The goals of this rapid and constant change are not necessarily geared to the common good or to integral and sustainable human development. Change is something desirable, yet it becomes a source of anxiety when it causes harm to the world. (*Laudato Si’* 18)

He clearly would like to give us a throttle to control the engine that makes our social system spin faster and faster.

Global warming is real

Pope Francis says:

A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system. (*Laudato Si’* 23)

Some significant Catholic thought leaders disagree with this statement. Eleven days after a draft of the document had been leaked,¹⁵ *Crisis Magazine*, an American conservative-Catholic publication, had already published two articles (here¹⁶ and here¹⁷) rejecting the pontiff’s assertion of a scientific consensus on global warming or, synonymously, the greenhouse effect.

But the vast majority of scientists support what His Holiness is articulating. In February 2015 even NASA – the National Aeronautics and Space Administration, which is the U.S. space agency - came out to say that human-made global warming is real.¹⁸ Here is what they said (video will load after a short commercial): [See video referenced in note 18]

There are many reasons why man-made global warming is worrisome, and His Holiness addresses several. For example, a rise in world temperatures will lead to the melting of polar ice caps (*Laudato Si’* 23-25), which will raise sea levels and inundate communities in shallow regions like coastal Bangladesh.¹⁹ Global warming may also acidify oceans (*Laudato Si’* 24).

Europeans are already getting an inkling of the harm a very slight increase in temperatures can inflict: In Germany, honey bees are the most important pollinators for two to three thousand plant species - 65% of the country’s agricultural crop depend on pollination.²⁰ During the unusually mild winter of 2012-13 beekeepers lost 15% of their hives.²¹ The cause was the Varroa mite, a parasite from South Asia that first arrived in Germany in 1977 and that thrives in mild conditions. Imagine the damage to German beekeepers, farmers, and consumers if winters warm up long-term.²²

As environmental stewards we must stem the greenhouse effect in a way that is both swift and long lasting.

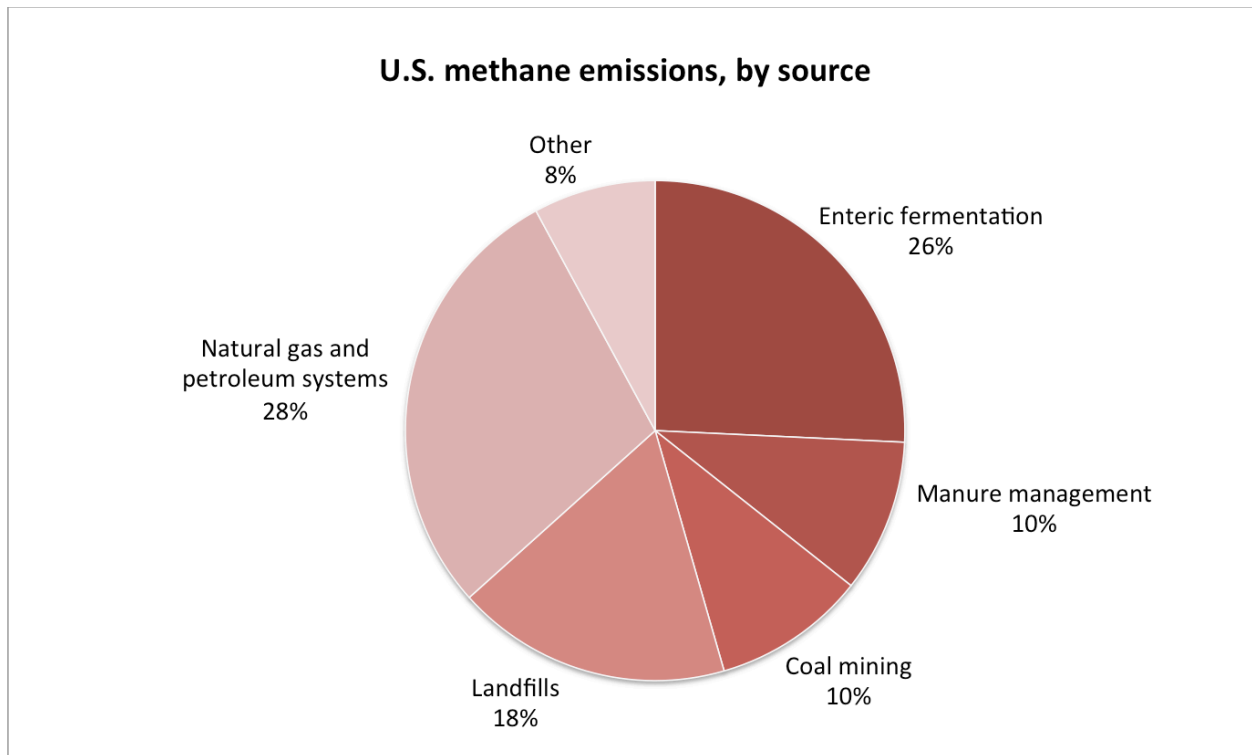
Our passion for beef and dairy heats up the planet

Among the greenhouse gases that Pope Francis mentions is methane (*Laudato Si'* 23-24). Since methane connects our food system with the greenhouse effect I want to give it more emphasis than the pope did.

Let's start by summarizing the dangers this gas poses. When released into the air, each methane molecule acts as small sponge that traps solar heat in the atmosphere.

The U.S. Environmental Protection Agency (EPA) pegs methane's global warming potential between 28 and 36. This means that a gram of this substance traps 28 to 36 times as much heat in the atmosphere as a gram of carbon dioxide, the most widely known greenhouse gas. The more methane we discharge, the warmer the atmosphere becomes.

Now guess who produces an especially large amount of the greenhouse gas methane? The animals we raise so intensively for meat production. In the U.S., livestock agriculture accounts for 36% of methane emissions.



Source: United States Environmental Protection Agency (Note: According to the EPA, the percentage for natural gas and petroleum systems is 29%, not 28%).

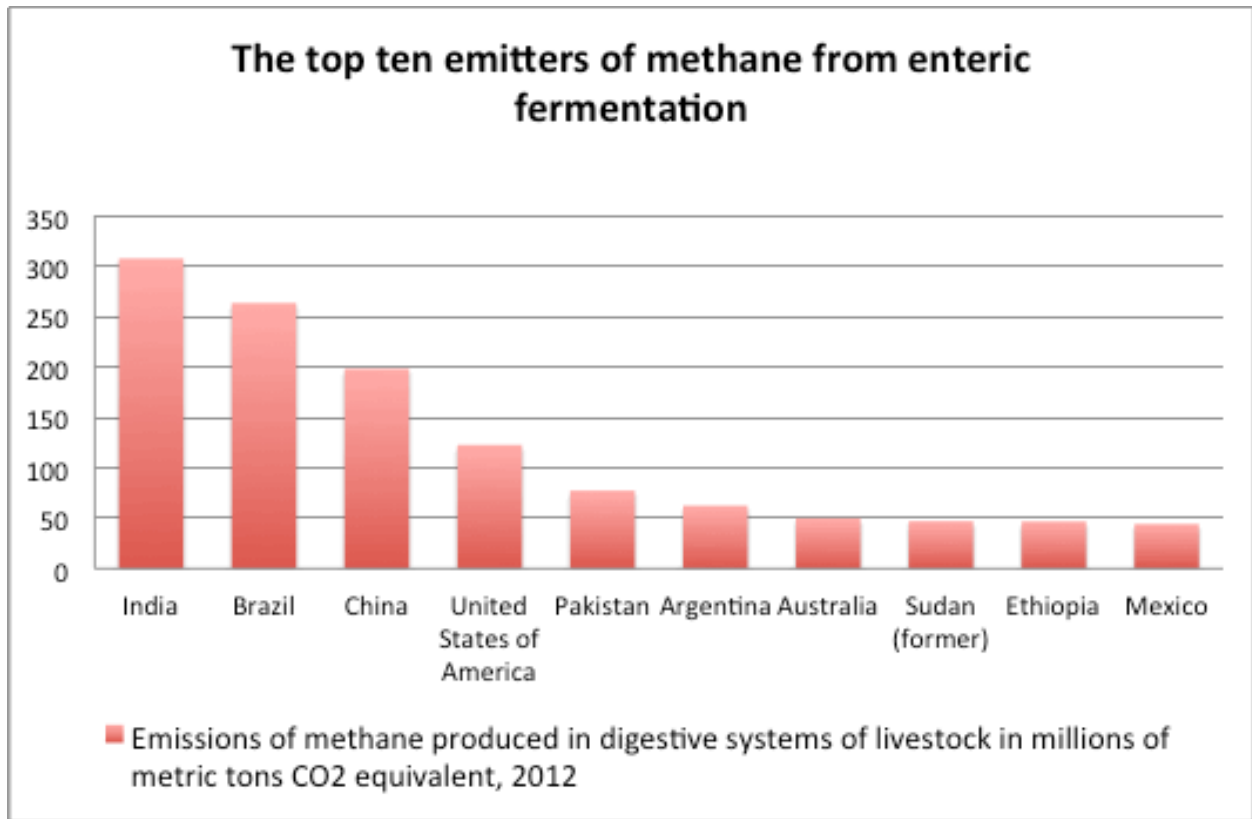
As this EPA chart shows, ten percent of U.S. emissions come from manure management – the way animal feces are processed.

