

What You Can Do

to help reduce global warming. 😊

GOESE



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Revision: Thursday, February 8, 2024

Personal Environmental Action Plan

Web Page: https://www.goese.com/environment/action_plan/environmental_action_plan.htm

Download PDF: https://goese.com/downloads/environment/How_to_Stop_Global_Warming-Prioritized_List.pdf

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DO NOT FEEL HOPELESS!! Your **votes, habits, purchases** and **activism** all have a **real impact** on the environment & the future of all animals, including humans.

 The livelihood of that bee you saw dying on the sidewalk is more crucial than you might think!

About This Document

Most people do *NOT* like being told what to do. So please think of this as a **list of ideas** for things almost anyone can do rather than a mandate. Too many people remain oblivious to the damage we're inflicting on our biosphere every day and the long-lasting consequences. Others suffer from environmental anxiety, which is worsened when lobbyists and corrupt politicians push governments in the wrong direction to support large-scale damage from coal, fracking, and drilling for oil in parks and natural preserves. When dealing with anxiety, ***the impulse to do something proactive is a very healthy thing.***

This list is provided to help anyone who wants to ***do something*** about climate change, deforestation, pollution, and the resultant loss of biodiversity. If the list helps you think about this issue more frequently in a positive, proactive way, we're already making progress! Please share it if you think its worthwhile.

Forward

For an effective change to the alarming trends in...

- concentrations of atmospheric carbon dioxide (CO₂) & a long list of pollutants²
- global warming
- ocean acidification & the loss of coral reefs
- the growing loss of biodiversity (i.e. thousands of species going extinct)
- deforestation

...**dramatic change is needed ASAP** at all levels of **government** practices, policies, research funding and legislation (regulations, incentives,

¹ If you must print this, please find 100% post-consumer recycled paper or paper that is made from rapidly-renewable fibers (RRF, like bamboo or sugar cane) from brands like TreeZero.

² "Super Pollutants" like black carbon, hydrofluorocarbons (HFCs), & methane (CH₄) are much worse than CO₂.

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conservation) and the **corporate/industrial** world (environmental options like renewable energy/materials, reducing other harmful gas emissions, more effective carbon sequestration methods). However, **your individual actions can help, and certainly won't hurt!** According to the EPA, transportation and electricity generation are roughly tied for "first place" in the generation of harmful greenhouse gasses. You can personally have an impact on both of these sources of CO₂ emissions. Climate change repercussions will ultimately cause more deaths than the coronavirus COVID-19 strain, but because it is emerging so slowly over many years, getting people mobilized to fight this threat is a bigger challenge. We have already started a warming trend we cannot stop, so much of what needs to be done now is to help accommodate the human race in this "new" harsh environment.

✓ Actionable Ideas

These ideas for an action plan (starting below)—suitable for every adult in every developed country on the planet—are listed in order of impact and practicality.³

1. **Vote for political candidates who make [the mitigation of] global warming a top political agenda** and have a proven track record of transforming that agenda into action and laws that force us all to make the necessary changes. Find and support those candidates and politicians here: <https://www.givegreen.com/> Don't support candidates who are "**in the pocket**" of large fossil fuel and petrochemical corporations, relying on their campaign contributions in return for laws that are not good for our environment. Governments and corporations must actively move to more environmental, carbon-negative policies. This is not always the "popular" path. Many industries lobby politicians to make laws and policies that are immutably bad for the environment...only because they're profitable for corporations. **Individual efforts alone will not be enough to avoid a "highly probable" environmental apocalypse before the year 2150.** Research the candidates you can vote for, and make your local, state and federal choices accordingly. If you don't have time to do the research, **it's generally a safe bet that the Democratic candidate is more environmentally attuned** than the Republican one is. I'm very happy to have a Congressional representative (Scott Peters) who worked as an environmental attorney for 15 years and now works in Congress to fight against the terribly anti-environmental policies that the orange buffoon (Donald tRump) and his cabinet members pursued to keep the fossil fuel industry happy. I wrote about Congressman Peters in my blog at www.EnvironmentalApocalypse.com after attending a town hall meeting where he addressed environmental concerns. He also agreed during that

³ A subjective, proprietary method of sorting the items was used and the exact order is not crucial. Try it all.



meeting to have a separate meeting with attendees from www.350.org to focus on solutions. Since that meeting he introduced the bipartisan, bicameral “Super Pollutants Act,” which would protect methane (CH₄) regulations that the tRump Administration was trying to roll back. (Methane is a much worse greenhouse gas than CO₂ is.) Even your local candidates can have a big impact. For example, in our local city council elections this year, one of the candidates is listening to rich constituents (with nothing but first-world problems) complain about electric scooters proliferating around town. To get their votes, he’s proclaiming that he’ll outlaw them. I’ve seen how these scooters—which will never cause the traffic congestion or pollution that cars do—help those who can’t afford a car or can’t find sufficient parking help citizens travel short distances (e.g. from mass transit depot to class). These scooters are a progressive part of an evolving transportation system that this particular politician wants to outlaw so people have to use cars to get anywhere. **Learn more about helping environmentally conscious political candidates at the website provided by the League of Conservation Voters at <https://www.lcv.org/> and review a history of how legislatures are voting on their scorecard here. <http://scorecard.lcv.org/>**

2. **Learn more & spread the word.** Read, watch, and learn more about the climate crisis and our environment. Spread the word by talking with others and joining protests to bring more attention to (and action on) the dire situation we’ve gotten ourselves into. The more you learn about humanity’s environmental impact, the more you’ll want to *do* about it.

