Made in America & Made to Last!

Earth Day 2024 - A reflection from Earth Day in 1970

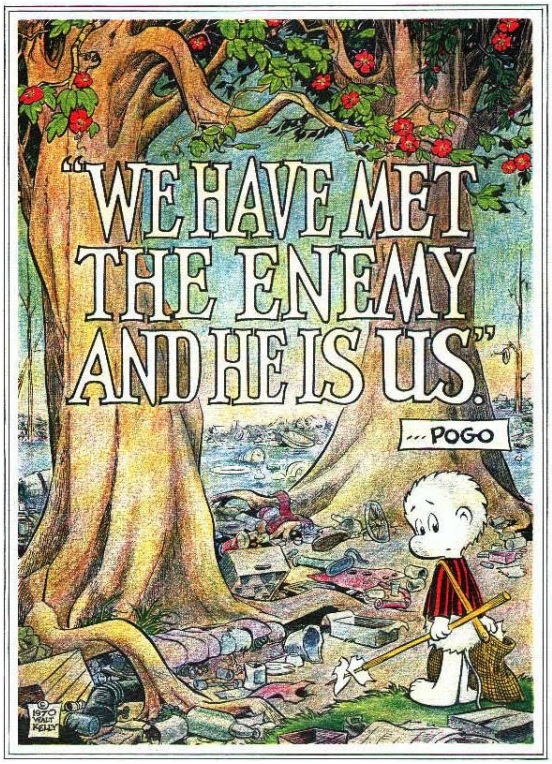
By Patricia M. DeMarco

This April 2024, Pittsburgh has been graced with a spectacular eclipse of the sun and weeks of daffodils blooming through rain and cool nights. The beautiful, bountiful exuberance of Nature bursts forth in a surge of sap running through the trees. Blossoms emerge along streets, in the woods and in backyard gardens. I delight in the cycle of Nature, but I quake inside at the challenges inundating our world. This Earth Day 2024 places a spotlight on plastic - a man-made counterpoint to the wonders of the natural world. Plastic brought apparent convenience and inexpensive goods to America, but the consequences resonate for hundreds of years in global pollution from often toxic synthetic materials.

Earth Day 1970- a Retrospective

I reflect to the Earth Day of April 22, 1970- that first Earth Day Celebration and call to action. Millions marched in the streets, held Teach-Ins on university campuses and city parks, and interspersed pleas for clean air and water with calls for women's rights, civil rights and protests against the Vietnam War. The issues intertwined, overlapped and drove changes in values that were enshrined in law within a year. The National Environmental Policy Act (1970), Clean Air Act (1970), the Clean Water Act were all passed with strong bipartisan support over the course of two Congressional sessions, and President Nixon established the Environmental Protection Agency to oversee enforcement and administration of the legislation. In the next decade, further environmental protections came from The Endangered Species Act (1973) the Resource Conservation and Recovery Act (1976) the Toxic Substances Control Act (1976) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) (1980).

Workmen from the U.S. Parks Service clean up debris left behind from the Earth Day gathering, April 23, 1970. The scene was made with an extreme wide-angle lens. (AP Photo/Bob Daugherty)
The first Earth Day, 1970.
https://www.pennlive.com/life/2016/04/the_first_earth_day_was_april.html



Pogo Cartoon. Earth Day 1970
https://airandspace.si.edu/multimedia-gallery/14-pogo-earth-day-1970-ajpeg

These laws put in place an array of methods for emissions controls, measures and evaluations that have been amended, refined, but in some cases diluted, over the years. This body of legislation is remarkable in its stunning expression of values that redefined the relationship of human beings on earth to their world and all life within it.[1] The 1970 legislation addressed protecting the environment itself by attempting to limit the amounts of substances deemed to be pollutants that could be permitted to be emitted into the air and water or to leach from landfills. For the demonstrators and advocates, there was much rhetoric, but behavioral change has come more slowly. One broad theme to emerge was the concept that human behavior and human actins are at the heart of the environmental pollution.

Earth Day 2024 Perspective

This shared sense that the living world has intrinsic value critical to the health of all interconnected living beings has been eroded and even derided today. Modern environmental initiatives focus more on environmental justice and restoring and enforcing environmental

protections in distressed and disinvested communities. In response to grassroots efforts across the country from initiatives like ReImagine Appalachia,[2] President Biden and a Democratic Congress passed the Bipartisan Infrastructure Bill (2020) and the Inflation Reduction Act (2022) to enact the most significant climate legislation in U.S. history, offering funding, programs, and incentives to accelerate the transition to a clean energy economy and will likely drive significant deployment of new clean electricity resources.[3] Combined with the overlay of the EJ40 Environmental Justice[4] priorities, these laws begin to redress the disinvestment in former industrial communities and communities abandoned by extractive resource operations. However, unlike the push for Earth Day in 1970, the bipartisan support was not strong enough to carry through the change of Congress. With a narrow margin, Republican control of the House of Representatives initiated a dismantle and de-fund agenda to slow or halt progress, especially on climate action.