Another 26 percent come from enteric fermentation – the burps and farts of cattle and, to a far lesser extent, other livestock.

Enteric fermentation is a worldwide problem. The graph below lists the top ten methane emitters from enteric fermentation. India leads the pack, followed by Brazil and then China. The U.S. is in fourth place. In 2012 the combined

cattle of these ten nations burped up 1,200 million tons of CO₂ equivalent in methane.

The solution to this danger is to reduce the number of cattle we rear.



Source: Food and Agriculture Organization of the United Nations (FAOSTAT)

We are destroying tropical forests

The impact of livestock ranching on global warming extends beyond the discharge of methane. As Pope Francis tells us, “things are made worse by the loss of tropical forests which would otherwise help to mitigate climate change” (*Laudato Si’* 24).

Since he does not explain what meat production has to do with tropical rainforests, I will. Located north and south

of the Equator in Central and South America, Africa, Australia, and Asia, these forests are important because they mitigate climate change. The rainforests absorb the greenhouse gas carbon dioxide – over half a billion metric tons each year²³- and convert it into plant material. As we cut down tropical forests, we eliminate this important source of greenhouse gas mitigation. Moreover, as these trees are destroyed, their carbon is released back into the air as carbon dioxide.²⁴ That rainforests are sometimes called the lungs

of the world illustrates their important contribution to Earth's carbon cycle.

Unfortunately these forests are being cleared worldwide for creating rubber and oil plantations and for growing grass to feed cows²⁵ and make more beef. Writing about this in 2009, the British newspaper *The Guardian* looked specifically at the Amazon:²⁶

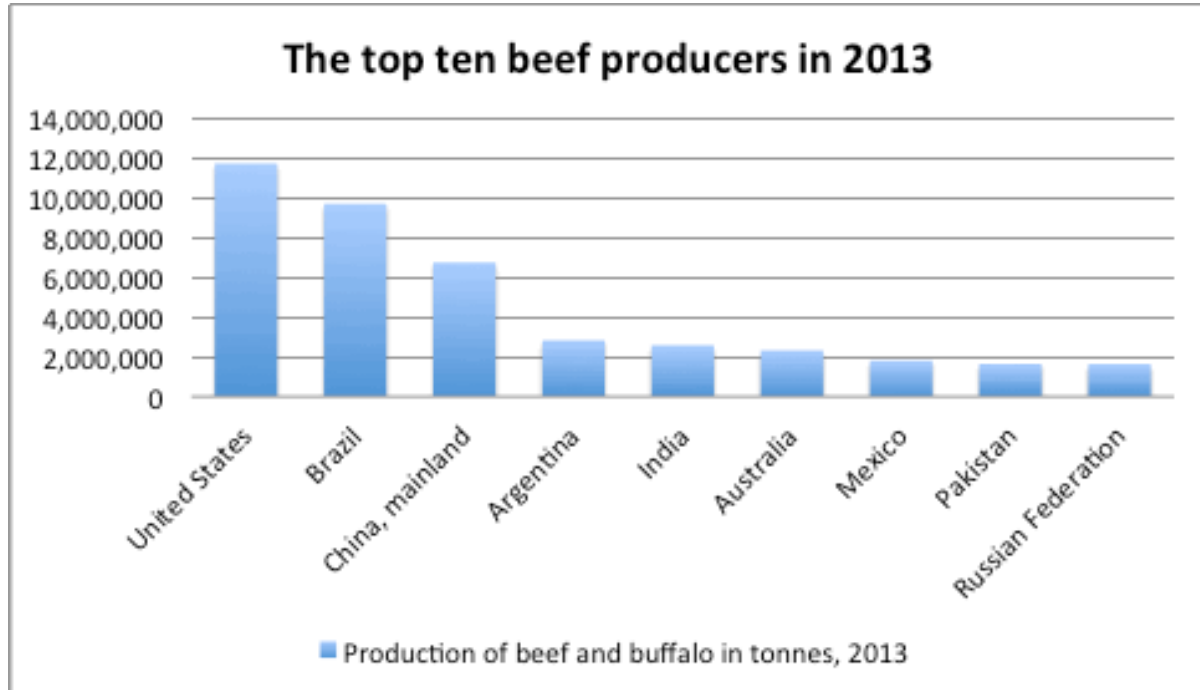
Since the 1970s, when satellite mapping of the region became available, around a fifth of the rainforest has been destroyed, an area the size of California. Greenpeace US estimates that, between 2007 and 2008, another 3m acres (1.2m hectares) of the Brazilian Amazon have been destroyed.

What is driving the destruction?

Logging, cattle farming and soy plantations are key, plus the increased construction of

dams and road, and shifting patterns of farming for local people and mining (for diamonds, bauxite, manganese, iron, tin, copper, lead and gold). These factors are often interlinked – trees are cut down for timber and the cleared land can be used for grazing cattle. Soybeans are then cultivated on the same land. Land is also cleared for biofuel crops. According to Greenpeace, around 80% of the area deforested in Brazil is now cattle pasture. Brazil's biggest export markets for beef are Europe, the Middle East and Russia.

When it comes to producing beef, the United States is the world leader, followed by Brazil and China. Argentina, the pope's home country, occupies fourth place. Our passion for beef heats up the planet. Since beef is not a vital component of the human diet, a logical conclusion is that we should eat less of it.



Source: Food and Agriculture Organization of the United Nations (FAOSTAT)

We are losing tropical animal and plant species

Over recent decades, Earth's biodiversity has declined. The publication *Motherboard*, which tracks scientific and technological innovation, reports the findings of a team of scientists led by Gerardo Ceballos of the National Autonomous University of Mexico:²⁷

Ceballos and his colleagues found vertebrate species have been disappearing at an alarming rate for the last 500 years, roughly since humans started to have a significant impact on the environment. Since 1500, at least 338 vertebrate species have gone extinct, and if species continue to disappear at this rate, the planet's biodiversity could be significantly and permanently altered within three generations, the researchers warned.

To be sure, species extinction is a normal feature of evolution. But the rate at which species are currently disappearing, says *Motherboard*, is 50 times the natural rate of extinction.

When it comes to biodiversity, the tropical rainforests are especially valuable, and their destruction harms the global system of life beyond impacting global climate. Nature Conservancy explains:²⁸

Tropical forests cover only 12 percent of the planet but are home to more than one-half of the Earth's known plants and animal species. At the current rate of deforestation, tropical rain forests will virtually disappear as functioning ecosystems within 100 years.