Share this list by copying this link and sending it in emails and texts to people you know...

https://goese.com/downloads/environment/How_to_Stop_Global_Warming-Prioritized_List.pdf

Become an effective environmental evangelist, but in a gentle way that won’t make people avoid you. (Remember that it’s not everyone’s #1 concern...yet.) With friends and family who will listen, share what you’re learning about our ecosystem and biodiversity. Share your ideas on how we can all have an impact. We can do more with a larger army. You can decide for yourself where you stand on the causes of global warming if you keep an open mind while exploring films and publications. No matter what contributes the most to the current warming trend (a minority still denies the human cause), the fallout from ongoing climate change has been observable for decades.

Here are my current recommendations:

► **WATCH: Chasing Coral**, a Netflix documentary.

<https://www.chasingcoral.com/>



As a scuba diver I've noticed the death of coral reefs over the decades, but I didn't realize how widespread the issue is. This film discusses the cause and ultimate effects of this global loss. Coral reefs are like the "canary in the coal mine" of our entire ecosystem. Locally, here in La Jolla, a "warming" of our local water at the La Jolla Cove killed off our beautiful underwater kelp forest years ago, and it has yet to return.

► **READ: The Uninhabitable Earth**, by David Wallace-Wells. Time will tell if the dire predictions in this book are exaggerated, but so many of the "climate change" effects of global warming described by the author are self-evident and already covered in the news. The "alarmist" accusations by some critics⁴ of the book may turn out to be valid, but the author acknowledges the multidimensional complexity and controversies surrounding the topic. I hope the predictions about what the world will look like in the year 2100 are way too pessimistic. If not, millions if not billions of lives will be lost, and our great grandchildren will be fighting for their lives, wondering why we didn't do more to reverse the current warming trend...even if it was entirely caused by nature! No matter the cause of the warming, the warming has been the cause of four out of the five mass extinctions that have taken place on earth.⁵

► **STUDY IN DEPTH: Biodiversity and Climate Change: Transforming the Biosphere (2019 edition)**, by Thomas E. Lovejoy, Lee Hannah, and Edward O. Wilson. If you care about the plants and animals and don't mind reading a textbook-like tome, this is for you. Wilson adheres to non-alarmist (but still very scary), dry, peer-reviewed scientific review of what has already happened and what is very likely going to happen to all the species in our ecosystem as the climate continues to change. If you're studying the effects of climate change, this reference work should be in your library.

3. **Minimize waste.** This is an overriding theme to keep in mind if you don't read any further down this list. If you're mindful of the energy, material and water you consume, you'll be doing future generations a favor. Examples include:
 - a. Food — Don't buy or cook more than you consume. It takes a great deal of energy and water to deliver that food to your kitchen. Compost food byproducts (e.g. eggshells, banana peels, apple cores) to use in your garden if you're fortunate enough to have one.

⁴ My "follow the money" investigations into people on both sides of the climate-change debate find more fault with climate-change deniers. While many of them are legitimate scientists, some have ties to the energy industry or other economic interests that can be hurt by efforts to reduce CO₂ emissions, and others have not stayed current on the latest scientific findings most pertinent to the topic.

⁵ Interestingly, only the mass extinction that the dinosaurs died in appears to have been caused by a massive asteroid. The others appear to have been caused by big swings in global warming and cooling.



- b. Water — Don't leave the water running when you're not using it, even if you live where there is no water shortage. It takes energy to filter, process and deliver your cold water, not to mention the fossil fuel-based energy that goes into heating your hot water.
 - c. Electricity — Turn the lights/AC/heat off when you're not directly using them.
 - d. Natural Gas — Turn the heat down a little. Wearing cozier clothes in the winter can keep you comfortable and help save tons of fossil fuel.
 - e. Gasoline — If you can turn your car off when you're waiting for someone or reading messages on your phone in a parking lot, please do. This isn't just about conserving energy & the thermal aspects. It's also about improving our air quality. Car exhaust includes soot (lung-damaging fine particulate pollution) and the less-visible aspect of smog...the ozone-forming nitrogen oxide emissions. Trade in your ICE (internal combustion engine) car for an electric one. If you're worried about range for cross-country trips, just rent a car for those rare occasions.
4. **Eat less meat.** Or eat no meat at all. Meat of all kinds requires a lot of energy and water to produce, and beef is the heftiest offender. I highly recommend watching two movies that have had a profound effect on what I consume for environmental and health reasons:

■ **Forks Over Knives** (2011) <https://www.forksoverknives.com/the-film/#gs.mjxmrq>

