Environmental Injustice

Earth Day 2022

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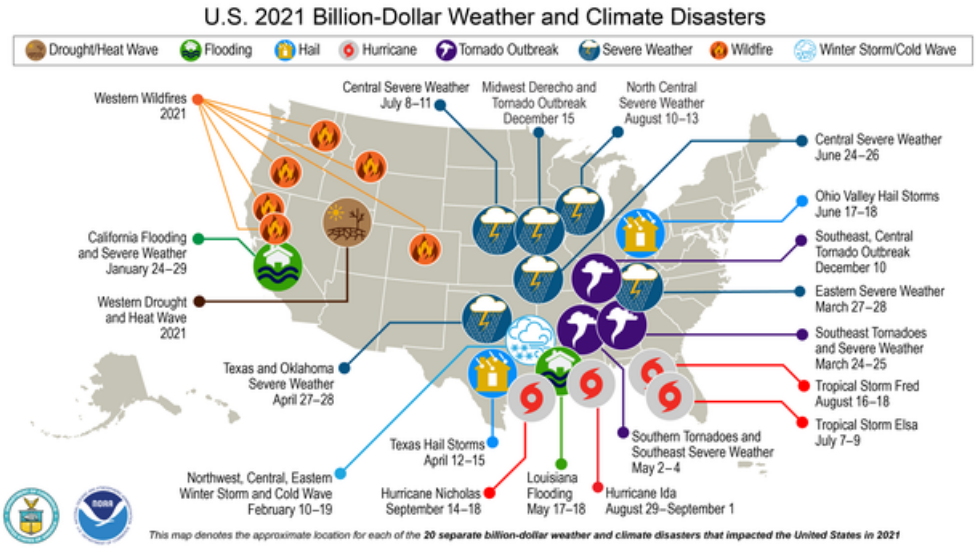
Introduction

- Most of us either know someone who has experienced, or personally experienced ourselves, the fierce effects of climate disasters growing more intense over time.
- Every region of the US is affected by these expensive and destructive climate disasters.



  - Source: NOAA Climate.gov. (2022, January 12). *2021 U.S. billion-dollar weather and climate disasters in historical context*. https://www.climate.gov/news-features/blogs/beyond-data/2021-us-billion-dollar-weather-and-climate-disasters-historical

- Extreme effects impact the Northeast US:
  - *"The stretch of coastline from the tip of the Delmarva Peninsula in Virginia to the elbow of Cape Cod in Massachusetts is experiencing the greatest increase in sea level rise rate globally: 2 to 3.7 mm per year—more than three times the global average."*
    - Source: National Oceanic and Atmospheric Administration. (2020, September 30). *Northeast | U.S. climate resilience toolkit*. U.S. Climate Resilience Toolkit. https://toolkit.climate.gov/regions/northeast

  - *"The Northeast has seen a greater recent increase in extreme precipitation than any other region in the United States—the region experienced more than a 70 percent increase in the amount of precipitation falling in "very heavy events" (defined as the heaviest one percent of all daily events) between 1958 and 2010. The frequency of these heavy downpours is projected to continue to increase over the remainder of the century."*
    - Source: National Oceanic and Atmospheric Administration. (2020, September 30). *Northeast*. U.S. Climate Resilience Toolkit. https://toolkit.climate.gov/regions/northeast

- Why are climate disasters getting worse? Climate change, driven by global warming, made worse by pollution.

When the Air is Poison

What Pollutes Our Air?

- *"Air pollution is contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere. Household combustion devices, motor vehicles, industrial facilities and forest fires are common sources of air pollution. Outdoor and indoor air pollution cause respiratory and other diseases and is an important source of morbidity and mortality. Air pollution kills an estimated seven million people worldwide every year."*
    - Source: World Health Organization. (2019, July 30). *Air pollution*. https://www.who.int/health-topics/air-pollution#tab=tab_1

- *"The Clean Air Act requires the EPA to set standards for six common air pollutants: ground-level ozone, particulate matter, carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide."*
    - Source: Environmental Protection Agency. (2021d, August 16). *Criteria air pollutants*. US EPA. https://www.epa.gov/criteria-air-pollutants

- Lead: *"Major sources of lead in the air are ore and metals processing and piston-engine aircraft operating on leaded aviation fuel. Other sources are waste incinerators, utilities, and lead-acid battery manufacturers. The highest air concentrations of lead are usually found near lead smelters.*
  Once taken into the body, lead distributes throughout the body in the blood and is accumulated in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system. Infants and young children are especially sensitive to lead exposures, which may contribute to behavioral problems, learning deficits and lowered IQ.
  Lead is persistent in the environment and can be added to soils and sediments through deposition from sources of lead air pollution. Other sources of lead to ecosystems include direct discharge of waste streams to water bodies and mining. Elevated lead in the environment can result in decreased growth and reproduction in plants and animals, and neurological effects in vertebrates."
    - Source: Environmental Protection Agency. (2021c, August 16). *Basic information about lead air pollution*. US EPA. https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution#how

- Sulfur Dioxide: *"The largest source of SO2 in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities. Smaller sources of SO2 emissions include: industrial processes such as extracting metal from ore; natural sources such as volcanoes; and locomotives, ships and other vehicles and heavy equipment that burn fuel with a high sulfur content.*
  Short-term exposures to SO2 can harm the human respiratory system and make breathing difficult. People with asthma, particularly children, are sensitive to these effects of SO2. [H]igh concentrations of SO2 in the air generally also lead to the formation of other sulfur oxides (SOx). These particles contribute to particulate matter (PM) pollution. At high concentrations, gaseous SOx can harm trees and plants by damaging foliage and decreasing growth. SO2 and other sulfur oxides can contribute to acid rain which can harm sensitive ecosystems. SO2 and other sulfur oxides can react with other compounds in the atmosphere to form fine particles that reduce visibility (haze) in parts of the United States, including many of our treasured national parks and wilderness areas."
    - Source: *Environmental Protection Agency. (2022b, March 9). Sulfur dioxide basics. US EPA.* *https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#what%20is%20so2*

- Nitrogen Dioxide: *"NO2 primarily gets in the air from the burning of fuel. NO2 forms from emissions from cars, trucks and buses, power plants, and off-road equipment. Breathing air with a high concentration of NO2 can irritate airways in the human respiratory system. Such exposures over short periods can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. NO2 and other NOx interact with water, oxygen and other chemicals in the atmosphere to form acid rain. Acid rain harms sensitive ecosystems such as lakes and forests. The nitrate particles that result from NOx make the air hazy and difficult to see though. NOx in the atmosphere contributes to nutrient pollution in coastal waters."*
    - Source: Environmental Protection Agency. (2021a, June 7). *Basic information about NO2*. US EPA. https://www.epa.gov/no2-pollution/basic-information-about-no2#What%20is%20NO2

In Our Backyard

Harlem, NY

- In March 1988, "*WE ACT was founded by Vernice Miller-Travis, Peggy Shepard, and Chuck Sutton. It was one of the first environmental organizations in New York State to be run by people of color, and NYC's first environmental justice organization."* In 1996, "*WE ACT worked with the EPA to conduct the first assessment of Northern Manhattan's air quality. The assessment revealed that harmful particulates are more than 200% higher than the air quality standards for PM 2.5 (the smallest particles in diesel soot)."* In May

1997, "*WE ACT launched a major public awareness campaign, "Dump Dirty Diesel," urging the MTA to commit to modifying bus depots to accommodate natural gas buses, and to invest in clean-fuel buses only. Six out of seven diesel bus depots are located in Northern Manhattan*." In November 2000, "*WE ACT and several Northern Manhattan community residents filed a Title VI Complaint with the United States Department of Transportation (DOT) charging the MTA with violating the civil rights of Northern Manhattan residents. In response, the DOT concluded that the MTA must give due consideration to environmental justice principles in its siting decisions.*"
    - Source: WE ACT. (2021, February 24). *Our story*. WE ACT for Environmental Justice. https://www.weact.org/whoweare/ourstory

- "*WE ACT's mission is to build healthy communities by ensuring that people of color and/or low income residents participate meaningfully in the creation of sound and fair environmental health and protection policies and practices. WE ACT envisions a community that has: informed and engaged residents who participate fully in decision-making on key issues that impact their health and community; strong and equal environmental protections; increased environmental health through community-based participatory research and evidence-based campaigns.*"
    - Source: WE ACT. (2021, February 24). *Our story*. WE ACT for Environmental Justice. https://www.weact.org/whoweare/ourstory

Newark, NJ

- The Ironbound neighborhood "*covers just four square miles. But crammed alongside its more than 50,000 residents are hundreds of contaminated sites, industrial warehouses, a sewage processing facility and an incinerator that burns trash from as far away as New York City."*
    - Source: Yi, K. (2020, October 15). *New documentary looks at the toxic sites concentrated in one Newark neighborhood*. Gothamist. https://gothamist.com/news/new-documentary-looks-toxic-sites-concentrated-one-newark-neighborhood

- *"If you travel down a one-mile stretch of Doremus Avenue in Newark, NJ, you pass a natural gas plant next to a sewage treatment facility next to an animal fat rendering plant next to a series of ominous looking chemical storage containers behind acres of fencing. Airplanes pass overhead every two minutes, their engines rattling windows, while a putrid smell wafts from the open pools at the sewage treatment plant.*
  This stretch is known as Chemical Corridor, and it's located just down the road from schools and apartment buildings. It borders the Ironbound neighborhood, where Portuguese, Brazilian, Central American and African American residents are separated from toxic substances by little more than a railroad track.
  The Ironbound district of Newark, New Jersey, is one of the most toxic neighborhoods in the country. Maria Lopez-Nuñez, a Honduran-American resident there, is waging a war for environmental justice. She is part of the Ironbound Community Corporation, one of the most effective environmental justice organizations in the country. The Sacrifice Zone follows Maria as she leads a group of environmental justice fighters determined to break

the cycle of poor communities of color serving as dumping grounds for our consumer society."