There is no longer a national bipartisan consensus for the value of environmental and climate policy. A 1989 Gallup Poll reported that 76 percent of Americans considered themselves environmentalists, but by 2021 that had declined to 41 percent.[5] The change came from two conditions. First, in the early days, environmentalism was considered a safe consensus issue - people could see smog and water pollution when rivers would catch fire. Everyone supported controlling emissions that would visibly improve such stark conditions. But this position began to erode with the early Reagan administration (1981–1983) which launched an overt attack on the EPA, combining deregulation with budget and staff cuts.[6] The George W. Bush administration (2001–2008) adopted a subtler approach, undermining science-based policy. Under the Trump administration (2016-2020), both strategies were used. Wealthy donors, think tanks, and fossil fuel and chemical industries have become more influential in pushing deregulation, and among the public, political polarization has increased, the environment has become a partisan issue, and science and the mainstream media are distrusted.[7] The EPA and the environmental controls and regulations were cast as inhibitions to business and economic growth. Most discouragingly, economic value is now the dominant factor in public policy, with diminished influence of environmental, social or cultural values.

Second, in today's situation, environmentalism includes demands for action on climate change, which has a large body of opponents who deny that climate change is real or an urgent issue. These differences fall sharply on political lines, and environmental values have been rolled into the polarized political backdrop. It is a complex picture. Across political lines, two thirds of Americans (69%) prioritize alternative resources like wind and solar with a goal of becoming carbon neutral by 2050 and believe the government should encourage this with incentives; and younger adults (ages 18-29) favor phasing out of fossil fuels completely. [8] Most Republicans of all age groups, but only about half of Democrats, back continuing to use a mix of energy sources, including oil, coal and natural gas.[9] While 54% of all Americans believe climate change is a major threat, the partisan divide on this issue has grown between 2009 (61% D and 25% R) and 2022 (78% D and 23% R) but in terms of priority, addressing climate change ranks 17th out of 21 national issues.[10,11] Perceptions of the severity of climate change impact varies locally, but is still most affected by political persuasion rather than local ground conditions.[12] Most Americans also believe the government and corporations are doing too little to address climate change.[13]

Three Existential Crises:

We face three interlocking existential crises: Global warming from unprecedented levels of greenhouse gas accumulation in the atmosphere from human activities, principally emissions from burning fossil fuels;[14] [15]Global loss of biodiversity, from habitat destruction, extractive resource development and agricultural practices that destroy ecosystems;[16] and global pollution, especially from synthetic materials including plastics. We can examine these threats through the lens of plastics pollution, as this is the theme for Earth Day 2024.

Global Pollution- Plastic Everywhere!

This Earth Day 2024 has a focus on plastic pollution, with good reason. The first international Global Plastics Outlook documents the ubiquitous accumulation of plastic across the world:

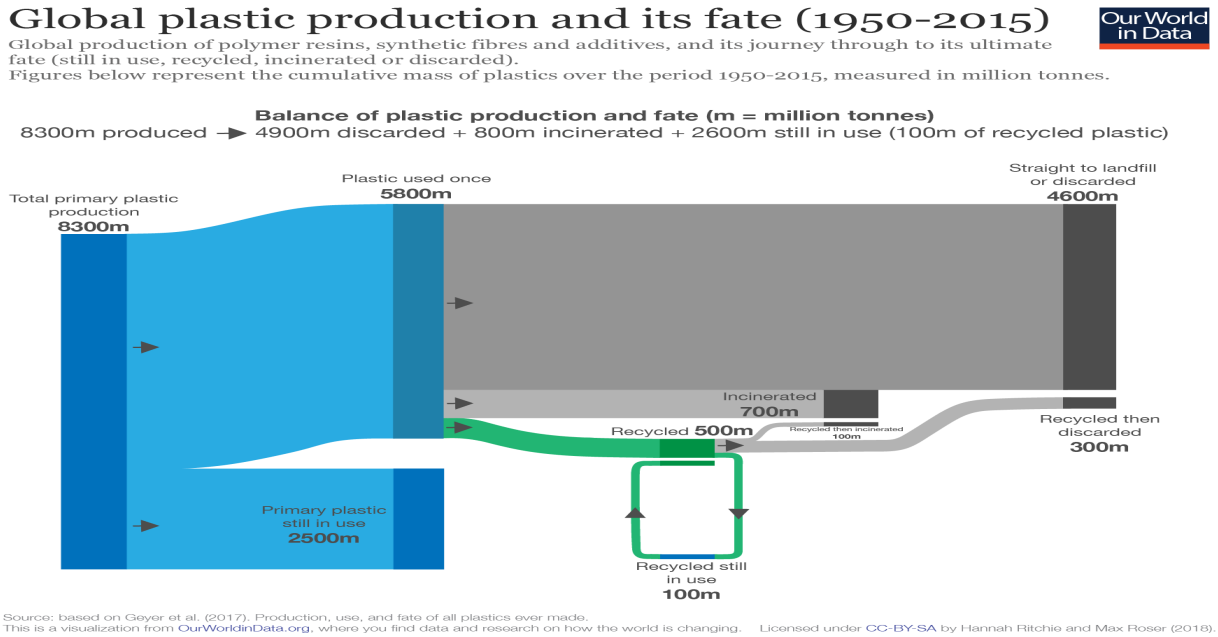
- Plastic consumption has quadrupled over the past 30 years, driven by growth in emerging markets. Global plastics production doubled from 2000 to 2019 to reach 460 million tonnes. Plastics account for 3.4% of global greenhouse gas emissions.
- Global plastic waste generation more than doubled from 2000 to 2019 to 353 million tonnes. Nearly two-thirds of plastic waste comes from plastics with