■ **The Game Changers** (2018) <https://gamechangersmovie.com/>
 Due to the huge cow population required to satisfy the world's demand for beef, cows are a huge source of methane.⁶ Atmospheric⁷ methane (CH₄) is 21 times more potent at trapping heat from the sun than carbon dioxide (CO₂) is. While methane is less prevalent in the atmosphere than CO₂, it is (per unit) the most destructive of the so-called "greenhouse gases,"⁸ which is a term used to describe the heat-trapping pollution we have added to our atmosphere, accelerating

⁶ Cow burps and manure contribute more methane gas than their farts do. Cows, sheep, goats, giraffes, and deer belong to a class of mammals called ruminants, which have more than one stomach chamber. The first chamber (division) is the rumen. Microbes in the rumen create methane gas as a byproduct, which ruminants burp out.

⁷ Earth's atmospheric methane concentration has more than doubled since 1750. The largest reservoir of naturally-occurring methane is under the seafloor in the form of methane clathrates.

⁸ Don't for a minute let this fact make you think we're doing any good for the planet by burning methane to produce carbon dioxide. The consumption of natural gas results in more mining for natural gas, which inherently involves a lot of methane leaking into the environment. We're all better off if it remains "captured" under the earth's crust.



earth's radiative forcing. Radiative [or "climate"] forcing is the difference between insolation (sunlight) absorbed by the Earth and energy radiated back to space.

To add to the water/energy/emission faults, global demand for beef has caused large parcels of the Amazon and other forests/jungles to be sold to ranchers to raise beef cattle, taking away our second-largest (after the oceans) source of oxygen generation and CO₂ collection. Without accounting for this horrible deforestation, USDA and other data show a vegetarian diet leaves about half the carbon footprint of a "meat lover" diet. Many people think we need animal protein to function properly. That doesn't appear to be the case. There are even professional bike racers who are vegan⁹ and those guys/gals are subjected to insane levels of stress and exertion. If you want some animal protein and natural vitamin B₁₂ in your diet, you can get that from eggs and cheese. **⑤ Ever since I watched Game Changers** (the movie) I've stopped sponsoring the killing of animals for my nutrition and I can tell you, even though I didn't think about it before this change, I feel better after making this decision. I don't judge people who eat meat, but I'd love them to consider the alternatives. If you have a vegetarian in your family, you probably already know there are countless, delicious vegetarian recipes and ready-to-heat meals that can make you and the planet healthier.

5. **Donate to family planning organizations** that help men and women around the world [who do not want to conceive] obtain family planning (birth control) products & assistance. A 2017 World Health Organization (WHO) study found that **about 214 million women of reproductive age in developing countries who want to avoid pregnancy are not using a modern contraceptive method**. In some countries, this topic brings us back to the "vote" action item above. Some religious fundamentalist politicians would like to outlaw birth control of any kind, which makes no sense to any thinking person who is interested in ever having sex. Capitalists who want a "bigger economy" (read: more customers) also find ways to fight family planning. **Birth control is the most profound way a woman can retain control of her body and her life.**
 - **Population growth is the #1 contributor to our destruction of the environment.** If there were only a billion people on the planet, we wouldn't be facing the mess we're in.
 - Countries, states and cities that make it easy for people of all ages to purchase low-cost condoms obviously have a much lower level of unwanted pregnancies.
 - Read more here: <http://populationgrowth.org/>

⁹ It should be noted that Vitamin B₁₂ (cobalamin) supplements are required in the vegan diet.



6. **Reduce, Reuse, Recycle.** ♻️ This suggestion is heavily tied to my underlying “minimize waste” theme.
- Reduce: This one is the key, because if we reduce our production/consumption, there’s less to reuse or recycle. Think before you buy. Try to drive down your consumption of water packaged in small, single-use plastic bottles. Do your best to reduce consumption overall. Reuse items that can help displace the production of more stuff that consumes energy and fills methane-generating landfills. The bottom line of this whole environmental/greenhouse gas problem is this:
❖ **TOO MANY PEOPLE CONSUMING TOO MUCH OF EVERYTHING!**
 - Reuse: From reusable grocery bags & food/drink storage containers to water bottles to clothing to cars, to large refurbished industrial electric motors, you can probably find more ways to reuse items (or find a home for items you no longer need) if you give it some thought. You’d be amazed at how many people are willing to stop by and pick up a large item you thought of throwing in the garbage if you list it under “free stuff” on Craigslist. Depending upon emissions considerations, buying a used car might be more environmentally-friendly than a new one.
 - Recycle: Our material recycling processes—whether that of metal, paper, plastic, electronics, organic waste (food/yard), or whatever—are very inefficient. Recycling (when done properly) can save energy, reduce harmful methane emissions (through organic waste recycling), and reduce the amount of new material production required. Not only that, but most paper is still being produced from “virgin” pulp that does not include any recycled material, which means CO₂-reducing trees are being cut down to make your paper.