- Source: Talking Eyes. (2021). *About the film*. The Sacrifice Zone: Life in an Industrial Wasteland. https://thesacrificezone.org/about

Across the Country

Baytown, TX

- "*Brittany Madison is worried about the air. Madison, who is 31, lives in Baytown, Texas, a city next to the Houston ship channel where the skyline is dense with the glittering towers of chemical plants… Her apartment is within about 30 miles of more than 170 facilities that give off toxic chemical emissions. The EPA collects data on each individual facility, but it doesn't consider the excess cancer risk from all of the facilities' combined emissions. When the emissions from all … the facilities in the area are added together, the estimated additional cancer risk on Madison's block jumps [from 1 in 730,000] to 1 in 46,000…"*
  - Source: ProPublica, Younes, L., Kofman, A., Shaw, A., Song, L., & Miller, M. (2021, November 2). *Poison in the air*. ProPublica. https://www.propublica.org/article/toxmap-poison-in-the-air

Mossville, LA

- *"Among the most polluted pockets of the country, …Mossville was founded by formerly enslaved people in the 1790s, long before the Civil War. Debra Sullivan Ramirez, 67, remembers her childhood there as a kind of idyll. She and her family lived off the land, with its shady swamps and leafy orchards. They grew their own fruits and vegetables, hunted and fished, and strained juice from Mayhaw trees to make jelly. After church on Sundays, Sullivan Ramirez remembers, she would fall asleep on her grandma's front porch to the soothing hum of the Conoco chemical plant across the street.*
  In hindsight, there had always been warning signs. Fluorescent ponds. Plumes of yellow smoke. The occasional explosion in the sky. Not to mention all the sickness. Many of her neighbors suffered from respiratory problems and heart disease. Her father had diabetes, which may have been triggered by dioxin, a chemical that attacks the pancreas. Her sister Sandra died of ovarian cancer at 61. Her neighbor Kathy Jones died at 58 from an 8-pound tumor near her kidney. "It wasn't one block that didn't have cancer," Sullivan Ramirez said.
  Over the years, Sullivan Ramirez herself has struggled with nerve degeneration and scleroderma, a rare condition that involves the tightening of the skin and connective tissues. While it can be difficult to link specific cases of disease to pollution exposure, the evidence in Mossville has accumulated: In a 1998 health survey conducted by the University of Texas, 84% of Mossville residents reported having headaches, dizziness, tremors and seizures. An EPA study from the same year found that the average level of dioxins in the blood of Mossville residents was dangerously high — triple that of the general U.S. population. Even small amounts of dioxin, one of the most poisonous

chemicals released by facilities, can cause developmental problems, damage the immune system and lead to cancer. A 2007 report found that the types of dioxin compounds in the blood of Mossville residents matched those emitted by local industrial facilities."

- Source: ProPublica, Younes, L., Kofman, A., Shaw, A., Song, L., & Miller, M. (2021, November 2). *Poison in the air*. ProPublica. https://www.propublica.org/article/toxmap-poison-in-the-air

Actions to Take

- Check the **air quality** in your neighborhood (app and website)
  - Source: AirNow https://www.airnow.gov

- Think about the **transportation** you use. *"Choose a cleaner commute — carpool, use public transportation, bike or walk when possible. Combine errands to reduce "cold starts" of your car and avoid extended idling. Be sure your tires are properly inflated."*
  - Source: AirNow. (n.d.). *What you can do*. https://www.airnow.gov/education/what-you-can-do

- Look for **local programs to reduce energy consumption** and **reliance on fossil fuels**.
  - NYC: Tax incentive for installing a Green Roof or Solar Panels
    - Source: NYC Department of Buildings. (n.d.). *Green roofs & solar panels - buildings*. https://www1.nyc.gov/site/buildings/property-or-business-owner/green-roofs-solar-panels.page#
  - NYC: No- or low-cost CoolRoofs (painting roofs white to reflect the sun/heat)
    - Source: NYC Department of Small Business Services. (n.d.). *NYC CoolRoofs - NYC business*. https://www1.nyc.gov/nycbusiness/article/nyc-coolroofs#request
  - NYC: Resources (including pitch deck) to "*reach out to landlords and building managers, and introduce the idea of putting a green roof on your building.*"
    - Source: Yan, V. (2022, April 12). *NYC green roof advocacy - a call to action*. Brooklyn Grange. https://www.brooklyngrangefarm.com/blog/nyc-green-roof-advocacy
  - NYC Building Owners: No- or low-cost green building upgrades
    - Source: BlocPower. (n.d.). *BQDM building intake owner form*. https://welcome.blocpower.io/building-owners/brooklyn-queens
  - National: *"**BlocPower**, a climate technology startup based in the Brooklyn Navy Yard, was founded in 2014 with a mission to make American cities greener and healthier. To date, the company has retrofitted more than 1,000 buildings in financially disadvantaged communities throughout New York City, and has projects underway in 24 cities.*
    "I knew that millions of Americans in neighborhoods like Bed-Stuy, East New York, and Brownsville wanted change, and to me that included solar panels and all the job creation that comes with them. It became clear that if we wanted

communities like these to have solar panels just like everyone else, we were going to have to start a company by ourselves. I started BlocPower when I was still in business school and Keith joined in 2015. In the summer of 2016, Keith put together one of the largest solar projects in New York State, "Solarize Brownsville," and installed solar panels on 200 homes in one of the lowest income neighborhoods in NYC – something we were told couldn't be done." - Donnel Baird, co-founder and CEO, BlocPower

- Source: Downtown Brooklyn. (2021a, April 1). *Brooklyn's leaders in clean energy: Donnel Baird and Keith Kinch of BlocPower.* https://www.downtownbrooklyn.com/news/2021/brooklyns-leaders-in-clean-energy-donnel-baird-and-keith-kinch-of-blocpower

- Look for **local programs to combat air pollution**.
  - NYC: 311 Report an idling vehicle "*You can report a vehicle, other than an authorized emergency vehicle, that is parked with its engine running for more than three minutes, or parked next to a school with its engine running more than one minute.*"
    - Source: NYC311. (n.d.). *Idling vehicle*. https://portal.311.nyc.gov/article/?kanumber=KA-02222

    - But, be aware and discrete when reporting. People have been harassed and assaulted.
      - Source: Wilson, M., & Blesener, S. (2022, March 19). A New York City clean-air program pays citizens to report idling trucks. *The New York Times*. https://www.nytimes.com/2022/03/19/nyregion/clean-air-idle-car.html

- Support **local BIPOC** (Black, Indigenous and People of Color) **led community organizations** by volunteering, donating, and sharing about their work.
  - "*I feel like there's no one better to solve the issues in their community than people who actually live in the community. And they're not these white men that had these* [national] *environmental organizations, they're these small grassroots community efforts that are truly fighting for themselves. And I feel like we really need to pivot away from this writing a big blank check to these national environmental organizations and focus on building local community power*." - Nikayla Jefferson
    - Source: Stoke, L., & Wilkinson, K. (Hosts). (2020, December 15). The stages of black climate grief (No. 8) [Audio podcast episode]. In A *Matter of Degrees*. Post Script Audio. https://www.degreespod.com/episodes/episode-08 (includes Transcript)

When the Water is Toxic

What Pollutes Our Water?

- *"Water pollution occurs when harmful substances contaminate a stream, river, lake, ocean, aquifer, or other body of water, degrading water quality and rendering it toxic to humans or the environment.*
  Eighty percent of ocean pollution originates on land—whether along the coast or far inland. Contaminants such as chemicals, nutrients, and heavy metals are carried from farms, factories, and cities—[including] *oil and gasoline that drips from millions of cars and trucks every day—by streams and rivers into our bays and estuaries; from there they travel out to sea. Our seas are also sometimes spoiled by oil spills and leaks—big and small—and are consistently soaking up carbon pollution from the air. Meanwhile, marine debris—particularly plastic—is blown in by the wind or washed in via storm drains and sewers."*
    - Source: Denchak, M. (2018, May 14). *Water pollution: Everything you need to know*. NRDC. https://www.nrdc.org/stories/water-pollution-everything-you-need-know

- Harmful algal blooms (HAB)
    - "*HABs occur when algae — simple photosynthetic organisms that live in the sea and freshwater — grow out of control while producing toxic or harmful effects on people, fish, shellfish, marine mammals, and birds.*"
        - Source: National Oceanic and Atmospheric Administration. (2019, April 10). *Harmful algal blooms (red tide)*. https://oceanservice.noaa.gov/hazards/hab

    - *"Human activities that contribute to HABs: runoff from agriculture, dissolved chemicals introduced into water supplies via rainfall or irrigation, and effluent from sewage treatment plants all contribute to excess amounts of nutrients in our waterways. These nutrients are food for algae."*
        - Source: National Oceanic and Atmospheric Administration. (2021, February 26). *Can we clean up, stop, or end harmful algal blooms?* National Ocean Service. https://oceanservice.noaa.gov/facts/hab-solutions.html