To Pope Francis, nature in all its abundance reflects God (*Laudato Si'* 84). That human action has diminished global biodiversity is therefore a sign of disrespect for, or lack of interest in, God's way of revealing himself to humankind. The pontiff gently reminds us,

When we can see God reflected in all that exists, our hearts are moved to praise the Lord for all his creatures and to worship him in union with them. (*Laudato Si'* 87)

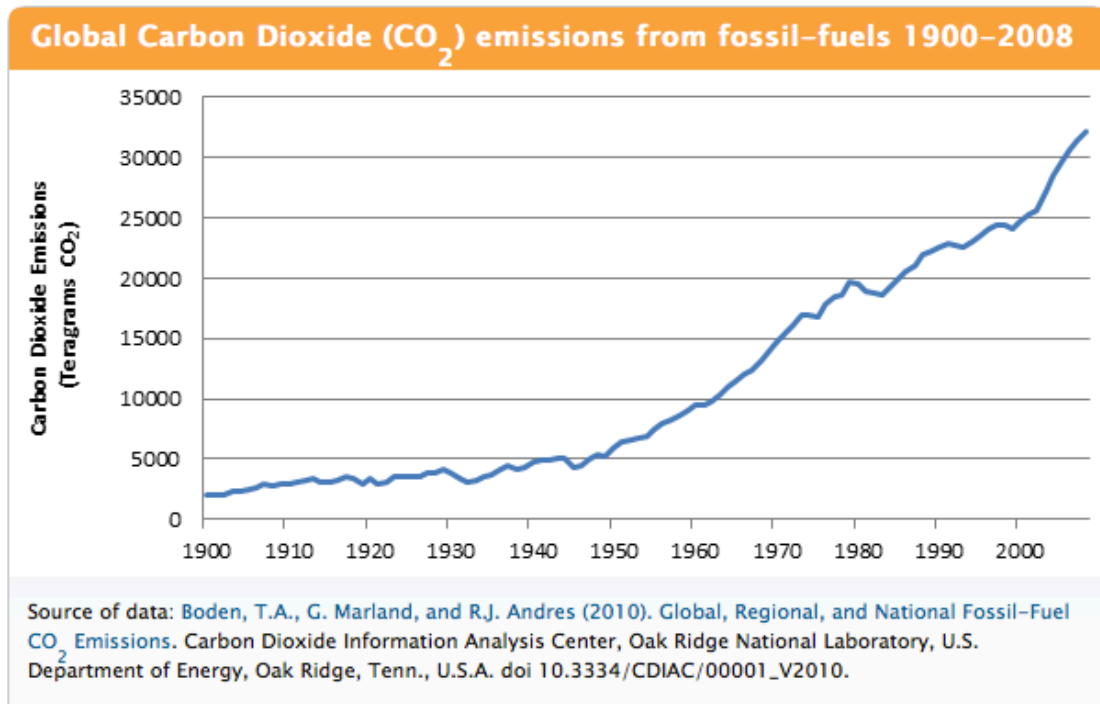
If nature truly reflects God, protecting its species from extinction becomes a form of Christian worship.

Let's phase out fossil fuels

We just saw that methane has a far greater global warming potential than carbon dioxide, which means it traps a larger amount of heat. This suggests that methane is more dangerous than carbon dioxide. But this is true only in the short run: Methane remains in the atmosphere for a mere decade, whereas carbon dioxide lingers for several thousand years.²⁹

His Holiness therefore asks that we promptly phase out our reliance on fossil fuels. That's because the burning of fossil fuels produces the majority of man-made carbon dioxide, the greenhouse gas with the most threatening long term effect. (*Laudato Si'* 165).

The chart below explains why the pope raises this issue with such urgency: Even though scientists have known for decades that carbon dioxide is a greenhouse gas, global annual emissions have risen at a shocking rate.



Source: United States Environmental Protection Agency

Here is how this demand connects with animal husbandry. According to the 2013 report *Tackling Climate Change through Livestock*,³⁰ published by the Food and Agricultural Organization (FAO) of the United Nations, the global livestock sector is responsible for 14.5 percent of all man-made greenhouse gas emissions. This number breaks down into three gases:

- 44 percent methane
- 29 percent nitrous oxide
- 27 percent carbon dioxide.

We can reduce these emissions by reducing our dependence on meat.

There are many additional ways in which we can render our food supply more climate-friendly. Since the world's population is projected to reach the 9 billion mark by 2050, we must explore all these possibilities. In its report *Energy-*

Smart' Food for People and Climate,³¹ the Food and Agriculture Organization of the United Nations suggests that the global food chain:

- Deploy new farming methods among subsistence farmers that are not only ecologically friendly but also improve yields.
- Use existing energy sources more efficiently.
- Rely more on renewable energy systems that are low in carbon.
- Reduce waste, as currently a whopping one third of the food that's produced is not consumed.³²

Realizing these changes requires concerted efforts on a global scale: Engineers and social scientists in think tanks and at universities devise food production technologies that are both energy-efficient

and socially acceptable; intergovernmental organizations sponsor research on agricultural energy consumption, provide depositories for policy innovation, and carry these innovations into local communities through development projects; national and local governments conceive and implement regulations for an energy-efficient food chain; local producers and consumers introduce energy-efficient technologies into their daily lives.

We need to preserve our fresh water sources

As life rapidifies and consumption increases, fresh drinking water becomes scarce. Pope Francis says:

Fresh drinking water is an issue of primary importance, since it is indispensable for human life and for supporting terrestrial and aquatic ecosystems. Sources of fresh water are necessary for health care, agriculture and industry. Water supplies used to be relatively constant, but now in many places demand exceeds the sustainable supply, with dramatic consequences in the short and long term. (*Laudato Si'* 28)

This is happening right now in the United States to a giant underground water table called the Ogallala Aquifer. This aquifer traverses eight states, starting with South Dakota in the north, then moving southward through Wyoming, Nebraska, Colorado, Kansas, Oklahoma, New Mexico, and Texas. The aquifer provides drinking water to about two million people.

Farming is water-intensive and ranching even more so: According to the Center for Investigative Reporting, making a pound of grain-fed beef requires over 1800 gallons

of water.³³ That is 6,800 liters or 60 barrels.³⁴ The U.S. Geological Survey puts that number much higher, at 3,000 to 13,500 gallons for a quarter pound Hamburger.³⁵

Both farming and ranching have been pulling large amounts of water from the Ogallala aquifer. A 2013 article in the Washington Post says that in some counties the water table is dropping by as much as two feet per year.³⁶ It may seem inconceivable that anyone in the United States might ever suffer a shortage of drinking water. But the dewatering of the Ogallala aquifer demonstrates that even in nations of abundance, fresh water is a precarious resource that needs to be managed with care. Witness the developing crisis in California, whose 52 million residents are competing for water with farmers, who raise a majority of the fresh vegetables consumed in the United States.³⁷

We therefore need to devote serious research to the protection of our fresh water sources.

Make fresh water available to the poor

Pope Francis deplores the growing trend towards water privatization:

Even as the quality of available water is constantly diminishing, in some places there is a growing tendency, despite its scarcity, to privatize this resource, turning it into a commodity subject to the laws of the market. (*Laudato Si'* 30)

Even that is happening in the United States, and it involves India. In 2013, Newsweek reported that the city of Sitka, Alaska, sold

the rights to transfer three billion gallons of water annually from Sitka's reservoir to the company True Alaska Bottling. A partner company, S2C Global, was going to build a facility in India that would process this Alaskan water and then sell it to the Middle East.³⁸

Is it morally permissible to turn a resource to which access is considered a human right into a commodity? Pope Francis does not advance a single yes-or-no answer, but he says:

One particularly serious problem is the quality of water available to the poor. (*Laudato Si'* 29)

Newsweek shares this worry when it points out how ethically challenging the question of water privatization is:

Proponents of privatization say markets are the best way to solve that problem: only the invisible hand can bring supply and demand into harmony, and only market pricing will drive water use down enough to make a dent in water scarcity. But the benefits of the market come at a price. By definition, a commodity is sold to the highest bidder, not the customer with the most compelling moral claim.

The provision of water is a complex affair, and how it is best done depends on a region's technological capacities, native resources, and needs. We may therefore assume that the pontiff is against any one-size-fits-all solution. What is clear is his insistence that any water policy be specifically evaluated for its impact on society's most marginalized members.

Access to nature for all, like in the blue zones

Consumerism, a culture of desiring material possessions beyond the necessary, makes society's members want to appropriate things and exclude others from their use. It engenders a focus on oneself and one's possessions, and erodes solidarity with others, especially the poor (*Laudato Si'* 49).

This drive to appropriate and exclude has resulted in a remarkably uneven access to nature that cuts out the marginalized members of society:

In some places, rural and urban alike, the privatization of certain spaces has restricted people's access to places of particular beauty. In others, "ecological" neighbourhoods have been created which are closed to outsiders in order to ensure an artificial tranquillity. Frequently, we find beautiful and carefully manicured green spaces in so-called "safer" areas of cities, but not in the more hidden areas where the disposable of society live. (*Laudato Si'* 45)

The pope values access to nature for all, and there are two reasons for this. First, he views animals, plants, microbes, and fungi as the book through which God reveals to us his beauty and goodness (*Laudato Si'* 12), encouraging us to worship him. If we want all humans to find their way to worship, they all, regardless of income, must be granted access to nature.