Granted, the funding and status of many municipal recycling programs are abhorrent and the countries we’ve dumped our “recycled” plastic on have been overloaded, but that doesn’t mean we shouldn’t try. Why store food “use once” plastic or paper bags when there are countless reusable options? Also, be mindful when you sort your recyclables. Don’t toss dirty items or items they don’t recycle (called wish-cycling) into the bin. ***If the recycling batch is too spoiled with non-recyclable items, the screeners may put the whole batch into a landfill***, negating all those recycling efforts. Unfortunately those little receipts printed on “thermal” paper are NOT recyclable. Migrate toward e-receipts (email, PDF, etc.).



7. **“Money Talks” Part 1 of 3: Donate to environmental organizations** that are doing something about global warming.¹⁰ Take your pick from my suggestions below. Some help raise awareness of environmental abuse issues. Some work through the legal system and by other means to get governments and large corporations to shift in a direction that will make bigger improvements than we can as individuals. Some buy very large plots of land in nature to help keep it out of the hands of those who, in the words of Joni Mitchell’s song “Big Yellow Taxi,” want to pave paradise and put up a parking lot.

NOT all environmental organizations are created equal. If you’re looking at one that supports biofuels or biomass¹¹ energy production, it probably has connections to “new energy” tycoons that want to control the “beyond coal” market without particular regard for the environmental impact.¹² I recommend donating to one of the organizations below rather than buying carbon offsets.¹³

Unfortunately, some environmental organizations send you lots of paper through the postal service after you donate (obviously incongruous with their environmental cause) but you can ask them to stop.¹⁴ If they don’t stop, cut them off. I had to do that with the Nature Conservancy because their flow of paper mail was relentless. I’ve done my best to train my charitable beneficiaries to NOT send me mail. I have a spreadsheet that steers my annual giving plan more than any amount of mail ever will.

If you don’t feel you have the spare change to donate, there are NO-COST ways to contribute, like switching your default search engine to Ecosia, which contributes ad revenue to tree-planting efforts around the world (<https://www.ecosia.org/>).

- a. **Give Green** (<https://www.givegreen.com/>) offers an easy, strategic way to support environmental candidates and accelerate action on

¹⁰ Are you currently making donations to feed the poor and heal the sick? In the long run, these environmental organizations will have a greater effect on wellness and safe food production for humanity through their work to keep our environment healthy and stable. Also, some of them (like RAN) work for the people affected, too. Confession: We *also* donate to organizations that feed the poor and help heal the sick.

¹¹ As you probably know, biomass energy’s environmental value is dubious, whether the source is peat, timber, or more quickly “renewable” sources like agriculture or sugarcane.

¹² The movie “Planet of the Humans” by Jeff Gibbs (2020; Michael Moore, executive producer; free on YouTube) leans heavily into them with some partially outdated/inaccurate insinuations/accusations while issuing a mortifying wakeup call to all of us.

¹³ See this brief article to learn why: https://grants.ran.org/hrf_faq/whats-wrong-with-carbon-offsets/

¹⁴ The Nature Conservancy—while a respectable organization with an attractive charter—is an especially egregious user of paper mailings to solicit more money after you donate to them. The more paper they mail to me, the less likely I am to continue to donate, especially if they continue to do so after I ask them to stop.



climate change. Corporations change their polluting behavior when laws and lawsuits **force** them to. Otherwise they'll do whatever is most profitable for them while they weave a "green story" for you. The laws won't change if we keep electing politicians who do not make the survival of our environment a priority.

- b. **Conservation International** (<https://www.conservation.org/>) buys up land to keep it out of the wrong hands (e.g. governments & mining companies) and advises many corporations on how they can be better stewards of our planet.
 - c. **Rainforest Action Network** (<https://www.ran.org/>) who were among the first environmental organizations to call out the extensive fraud surrounding biofuel and dubious biomass energy projects.
 - d. **Union of Concerned Scientists** (<https://www.ucsusa.org/>) regularly exposes politicians and corporations for practices that are bad for our health and our environment.
 - e. **Natural Resources Defense Council** (<https://www.nrdc.org/>)
 - f. **Environmental Defense Fund** (<https://www.edf.org/>) addresses issues including global warming, ecosystem restoration, oceans, and human health, and advocates using sound science, economics and law to find environmental solutions that work.
 - g. **350.org** (<https://350.org/>) has put feet on the streets and voices in political and corporate meetings to raise awareness of environmental issues and legislation.
 - h. **Greenpeace** (<https://www.greenpeace.org>) has been pursuing a multifaceted approach to advocacy for biodiversity and the environment.
8. **"Money Talks" Part 2 of 3: Move your investments into environmentally-sound assets.** Take your investment dollar away from funds & corporations (especially coal, oil & gas companies) that support the destruction of our environment through continued mining of fossil fuels. Invest in ETFs or individual companies that are focused on renewable energy or reducing consumption (per-capita carbon footprint). While some corporations make flowery claims about their carbon credits/offsets¹⁵ which clearly [aren't a cure](#), some effort is better than a complete disregard for the environment.
9. **Install solar panels** on your home and business. Install much more than you anticipate needing to assure that your home's contributions to the reduction of CO₂ emissions go beyond your energy usage. Most

¹⁵ Formerly referred to as "cap-and-trade" in the theoretical framework of the "per-country" cap for carbon emissions in the 1997 Kyoto Protocol treaty.



areas of the country allow you to actually contribute energy to the power grid when your solar panels generate more than you're using, even if you don't include a battery system. Tell your representatives in government that you believe in government incentives to get more people to install solar panels on their homes. Natural gas may be the most efficient way to heat your water for coffee or tea, but if you have enough solar panels then using your microwave or electric stove can be a cleaner way to go.