    - "*HAB events have been associated with massive wildlife mortalities…and have also been tied to the death of pets and livestock that may be exposed through drinking contaminated water or licking themselves after bodily exposure."*
        - Source: U.S. National Office for Harmful Algal Blooms. (2019). *Wildlife – harmful algal blooms*. https://hab.whoi.edu/impacts/impacts-wildlife

- Marine debris

    - *“Any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment… There is no part of the world left untouched by debris and its impacts.”*
        - Source: National Oceanic and Atmospheric Administration. (2018, January 19). *Marine debris*. https://oceanservice.noaa.gov/hazards/marinedebris/

    - *“Marine debris comes in many forms, ranging from small plastic cigarette butts to 4,000-pound derelict fishing nets. Plastic bags, glass, metal, foamed plastic, tires, derelict fishing gear, and abandoned vessels are all examples of debris that often ends up in our waterways. Marine debris may be mistaken by some animals for food or eaten accidentally. Often, larger items like nets, fishing line, and abandoned crab pots snare or trap animals. Entanglement can lead to injury, illness, suffocation, starvation, and even death…Microplastics can come from a variety of sources including larger plastic pieces that have broken apart, resin pellets used for plastic manufacturing, or in the form of microbeads, which are small, manufactured plastic beads used in health and beauty products.”*
        - Source: National Oceanic and Atmospheric Administration. (2017, October 10). *Ten things you should know about marine debris*. https://oceanservice.noaa.gov/news/marinedebris/ten-things.html

- Impact on human health. *“Water pollution kills… Waterborne pathogens, in the form of disease-causing bacteria and viruses from human and animal waste, are a major cause of illness from contaminated drinking water. Diseases spread by unsafe water include cholera, giardia, and typhoid… Accidental or illegal releases from sewage treatment facilities, as well as runoff from farms and urban areas, contribute harmful pathogens to waterways. Thousands of people across the United States are sickened every year by Legionnaires’ disease… A wide range of chemical pollutants—from heavy metals such as arsenic and mercury to pesticides and nitrate fertilizers—are getting into our water supplies. Once they’re ingested, these toxins can cause a host of health issues, from cancer to hormone disruption to altered brain function.”*
    - Source: Denchak, M. (2018, May 14). *Water pollution: Everything you need to know*. NRDC. https://www.nrdc.org/stories/water-pollution-everything-you-need-know

In Our Backyard

New York City

- Combined Sewer and Stormwater System (mild adult language warning): *“New York City's full of sh*t - real sh*t, 27 billion gallons of sh*t that gets dumped into the Hudson River every year. And that's billions, with a b. Even though the city pipes in crystal-clear drinking water from a collection of reservoirs up North, the waters that New Yorkers see*

and smell every day are a toxic nightmare. Oil spills, PCBs [toxic factory coolants GE poured generously into the Judson in the '70s], rotting corpses, human feces, and 15 feet of something called 'black mayonnaise" are just a few of the pristine features Mayor Bloomberg isn't bragging about...
The toxicity of the Hudson River has become the norm for American's urban waterways... Where you have older cities, like New York, and Albany, and Yonkers, where they used to build the wastewater infrastructure where the sewage and the stormwater went through the same pipe. So when too much rain happened, it would overwhelm those pipes, and they didn't want all that rain and stormwater to go to their sewage treatment plant and overwhelm the sewage treatment plant or back up into people's houses, so they just bypass it directly into their local waterway. And that's what happens in New York City when it rains. That's what happens in other cities around the country… Commercial fishing, as a way of life on the Hudson, was destroyed and taken away because of the pollution in the river and its effect on the fish stock…
The 14 wastewater treatment plants around the city process 1.3 billion gallons of raw sewage a day. That's 15,000 gallons per second. Before they were built, and for most of the 20th century, all that sewage was just loaded onto a boat and dumped 12 miles east of the Jersey shore. Later, they decided to dump further out - 106 miles instead. In 1991, somebody thought it was a good idea to load all the sludge onto a train and send it 2,000 miles to Sierra Blanca, a little town in west Texas. New York State sent Texas 250 tons of sludge a day for over 10 years.
Combined sewer overflows were the last remaining uncontrolled form of water pollution in cities. There are a few things that a city can do. It can build holding tanks. It can actually enlarge the sewer pipes. But those are really expensive, and the alternative to gray infrastructure for CSOs is green infrastructure. And that means building parks, and gardens, and bioswales, and other permeable surfaces in the city to both absorb and slow down the flow of stormwater... Tracy Brown and Riverkeepers' Sewage Right to Know Act mandates that the public are notified immediately when sewage is dumped into the Hudson... And this isn't only New York City's problem. 772 of America's cities were built with combined sewage systems."
    - Source: Vice. (2012, November 13). *New York's toxic wasteland: America's water crisis (part 1/3)* [Video]. YouTube. https://www.youtube.com/watch?v=VrUVLpFaUoM

- Unfortunately, not much has improved in 10 years: *"Every year, around 20 billion gallons of untreated raw sewage and polluted runoff bypass the city's sewage treatment plants and get dumped into the water along the shoreline in all five boroughs. Almost every time it rains in New York City, raw sewage, pet waste, trash, and polluted runoff flow into waterways where people swim, fish, row, kayak, and boat. As little as one tenth of an inch of rain can overwhelm the city's sewers and sewage treatment plants. Overflows occur regularly along the shorelines of waterfront parks and other public access points, like Hudson River Park, Inwood Hill Park, Roberto Clemente State Park, Astoria Park, Brooklyn Bridge Park, and Snug Harbor. Not only is this gross but it's also incredibly*

dangerous, putting those who come into contact with contaminated water at risk of developing intestinal illnesses, rashes, and infections."

- Source: Levine, L. (2020, February 24). *NYC's new plan would let massive sewage overflows continue*. Natural Resources Defense Council. https://www.nrdc.org/experts/larry-levine/nycs-new-plan-would-let-massive-sewage-overflows-continue

Brooklyn (Gowanus Canal) & Queens (Newtown Creek)

- Two Superfund Sites: *"New York City's two most notoriously polluted waterways were listed as federal Superfund sites within months of each other a decade ago. Since then, a full-fledged cleanup has begun in Gowanus Canal – yet Newtown Creek has no relief in sight. The two waterways, situated just 5.5 miles away from each other in Brooklyn and Queens, could not be further apart in the pace of their remediation processes."*
  - Source: Dulong, M. (2021, January 20). *Gowanus canal and Newtown creek: A tale of two superfunds*. Riverkeeper. https://www.riverkeeper.org/blogs/docket/gowanus-canal-newtown-creek-two-superfund

- Brooklyn: *"The Gowanus Canal Community Advisory Group and elected officials cheered in November 2020 as contractors began dredging contaminants from the head of the canal. "Black mayonnaise," a mixture of liquid tar from manufactured gas plants, petroleum products, raw sewage and other contaminants, coats the bed of the waterway. The U.S. Environmental Protection Agency has directed the parties most likely responsible for the contamination to "dredge and cap" the canal to protect human health and wildlife. While that process proceeds, EPA is also forcing New York City to construct two sewage capture tanks, as the raw sewage still being dumped into the canal by the city contains toxic contaminants, too. Despite these efforts, pollution will continue. Long after the sewage tanks are constructed and the canal bed has been dredged, the canal will still receive roughly 110 million gallons per year of raw sewage and polluted stormwater discharges. Climate change and the proposed Gowanus rezoning could exacerbate those discharges."*
  - Source: Dulong, M. (2021, January 20). *Gowanus canal and Newtown creek: A tale of two superfunds*. Riverkeeper. https://www.riverkeeper.org/blogs/docket/gowanus-canal-newtown-creek-two-superfund

- Queens: *"The Newtown Creek cleanup has been delayed years, mired in discussions over the "Remedial Investigation/Feasibility Study." Ongoing studies are expected to continue throughout 2022. Newtown Creek is a larger waterbody than Gowanus Canal (3.8 miles to 1.8 miles), and its Greenpoint side is home to one of the largest North American oil spills – 50 percent larger than the Exxon Valdez disaster. Other manufacturing operations and ongoing sewage discharges have left thick layers of black mayonnaise and other contaminants. A group of industrial parties has proposed a superficial cleanup of the lower 2 miles of the creek. The proposal comes before the EPA*

could fully model the pollution or determine what threshold of pollutant removal is necessary to protect health. Similarly — and outrageously — New York City has proposed no additional reduction of its raw sewage discharges beyond what it has planned to complete by 2042. That plan would leave over half a billion gallons to be discharged annually, even when cleanup is complete."