Second, he believes that being in nature is a basic human need:

Neighbourhoods, even those recently built, are congested, chaotic and lacking in sufficient green space. We were not meant to be inundated by cement, asphalt, glass

and metal, and deprived of physical contact with nature. (*Laudato Si'* 44)

What does this have to do with food? In the United States, where the number one medical problem is obesity, we tend to believe that health is about the personal determination to diet and exercise. Dan Buettner, the author of the book *The Blue Zones Solution: Eating and Living Like the World's Healthiest People*,³⁹ shatters this myth. He explains that a commitment to healthy eating must be complemented by access to nature.

Disconcerted by the high levels of obesity, diabetes, and heart disease he saw all over Western industrialized societies, Buettner inquired into what he calls “blue zones” – places like Okinawa in Japan, Ikaria in Greece, or Nicoya in Costa Rica, where people live unusually long and healthy lives. These blue zones taught him that healthy living hinged on four lifestyle choices:

- Choosing a whole foods, largely plant-based diet;
- Practicing stress management techniques;
- Enjoying moderate exercise;
- Maintaining social support and community.

In implementing these lifestyle choices, personal determination can get us only so far, because we have a limited store of fortitude on which we can draw each day. Often we use it up as we care for our children, deal with unpleasant work situations, and complete the numerous chores that mark our days.

That is why we need our surroundings to facilitate and encourage healthy behavior: through easily accessible shops and

farmers' markets that offer fresh produce, programs that build community and relationships with others, and an infrastructure of roads and parks that nudges citizens towards walking regularly.

Easy access to nature, Buettner would therefore say, is important for three reasons: It enables us to exercise, distracts us from snacking, and helps us manage our stress. In short, access to nature keeps us from overeating. And as the outdoors help heal individuals, they contribute to the health of society. That's why natural habitat ought to become an integral component of city planning (*Laudato Si'* 147 and 150).

Become kinder to animals, and you become kinder to your neighbor

Pope Francis observes that the way we treat each other and the way we treat the environment are deeply connected:

The human environment and the natural environment deteriorate together; we cannot adequately combat environmental degradation unless we attend to causes related to human and social degradation. In fact, the deterioration of the environment and of society affects the most vulnerable people on the planet. (*Laudato Si'* 48)

The statement makes sense. Here are two good examples of the connection between social and environmental health. First, the quality of one's social interaction is directly connected to one's health, and that, as we have just seen, is connected to spending time outdoors. When you yourself are healthy, you feel good about yourself, and

that frees you up to pay attention to the needs of people around you.

Second, empathy for animals – who are part of nature – and empathy for humans – part of society – are similar emotions. People from European societies who own a dog or a cat are often as attached to their pet as they are to a human family member: When the pet falls sick, they spend what they can to heal it, and when the pet dies, they grieve. That’s because we thrive on social relationships, even when they are with animals.

If a person’s ability to empathize with animals is stunted, causing him or her to see these creatures as nothing more than instruments for the production of milk, eggs, meat or other raw materials, will he or she be able to experience empathy for human beings? In 2007, a famous American football player, Michael Vick, was indicted for financing a dog fighting ring, providing the staging facilities, and even executing dogs that did not perform well enough in fights. Can someone be tender to his spouse or child while terrorizing, maiming, and killing pit bulls? Pope Francis thinks not.

He believes that what flows from the heart cannot be segmented:

when our hearts are authentically open to universal communion, this sense of fraternity excludes nothing and no one. It follows that our indifference or cruelty towards fellow creatures of this world sooner or later affects the treatment we mete out to other human beings. We have only one heart, and the same wretchedness which leads us to mistreat an animal will not be long in showing itself in our relationships with other people. (*Laudato Si’* 92)

Hence, whenever we become kinder to plants and animals, including those that supply us with food, we become kinder to each other and perhaps even to ourselves.

Corporations tend to profits and stockholders, not the environment

His Holiness does not trust the free market to cure environmental and social degradation on its own. He writes:

The most one can expect is superficial rhetoric, sporadic acts of philanthropy and perfunctory expressions of concern for the environment, whereas any genuine attempt by groups within society to introduce change is viewed as a nuisance based on romantic illusions or an obstacle to be circumvented. (*Laudato Si’* 54)

Many companies, he tells us, exhibit only superficial concern for the environment. In the United States I see two explanations for this: 1) We have structured companies in ways that privilege profits over societal interests; 2) Company profits increase as “negative externalities” rise. Let’s look at both in turn.

Company structure privileges profits over social goals

When it comes to company structure in the United States, the most important distinction is that between privately and publicly held enterprises.

In a privately held company there is a strong overlap between the firm’s owners and its management. For that reason managers who want to balance their desire for environmental stewardship and the

profit imperative are reasonably free to make choices when these goals collide. But in a publicly traded enterprise, in most instances, managers have a *legal responsibility* to act in ways that maximize profits – even if they personally prefer to ensure good environmental and social outcomes.

The reward system for corporate CEOs is almost exclusively based on their company's stock price. There is little or no encouragement for actions that benefit society at large. When a conflict arises between environmental concerns and profit, the choices of these executives are severely limited.

In her book *What to Eat*,⁴⁰ Professor Marion Nestle explains why corporations in the U.S. do everything they can to make us buy more processed food, even though it makes us fat and sick:

The food industry's normal methods of doing business encourage you to eat more, not less ... As publicly traded corporations, most food companies must file quarterly reports with Wall Street. Investment analysts not only demand profits, they demand growth. It is not enough for Kraft Foods to generate \$32 billion in sales in 2004. If that company wants its stock prices to rise, it has to increase sales by a sizable percentage every ninety days. Companies must sell more, and then more, and even more. In this kind of investment economy, weight gain is just collateral damage.

If you thought that people are obese simply because they lack the discipline to make healthy choices, think again. Recall that Dan Buettner, the author of *The Blue Zones Solution: Eating and Living Like the World's Healthiest People*, told us earlier that our social and natural environment play a role in our health. Now Marion Nestle confirms

that our social environment matters: The food industry talks us into eating their products, and many of us comply.

Negative externalities pervade our food system

Let's now look at the second reason why companies, in the pope's view, exhibit only superficial concern for the environment: negative externalities. For economists, a company fulfills its societal mission when it alone bears the cost of its operations. But unfortunately that isn't the way it works. To maximize profits companies impose as much of their costs on society as they legally can, for example in the form of environmental degradation.

A cost that is dumped on society is called a "negative externality." Companies thrive on such externalities, because when society pays for things the company should shoulder, it reduces costs for the company, thereby increasing profits. Imposing negative externalities on society, then, is the equivalent of pocketing fat subsidies.

Negative externalities pervade our food system. For example, concentrated animal feeding operations (CAFOs), which confine livestock in unnatural conditions either for slaughter or for the production of eggs or dairy, create massive amounts of feces and urine, which are typically pumped into anaerobic lagoons. Such lagoons inflict great strain on the environment. First, they emit gases that contribute to global warming. Second - and this is true especially for hog breeding operations -, they impose a nauseating stench on people living nearby.⁴¹ Third, when these lagoons overflow, as can happen in times of heavy rainfall, their contents end up in local waterways, contaminating them.⁴² The

costs of this environmental degradation are frequently shouldered not by the CAFOs but by the surrounding municipalities and by communities downstream.

Business associations often lobby against regulators who want to diminish these negative externalities. For years the American ice cream industry has been flouting government guidelines designed to protect the public from the deadly listeria microbe. According to the *Houston Chronicle*, two industry lobby groups - the Grocery Manufacturers Association and the International Dairy Foods Association - fought the U.S. Food and Drug Administration when it attempted to impose mandatory testing for listeria. Says the *Chronicle*:⁴³

Mandatory microbial testing on plant surfaces and in food has long been viewed by industry groups as a one-size-fits-all approach that doesn't work and costs too much, especially for small producers. Some have deemed it unnecessary when there are controls - like pasteurization - that kill pathogens. But consumer advocates say those arguments veil a deeper objection: Companies know that if they test for bugs, they will find them, and if they find them, the law says they must act.

The cost this intransigence imposed on society has been steep: Because of a listeria outbreak at Blue Bell Creameries ten persons across four states contracted listeriosis. Three of them died.⁴⁴

In sum, because companies benefit from negative externalities, they cannot be expected to do what's best for society.