lifetimes of under five years, with 40% coming from packaging, 12% from consumer goods and 11% from clothing and textiles.

- Only 9% of plastic waste is recycled (15% is collected for recycling but 40% of that is disposed of as residues). Another 19% is incinerated, 50% ends up in landfill and 22% evades waste management systems and goes into uncontrolled dumpsites, is burned in open pits or ends up in terrestrial or aquatic environments, especially in poorer countries.

- In 2019, 6.1 million tonnes (Mt) of plastic waste leaked into aquatic environments and 1.7 Mt flowed into oceans. There is now an estimated 30 Mt of plastic waste in seas and oceans, and a further 109 Mt has accumulated in rivers. The build-up of plastics in rivers implies that leakage into the ocean will continue for decades to come, even if mismanaged plastic waste could be significantly reduced.[17]

This industry-driven push toward plastic comes as oil and gas companies seek to expand market alternatives to fuels in response to greenhouse gas emission controls. Plastic production has grown exponentially from two million tons in 1950 to over 400 million tons in 2015.[18] Industry output of plastic globally reached 400.3 metric tons in 2022[19] with a market value of $712 Billion (USD) expected to grow to $1,050 Billion (USD) by 2033.[20] North America represents 19% of global plastic consumption and generates 42 million metric tons of plastic waste per year, about 286 pounds per person per year.[21] In the US only 9% of plastic waste is recycled- the rest goes to landfills or to overseas disposal, often in countries with inadequate management capacity.



Creating synthetic materials, most of which are not readily decomposed in natural systems, imposes a tremendous burden on the living systems of the Earth. The burden is especially heavy because most of the plastic used today is in packaging and other items designed for single use or short- term use – such as plastic bags, plastic dishes and cutlery, food containers. Just itemize all the plastic you use in a single day…when it goes to the landfill, as almost all of it does, the breakdown period ranges from hundreds of years to never, in the case of per-fluoroalkanes (PFOA and PFOS) used in waterproofing, stain resistant coatings and fire retardants. This year, the EPA has finally issued regulations limiting the allowable level of two of the six categories of PFOA and PFOS in drinking water.[22] Of the 80,000 chemicals in commercial use in the US today, only 200 have been tested for health effects by the EPA.[23]

Every day decisions are made to allow uncontrolled pollution to continue in neighborhoods of marginalized people. We let injustice continue like a creeping blight –

- Air pollution spreads asthma to one in five adults and one in four children in Clairton PA[24];
- Chemical contamination spreads endocrine disruptors throughout the population, for example, 93% of Americans have detectable levels of Bis-Phenyl A in their blood and a body burden of hundreds of synthetic chemicals in our bodies, even in newborn infants[25];
- Obesity afflicts 33% of Americans who live in food desserts[26];
- Water supplies in most major cities are contaminated with micro-plastics, plastic fibers and forever chemicals as well as lead and other infrastructure failures[27].

The health harms from plastics have been well documented. Exposure to harmful chemicals during manufacturing, leaching in the stored food items while using plastic packages or chewing of plastic teethers and toys by children are linked with severe adverse health outcomes such as cancers, birth defects, impaired immunity, endocrine disruption, developmental and reproductive effects.[28] Plastic became the cheap, convenient option for many consumer goods, as they are made from natural gas and petroleum, highly subsidized

resources that discount the environmental and health costs of extraction, production and use of these synthetic materials. The plastic detritus will become the lingering hallmark of our modern civilization as the discarded plastics of all kinds accumulate in oceans, landfills and along every highway and stream.