- Source: Dulong, M. (2021, January 20). *Gowanus canal and Newtown creek: A tale of two superfunds*. Riverkeeper. https://www.riverkeeper.org/blogs/docket/gowanus-canal-newtown-creek-two-superfund

Ringwood, NJ

- *"The borough of Ringwood, New Jersey, is home to about 12,000 people, including the Turtle Clan of the Ramapough Lenape tribe. Nestled in the northern highlands of the state, the borough surrounds the Wanaque Reservoir, a source of drinking water for millions of people.*
  In the 1960s and '70s, Ford Motor Co. dumped more than 35,000 tons of toxic paint sludge into abandoned mine shafts it purchased from the borough, poisoning groundwater with arsenic, lead and other harmful chemicals. Because [of those levels]*, the EPA began monitoring the site in 1983. Today, contaminants from the site pose a risk to the nearby reservoir providing drinking water to millions of residents of New Jersey.*
  "It's certainly beholden upon Ford, who is the polluter here, to do what they said they're going to do and clean up this site," said Bob Spiegel, who runs Edison Wetlands Association. While Ford has removed some of the paint sludge, more remains.
  "This is real; we are human beings and this is really happening," said Vivian Milligan of the Ramapough Lenape tribe in Ringwood. "We're back here in these mountains and people tend to feel like, 'Let them stay there, back in the corner and die off.' But that's not my plan. My plans are to stand up and try to get things done right."
  - Source: News21 Staff, Spearing-Bowen, J., & Schneider, K. (2017, September 17). *Industrial waste pollutes America's drinking water*. Center for Public Integrity. https://publicintegrity.org/environment/industrial-waste-pollutes-americas-drinking-water/

Across the Country

North Carolina

- *"When the Wilmington, North Carolina, StarNews broke a story in 2017 about the rampant contamination of the region's drinking water supply by a chemical called GenX, Tom Kennedy had just finished four months of chemotherapy for his stage 2 breast cancer. During the radiation treatment that followed, Kennedy, then 45, learned that the cancer had metastasized to his brain, newly classifying him as a stage 4 terminal patient with 6 to 12 months to live. Four years later, with some 60 rounds of chemotherapy under his belt, he's still going strong.*

But also four years later, the Cape Fear River watershed—which supplies drinking water for Kennedy's family and around 350,000 other North Carolinians—remains contaminated with the perfluoroalkyl and polyfluoroalkyl substances (PFAS) that DuPont, and its spin-off, Chemours, dumped into the river for more than four decades. "I don't know if it can ever be proven," Kennedy says, "but I'm pretty certain that the PFAS contamination is what led to my cancer.
PFAS are used, often superfluously, in everyday products like nonstick cookware, carpets, food packaging, stain repellents, and water-resistant clothing. The synthetic compounds are also commonly found in firefighting foam and gear, which has led to the contamination of most military bases and airports. GenX, which DuPont began producing in 2009, is merely one of the many thousands of these "forever chemicals" that don't break down in the environment and, instead, can bioaccumulate in the bodies of humans and wildlife. According to the Centers for Disease Control and Prevention (CDC), PFAS can be detected in the blood of nearly every American.
La'Meshia Whittington of the NC Black Alliance and Advance Carolina notes that low-income people of color face greater risks of exposure, since they're not only more likely to live near polluting facilities but also more likely to eat fast food meals that come in PFAS packaging, live in rental units with PFAS-laden carpeting, or drink from contaminated water supplies. At the same time, these populations are less likely to be able to afford bottled water or the expensive filtration systems that effectively remove PFAS contamination from their water. Whittington says, 'It's the historical legacy and atrocity of cumulative impact that we've had to deal with.'"
    - Source: Greenfield, N. (2021, June 7). *The drinking water crisis that North Carolina ignored*. NRDC. https://www.nrdc.org/stories/drinking-water-crisis-north-carolina-ignored

Florida

- *"Heads of romaine lettuce might seem like empty calories for starving "sea cows" that weigh 1,000 pounds. But for Florida's manatees, they're just what the vet ordered.*
In parts of eastern Florida, seagrass — the primary food source for these hulking marine mammals — is disappearing. So for the first time in history, state officials have started feeding manatees huge quantities of leafy greens. A single manatee can crunch its way through about 100 pounds of lettuce in a single day.
Last year, Florida lost a record 1,100 manatees, or more than 12 percent of its total population. And more than 130 manatees have died already in 2022, according to the nonprofit Save the Manatee Club, which is far above average for this time of year. The Florida manatee is a subspecies of the vulnerable West Indian manatee.
Algae pose a problem because seagrasses need sunlight to grow. Fed by nutrients in pollution, such as septic discharge and farm runoff, algae can become so abundant that they actually block light from reaching the lagoon's floor. When the seagrass dies, it can become yet another nutrient that fuels the algae.
There wasn't some big chemical spill in the Indian River Lagoon, Rose said, but rather slow and steady pollution that accumulated in these waters for at least a decade, throwing the ecosystem out of whack and making it more prone to blooms of algae. In

2011, for example, a 'superbloom' of algae erupted in the lagoon, covering roughly 131,000 acres and nearly wiping out its seagrass. The grass started to recover — until the lagoon was struck by yet another bloom a few years later. By 2017, a staggering 95 percent of seagrass had disappeared in the northern and central portions of the lagoon, and it hasn't recovered much since.
The main source of pollution is a few hundred thousand septic systems from nearby homes and businesses, which leak nutrients like nitrogen into the lagoon, according to a recent study published in the journal Marine Pollution Bulletin. The region urgently needs to modernize its wastewater treatment facilities, De Freese said. He added that Florida also needs a better way to treat stormwater runoff that sloshes into the lagoon along with pollution."

- Source: Jones, B. (2022, February 8). *Florida's manatees are dying in Indian River Lagoon. Why?* Vox. https://www.vox.com/down-to-earth/22917307/florida-manatees-algae-seagrass-indian-river-lagoon

Actions to Take

- Support **local BIPOC** (black, Indigenous and people of color) **led community organizations** by volunteering, donating, and sharing about their work. Get involved with local advocacy groups and question political candidates about their environmental plans.
  - *"Local community members from both the Brooklyn and Queens sides are needed to join the Newtown Creek Community Advisory Group. The purpose of the group is to advise EPA about the cleanup and give voice to local needs. We must demand that the EPA move swiftly and direct the parties potentially responsible for the cleanup to devise a meaningful remediation plan for the whole creek that will fully protect human health and bring life and recreational opportunities back to the waterway."*
    - Source: Dulong, M. (2021, January 20). *Gowanus canal and Newtown creek: A tale of two superfunds*. Riverkeeper. https://www.riverkeeper.org/blogs/docket/gowanus-canal-newtown-creek-two-superfund

- Remember the mantra from the 1990s - **reduce, reuse, recycle**? Those were presented in a specific order. We've essentially taken the last resort step - recycle - and made it the first response. We need to **correct the priorities** - reduce consumption, and if something is needed, try reusing before buying new. If you need to stop using something, recycle it.

  - *"The **Buy Nothing Project** was founded in 2013 with the mission to build community by connecting people through hyperlocal gifting, and reducing our impact on the environment."*
    - Source: Buy Nothing Project. (n.d.). *About us*. http://buynothingproject.org/about

    - *"The **Freecycle Network** is … a grassroots and entirely nonprofit movement of people who are giving (and getting) stuff for free in their own towns and keeping good stuff out of landfills."*
        - Source: Freecycle. (n.d.). *Freecycle: About freecycle*. https://www.freecycle.org/pages/about

- *"**Properly dispose** of chemical cleaners, oils, and non-biodegradable items to keep them from ending up down the drain.*
  ***Maintain your car** so it doesn't leak oil, antifreeze, or coolant.*
  *If you have a **pup**, be sure to **pick up its poop**."*
    - Source: Denchak, M. (2018, May 14). *Water pollution: Everything you need to know*. NRDC. https://www.nrdc.org/stories/water-pollution-everything-you-need-know

- *"**Plant grass, trees and shrubs in bare areas**. The grass, trees and shrubs will reduce and absorb runoff, and their roots will hold the soil together, reducing erosion.*
  ***Use fertilizers and pesticides sparingly** on lawns and gardens. To reduce the use of pesticides, use beneficial insects such as ladybugs and praying mantises to control unwanted pests in the garden.*
  ***Keep* [trash] *out of storm drains**, where it will clog up the drain or end up in the nearest stream or lake.*
  ***Recycle plastic, glass, and paper**. Less trash means less material in the waste stream, and reducing the waste stream is the goal of all measures to control nonpoint source pollution."*
    - Source: National Oceanic and Atmospheric Administration. (2013, June 1). *What you can do: Pollution tutorial*. https://oceanservice.noaa.gov/education/tutorial_pollution/016youcando.html

- *"**Use less water**: Use water-saving devices on sinks, in toilets, and in showers. Take short showers instead of baths. Do not run the water constantly while brushing your teeth. Wash clothes when you have a full load of laundry. Only water your lawn and plants when absolutely necessary."*
    - Source: Harvard T. H. Chan School of Public Health. (2013, September 11). *Water pollution*. Environmental Health Education Program. https://www.hsph.harvard.edu/ehep/82-2/

- Look for **local programs** that help **keep recyclable products out of landfills and waterways**:
    - NYC: Free Recycling Programs for Buildings
        - **e-cycleNYC** - a free, in-building collection service for old electronics for residential buildings with 10 or more units.
            - Source: The City of New York Department of Sanitation. (n.d.-b). *Electronics*. https://www1.nyc.gov/assets/dsny/site/services/electronics

        - Brochure: https://www1.nyc.gov/assets/dsny/downloads/pdf/promotional-materials/e-cyclenyc-brochure-ec-bro-f.pdf

    - **refashionNYC** - "*a free, in-building collection service for old clothes and other fabric items for NYC residents, businesses, schools and nonprofits.*"
        - Source: The City of New York Department of Sanitation. (n.d.-a). *Donate goods*. https://www1.nyc.gov/assets/dsny/site/services/donate-goods