Acts of philanthropy are just sporadic

And what does Pope Francis mean - in *Laudato Si'* 54 - when he says firms engage

in "sporadic acts of philanthropy and perfunctory expressions of concern for the environment"? Most likely he is speaking of corporate social responsibility programs. Hailed by some as real efforts to be good corporate citizens, they are dismissed by others as window-dressing that has more to do with marketing than with a genuine concern for the environment.

With his thoughts on the inadequacies of the free market, the pope raises an important question: How should governments regulate private enterprise to protect both public health and the global environment?

We must protect the rights of the poor

The encyclical calls Earth a shared inheritance - it belongs to the human family, rich and poor alike. Because the poor lack the ability to forcefully make their voices heard, any ecological approach must act to protect these citizens' needs on their behalf:

Whether believers or not, we are agreed today that the earth is essentially a shared inheritance, whose fruits are meant to benefit everyone. For believers, this becomes a question of fidelity to the Creator, since God created the world for everyone. Hence every ecological approach needs to incorporate a social perspective which takes into account the fundamental rights of the poor and the underprivileged. The principle of the subordination of private property to the universal destination of goods, and thus the right of everyone to their use, is a golden rule of social conduct. (*Laudato Si'* 93)

Pope Francis tells us that private property is no absolute right. This means your use of property must abide by the best interest of the community in which you live. What that interest is needs to be worked out by society. But the pope stresses that the resulting framework must balance property rights with everyone's right to access an unadulterated environment.

Our society is a technocracy

The Pope acknowledges the important contribution technology – processes that extend humans' ability to shape their surroundings - can make to quality of life (*Laudato Si'* 104). But he criticizes that we have become a technocracy – a society that values technological innovation above all else (*Laudato Si'* 115).

The economy embraces technology without concern for its negative effects

His Holiness believes that our economic system has enabled the trend towards technocracy because it embraces technology as a means for increasing efficiency, introducing new products or services, and reaching more customers. Whenever economic actors discover ways to profit from technological advancement, they adopt them with little or no thought of its societal consequences. That's why Pope Francis finds,

The economy accepts every advance in technology with a view to profit, without concern for its potentially negative impact on human beings. (*Laudato Si'* 109)

To see how this might apply to the world of nutrition, consider food additives. These are technologies designed to gel,

homogenize, preserve, color, texturize, and otherwise alter our experience of the things we eat or drink. Over the past decades, the number of additives in the American food supply has increased substantially, to well over 3000 today.⁴⁵ And as we speak, the processed food industry is expanding its reach into developing countries. This has boosted the global market for additives - from US\$ 29.94 billion in 2009 to US\$ 36.45 billion in 2013.⁴⁶

Over thousands of years the human body evolved to consume natural foods. Most food additives are synthetic concoctions that do not exist in nature, and their safety for humans has not been established. Many of these additives have since been shown to be dangerous. A sampling:

1. Both artificial coloring and the preservative sodium benzoate cause hyperactivity in some children.
2. Sodium nitrite, an additive for curing meat that can be found in bacon, causes gastric cancer.
3. Transfat, which has been used in deep-fried food and baked goods, contributes to heart disease and type 2 diabetes.
4. Hexane, a chemical solvent used to extract vegetable oil from soybeans causes nerve damage when ingested or inhaled in large amounts.⁴⁷

Why do processed food corporations use these technologies if they are harmful? The answer lies in firms' profit motivation and the quest to create negative externalities.

Government is part of the problem. Underfunded and exposed to heavy lobbying from food industry associations, the U.S. Food and Drug Administration

(FDA) created a regulatory system that makes it easy for companies to classify their additives as “generally recognized as safe”(GRAS) and then include them in food items without any real testing. The GRAS process is inexpensive and quick, but it does little to protect consumers. The video “Why Nobody Knows What's Really Going into Your Food” from the Center for Public Integrity ⁴⁸ informs us:

Companies have added at least 1,000 ingredients to the food we eat without ever telling the FDA.

That is why Pope Francis laments that the global economic system loves technology without regard for the harm it inflicts. The solution is to re-subject technology to proper societal control, using the democratic process.

Technology has empowered the already powerful

The pontiff’s trenchant critique of technology continues as he points to recent technological innovations that have empowered the already powerful more than the weak. These innovations have given “those with the knowledge, and especially the economic resources to use them, an impressive dominance over the whole of humanity and the entire world” (*Laudato Si’* 104).

How does this apply to the area of nutrition? Technology has enabled powerful food corporations to completely transform that most intimate way in which we humans interact with our environment: the ingestion of food and drink. Here are three examples.

1. Creating cravings for processed foods

First, through food technology and by combining salt, fat, and sugar in the optimally addictive way food companies manipulate consumers’ evolutionary triggers. The side effect is that society, and here most of all the poor, over-consume these items, become obese, and fall ill with cardiovascular disease. Summarizing the book *Salt, Sugar, Fat* by Michael Moss, the *New York Times* writes:

By concentrating fat, salt and sugar in products formulated for maximum “bliss,” Big Food has spent almost a century distorting the American diet in favor of calorie-dense products whose consumption pattern has been mirrored by the calamitous rise in obesity rates. Entire food categories were invented to support this strategy ... as processors bent the American appetite to Wall Street’s will.

2. Hooking children on processed foods

Second, their knowledge of information, survey, and marketing technology has enabled food giants to specifically target children in their advertising campaigns. In 2003-2004, found a research team led by Professor Lisa Powell of the University of Illinois at Chicago, U.S. children between ages 2 and 11 watched an average of 3 hours and 15 minutes of television per day. In that time, “27.2% and 36.4% of children's exposure to total non-program content time and product advertising, respectively, was for food-related products,” and to an almost complete extent processed food.

The motivation for these many advertisements, say Powell and her co-authors, is the sway these children have over their parents’ buying behavior. In 2002, for example, children directly influenced \$330 billion of adult spending.

These big food companies are fully aware that children have little ability to evaluate claims made in their advertising and exploit this weakness in the pursuit of profit. Both they and their parents thus become pawns in the corporate drive to increase stock prices.

3. Destroying the diversity of food

Third, thanks to the processed food industry with its heavy use of food technology we are now eating more or less the same ingredients across the world. *Time* reports that while the range of food choices available in each country has expanded, actual meals have increasingly come to rely on a few global crops – wheat, corn, and soybeans, all staples in the Standard American Diet that is being exported into the rest of the world. Pope Francis says:

A consumerist vision of human beings, encouraged by the mechanisms of today's globalized economy, has a leveling effect on cultures, diminishing the immense variety which is the heritage of all humanity.
(*Laudato Si'* 144)

To sum up, technologies - processes with which we modify the world we live in - empower users to influence their surroundings, no matter whether these surroundings are human or non-human. The greater a person's financial resources, the more access he or she has to technology. The coffers of big food corporations widely outstrip those of individuals. Hence Big Food's access to the range of technologies has been very high, enabling them to transform their relationship with consumers and consumers' relationship with food.

The technological mind sees nature as cold body of facts

Quoting German priest and professor Romano Guardini, Pope Francis states,

the technological mind sees nature as an insensate order, as a cold body of facts, as a mere 'given', as an object of utility, as raw material to be hammered into useful shape.
(*Laudato Si'* 115)

That applies to animals in the U.S. food system. Harvard law professor Cass Sunstein points out that in the United States, animals raised for food production are treated similar to inert objects and have hardly any rights:⁴⁹

The anti-cruelty provisions of state law contain extraordinarily large exceptions. ... They do not apply to the use of animals for medical or scientific purposes. To a large degree, they do not apply to the production and use of animals as food.

Moreover, explains Sunstein, state anti-cruelty laws that do apply can only be enforced through public prosecution. If a public prosecutor has the time, energy, and budget to sanction the violation of such rights, it will happen. But more often than not, he or she is pursuing other cases that our technocracy values more.

Because prosecutors have little inclination and private lawsuits cannot be brought, livestock have essentially no protection from cruelty. That torture routinely happens in factory settings is well established. Owners of concentrated animal feeding operations (CAFOs) and slaughterhouses are the most directly responsible parties in this abuse; but every consumer who purchases factory-farmed beef, pork, chicken, or turkey is implicated.