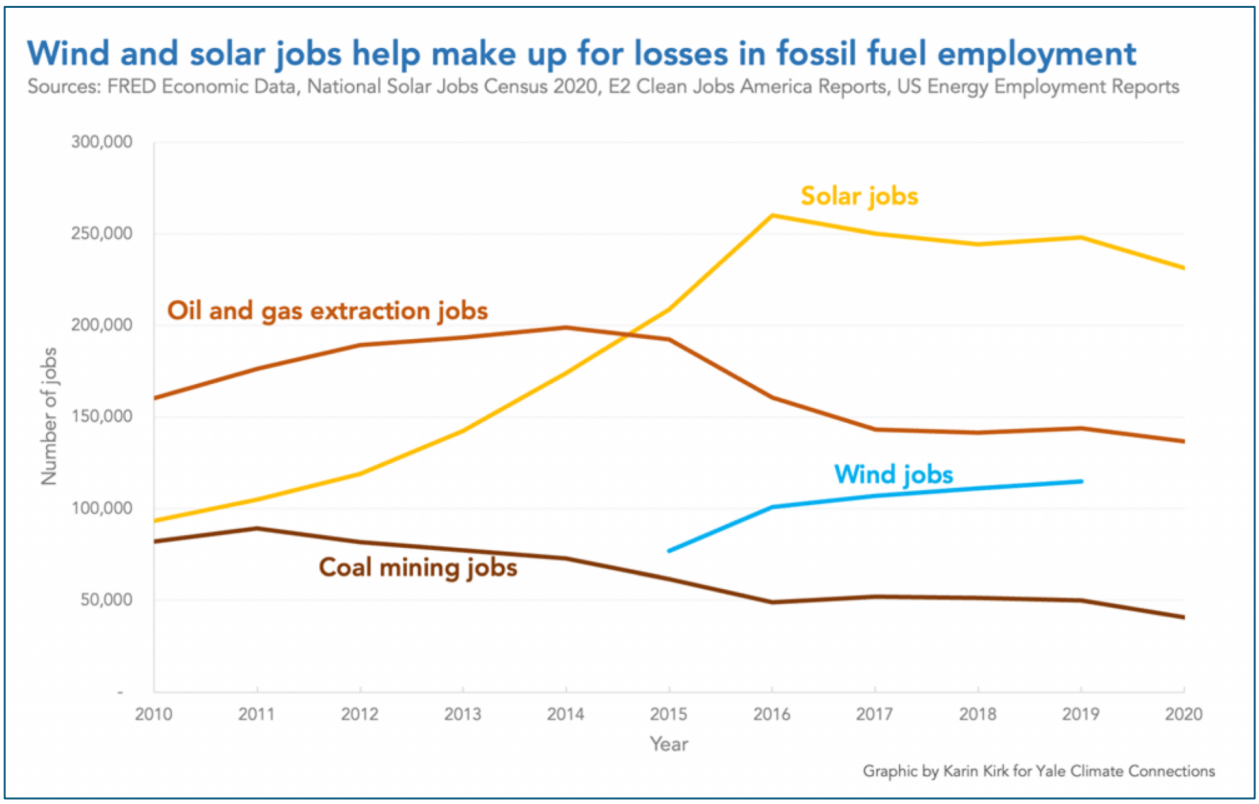
System Solutions:

The problems of plastic pollution, global warming and biodiversity loss are interconnected. As we move toward a transformation of our economy where economic values are balanced with cultural, social, and environmental values, we need to make significant policy changes. Achieving bipartisan support around protecting and restoring the life support system of the Earth may help to shift policy priorities. Clearly, for people to thrive as a civilization, we all need fresh water to drink and grow food; clean air to breathe; fertile ground to support our food system; and to maintain the biodiversity of species that comprise the interconnected web of life, of which humans are but one part.

1. **Accelerate the transformation to a renewable energy resource system.**

To address the interconnected existential crises of our time, our country needs to accelerate the transformation of the energy system. Climate action commitments, even if achieved fully, fall short of holding the global average increase in temperature below 1.5^{o} C. The good news here is that in the US, there are more workers in the renewable energy field (3.1 million as of 2022) than in the fossil fuel industry (1.7 million as of 2022) and the clean energy sector is growing faster than the economy as a whole.[29] This bodes well for the success of the energy

system transformation.



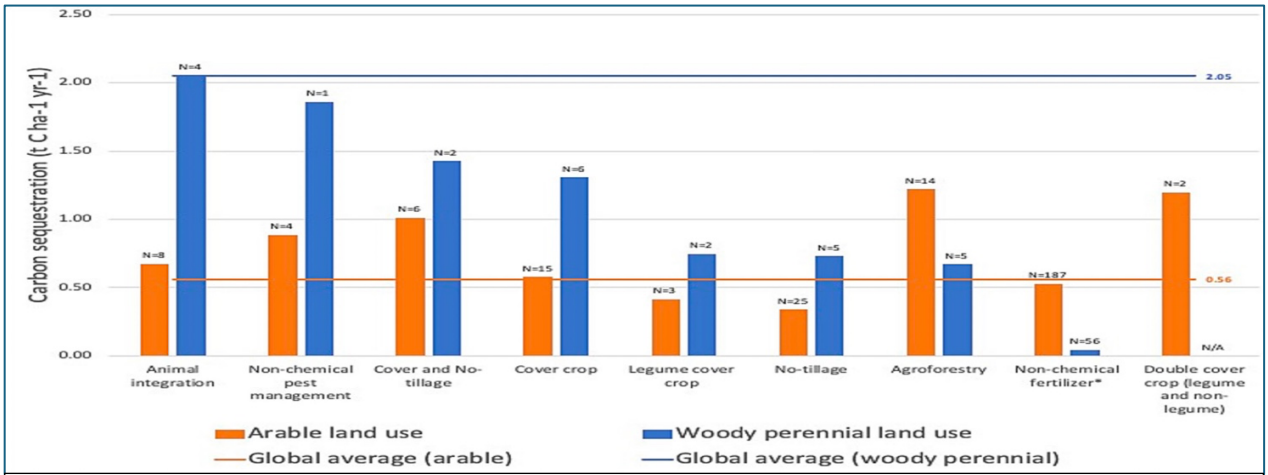
But, even as some legislative actions thrust in the direction of more sustainable energy systems based on renewable resources, massive subsidies to fossil extractive industries enshrined in law continue. In 2022, fossil fuel subsidies in the United States totaled $757 billion, including $3 billion in explicit subsidies and $754 billion in implicit subsidies, which are costs like negative health impacts and environmental degradation that are borne by society at large rather than producers; and in FY 2022, subsidies exceeded revenue by $2.1 billion—a net loss for the government.[30] On a global level, the International Monetary Fund reports that globally government subsidies to fossil fuel industries surged to $7 Trillion in 2022.[31] Rescinding subsidies to fossil extractive industries, both direct funds and indirect subsidies, would be a significant positive step toward restructuring the energy system away from dependence on fossil extractive industries.