- NYC: Recycling Organizations
    - *"**FABSCRAP** collects unused fabric, clothing with imperfections, and fabric offcuts to sell to artists, crafters and students. Full rolls of fabric are cut into yards to be sold, while smaller pieces are offered for sale as is. Small scraps are shredded to create insulation, carpet padding, furniture lining, and moving blankets."*
        - Source: Downtown Brooklyn. (2021b, April 23). *Earth day spotlight: Brooklyn's innovators in sustainability*. https://www.downtownbrooklyn.com/news/2021/earth-day-spotlight-brooklyns-innovators-in-sustainability

    - *"**Revivn**, a hardware manufacturing company based in the Brooklyn Navy Yard, collects and repurposes reusable hardware. Through partnerships with non-profit organizations, the recycled electronics are sent worldwide to those in need of a working computer, phone, keyboard or other device."*
        - Source: Downtown Brooklyn. (2021b, April 23). *Earth day spotlight: Brooklyn's innovators in sustainability*. https://www.downtownbrooklyn.com/news/2021/earth-day-spotlight-brooklyns-innovators-in-sustainability

- NYC: Become a **Harbor Protector**. They *"are environmental stewards that volunteer to keep our neighborhoods clean and pollution out of our waterways."*
  "Catch Basin Cleanup: Catch basins collect rainwater and prevent litter from entering our sewer system and waterways. Harbor Protectors remove litter and leaves that can cover catch basins so that they function at their best."
  "Catch Basin Stenciling: When people pour oils or dump garbage down catch basins, it pollutes our waterways. Harbor Protectors stencil an educational message near a catch basin to remind neighbors not to dump anything there!"
  "Rain Garden Care: Rain Gardens prevent street flooding, beautify neighborhoods, and protect local waterways! Harbor Protectors remove litter and help our maintenance staff care for plants. Look for rain gardens near you."
  "Shoreline Cleanup: When litter and debris washes up on our shoreline, it causes issues for local residents and wildlife. Harbor Protectors can partner with us on shoreline cleanup events!"

        - Source: New York City Department of Environmental Protection. (n.d.). *Harbor protectors*. https://www1.nyc.gov/site/dep/whats-new/harbor-protectors.page

    - NYC: **Circular Economy Manufacturing** - Local, small scale solar powered factory processing post-consumer plastics into flakes that can be remolded into new products. *"Using a portable, renewably powered MicroFactory to locally produce well designed products from sustainable material cycles for the Circular Economy."*
        - Circular Economy Manufacturing. (n.d.). *About*. https://www.circulareconomymfg.com/about

    - National: **TerraCycle** - free and paid recycling programs, buy recycled products, reuse through Loop. *"Overconsumption and a throwaway culture have led to a global waste crisis. While even complex trash is technically recyclable, most materials are not profitable to recycle. As a result, waste piles up in landfills and pollutes our planet while virgin materials are extracted from the earth to create new products. At TerraCycle, our mission is Eliminating the Idea of Waste®. Businesses, government entities, and people like you work with us globally to keep trash out of landfills or from incineration."*
        - TerraCycle. (n.d.). *About TerraCycle*. https://www.terracycle.com/en-US/about-terracycle

When the Food is Wasted

What Food Goes to Waste?

- *"More than three-quarters of surplus food comes from perishables, which include fruits and vegetables, meats, prepared fresh deli items, seafood, milk and dairy, and some grain products such as bread and bakery items. Perishables often get discarded, because they quickly go bad. In contrast, non-perishable foods — pastas, canned goods, and highly processed, shelf-stable products — are generally wasted less, because they don't spoil as easily. Fruits and vegetables constitute more than a third of total food waste. Conversely, seafood and meats are the most expensive food types and the two least wasted."*
    - Source: ReFED. (n.d.). *Food waste challenge*. https://refed.org/food-waste/the-challenge/#overview

- *"Global hunger isn't about a lack of food. Right now, the world produces enough food to nourish every child, woman and man on the planet. But nearly a third of all food produced each year is squandered or lost before it can be consumed. In many rich countries, this food waste happens in the kitchen — when we prepare foods that go uneaten, or leave food to spoil in fridges and kitchen cabinets. For millions of people in*

developing countries, this food waste happens at harvest time. Poor storage facilities in farms lead to pest infestations and mold ruining crops. Lack of access to technology and markets means many farmers are forced to watch their crops rot in fields as the labor and financial investment required to harvest them is often unavailable."

- Source: World Food Programme. (2020, June 2). *5 facts about food waste and hunger*. https://www.wfp.org/stories/5-facts-about-food-waste-and-hunger

- *"In high-income countries, 40 percent of food is wasted because people buy more food than they can consume. In low-income countries, where the vast majority of the world's hungriest people live, most food loss occurs during the early stages of growth, harvest and storage.*
  Reversing current food waste and food loss trends would preserve enough food to feed 2 billion people. That's nearly twice the number of undernourished people across the globe."
  - Source: World Food Program USA. (2022, March 9). *Food waste: How the World Food Programme helps recover food loss*. https://www.wfpusa.org/drivers-of-hunger/food-waste

- *"In the United States, more than 72 billion pounds of safe, wholesome food goes uneaten a year. We designate some for animal feed, plow some under or leave it to rot in the fields, and simply throw much of it away. All while 41 million Americans go hungry."*
  - Source: Shea, M. (2018, February 21). *Food waste & hunger: Solutions to the paradox*. The Rockefeller Foundation. https://www.rockefellerfoundation.org/blog/food-waste-hunger-solutions-paradox

- *"Food Waste in* [US] *Landfills Nearly Triples - The amount of spoiled food going to landfills has increased dramatically since the 1960s,"* from 12,200 tons in 1960 to 35,280 tons in 2020.
  - Source: Povich, E. S. (2021, July 8). *Waste not? Some states are sending less food to landfills*. The Pew Charitable Trusts. https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2021/07/08/waste-not-some-states-are-sending-less-food-to-landfills

- The *"EPA estimated that in 2018 in the United States, more food reached landfills and combustion facilities than any other single material in our everyday trash, at 24 percent of the amount landfilled and at 22 percent of the amount combusted with energy recovery."*
  - Source: Environmental Protection Agency. (2022a, February 27). *Sustainable management of food basics*. https://www.epa.gov/sustainable-management-food/sustainable-management-food-basics

- *"1.3 million tons of food in New York City get thrown away each year."*
  - Source: https://www.foodwastetoolkit.com/

- In New York City, it's estimated that the average household:
    - *"wastes 8.4 pounds of total food per household per week (includes typically edible, questionably edible, and inedible)*
    - *wastes 5.4 pounds of edible food per household per week (includes typically edible and questionably edible)"*
        - Source: Hoover, D., & Moreno, L. (2017, October). *Estimating quantities and types of food waste at the city level* (R-17-09-B). Natural Resources Defense Council. https://www.nrdc.org/sites/default/files/food-waste-city-level-report.pdf

- *"When food is discarded, all inputs used in producing, processing, transporting, preparing, and storing discarded food are also wasted. Production, transportation, and handling of food generate significant Carbon Dioxide (CO2) emissions and when food ends up in landfills, it generates methane, an even more potent greenhouse gas. EPA estimated that each year, U.S. food loss and waste embodies 170 million metric tons of carbon dioxide equivalent…– equal to the annual CO2 emissions of 42 coal-fired power plants. This estimate does not include the significant methane emissions from food waste rotting in landfills."*
    - Source: Buzby, J. (2022, January 24). *Food waste and its links to greenhouse gases and climate change*. US Department of Agriculture. https://www.usda.gov/media/blog/2022/01/24/food-waste-and-its-links-greenhouse-gases-and-climate-change

- *"If wasted food were a country, it would be the third largest producer of carbon dioxide in the world, after the U.S. and China. If we reduce food waste, we could cut global emissions by 8-10 percent."*
    - Source: World Food Program USA. (2022, March 9). *Food waste: How the World Food Programme helps recover food loss*. https://www.wfpusa.org/drivers-of-hunger/food-waste

Why Do We Waste Food?