In a consumerist society such as ours, money talks. Every time an individual pays for an item, the cash register sends a signal to the grocery store inventory alerting it that the product just bought must be replenished. By spending money on meat from CAFO operations, we consumers therefore communicate loudly and clearly to factory breeders, “Give us more.” This violates the mandate - which, according to Pope Francis, comes to us from God himself - to care, protect, oversee, and preserve (*Laudato Si’* 67).

Overcome the specialization of technocracy and reclaim the big picture

You might conclude that the pope rejects technology; in fact, he believes it has a great role to play “when [it] is directed primarily to resolving people’s concrete problems, truly helping them live with more dignity and less suffering” (*Laudato Si’* 112).

In order to get there, we need to overcome the kind of specialization that a technocratic society abounding in technologies of many different kinds privileges:

The specialization which belongs to technology makes it difficult to see the larger picture. The fragmentation of knowledge proves helpful for concrete applications, and yet it often leads to a loss of appreciation for the whole, for the relationships between things, and for the broader horizon, which then becomes irrelevant. (*Laudato Si’* 110)

Therefore, says the pope, society must reclaim the big picture and direct

technology to ensure its service to the public at large, not solely the economic subsector which, as we saw, is often in direct conflict with society’s best interests (*Laudato Si’* 104). That idea applies as much to food additives as it does to any other technology.

We are the environment

When thinking of the environment, we tend to view it as separate from us (*Laudato Si’* 139). Technology has strengthened this perception by mediating the environment’s impact on us – air conditioners shield us from heat and humidity, electrical light allows us to be active independently of sun light, the way food is processed, packaged, and sold disconnects us from the seed that must be sown and tended before it can grace us with sustenance.

Pope Francis urges us to recognize the error in our way of thinking. We live *in* nature, not next to it. We breathe the oxygen that plants recycle for us, eat the fruits and vegetables that the soil provides and that are only as nutritious as the dirt in which they grow. Nature is even inside us. Summarizing emerging research on bacteria, a 2010 contribution to the magazine *Pacific Standard* explains:⁵⁰

Strictly by the numbers, the vast majority — estimated by many scientists at 90 percent — of the cells in what you think of as your body are actually bacteria, not human cells. The number of bacterial species in the human gut is estimated to be about 40,000, according to Daniel Frank and Norman Pace, writing in the January 2008 *Current Opinion in Gastroenterology*. The total number of individual bacterial cells in the gut is projected to be on the order of 100 trillion, according to Xing Yang and colleagues at the Shanghai Center for Bioinformation Technology.

Perhaps this tempts you to swallow an antiseptic solution that purges your digestive tract of bacteria. Pope Francis would likely counsel against that and remind you that most bacteria inside your body make very important contributions to your health. Then he might explain that your separation from the environment is an illusion, that you *are* nature, *depend* on nature, and therefore need to take care of nature both inside and outside yourself:

When we speak of the “environment”, what we really mean is a relationship existing between nature and the society which lives in it. Nature cannot be regarded as something separate from ourselves or as a mere setting in which we live. We are part of nature, included in it and thus in constant interaction with it. (*Laudato Si'* 140)

Safeguarding the environment should therefore be a comprehensive process: Just as you depend on nature in myriad of ways, so do plants and animals. They all form complex ecological systems, the elements of which exist in a delicate balance with each other. That’s why Pope Francis advises we look for new ways of using Earth’s resources, ways that are sustainable and maintain each ecosystem’s ability to regenerate itself (*Laudato Si'* 140).

Experts, please debate!

Having examined several problems linking the crisis of Sister Earth to rapidification and technocracy, we now must seek good solutions. Pope Francis does not have answers to all environmental problems he raises. They must be solved, he humbly suggests, through debate that is led by experts.

On many concrete questions, the Church has no reason to offer a definitive opinion; she knows that honest debate must be encouraged among experts, while respecting divergent views. But we need only take a frank look at the facts to see that our common home is falling into serious disrepair. (*Laudato Si'* 61)

These experts must be granted a high level of freedom in their deliberations:

Due to the number and variety of factors to be taken into account when determining the environmental impact of a concrete undertaking, it is essential to give researchers their due role, to facilitate their interaction, and to ensure broad academic freedom. (*Laudato Si'* 140)

The call for a global dialogue driven by the desire to heal Earth and grounded in knowledge of the facts is central to *Laudato Si'*.

The Food and Agriculture Organization of the United Nations also seeks dialogue. In its 2011 report *'Energy-Smart' Food for People and Climate*, it suggested to create a multi-partner program that would be based on three pillars:

- increasing energy access with a focus on rural communities;
- improving energy efficiency at all stages of the food supply chain; and
- substituting fossil fuels with renewable energy systems in the food sector.⁵¹

Organizations and individuals with an interest in creating a more sustainable and humane food supply are dispersed across the world. They now need to be networked in ways that generates powerful synergies.

A global, high-level consensus is called for

Pope Francis hopes that with help from his encyclical's critique of consumerism and with guidance from experts who come up with ways of solving the crisis of planet Earth, humanity will arrive at a global consensus:

A global consensus is essential for confronting the deeper problems, which cannot be resolved by unilateral actions on the part of individual countries. Such a consensus could lead, for example, to planning a sustainable and diversified agriculture, developing renewable and less polluting forms of energy, encouraging a more efficient use of energy, promoting a better management of marine and forest resources, and ensuring universal access to drinking water. (*Laudato Si'* 164)

The pope asks for an agreement on the system of governance over the resources humanity holds in common: air, water, the atmosphere and its temperature, and many others.

What is needed, in effect, is an agreement on systems of governance for the whole range of so-called "global commons". (*Laudato Si'* 174)

But is this sufficient? Given the pope's dire view of corporate power, perhaps we should also rethink how companies are structured and held accountable and explore how we can leverage market forces while respecting the needs of the environment. Experts who have blazed this trail include Marjorie Kelly, the author of *Owning our Future*⁵² and David Korten, who wrote *The Post-Corporate World*, a book anticipating the 2008 financial crisis.⁵³ Among others

Korten recommends an international agreement to regulate international corporations and finance.⁵⁴

The grassroots have an important role to play

Suggesting the need for an intergovernmental consensus to repair the global commons seemingly removes any influence over the future of the planet from the grassroots, the many individuals that make up the human family. Not so, says the pope. If individuals change their lifestyle and do so in large numbers, they can bring pressure to bear on society's leaders. This is possible in the political arena through organization and collective action.

In the economic arena, individuals can wield influence by voting at the cash register. For example, a substantial reallocation of spending away from processed foods to fresh fruits and vegetables or – better yet – organic fruits and vegetables will send signals to producers for healthier nutrition – signals these producers will ignore at their peril.

Reducing consumption of meat - and especially beef - for the purpose of curbing methane emissions and halting rain forest destruction sends an unmistakable message to governments that the public cares about the planet's health:

A change in lifestyle could bring healthy pressure to bear on those who wield political, economic and social power. (*Laudato Si'* 206)

The argument also applies to consuming fish from over-exploited oceans (*Laudato Si'* 40).

Lastly, citizens have the power to reduce the level of cruelty inflicted on animals in the livestock sector. In fact Pope Francis demands that Christians do so as part of living the gospel:

There is the recognition that God created the world, writing into it an order and a dynamism that human beings have no right to ignore. We read in the Gospel that Jesus says of the birds of the air that “not one of them is forgotten before God” (Lk 12:6). How then can we possibly mistreat them or cause them harm? I ask all Christians to recognize and to live fully this dimension of their conversion. (*Laudato Si’* 221)

Replace consumerism with serenity

In urging the grassroots to break their addiction to consumption, the pope states plainly his belief that consumerism is counterproductive to spirituality:

A constant flood of new consumer goods can baffle the heart and prevent us from cherishing each thing and each moment. (*Laudato Si’* 222)

He recommends we learn to make do with fewer things:

We need to take up an ancient lesson, found in different religious traditions and also in the Bible. It is the conviction that “less is more. (*Laudato Si’* 222)

Doing so will give us fulfillment:

To be serenely present to each reality, however small it may be, opens us to much greater horizons of understanding and personal fulfilment. Christian spirituality proposes a growth marked by moderation and the capacity to be happy with little. (*Laudato Si’* 222)

Moderation, he says, leads to happiness:

Happiness means knowing how to limit some needs which only diminish us, and being open to the many different possibilities which life can offer. (*Laudato Si’* 223)

Let’s circle back to how, precisely, these ideas relate to food the food we eat. Those who have been following the blog SweetOnion.Net know that I practice a plant-based diet, with occasional slips here and there. That’s because, as J. Morris Hicks explains in his book *Healthy Eating, Healthy World*, this diet provides us with three benefits in one: better health, improved ethical treatment of animals, and demonstrable benefits in combatting global warming.⁵⁵

Friends who learn that I limit my food intake sometimes conclude that I am unhappy, because I deny myself the delights of a wide variety of fares: cream, seafood, cheese, eggs, beef, and candy. But by limiting myself I have become happier, because I live a life of kindness and compassion. Perhaps the compassion factor helps explain why researchers have found a positive link between vegetarianism and good mood.⁵⁶

Living a life of kindness is important, says *Laudato Si’*:

No one can cultivate a sober and satisfying life without being at peace with him or herself. ... An integral ecology includes taking time to recover a serene harmony with creation, reflecting on our lifestyle and our ideals, and contemplating the Creator who lives among us and surrounds us, whose presence “must not be contrived but found, uncovered”. (*Laudato Si’* 225)

This new approach to consumption promises to advance serenity, practicing individual by practicing individual. And if embraced by large numbers of us, it will go

a long way towards healing our common home, Earth.