The argument against removing subsidies rests on the significant role these industries play in the economy. But the true function of a subsidy in the marketplace is to support innovative or emerging technologies or products that have a beneficial effect on the economy and for society. When net profits exceeded $219 Billion in 2022 for oil companies alone,[32] clearly subsidies are no longer justified. If we are to transform the market for a sustainable energy system, continuing subsidies for entrenched world dominant industries must cease. Transferring such subsidies to sustainable energy systems, especially targeting subsidies to emerging technologies and advances in the electricity grid, can accelerate the transition to a more sustainable future. Otherwise, we are trying to fill a bucket with a huge hole in the bottom.

2. Regenerative agriculture and restorative land use

Investments from the IRA in conservation practices and forestry are likely to increase the amount of carbon stored in soil by 2030.[33] IRA appropriates $18 billion for agriculture conservation programs to encourage farmers to incorporate a more sustainable form of farming by scaling carbon sequestration measures across their practices and a further $5 billion has been reserved for wildfire protection and forestry projects, to support climate smart forestry.[34] Incorporating these initiatives into the reauthorization of the Farm Bill will further enhance the use of regenerative agriculture practices in commercial farming.

Regenerative agriculture can capture and sequester carbon in soils, increasing the fertility of the land and reducing the amount of carbon dioxide in the atmosphere.[35]



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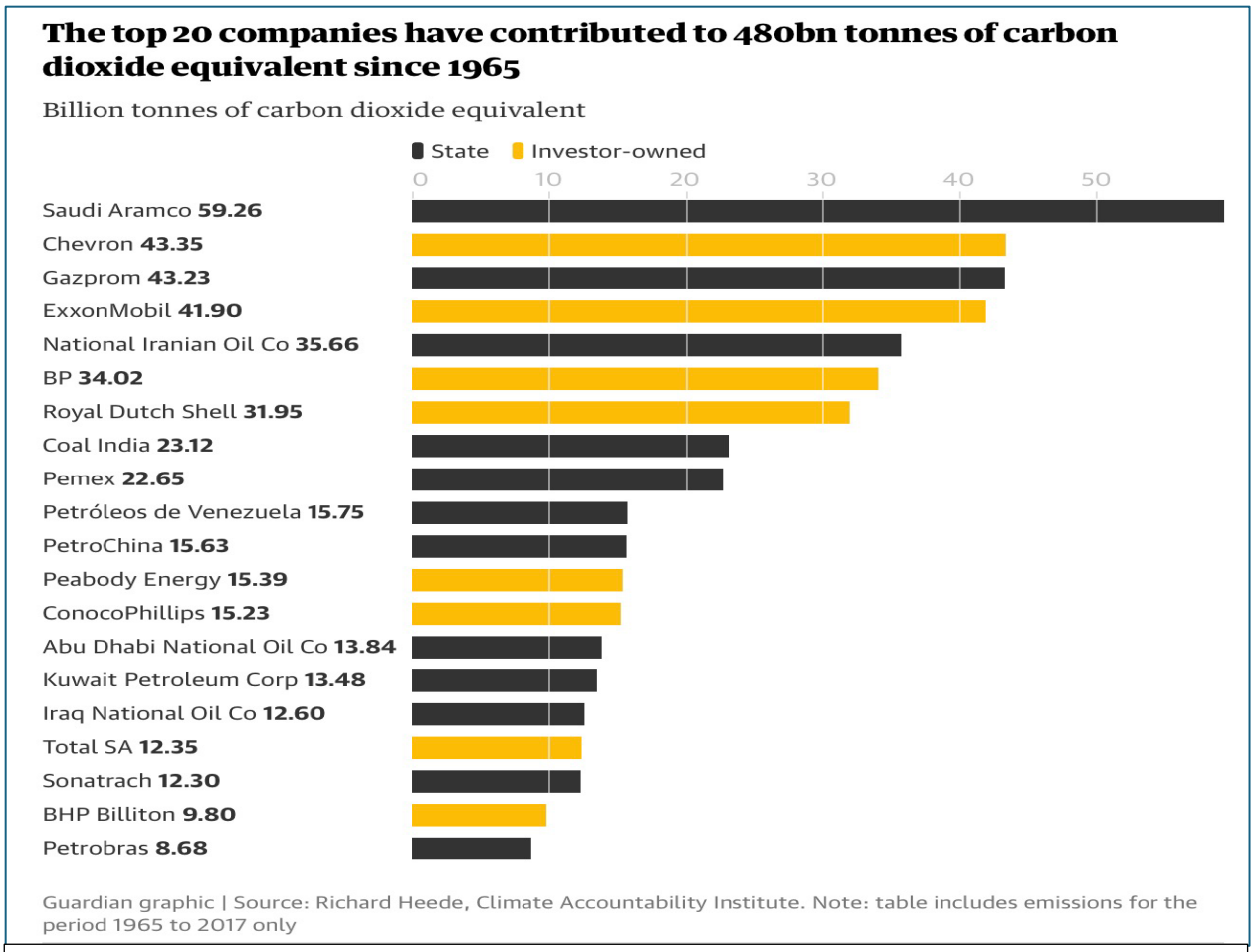
Using regenerative agriculture practices to help restore abandoned mined lands[36] can also contribute to producing crops that can serve as feedstocks to plastic alternatives.[37] These include the use of industrial hemp, a perennial deep-rooted plant with both fibrous and pulp components that can be made into replacements for plastic packaging, textiles and other materials, all of which are biodegradable.[38] This is very important because the biodegradable property of hemp-based materials prevents the accumulation of micro-fibers and micro-plastic particles resulting from fragmentation without decomposition of synthetic plastic.