10. **"Money Talks" Part 3 of 3: Buy an electric vehicle (EV), plug-in hybrid (PHEV), or hybrid car.** When people stop buying gas-guzzling ICE (internal combustion engine) vehicles like Bentleys¹⁶ and Land Rovers, manufacturers will stop making them. If you drive in stop-and-go traffic and you have some environmental conscience, you know how terrible it feels to be spewing toxic gases into the atmosphere while getting nowhere in a hurry. Many gas/diesel models now stop the engine when the vehicle is stopped for a few seconds. That's a start, but a kluge at best. **I can't tell you how much better it feels to a car that isn't spewing fumes when it's stuck or rolling slowly in heavy traffic.**

Granted, there's a carbon footprint associated with the manufacture of EVs, but please don't let that deter you. If you install enough solar panels on your home to charge your EV/PHEV and power everything in your home, you'll feel even better, knowing that the sun is powering your car instead of the natural gas or coal that's burned to deliver electrical service to your home. The available selection of EV/PHEV cars is growing every year. Having owned an EV and a PHEV, I recommend going with the full EV. PHEVs can have all the same problems related to conventional ICE (internal combustion engine) vehicles. Also, our PHEV would start to burn the gas when it decided the gas was getting "too old" because we were using it in electric mode for local trips.

If you can afford to put up enough solar panels and you drive an electric car, your commute and errands can all become carbon neutral or possibly even carbon negative as your panels contribute energy to the grid. Donate your old car to an eco-centric charity (for the tax deduction). If you can't afford an electric vehicle, make fuel efficiency a major decision factor in your next purchase and a part of your driving habits.¹⁷

¹⁶ A Bentley is a nauseating display of wealth and disregard for the environment, typically getting less than 20 mpg.

¹⁷ Slower acceleration provides cleaner emissions and gives you better gas mileage.



11. **Adopt** instead of making more humans. This recommendation meets criticism¹⁸ but there's no getting around the fact that the root cause of our problem has been the population explosion over the past two centuries (~7.8B in 2020 vs. ~1.1B in 1820). So if you want to have children but aren't 100% committed to producing all your own, consider adoption. The environmental benefits of adoption over creating more humans is undeniable, and the societal benefits resulting from you giving that child a loving home are tremendous.
12. **Insulate** your home, again. If your home is more than 20 years old, there's a good chance you can save a lot of HVAC energy consumption in hot and cold weather by upgrading your insulation. I wish I had done this decades ago on our 60-year-old home. There are new materials available now for high R-value insulation that were not available even 30 years ago. Get some quotes from experts ASAP. This will give you more time to get a return on your investment through smaller energy bills.
13. **Volunteer** at any of the many environmental and family planning organizations.
14. **Go Paperless with almost everything**. Your printed newspapers, magazines & bills often kill¹⁹ trees—including those in virgin, old-growth²⁰ forests that have been developing for thousands of years—for virgin wood pulp. Oceans and **forests** are our best bets for reducing greenhouse gasses until we discover more efficient, synthetic means of carbon capture. Deforestation accelerates the destruction of our ecosystem. Pulp/paper manufacturing is one of the greatest sources of pollution and greenhouse gas emissions. Get your news, entertainment, bills and catalogs *online*. Read the news on your computer, phone, or tablet (rather than having fossil fuel-burning cars and trucks deliver them to your home). **Remember the "reduce" and "reuse" parts of the environmental mantra are more important than the "recycle" part.** Use real plates, cloth napkins and a handkerchief to stop killing trees to make disposable products.

¹⁸ My wife thinks this suggestion is terribly "out of line," but she's wrong because overpopulation is the #1 cause of the climate crisis. Just study the history of overpopulation of any species and you'll find we're hitting the "wall" right now. And remember, this is a list of ideas, not demands...we didn't adopt.

¹⁹ Paper advocates claim that if we stop using paper then there will be no motivation to plant new trees to make more paper. Here's a catch: We can plant new trees then just let them grow and collect CO₂ without us cutting them down. We need all the forests and healthy oceans we can get to maximize CO₂ reduction.

²⁰ An old-growth, primary or late seral forest is one that has reached advanced age without significant disturbance (e.g. cultivation or harvesting by humans). Demand for virgin paper pushes the logging industry into old-growth forests for a new supply of wood and virgin wood pulp, while environmentalists desperately try to communicate the importance of leaving these forests untouched for the maintenance of biodiversity, water regulation and nutrient cycling, which includes CO₂ capture.