About the author

Nivien Saleh, Ph.D., is a former professor of international studies at the University of St. Thomas in Houston, Texas, and the Thunderbird School of Global Management in Glendale, Arizona. She authored the book *Third World Citizens and the Information Technology Revolution*. Dr. Saleh received her Ph.D. in political science from American University in Washington, DC. Her blog can be found at SweetOnion.Net.

Works cited

¹ Francis I. 2015. *Laudato Si'* [Encyclical Letter on Care for Our Common Home]. Online: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html. Accessed July 24, 2015.

² El-Tahri, Jihan (Director and Writer) and Martin Smith (Writer). 2005. "House of Saud" [television series episode], in *Frontline*, produced by Riot Pictures, Season 23, Episode 2.

³ Second Vatican Council. 1964. *Unitatis Redintegratio* [Decree on Ecumenism]. Online: http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_decree_19641121_unitatis-redintegratio_en.html. Accessed July 24, 2015.

⁴ Feister, John. No Date. "Stories About St. Francis and the Animals." *AmericanCatholic.org*. Online: <http://www.americancatholic.org/Features/Francis/stories.asp>. Accessed July 24, 2015.

⁵ Woodruff, Judy (Host). 2015. "Shields & Brooks on Church Shooting, Pope's Environmentalism." *PBS News Hour*, June 19 [Webcast]. Online: <http://www.pbs.org/newshour/bb/shields-brooks-church-shooting-popes-environmentalism/>. Accessed July 24, 2015.

⁶ Catholic Church. 1993. *Catechism of the Catholic Church*. 2nd ed. Vatican: Libreria Editrice. Online: http://www.vatican.va/archive/ENG0015/_INDEX.HTM. Accessed July 24, 2015.

⁷ Bakalar, Nicholas. 2015. "37.2 Trillion: Galaxies or Human Cells?" *The New York Times*, June 19. Online: <http://www.nytimes.com/2015/06/23/science/37-2-trillion-galaxies-or-human-cells.html>. Accessed July 24, 2015.

⁸ Kirwan, Joseph. 1996. "Greens and Animals," in *The Cross and the Rainforest: A Critique of Radical Green Spirituality*, edited by Robert Whelan and Joseph Kirwan, 102-123. Grand Rapids, MI: Acton Institute for the Study of Religion and Liberty and Wm. B. Eerdmans's Publishing Co.

⁹ Laird, Peter A. 1997. "The Cross and the Rainforest." *Religion & Liberty* 7(2). Online: <http://www.acton.org/pub/religion-liberty/volume-7-number-2/cross-and-rainforest>. Accessed July 24, 2015.

¹⁰ People for the Ethical Treatment of Animals (PETA). No Date. "Factory Farming: Misery for Animals." PETA.org. Online: <http://www.peta.org/issues/animals-used-for-food/factory-farming/>. Accessed July 24, 2015.

¹¹ "Interview Michael Pollan." 2002. PBS.org. Online: <http://www.pbs.org/wgbh/pages/frontline/shows/meat/interviews/pollan.html>. Accessed July 24, 2015.

¹² People for the Ethical Treatment of Animals (PETA). No Date. *Glass Walls* [Webcast]. Online: <http://www.peta.org/videos/glass-walls-2/>. Accessed July 24, 2015.

¹³ Pollan, Michael. 2006. *The Omnivore's Dilemma*. New York, NY: Penguin Press.

¹⁴ United States Department of Agriculture, Economic Research Service. 2015. Food Expenditures. Online: <http://www.ers.usda.gov/data-products/food-expenditures.aspx>. Accessed July 24, 2015. See Table 7—"Food expenditures by families and individuals as a share of disposable personal income" (last updated December 1, 2014).

¹⁵ Yardley, Jim 2015. "Pope Francis Calls for Climate Action in Draft of Encyclical." *The New York Times*, June 15. Online: <http://www.nytimes.com/2015/06/16/world/europe/pope-francis-environmental-encyclical.html>. Accessed July 24, 2015.

¹⁶ Oddie, William. 2015. "Environmentalism That Harms the Poor." *Crisis Magazine*, June 26. Online: <http://www.crisismagazine.com/2015/environmentalism-that-harms-the-poor>. Accessed July 24, 2015.

¹⁷ Briggs, William M. 2015. "Leaked Laudato Lamented." *Crisis Magazine*, June 17. Online: <http://www.crisismagazine.com/2015/leaked-laudato-lamented>. Accessed July 24, 2015.

¹⁸ Woodruff, Judy (Host). 2015. "Only a Little Bit Hotter, But 2014 Record Continues Trend: Interview with Gavin Schmidt." *PBS News Hour*, January 15 [Webcast]. Online: <http://video.pbs.org/video/2365405853/>. Accessed July 24, 2015.

¹⁹ Harris, Gardiner. 2014. "Borrowed Time on Disappearing Land." *The New York Times*, March 28. Online: <http://www.nytimes.com/2014/03/29/world/asia/facing-rising-seas-bangladesh-confronts-the-consequences-of-climate-change.html>. Accessed July 24, 2015.

²⁰ "Ein kalter Frühling hilft den Bienen." 2013. *Nano*, September 3 [Webcast]. Online: <http://www.3sat.de/mediathek/?mode=play&obj=38080>. Accessed July 24, 2015.

²¹ Schülke, Claudia. 2013. "Deutschland droht völliger Ausfall der Honigernte." *Die Welt*, June 18. Online: <http://www.welt.de/wissenschaft/umwelt/article117241320/Deutschland-droht-voelliger-Ausfall-der-Honigernte.html>. Accessed July 24, 2015.

²² "Ein kalter Frühling hilft den Bienen." 2013. *Nano*, September 3 [Webcast]. Online: <http://www.3sat.de/mediathek/?mode=play&obj=38080>. Accessed July 24, 2015.

²³ Kintisch, Eli. 2015. "Amazon rainforest ability to soak up carbon dioxide is falling." *News from Science*, March 18. Online: <http://news.sciencemag.org/climate/2015/03/amazon-rainforest-ability-soak-carbon-dioxide-falling>. Accessed July 24, 2015.

²⁴ Steinfeld, Henning, Pierre Gerber, Tom Wassenaar, Vincent Castel, Mauricio Rosales, and Cees De Haan. *Livestock's Long Shadow*. Rome: FAO, 2006. See page 85.

²⁵ Dezem, Vanessa. 2015. "Agriculture and Cattle Ranching Threatening Global Rainforests." *Bloomberg News*, May 21. Online: <http://www.bloomberg.com/news/articles/2015-05-21/agriculture-and-cattle-ranching-threatening-global-rainforests>. Accessed July 24, 2015.

²⁶ Adam, David. 2009. "Amazon Rainforests Pay the Price as Demand for Beef Soars." *The Guardian*, May 31. Online: <http://www.theguardian.com/environment/2009/may/31/cattle-trade-brazil-greenpeace-amazon-deforestation>. Accessed July 24, 2015.

²⁷ Rogers, Kaleigh. 2015. "We Are 100%, For Sure, in the Middle of a Major Extinction Event." *Motherboard*, June 19. Online: <http://motherboard.vice.com/read/we-are-100-for-sure-in-the-middle-of-a-major-extinction-event>. Accessed July 24, 2015.