- *"A major reason is that food is cheaper in the United States than nearly anywhere else in the world, aided (controversially) by subsidies to corn, wheat, milk, and soybeans. But the great American squandering of produce appears to be a cultural dynamic as well, enabled in large part by a national obsession with the aesthetic quality of food. Fruits and vegetables, in addition to generally being healthful, have a tendency to bruise, brown, wilt, oxidize, ding, or discolor and that is apparently something American shoppers will not abide."*
    - Source: Chandler, A. (2016, July 15). *Why Americans lead the world in food waste*. The Atlantic. https://www.theatlantic.com/business/archive/2016/07/american-food-waste/491513/

- *"More than 90 percent of Americans may be prematurely tossing food because they misinterpret food labels as indicators of food safety… Phrases like 'sell by', 'use by', and 'best before' are poorly regulated, misinterpreted and leading to a false confidence in food safety.*
  'Sell by' dates are a tool for stock control, suggesting when the grocery store should no longer sell products in order to ensure the products still have shelf life after consumers purchase them. They are not meant to communicate with consumers, nor do they indicate the food is bad on that date. 'Best before' and 'use by' dates are intended for consumers, but they are often just a manufacturer's estimate of a date after which food will no longer be at peak quality; not an accurate date of spoiling or an indication that food is unsafe. Consumers have no way of knowing how these 'sell by' and 'use by' dates have been defined or calculated since state laws vary dramatically and companies set their own methods for determining the dates, none of which helps to improve public health and safety."
    - Source: NRDC. (2013, September 18). *New report: Food expiration date confusion causing up to 90% of Americans to waste food*. https://www.nrdc.org/media/2013/130918

- Large-scale food production fails to respond quickly to emergencies. *"COVID-19 has upended our food system, and its effects have been felt across the entire supply chain. … Initial estimates – along with anecdotal evidence – suggest that the early days of the pandemic saw large increases in the amount of food going to waste. The sudden closures of restaurants and other foodservice businesses, along with increased demand at the retail level, resulted in extensive difficulties for growers and producers. Suddenly, there were huge quantities of produce and other perishable goods with nowhere to go, as products meant for wholesale foodservice distribution could not easily be repurposed to grocery due to packaging limitations, distribution challenges, and lack of existing sales relationships.*
  According to the Dairy Farmers of America, 3.7 million gallons of milk were dumped daily until June 2020, amounting to 5% of the country's milk supply. The Dairy Farmers of America and the International Dairy Association also reported that more than 107,000 unhatched eggs were destroyed daily until June 2020. And the U.S. National Pork Producers Council estimated that reduced plant capacities resulted in the euthanization of more than 10 million market hogs – more than 1.2 billion pounds of retail cuts of meat."
    - Source: ReFED. (2021, February 1). *How COVID-19 has affected food waste – and how the food system has responded*. https://refed.org/articles/how-covid-19-has-affected-food-waste--and-how-the-food-system-has-responded

- But people are more adaptive. *"At the consumer and household level, COVID-19 might actually be leading to a decrease in food waste. Typically, consumers collectively generate the most food waste each year, and 2020 initially seemed to be no different, as pandemic-related stockpiling and more home cooking increased the amount of waste. But many consumers are learning new planning and cooking skills and may have adapted to their new reality – according to the Food Industry Association, 36% of U.S. grocery shoppers surveyed felt that they have become better at avoiding food waste*

during the COVID-19 pandemic, and 51% expected they will have become better at it in the future. Still, 37% of consumers reported buying more groceries each time they went shopping, compared to before the pandemic – so the risk of food going to waste is still there."

- Source: ReFED. (2021, February 1). *How COVID-19 has affected food waste – and how the food system has responded*. https://refed.org/articles/how-covid-19-has-affected-food-waste--and-how-the-food-system-has-responded

Actions to Take

- *"**Plan ahead and buy only what you need**. Going to the store without a plan or on an empty stomach can lead to buying more than we need. To keep your kitchen on track, try to eat leftovers, think of meals you might eat out, and avoid unnecessary purchases by planning your grocery list ahead of time.*
  ***Use your freezer**. While there are plenty of benefits to eating fresh food, frozen foods can be just as nutritious. They also stay edible for much longer. A lot of seafood, for example, is frozen before it reaches your supermarket and then thawed and put on display. That means it will only stay fresh for a few days. By buying frozen seafood, you can extend the shelf life of the product considerably. Cooking and freezing food—especially produce—before it goes bad is a great way to avoid having to toss it.*
  ***Be creative with leftovers**. Before you shop, use the food you already have. Websites like Big Oven, Supercook, and MyFridgeFood allow you to search for recipes based on ingredients already in your kitchen. You can also use apps like Epicurious and Allrecipes to make the most of what's in your fridge and pantry.*
  ***Blend, bake, or boil**. Fruits and vegetables that are beyond ripe may not look pretty, but that doesn't mean they can't still taste delicious in recipes. Try using your wilting, browning, or imperfect produce to make sweet smoothies, bread, jams, sauces, or soup stocks."*
  - Source: World Wildlife Fund. (n.d.). *Fight climate change by preventing food waste*. https://www.worldwildlife.org/stories/fight-climate-change-by-preventing-food-waste

- **Buy local** whenever possible: Community Supported Agriculture (CSA) shares and farmer's markets.
  - "*Eating locally grown, in-season fruits and vegetables cuts down on the energy used to grow and transport food, meaning fewer emissions from massive, refrigerated trucks, and less demand for the heat and light required to keep a northern greenhouse toasty and productive year-round."*
    - Source: The Climate Reality Project. (2021b, April 21). *5 climate action chores for kids*. Climate Reality. https://www.climaterealityproject.org/blog/5-climate-action-chores-kids

- CSA - *"This local produce subscription model and its popularity in the U.S. typically get traced back to two New England farms that started using the term in 1986. But Booker T. Whatley, a horticulturist and professor at Tuskegee University, began developing direct-to-consumer models for small, diverse, regenerative farms over a decade earlier.*
  Whatley believed competing with large-scale, industrialized commodity growers would be the death of the Black family farm. His answer: the "clientele membership club." Whatley's plan, which he taught in workshops in his home state of Alabama and eventually outlined in a handbook, advocated growing a mix of high-value crops like honey, berries, and sweet potatoes, and building relationships with a community of buyers — city folk who would come to the farm to pick their own produce — all of which put more money in the farmer's pocket."
    - Source: Thompson, C. E. (2022, February 24). *The CSA has roots in Black history*. Fix Climate Solutions Lab. https://grist.org/fix/looking-forward/the-csa-has-roots-in-black-history/

- Involve friends and family, even kids, in **understanding what it takes to grow food**.
  - "*Tak*[e] *your kids berry picking this summer. With kids, especially younger ones, showing is often far better than telling. So show them when strawberries (and blueberries and raspberries and on and on) are in season in your neck of the woods. Have them taste the berry to see how much more flavorful it is than some store-bought produce, which is often picked before peak ripeness so it can travel great distances. Introduce them, if you can, to the local farmer who will benefit from your big day filling buckets in their berry patches. They'll learn fast just how much work goes into getting food on the table every day, and that locally grown, in-season produce is a better option – for both their taste buds and the planet."*
    - Source: Climate Reality Project. (2021b, April 21). *5 climate action chores for kids*. Climate Reality. https://www.climaterealityproject.org/blog/5-climate-action-chores-kids
  - Get involved in your local community garden.

- Rescue food from being wasted at restaurants and stores. Global: **Too Good To Go** App
  "Too Good To Go helps everyday people fight food waste in their local communities by connecting them to restaurants and grocery stores with surplus meals and ingredients through an easy-to-use app. Once registered, users can choose from their favorite local spots to pick up meals – everything from bagels to dim sum, or ingredients like apples and avocados, for a third of the normal price. This presents a win-win-win solution in which consumers get great food (presented in a Too Good To Go "Surprise Bag"), store owners no longer throw away delicious surplus, and we, together, help the planet by reducing waste."
  - Source: Too Good To Go. (2020, September 29). *Too good to go offers New Yorkers a new way to fight food waste* [Press release]. https://toogoodtogo.com/en-us/press/releases/nyc-launch

- **Compost** organics to keep them out of the landfill and prevent methane buildup. Look for local programs and groups to support you.
    - *"Composting lowers greenhouse gases by improving carbon sequestration in the soil* [removing carbon dioxide from the atmosphere and storing it in the soil] *and by preventing methane emissions through aerobic decomposition, as methane-producing microbes are not active in the presence of oxygen."*
        - Source: Environmental Protection Agency. (2020, October). *Composting food waste: Keeping a good thing going*. https://www.epa.gov/snep/composting-food-waste-keeping-good-thing-going

    - **Bushwick, Brooklyn composting** - *"BK ROT is New York City's first community-supported, bike-powered, fossil fuel free food waste hauling and composting service. Our project is staffed by young people of color who haul residential and commercial organic waste and transform it into high quality compost. Our operations provide accessible jobs and sustained professional development for emerging environmental leaders."*
        - Source: https://www.bkrot.org/

    - **NYC citywide drop-off composting** - *"Use the map to find locations where you can drop-off your food scraps* [which] *are processed locally at community scale compost sites.*" Mainly community-hosted designated drop-off spots, community gardens, and farmer's markets.
        - Source: The City of New York Department of Sanitation. (2022b). *Drop-off composting*. https://www1.nyc.gov/assets/dsny/site/services/food-scraps-and-yard-waste-page/nyc-food-scrap-drop-off-locations

    - **NYC curbside composting** - *"The following community boards continue to receive Curbside Composting service: Brooklyn 1, 2, 6, and 7, Manhattan 6 and 7, and Bronx 8. Residents in these community boards can continue to sign up online or by calling 311 to be added to the program.*
      Expansion of Curbside Composting outside of community boards currently receiving service is paused until further notice. We are working with the City's new Administration to evaluate the program and determine the best service model to help New Yorkers divert food waste from landfills."
        - Source: The City of New York Department of Sanitation. (2022a). *Curbside composting overview*. https://www1.nyc.gov/assets/dsny/site/services/food-scraps-and-yard-waste-page/overview-residents-organics

    - **NJ composting** - *"Un-Waste is an Organics Recycling and Microhauling business that takes food scraps from residents and small businesses to be*

recycled into premium compost, organic fertilizer, and renewable electricity at our partner facility, Trenton Renewables. This easy to use and seamless service is available to residents and businesses along the Central Jersey Shore."