15. **Stop & think before you print.** Do you really need to make a *paper* copy of that? Make your “default printer” a PDF file generator and share your output electronically via email rather than printed “hard copy,” which is more of a pain to archive than electronic files are anyway. With computer search functions, electronic documents are typically easier to find than paper ones are. Fortunately, generations after the baby boomers are naturally migrating to mobile devices and computers as “paper replacements” more than the boomers have.
16. **Buy recycled paper or paper from nearby non-tree sources.** OK, so we can’t always go paperless with *everything*. If you’re not using recycled toilet paper, paper towels and printer paper, chances are you are contributing to the unbridled deforestation conducted by the lumber and paper industries due to the demand for cheap, virgin pulp paper. Those fancy paper napkins that don’t use any recycled paper are killing trees that should remain standing to help sequester CO₂. **There are so many recycled and tree-free “rapidly-renewable fiber” paper options available...just look for them.** I’m finding that they are not necessarily more expensive anymore. Note where your “alternative pulp” (e.g. sugar cane waste or bamboo) paper is coming from. When it’s shipped from distant countries overseas, the delivery of this “green” product on cargo ships is burning heavy bunker fuel (aka “black yogurt” for its consistency), which emits soot that captures heat when it settles on ice, accelerating the melting of the polar ice caps. The USA needs to lift its hemp, sugarcane and bamboo production to help make paper from more readily-renewable resources and byproducts. Finally, **minimize your use of colored paper**, as that adds a greater bleaching challenge to the paper recycling process as the most in-demand recycled paper color is white.
17. **Replace** your incandescent lightbulbs. LED bulbs use a small fraction of the energy. Once again, saving energy allows us to burn less fossil fuel, which helps us breathe cleaner air slow down global warming caused by gas emissions.
18. **Commute by bike.** This is even better than an electric car, and in some cities it might get you there faster. I’m so happy to see the booming electric bike market in San Diego getting commuters out of their cars and onto electric bikes, bypassing traffic jams in the bike lane. Try it. You’ll be healthier and happier.
19. **Use mass transit when you can.** Have you explored the bus and train options available for your commute and travel plans? Flying consumes a great deal of energy by comparison. What is the most environmentally sound way to travel on vacation? Assuming that your travel is fully booked, the diesel bus comes out on top, followed by the high-speed



train, then a car with three people in it, then the medium-sized aircraft, followed in last place by the cruise ship. But trains and buses have an average occupancy of only 40%, *which would go up if we all used them*. Ideally, we'd all have electric cars that are charged entirely by environmentally-produced energy, like solar panels on our roofs and charging stations powered by the wind and the sun.

20. **Carpool**. It's not always an option, but look into it! Try the eRideShare phone app. You could save a ton of money, make new friends who live and work near where you do, and greatly reduce your contribution to the problems we're facing.
21. **Consolidate your travel**. It's totally understandable if you live in America and have always wanted to see Dublin and Paris. But you can combine your international bucket list trips to reduce the fossil fuels burned to fly you over the ocean. If you're not already donating to one of the environmental organizations I listed previously, you can help offset your travel carbon footprint by buying carbon offsets at websites like <https://www.cooleffect.org/> & <https://www.carbonfootprint.com/calculator.aspx>.
22. **Consolidate your deliveries**. If you use Amazon, I hope you use "Amazon Day" for all your nonurgent deliveries. When you don't have to have it "now," Amazon Day helps you consolidate your shipments to reduce the number of trips the delivery trucks need to make to your house each week.
23. **Minimize your travel by cruise ship**. Do you need to burn fuel to literally move your resort or amusement park with you as you travel? The International Council on Clean Transportation estimates that even the most efficient cruise ships emit 3 to 4 times more CO₂ per passenger-mile than a jet. Also, most cruise ships run on dirty, heavy fuel oil. Some have begun using "scrubbers" to remove toxic sulfur oxides from their exhaust, but the scrubbers discharge the pollutants into the ocean.
24. **Buy local**. This isn't just about supporting your local economy. **If your food, drinking water, wine, beer, and other routine items can be sourced locally, less energy is consumed in delivering those goods to you.** Your choice of type of food (e.g. no meat, no high-energy-consumption local growers) may have a bigger environmental impact than the shipment does, but flying food from distant countries rarely makes sense from an environmental standpoint. **I love Germany, the Netherlands, France, Spain, New Zealand, Australia, and Chile...but nowadays I try to buy all of my beer and wine from California and Oregon because I'm aware of how much CO₂ and pollutants are put into our atmosphere to ship those items from other countries to us**



here in California. Buying local also helps boost our local economy. California produces some of the best beer and wine on the planet! Vodka from Russia? NFW, for obvious reasons. Tito's vodka is better than all the others and it's made in the USA.