²⁸ The Nature Conservancy. No Date. "Climate Change: What We Do - the Role of Forests in Reducing Emissions." Online:

<http://www.nature.org/ourinitiatives/urgentissues/global-warming-climate-change/how-we-work/the-role-of-forests-in-reducing-emissions.xml>. Accessed July 24, 2015.

²⁹ United States Environmental Protection Agency. No Date. "Understanding Global Warming Potentials." Online: <http://epa.gov/climatechange/ghgemissions/gwps.html>. Accessed July 24, 2015.

³⁰ Gerber, Pierre J., H. Steinfeld, B. Henderson, A. Mottet, C. Opio, and J. Dijkman, A. Falcucci, and G. Tempio. 2013. *Tackling Climate Change through Livestock: A Global Assessment of Emissions and Mitigation Opportunities*. Rome, Italy: Food and Agriculture Organization of the United Nations (FAO). See page 15. Report is available online at <http://www.fao.org/news/story/en/item/197623/icode/>

³¹ Sims, Ralph E.H. et al. 2011. *'Energy-Smart' Food for People and Climate*. Rome, Italy: Food and Agriculture Organization of the United Nations, 2011. Online: <http://www.fao.org/docrep/014/i2454e/i2454e00.pdf>. Accessed July 24, 2015. See page 3.

³² Sims, Ralph E.H. et al. 2011. *'Energy-Smart' Food for People and Climate*. Rome, Italy: Food and Agriculture Organization of the United Nations, 2011. Online: <http://www.fao.org/docrep/014/i2454e/i2454e00.pdf>. Accessed July 24, 2015. See page IV, 1.

³³ Ching, Carrie (Producer), Arthur Jones (Illustrator/Animator), and Sarah Terry-Cobo (Reporter). 2012. *The Hidden Costs of Hamburgers* [Webcast]. Online: <http://cironline.org/reports/hidden-costs-hamburgers-3701>. Accessed July 24, 2015.

³⁴ Barclay, Eliza. 2012. "A Nation Of Meat Eaters: See How It All Adds Up." *National Public Radio (The Salt)*. June 27. Online: <http://www.npr.org/sections/thesalt/2012/06/27/155527365/visualizing-a-nation-of-meat-eaters>. Accessed July 24, 2015.

³⁵ The USGS Water Science School. No Date. "How Much Water Does It Take to Grow a Hamburger?" *The U.S. Geological Survey*. Online: <http://water.usgs.gov/edu/activity-watercontent.html>. Accessed July 24.

³⁶ Plumer, Brad. 2013. "How Long before the Great Plains Runs out of Water?" *The Washington Post (Wonk Blog)*, September 12. Online: <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/09/12/how-long-before-the-midwest-runs-out-of-water/>. Accessed July 24, 2015.

³⁷ Lustgarten, Abrahm, Lauren Kirchner, Amanda Zamora and ProPublica. 2015. "California's Drought Is Part of a Much Bigger Water Crisis." *Scientific American*, June 26. Online: <http://www.scientificamerican.com/article/california-s-drought-is-part-of-a-much-bigger-water-crisis/>. Accessed July 24, 2015.

³⁸ Interlandi, Jeneen. 2010. "The Race to Buy Up the World's Water." *Newsweek*, October 8. Online: <http://www.newsweek.com/race-buy-worlds-water-73893>. Accessed July 24, 2015.

³⁹ Buettner, Dan. 2015. *The Blue Zones Solution: Eating and Living Like the World's Healthiest People*. Washington, DC: National Geographic Society.

⁴⁰ Nestle, Marion. 2006. *What to Eat*. New York, NY: North Point Press.

⁴¹ Huber, Bridget. 2014. "Law and Odor: How to Take Down a Terrible-Smelling Hog Farm." *Mother Jones*, May/June. Online: <http://www.motherjones.com/environment/2014/04/terrible-smell-hog-farms-lawsuits>. Accessed July 24, 2015.

⁴² Genoways, Ted. 2014. "Hog Wild: Factory Farms Are Poisoning Iowa's Drinking Water." *Mother Jones*, March 21. Online: <http://www.motherjones.com/environment/2014/03/hog-wild-factory-farms-are-poisoning-iowas-drinking-water>. Accessed July 24, 2015.

⁴³ Collette, Mark. 2015. "Blue Bell, Industry, Flout Listeria Guidelines." *Houston Chronicle*, June 21. Online: <http://www.houstonchronicle.com/news/houston-texas/houston/article/Blue-Bell-industry-flout-listeria-guidelines-6340771.php>. Accessed July 2014.

⁴⁴ Centers for Disease Control and Prevention. 2015. "Multistate Outbreak of Listeriosis Linked to Blue Bell Creameries Products (Final Update)." June 10. Online: <http://www.cdc.gov/listeria/outbreaks/ice-cream-03-15/>. Accessed July 24, 2015.

⁴⁵ U.S. Food and Drug Administration. 2011. "Everything Added to Food in the United States (EAFUS)." Online: <http://www.fda.gov/Food/IngredientsPackagingLabeling/FoodAdditivesIngredients/ucm115326.htm>. Accessed July 24, 2015.

⁴⁶ Thomas, Jonathan. 2014. "Food Additives – A Growing Global Market" (White Paper). Letterhead Food Research. Online: <http://www.foodsciencematters.com/wp-content/uploads/2014/10/Food-Additives-White-Paper-Leatherhead-Food-Research-2014.pdf>. Accessed July 24, 2015.

⁴⁷ U.S. Department of Health and Human Services, Agency for Toxic Substances & Disease Registry. 1999. Toxicological Profile of n-Hexane. Online: <http://www.atsdr.cdc.gov/toxprofiles/tp113-c1.pdf>. Accessed July 24, 2015. Referring page: <http://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=393&tid=68>.

⁴⁸ Bell, Eleanor (Producer), Jared Bennett (Producer), Erin Quinn (Producer), Chris Young (Producer), and Phillip Allen (Animator). 2015. "Why Nobody Knows What's Really Going into Your Food" [Webcast]. The Center for Public Integrity. Online: <http://www.publicintegrity.org/2015/04/13/17112/why-fda-doesnt-really-know-whats-your-food>. Accessed July 24, 2015.

⁴⁹ Sunstein, Cass. 2002. "The Rights of Animals: A Very Short Primer." University of Chicago John M. Olin Law & Economics Working Paper No. 157 (2nd series). Online: http://www.law.uchicago.edu/files/files/157.crs_animals.pdf. Accessed July 24, 2015.

⁵⁰ Brown, Valerie. 2010. "Bacteria 'R' Us". *Pacific Standard*, Dec. 2. Online: <http://www.psmag.com/books-and-culture/bacteria-r-us-23628>. Accessed July 24, 2015.

⁵¹ Sims, Ralph E.H. et al. 2011. *'Energy-Smart' Food for People and Climate*. Rome, Italy: Food and Agriculture Organization of the United Nations. Online: <http://www.fao.org/docrep/014/i2454e/i2454e00.pdf>. Accessed July 24, 2015. Page 50.

⁵² Kelly, Marjorie. 2012. *Owning our Future: The Emerging Ownership Revolution*. San Francisco, CA: Berret-Koehler Publishers.

⁵³ Korten, David C. 1995. *The Post-Corporate World: Life after Capitalism*. San Francisco, CA: Berret-Koehler Publishers, and West Hartford, CT: Kumarian Press.

⁵⁴ Ibidem, p. 191.

⁵⁵ Hicks, J. Morris. 2011. *Healthy Eating, Healthy World: Unleashing the Power of Plant-Based Nutrition*. Dallas, TX: BenBella Books.

⁵⁶ Beezhold, Bonnie L., Carol S. Johnston, and Deanna R. Daigle. 2010. "Vegetarian Diets Are Associated with Healthy Mood States: A Cross-sectional Study in Seventh Day Adventist Adults." *Nutrition Journal* 9: 26. Online: <http://www.biomedcentral.com/content/pdf/1475-2891-9-26.pdf>. Accessed July 24, 2015. Beezhold, Bonnie L., and Carol S. Johnston. 2012. "Restriction of Meat, Fish, and Poultry in Omnivores Improves Mood: A Pilot Randomized Controlled Trial." *Nutrition Journal* 11(9). Online: <http://www.biomedcentral.com/content/pdf/1475-2891-11-9.pdf>. Accessed July 24, 2015.