Other materials can also serve as plastic alternatives, such as bamboo, mushrooms and fungi, algae and many other plant-based resources.[39] Although at this time, most of these materials are more expensive than fossil-resourced plastics, if the subsidies are removed from oil, gas and coal, and innovations are incentivized, the price disadvantage diminishes.

3. Circular Materials management from non-fossil feedstocks

There is one bipartisan issue that can help to advance all of the crises we have been addressing, especially plastic replacement. Made In America with good union jobs has become the rallying call for passing both the BIL and IRA in 2021 and 2022. The deliberate policies around globalization created an international marketplace where now about 20 multi-national corporations, which account for over one third of greenhouse gas emissions since 1965,[40] are involved in producing or supplying the production of plastics worldwide. [41]



Matthew Taylor & Jonathan Watts. "Revealed: The 20 Firms behind a third of all carbon emissions." October 9, 2019. The Guardian. https://www.theguardian.com/environment/2019/oct/09/revealed-20-firms-third-carbon-emissions

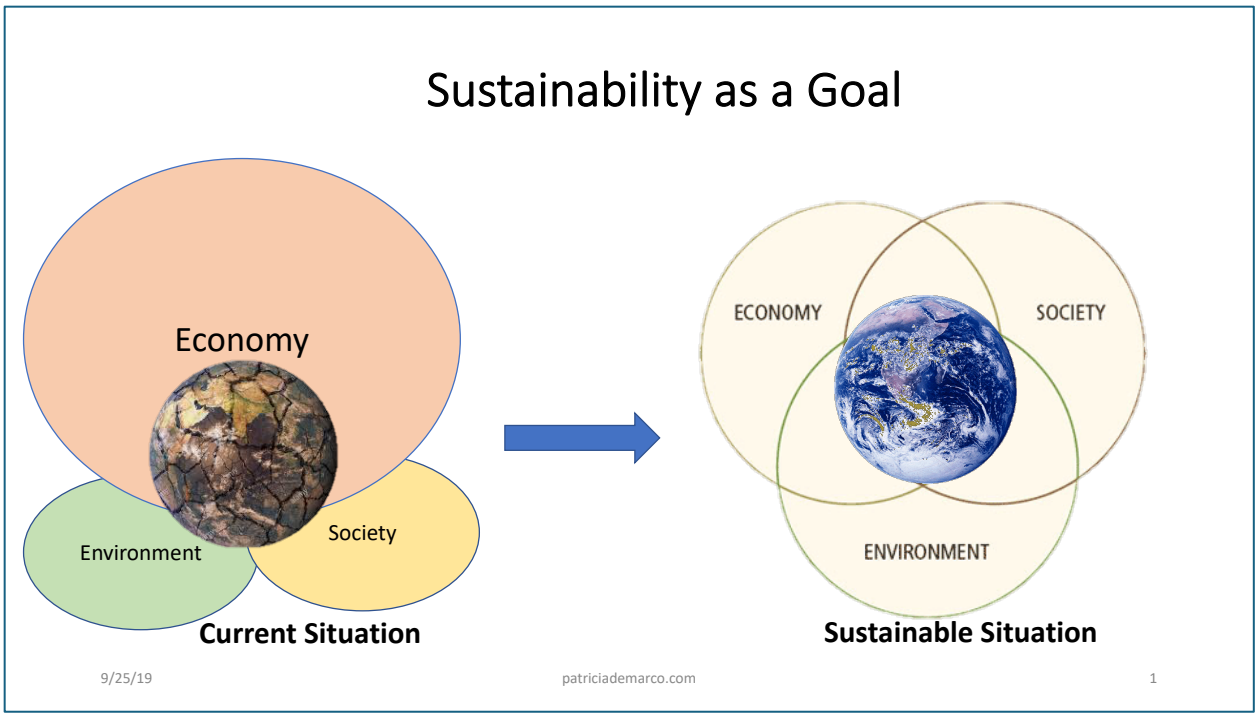
The standard practice since the beginning of the industrial age has been to make raw materials into consumer products as rapidly as possible. Planned obsolescence for items such as vehicles, clothing and appliances guaranteed repeat purchases to keep the revenue flowing.