25. **Plant trees.** Or donate to an organization that does. Or volunteer with an organization that does...which can be good, mood-lifting outdoor exercise. After the oceans, forests are our biggest source of clean air best available means of CO₂ greenhouse gas reduction.
26. **Turn it off.** Turn off your lights and appliances when you're gone for any length of time. It will save you money and reduce wasted combustion of fossil fuels. Turn off your car when you're sitting in a parking lot or waiting for someone unless the weather indicates a need for AC or heat. Open a window and get some fresh air. (Your battery won't die while you listen to the radio if you have your car in the accessory "ACC" mode rather than the ignition mode when your dashboard lights up.) If you're one of those people who don't pay attention to thermostat settings, be sure to install & use a programmable thermostat so you aren't accidentally wasting energy when you aren't around.
27. **Widen your comfort zone.** If you make an effort to *climatize and dress accordingly*, you can lower your heat in the winter and use less AC in the summer, saving what is probably the largest portion of your energy bill. Just a couple degrees difference can save thousands of pounds of carbon emissions each year. Besides, a cool room can motivate you to move or exercise, which is good for your health. The old myth that you can lose half your body heat through your head²¹ has been debunked, but I can tell you from personal experience that wearing a hoody indoors in the winter (who's looking?) allows me to stay cozy with the thermostat adjusted a couple degrees cooler.
28. **Try a space heater** at night in your bedroom. If you're heating your whole home at night, you're probably using a *lot* more energy than necessary. Do you spend a lot of time at your desk? Try a space heater. You may laugh, but after finding space heaters a little too intense at close range, I bought a food warmer²² with a replaceable heat lamp to keep under my desk. I love it! The heat flows up and around me very nicely.
29. **Turn your water heater temperature down.** You can still enjoy your same hot shower...it will just have less cold water mixed in. Your water

²¹ This falsehood came from a poorly-designed US Army study where subjects were wearing arctic clothing all over their bodies but not on their heads. Duh. They published their "findings" in a 1970 survival manual. The claim has been soundly refuted through subsequent research. But the idea of wearing a hat and/or hood remains sensible!

²² See: <https://www.amazon.com/Kratos-31M-002-Warmer-Black-Watts/dp/B0BFYPMTRH>



heater will last longer and you'll save money. Despite your water heater's insulation, it takes more energy to raise the temperature higher and store [about 60 gallons of] the hotter water. Also be sure to flush a little water from your water heater every year to help it last longer and work more cleanly & efficiently.

30. **Use less water.** Even if your town isn't experiencing a water shortage, remember that the gathering, treatment, and delivery of your water requires a lot of **energy** (especially when you're using hot water). Minimize the use of sprinkler timers that water your yard even on rainy days. Convert to plantings that require less water.
31. **Convert to an on-demand water heater.** These do not store a large amount of hot water the way conventional water heaters do, so less energy is used, especially for low-use situations.
32. **Keep a pitcher in the shower.** Doing so will allow you to fill it with the water that you normally let go straight into the drain while you wait for the water to "heat up." The longer the distance between your shower and your water heater, the more helpful this water-conserving trick is. Move the filled pitcher next to your sink and use the water for whatever you might need, from drinking to rinsing dishes.
33. **Boycott** corporations and organizations that cause the greatest damage our ecosystem. If you're brave and have the time, feel free to shame them on social media (e.g. Twitter) for their horrible practices. Here is a sampling of the worst culprits who waste energy, promote population growth, and cause deforestation on a massive level.
 - a. Bitcoin — Because of the algorithms they use, Bitcoin causes computers around the world to consume about as much energy as the entire country of Ireland. Other cryptocurrencies have the same problem, which can be reduced with a change in their algorithms.
 - b. Fiji Water — Buying water from overseas is just plain silly, and Fiji Water is the worst because they like to pretend they are environmentally oriented while their customers fund the shipping of plastic bottles from China to Fiji, then shipping full bottles from Fiji to nations around the world. For every sip of that water, the customer is supporting the combustion of more than that amount of fuel just to deliver it.
 - c. The Catholic Church — I was raised Catholic, so I'm pretty familiar with their efforts to boost the population and shun birth control. In case you haven't already boycotted them for the thousands of sexual abuse cases that finally came to light, look again at the church's long history of missionaries that spread the idea that birth control is evil. (Why? To make more evangelists, of course...to win the stupid



- religion game.) Remember that population growth is the #1 “engine” behind our unprecedented CO₂ emissions.
- d. Johnson Controls — The building industry is one that has so many opportunities to choose strategies and products that have a big impact on the environment, which makes blatant “anti-environmental” moves especially despicable from a key vendor like Johnson Controls. In February 2019, a federal court ruled the Trump administration acted unlawfully in rolling back an energy efficiency rule in favor of one manufacturer of central air conditioners, Johnson Controls International, to the detriment of consumers, the environment, and other manufacturers. The U.S. District Court for the Southern District of New York declared the rollback “arbitrary and capricious.” Builders will be doing us all a favor if they chose alternative vendors for HVAC systems.
34. **Avoid buying purebreds.** As with the “adoption” suggestion above, choosing to have your next pet be a “rescue” instead of financially supporting the breeding of more pets—while thousands of unwanted ones are being euthanized—makes sense on more than an environmental level. I absolutely love dogs, but I don’t lose sight of the fact that pet population control can help the environment just as human population control does, albeit to a lesser extent since pets aren’t driving cars and buying Fiji water. But dogs and cats are generally on meat-based diets, so there’s a notable carbon footprint. Millions of animals are raised in confinement then slaughtered to keep dogs and cats fed.
35. **Avoid palm oil.** Palm oil accounts for ~40% of the current global annual demand for vegetable oil as food, animal feed and fuel. While oil palms are relatively high-yield crops, oil palm tree plantation expansion into forested regions of Borneo, Sumatra, the Malay Peninsula and other regions has led to disastrous tropical deforestation.²³
36. **Move** to a more temperate climate. I know...easier said than done, but the amount of energy you’ll save by not having to use heat and/or AC nearly as often can put a big dent in your CO₂ emissions. Plus, you’ll probably be outdoors more often and live a happier, healthier lifestyle.
37. **Avoid aerosol sprays.** Use “pump” sprays instead of pressurized cans, if you must use a spray.²⁴ After chlorofluorocarbons²⁵ (CFCs) were banned in most countries because of their negative effect on Earth's ozone layer, replacement propellants in products like hair spray and