- Source: Un-Waste. (n.d.). *Our company*. https://www.unwastemovement.world/about

- Support companies who not just reduce waste, but go a step further by **upcycling** and creatively using "waste" from one industry as an "ingredient" for another
  - "*Partnering with over twenty NYC breweries, **Rise Products** upcycles the grain that is a by-product of the beer-making process into nutritious flour that has twelve times the fiber and twice the protein of all-purpose flour. Amongst those putting their product to good use is **Runner & Stone** who uses the flour for their signature delicious bread."*
    - Source: Downtown Brooklyn. (2021b, April 23). *Earth day spotlight: Brooklyn's innovators in sustainability*. https://www.downtownbrooklyn.com/news/2021/earth-day-spotlight-brooklyns-innovators-in-sustainability

- Look for local programs and organizations to help. NYC: The **Food Waste Toolkit** is a *"free innovative digital tool that helps NYC residents and businesses identify the companies or organizations that can help them fight food waste at home and at work. Users can easily navigate the steps needed to reduce food waste before it starts, minimize impact in the kitchen and reuse food scraps for a better planet and community. This instructional manual will accompany an interactive database of Sanitation Foundation-approved food waste solutions vendors operating throughout the five boroughs."*
  - Source: Sanitation Foundation. (2021, June 24). *Food waste toolkit*. https://www.sanitationfoundation.org/fwf/food-waste-toolkit

Disparate Impact: Sacrifice Zones, Fenceline Communities, and Concentrated Risk

- "*The climate crisis does not impact all communities equally – a fact that's been made crystal clear as too many low-income communities and people of color now face not just stronger storms and more lethal heatwaves, but compounding crises from air pollution to COVID-19.*"
  - Source: The Climate Reality Project. (2021c, May 13). *Let's talk about sacrifice zones*. Climate Reality. https://www.climaterealityproject.org/blog/lets-talk-about-sacrifice-zones

- These communities are known as sacrifice zones - "*places where residents are exposed to disproportionately high levels of toxic contamination in the air, water and soil.*"

    - Source: Herr, A. (2021, October 29). *What is a sacrifice zone? The environmental racism of oil drilling in L.A.* KCET. https://www.kcet.org/news-community/what-is-a-sacrifice-zone-the-environmental-racism-of-oil-drilling-in-l-a

- Historical view: "*The phrase was first used during the Cold War to designate "National Sacrifice Zones" — areas that are radioactively contaminated due to **uranium mining** for nuclear weapons. In 1973, it was recycled in a report by the National Academy of Sciences with reference to the remediation of landscapes heavily impacted by **coal mining**. From there, the concept of sacrifice zones started to take hold, and made its way to the national press; a 1975 article from the Washington Post called the term a "watchword and a rallying cry" for communities heavily impacted by coal. A decade later, by 1987, the term was being applied to areas polluted by the **petrochemical industry** in Louisiana.*
    - Source: Herr, A. (2021, October 29). *What is a sacrifice zone? The environmental racism of oil drilling in L.A.* KCET. https://www.kcet.org/news-community/what-is-a-sacrifice-zone-the-environmental-racism-of-oil-drilling-in-l-a

- Fenceline communities are "*next to a company, industrial, or service facility and are directly affected in some way by the facility's operation (e.g. noise, odor, traffic, and chemical emissions)."* Sacrifice zones "*are the geographic area that the fenceline communities live in. The sacrifice zone refers to the location the fenceline community calls home or resides in."*
    - Source: Herr, A. (2021, October 29). *What is a sacrifice zone? The environmental racism of oil drilling in L.A.* KCET. https://www.kcet.org/news-community/what-is-a-sacrifice-zone-the-environmental-racism-of-oil-drilling-in-l-a

- *"Often people of color are used as a proxy for low-income; however, studies such as Toxic Waste and Race published by the United Church of Christ's Commission For Racial Justice in 1984, document that even middle-to-upper income people of color communities suffer a disproportionate burden of pollution. The primary predictor of where a toxic waste site is located in this country is whether the location is in a community of color."*
    - Source: Murphy, J. (2017, March 24). *Building justice: NYC's sacrifice zones and the environmental legacy of racial injustice*. City Limits. https://citylimits.org/2016/10/10/building-justice-nycs-sacrifice-zones-and-the-environmental-legacy-of-racial-injustice/

- *"Census tracts where the majority of residents are people of color experience about 40% more cancer-causing industrial air pollution on average than tracts where the residents are mostly white. In predominantly Black census tracts, the estimated cancer risk from toxic air pollution is more than double that of majority-white tracts."*

    - Source: ProPublica, Younes, L., Kofman, A., Shaw, A., Song, L., & Miller, M. (2021, November 2). *Poison in the air*. ProPublica. https://www.propublica.org/article/toxmap-poison-in-the-air

- *"That the people living inside these hot spots are disproportionately Black is not a coincidence… These disparities are rooted in racist real estate practices like redlining and the designation of low-income neighborhoods and communities of color as mixed residential-industrial zones. In cities like Houston, for example, all-white zoning boards targeted Black neighborhoods for the siting of noxious facilities, like landfills, incinerators and garbage dumps. Robert Bullard, a professor of urban planning and environmental policy at Texas Southern University, has called the practice "PIBBY" or "Place In Blacks' Back Yard" — a spin on the acronym "NIMBY" ("Not In My Back Yard")."*
    - Source: ProPublica, Younes, L., Kofman, A., Shaw, A., Song, L., & Miller, M. (2021, November 2). *Poison in the air*. ProPublica. https://www.propublica.org/article/toxmap-poison-in-the-air

- Here's more from Dr. Robert Bullard about concentrated risk in Houston, TX: "*From the 30's up until 1978, five out of 5 of the city owned landfills were in Black neighborhoods. Six out of 8 of the city-owned incinerators in Black neighborhoods, and 3 out of the 4 of the privately owned landfills were in Black neighborhoods. Even though Blacks only made up 25% of the population during that period of time*."
    - Source: Intersectional Environmentalist. (2021, March 15). *The intersectional history of environmentalism* [Video]. YouTube. https://www.youtube.com/watch?v=cyqYN90PPjE

  "April 1983: Dr. Robert Bullard conducted a first-of-its-kind study documenting the location of municipal waste disposal facilities in Houston. Solid Waste Sites and the Black Houston Community was the first comprehensive account of environmental racism in the United States. Bullard and his researchers found that African American neighborhoods in Houston were often chosen for toxic waste sites. All five city-owned garbage dumps, 80 percent of city-owned garbage incinerators, and 75 percent of privately owned landfills were sited in black neighborhoods, although African Americans made up only 25 percent of the city's population."
    - Source: Environmental Protection Agency. (2021, August 3). *Environmental justice timeline*. US EPA. https://www.epa.gov/environmentaljustice/environmental-justice-timeline

- *"'Industries rely on having these sinks — these sacrifice zones — for polluting,' said Ana Baptista, an environmental policy professor at The New School. "That political calculus has kept in place a regulatory system that allows for the continued concentration of industry. We sacrifice these low-income, African American, Indigenous communities for the economic benefit of the region or state or country.""*

    - Source: ProPublica, Younes, L., Kofman, A., Shaw, A., Song, L., & Miller, M. (2021, November 2). *Poison in the air*. ProPublica. https://www.propublica.org/article/toxmap-poison-in-the-air

- *"I mean why is there a climate movement focused on emissions when you can get to the same, if not a better, more healthy environment by focusing on what's happening to the people next to those emissions. I mean we ought to care about the communities that are literally not breathing because the air is too bad and the water is polluted and the soil is...like the death of that black man on TV – George Floyd – is what is happening in black communities every day, especially here in South Louisiana and Cancer Alley on those Southwest side of Louisianan the South Mississippi, in Uniontown, Alabama. This is what's happening.These are just humans that we have agreed to as a society to devalue and to invisibilize and what we have to do is visibilize them."* - Colette Pichon Battle
    - Source: Johnson, A.E., & Blumberg, A. (Hosts). (2020, September 24). Black lives matter and the climate (No. 7) [Audio podcast episode]. In *How to Save a Planet*. Gimlet Media. https://gimletmedia.com/shows/howtosaveaplanet/39habgl/black-lives-matter-and-the-climate (includes Transcript)

The Power of Women and Girls

Why Women and Girls are Key

- *"Essential to limiting global warming to 1.5°C is the leadership and participation of women. Making up 51% of the Earth's population, women and girls in every society are responding more effectively in times of crisis and actively working towards the creation of a more just and sustainable world. Yet, large structural gaps in inequality remain. By acknowledging the benefits women bring to the table, we can start to close these gaps and accelerate action to solve the climate crisis. Below are eight major reasons why we need to target resources to women climate leaders, summarizing recent research findings on the topic.*
    - *Women are the most impacted by climate change*
    - *Women are better leaders in times of crisis*
    - *Women are powerful organizers*
    - *Women have the solutions*
    - *Women turn knowledge into action*
    - *Women are economic dynamos*
    - *The world needs equality*
    - *Women are the visionaries"*
        - Source: Roetzel, L. J. (2022a, March 16). *Why women are key to solving the climate crisis*. One Earth. https://www.oneearth.org/why-women-are-key-to-solving-the-climate-crisis