But disposal and resource recovery received almost no attention. Indeed, business considers post-consumer processing as a negative salvage value, one that imposes cost without benefit to the producer. If we are to have a viable Made In America manufacturing policy, we must adopt practices that begin at the design phase to produce goods made to last, made to be recovered and reused or re-purposed, not thrown away. "Made in America and Made to Last!" can restore a sense of value in products. Creating heirlooms and respecting the

resource base needed to produce goods revives an ethic of pride in craftsmanship and quality instead of convenience, disposable and cheap standards. This practice can also restore the tradition of repair skills for clothing, appliances, machinery and furniture once common in every neighborhood and in many households. (My grandfather had a cast iron shoe repair last with three sizes of shoes to fix work boots and our loafers and saddle shoes. He could make them a half-size bigger as we were growing fast. When we grew out of them, they were handed down to younger siblings or cousins.)

Call to Action:

This time of transformation strives to align human activities more closely with the needs of the living systems of the Earth that provide our life support system. If people are to thrive together on a finite planet, we must adjust our consumption patterns to be more sustainable. To do this we must practice regenerative thinking across all aspects of our economy. The most important realignment must be to restore the central value of preserving the health of the environment- air, water and land that support all of the ecosystem services we depend on.[42] This fundamental transformation will not occur spontaneously. The market signals are too closely controlled by those with a vested interest in maintaining the status quo, or worse to revert to a time of unfettered industrial development. With the economy as the primary driver of public policy decisions, environmental values and social and cultural priorities are diminished. Yet these are the attributes that determine our quality of life and express our humanity. Re-establishing a balance to restore environmental and social values as counterweights to economic aspects alone will move the body of public policy toward a more sustainable trajectory.



Sustainability as a Goal

In addition to addressing the subsidies to established fossil extractive industries by rescinding them in law (some dating back to the 1800s) three legislative changes are necessary.

First, manufacturers must be held accountable for the post-consumer fate of their products. There must be significant penalties for producing materials and products whose only fate is landfill disposal, or which are not biodegradable as an ultimate disposition. Manufacturers accountability legislation has been introduced in the Senate by Senator Jeff Merkley as The **Break Free From Plastic Pollution Act of 2021**: A bill to amend the Solid Waste Disposal Act to reduce the production and use of certain single-use plastic products and packaging, to improve the responsibility of producers in the design, collection, reuse, recycling, and disposal of their consumer products and packaging, to prevent pollution from consumer products and packaging from entering into animal and human food chains and waterways, and for other purposes.[43] Passing this proposed legislation into law would help considerably to address the prevention of plastics pollution.

Second, Test for health effects before commercial production. Manufacturers of synthetic products must demonstrate with independent third party assurance that there are no significant

health effects from the production, use or disposal of the product before it enters commercial production. We have endured massive depositions of biologically active compounds into the biosphere without controls, and without full understanding of the potential for harm. People have been exposed without their knowledge or consent to endocrine disrupting chemicals in common products such as cosmetics, personal care products, household cleaning products and packaging materials for food as well as coatings and additives on clothing and other products and furnishings. The epidemiologic evidence of massive human exposure to these materials calls out for preventive measures. Biological harms are preventable the health impact studies are required before allowing commercial production, not after consumer attempted litigation from exposure. The industry standard response to this issue is "You cannot prove that exposure to our product made you sick." This travesty must end. Establishing a robust process for consumer education about the connection between the health of the environment and the health of people helps considerably.[44] Activating consumer demand for reform is critical to achieving the necessary changes in the law.