²³ See <https://www.bbc.com/future/article/20211025-palm-oil-the-everyday-ingredient-that-harms-the-climate>

²⁴ Using spray sunscreen at a public beach? Look downwind for people annoyed at you for your disregard of their right to clean air. Why not just wipe a non-spray lotion on? That worked for decades when I was growing up.

²⁵ CFCs & HCFCs are more commonly known by the DuPont brand name "Freon."



sunscreen spray have included volatile, flammable hydrocarbons (e.g. propane, n-butane and isobutane), dimethyl ether (DME), and methyl ethyl ether which are all very bad for the atmosphere. Food stuffs (e.g. whipping cream, cooking spray) typically use nitrous oxide (N₂O, aka "laughing gas") & carbon dioxide (CO₂). Nitrous oxide was recently found to be a major scavenger of stratospheric ozone, with an impact comparable to that of CFCs. Even medicinal aerosols (e.g. asthma inhalers) use hydrofluoroalkanes (HFA) which deplete the ozone layer. While **a pump spray is environmentally preferable to any propellant-based aerosol**, some propellants aren't as bad as others. Liquid Hydrofluoroolefin (HFO) propellants are gaining some acceptance due to their relatively low vapor pressure, relatively low global warming potential (GWP), and non-flammability.

38. **Have old appliances professionally recycled.** When you recycle your appliance, there's a lot more to the environmental savings from having the steel and plastic reused to make new products. Your old AC or fridge probably used refrigerants that are extremely harmful to our atmosphere if released. Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFCs) compromise our atmosphere's ozone layer, which is a critical element for survival of life as we know it. They can be captured in a proper recycling process. See <https://www.energystar.gov/products/recycle> for more information.
39. **Other energy-saving habits...** Consumption of energy is the recurring theme here. Just be aware of it and think of ways that can reduce your energy consumption, bit by bit.
- Hang-dry your clothes if you live in a warm, dry climate. If you're not in a rush, this can be a meditative exercise that can help you slow down and relax. Your dryer consumes a massive amount of energy that could be saved by using the sunshine outside your door.
 - Walk to get that cup of coffee if you can. It can be a better experience than the drive if you pick a nearby shop. Side benefit: A walking habit will help you live a healthier, happier, longer life.
 - Use bar soap instead of liquid soap. [This article helps explain](#) why bar soap is more environmentally friendly than liquid soap is. (Personally, liquid soap never made sense to me for use in the bath or shower because it's more awkward and challenging to apply.)
 - You tell me!** What new ways to conserve energy have you discovered? I'm on Instagram at: <https://www.instagram.com/dan.goese/>



Final Comments:

According to the National Oceanic & Atmospheric Administration (NOAA), human activities since the beginning of the Industrial Revolution (around 1750) have produced a 40% increase in the atmospheric concentration of carbon dioxide (CO₂), from 280 ppm in 1750 to 406 ppm in early 2017. We are “snuffing out” our planet as we know it with excess greenhouse gasses, which in turn cause the “greenhouse effect” that gives us global warming. We must turn this around. Most of the responsibility for making big changes rest on your elected government officials and large corporations. But you can help by not exacerbating the problem with careless waste.

With this document focused on global warming, I want to clarify that climate change is only one of several ways we have been destroying our fragile environment. You’ve undoubtedly heard about PFAS²⁶, the so-called “forever chemicals that have a long chain of undesirable health effects. Also, using sunscreens that are not “reef-friendly” is leading to the death of many coral reefs, which are a crucial part of the oceanic food chain.

Any omissions or abbreviations of these effects is not intended to diminish the gravity of them. I just want to “compartmentalize” my environmental concerns, and certainly global warming is a big one that deserves focused attention. Record temperatures and recurring “once in a century” just might wake up more of the most adamant climate-change deniers, but I’m not counting on them. I’m counting on you...not to do everything, but to do what you can.

CONTACT ME: Have feedback? Share your comments and corrections with me at my environmental blog at www.EnvironmentalApocalypse.com or on Instagram at @dan.goese.

THANK YOU!

Thanks for joining me in my effort to postpone the looming environmental apocalypse.

²⁶ See: https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