Third, educate chemists, engineers and industrial manufacturers about living systems. The education of chemists, engineers and those who produce and manufacture goods must be enhanced to include an understanding of biological systems. This includes knowing fully the essential services provided by the robust ecosystems of the living earth, even though these are not counted as value in such metrics as the Gross National Product.[45] Chemists and industrial engineers must also understand the biology and physiology of living things, especially humans and the operation of food chains. When developing new products, structure and services, the impact on living systems cannot be left to chance. Many synthetic compounds act as endocrine disruptors (EDCs) what are biologically active at extremely low concentrations and can interfere with the normal functioning of hormones produced by the endocrine system in the regulation of reproduction, development, obesity and metabolism and many other systems.[46],[47] The Principles of Green Chemistry can guide this realignment of education to include a multi-disciplinary approach.[48]

Finally, be an active citizen. We can all act as empowered consumers. Americans discard 33.6 million tons of plastic a year average of 286 pounds of waste per person per year. Use your consumer power more wisely:

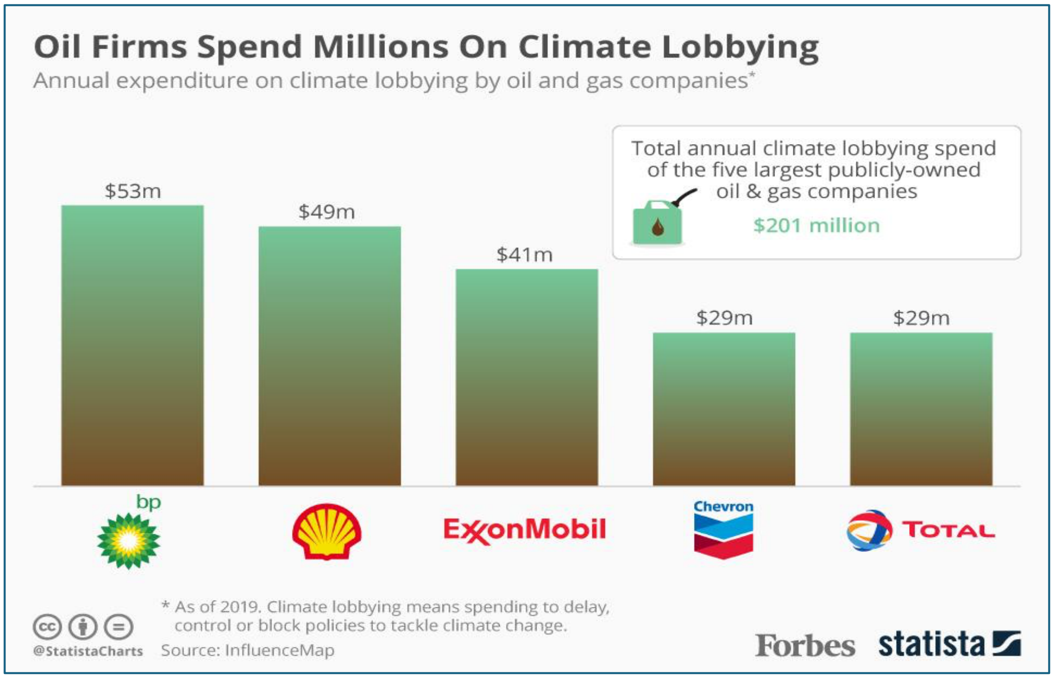
- **Refuse**-single-use items
- **Reduce**- Buy in bulk, substitute recyclable and non-toxic materials for non-recyclable
- **Reuse**- select refillable products; buy recycled materials-replace single-use items with reusable items-exchange toys, clothing, household décor
- **Recycle**- know the rules in your area and separate clean items
- **Rot**- compost food waste and organic material

Use your voice as an engaged citizen. Advocate for policies that will address these issues directly in your community, in your state legislature and with your Congressional Senators and Representatives. Your vote is your voice, and you have a responsibility as a citizen to hold the people who purport to represent you to account. Apathy is our enemy.

Conclusion:

The window of time for making the significant reductions in greenhouse gas emissions is closing rapidly. Civilization as we have known it will not survive without major changes in how people relate to the natural world. We must align our systems of resource use to be regenerative instead of extractive. We must assure that products and materials have been designed to avoid harmful biological interactions. And we must restore the sense of value for the living earth that is our only home.

We can create a world where all people can thrive. But we must be willing to make the adjustments in our hyper-consumptive society to live within the constraints of natural systems. The transition is already in motion, but moving far too slowly. The last gasps of the fossil industry are mighty and fierce. Oil firms spend an average of $201 million per year each on lobbying against regulations to control climate emissions and responsible accountability for their products and pollution. If they prevail over the next decade, our fate is sealed in a world too hot to support life in many places.



We are not ultimately facing a technology problem, but rather a moral and political problem. **The laws of Nature are not negotiable.** The solutions to the crises we face are at hand if we are willing and able to make the policy changes needed to achieve a finer future – one that is more sustainable, equitable and supportive of thriving communities where people live in closer harmony with Nature. As Leo Gerard, President of the United Steelworkers International Union stated, "We do not need to choose between having good jobs and having a clean environment. We must have both or we will have neither." [49]

On this Earth Day 2024, I savor the beauty of the world around me now, and I pray again in my old age for the surge of care and concern for the Living Earth and for our future that will override partisan politics and corporate greed.

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