Women-Powered Projects Around the World

- *"COP26 made it clear that UN climate negotiations are still primarily dominated by men, with women making up only a fraction of the diplomatic force. The distinct vulnerability of women to climate change was widely acknowledged, but women from the most vulnerable countries were not present at the decision-making levels. However, there are women-led organizations all around the world that are working to implement climate solutions and empower women to become leaders in their communities. These five projects below are just a few examples of how supporting women-led environmental projects can play a key role in addressing climate change.*
    - *Driving the clean energy transition in India*
    - *Teaching agroecology in West Africa*
    - *Scaling climate resilience in Indonesia*
    - *Propagating native plants and Indigenous ecological practices in the Mississippi Delta*
    - *Achieving food sovereignty for farmers in Central America"*

        - Source: Roetzel, L. J. (2022b, March 18). *Five climate solution projects around the world powered by women*. One Earth. https://www.oneearth.org/five-climate-solution-projects-around-the-world-powered-by-women

Inspirational Women and Girls Leading the Way

- *"The Global Landscapes Forum (GLF) is celebrating the work of women for the environment by highlighting 16 leaders working to protect and restore the global natural capital through science, finance, policymaking, journalism, and land rights, among others. The outstanding contributions of these women, aged 13 to 86, are also aligned with the UN Decade on Ecosystem Restoration starting this year; the UN Decade of Action for the Sustainable Development Goals (SDGs); the climate action pathways outlined by the Intergovernmental Panel on Climate Change (IPCC), and pledges for a green recovery from the COVID-19 pandemic.*

  Meet the leaders

    - ***Durreen Shahnaz** has channeled hundreds of millions of investment dollars toward positive social and environmental outcomes by founding the world's first social stock exchange and Asia's largest crowdfunding platforms for impact investing.*

    - ***Carole Dieschbourg**, Luxembourg's Minister for the Environment, Climate and Sustainable Development, played a key negotiating role in creating the pivotal Paris Agreement, helped transform her country's transportation and energy*

systems toward sustainability, and is working to position Luxembourg as a global center for sustainable finance.

- ***Cristina Mittermeier** has captured pivotal images that have helped convey the impacts of climate change to a global audience. Originally from Mexico and trained as a marine biologist, Mittermeier is considered a pioneer in conservation photography, practicing environmental photojournalism in such a way that it has capacity to affect the intellect and reach the heart.*

- ***Varshini Prakash** is a youth climate action leader who served on President Joe Biden's climate task force during his campaign. SHe has used her voice and platform to highlight the importance of centering the experiences of diverse and marginalized peoples in environmental activism and work.*

- ***Elizabeth Maruma Mrema** is a Tanzanian biodiversity leader and lawyer who was appointed executive secretary of the United Nations Convention on Biological Diversity in 2020. She is the first African woman to hold this role.*

- ***Erica Armah Bra-Bulu Tandoh**, known by her stage name DJ Switch, is a young multitalented Ghanaian entertainer who can also sing, rap and dance, and write poetry. She established the DJ Switch Foundation to support underprivileged Ugandans.*

- ***Jane Goodall**, the renowned English primatologist and anthropologist, is considered to be the world's foremost expert on chimpanzees. Founder of the Jane Goodall Institute and the Roots & Shoots programme, she has worked extensively on conservation and animal welfare issues.*

- ***Joji Cariño** is an Ibaloi environment and development educator and researcher from the Cordilleras Highlands of the Philippines. She has expertise on Indigenous knowledge and traditional occupations, cultural and biological diversity, international standards on forests, water and energy, extractive industries, and corporate accountability.*

- ***Jonna Mazet** is an American epidemiologist and Executive Director of the University of California, Davis One Health Institute. Recognized for her innovative and holistic approach to emerging environmental and global health threats, she is an elected member of the prestigious U.S. National Academy of Medicine.*

- ***Patricia Zurita**, Chief Executive Officer of BirdLife International, the world's largest nature conservation partnership, bringing together over 120 organizations worldwide to conserve birds, their habitats and global biodiversity, working with people towards sustainability in the use of natural resources.*

- ***Sahana Ghosh**, a science journalist, has produced a series "Environment and Her" that examines climate justice in the Sundarbans through a gender lens, supported by a fellowship from the Earth Journalism Network.*

- ***Sônia Guajajara** is a Brazilian indigenous activist, environmentalist, and politician. She regularly advocates for Indigenous rights at U.N. conventions, and in 2018, became the first Indigenous person to run for federal executive office in Brazil.*

- ***Sumarni Laman**, a community coordinator for Youth Act Indonesia, a movement of Kalimantan's Indigenous youth to take action against the region's forest fires. She leads its subprogram The Heartland Project, which raises awareness about deforestation across the archipelago and counters its effects through tree planting.*

- ***Susan Chomba** is a social scientist with over 15 years of experience in governance, policies and institutions in forestry, agriculture and rural development in Africa. She works on climate change policies, land tenure, equity, vulnerability and gender.*

- ***Vanessa Nakate** began Uganda's Fridays for Future movement and launched a fundraising campaign to save the Congo's rainforest from its ongoing deforestation. She is also helping transition schools in her home country to sustainable energy through her Green Schools Project initiative.*

- ***Yvonne Aki-Sawyerr** has led campaigns against blood diamonds, co-founded a charity to support disadvantaged youth in the midst of her country's civil war, and served as a director at the National Ebola Response Centre during the pandemic's deadly outbreak before being elected to her mayoral position of Freetown, Sierra Leone in 2018."*

    - Source: One Earth. (2022, January 12). *Sixteen women restoring the earth*. https://www.oneearth.org/sixteen-women-restoring-the-earth

- *"From organizing rallies and communicating the science behind climate change to making the clear connection between environmental factors and justice, women are leading the way on climate around the world. And these 12 women are on the front lines, making a difference for our planet when it matters the most:*

    - ***Catherine Coleman Flowers** is the founder and executive director of Alabama Center for Rural Enterprise, Inc. (ACRE), which 'promotes sustainable initiatives to strengthen the infrastructure of families in rural and impoverished communities through participatory involvement.' But her work doesn't stop there. From negotiating with the Alabama state government to serving as the rural*

development manager for Equal Justice Initiative to being an active Climate Reality Leader and Climate Speaker, Catherine has become a powerful force for change, both in her home state and beyond.

- ***Elsie Gabriel*** [t]*rained as a Climate Reality Leader in 2014 in Rio de Janeiro.* [She] *has drawn on her skills as an activist and expert in mass communications to champion a number of environmental causes close to her heart, from green travel and tourism to the conservation of Powai Lake in Mumbai, India, to many other local policy issues. In her everyday life, Elsie is the founder and president of her own non-governmental organization, Young Environmentalists Programme (YEP) Trust, which is dedicated to equipping young people, women, and underprivileged communities with the tools they need to make a difference for the environment and in their communities.*

- ***Dr. Katherine Hayhoe*** *is a renowned atmospheric scientist at Texas Tech University who studies climate change and why it matters to real people. She has over 120 peer-reviewed publications to her name and has been the lead author of the second and third editions of the US National Climate Assessment. She also serves as a scientific advisor to a slew of organizations and programs. But the role she might be best known for is that of respected climate communicator. As both a Christian and a scientist, Dr. Hayhoe is particularly well-positioned to talk to faith communities about the reality of the climate crisis.*

- ***Dr. Dorceta Taylor*** *is the director of diversity, equity and inclusion at the School for Environment and Sustainability at the University of Michigan. Considered one of the mothers of the environmental justice movement, she helped to develop the 'Principles of Environmental Justice' at the inaugural National People of Color Environmental Leadership Summit in Washington, DC.*

- ***Dr. Sylvia Earle*** *was the first woman to be named chief scientist at the National Oceanic and Atmospheric Administration (NOAA) and was Time magazine's first-ever Hero for the Planet. The Library of Congress calls her a 'living legend,' and she's founded three different organizations for protecting and exploring the Earth's ocean.*

- ***Christiana Figueres*** [is] *lauded as "the world's top climate policymaker," "climate revolutionary," "bridge-builder," and "UN's climate chief." Figueres has been speaking for and uniting people on the front lines of climate change around the world.*

- ***Mari Copeny*** *When Mari Copeny was 8, she wrote a letter to President Barack Obama, asking him to come to her hometown of Flint, Michigan to witness the many problems caused by the town's water. Their meeting went viral, and seven months later, President Obama authorized $100 million to repair Flint's water*

system. The city still needs lots of help, and Mari continues to organize and raise up her community. She and the education nonprofit Pack Your Back have handed out more than 700,000 water bottles to local families and distributed fully stocked backpacks to kids in the area.

- ***Heidi Cullen, PhD*** *spent nearly five years on television as the Weather Channel's climate expert. Now, she holds two directorships at California's Monterey Bay Aquarium Research Institute. She previously served as chief scientist of Climate Central, a nonprofit science journalism organization focused on the science and impacts of climate change.*

- ***Greta Thunberg*** *When Greta Thunberg – then just 15 years old – walked out of class last August and sat in front of the Swedish Parliament on a self-described 'school strike for the climate,' she sparked a movement. As her story began to spread and the world watched her speak truth to power at COP 24 and Davos, young people far beyond Stockholm began to organize and follow her example. The resulting movement, Fridays for Future, has brought a much-needed sense of urgency to the conversations around climate change.*

- ***Dr. Ayana E. Johnson*** *fell in love with the ocean when she was just five years old during a family vacation in Key West. Her passion led her to earn a PhD in marine biology and become a self-identified 'ocean policy nerd.' She's now a lecturer on ocean conservation at New York University and the CEO of the consultancy Ocean Collectiv, which creates and amplifies solutions for healthy oceans.*

- ***Haven Coleman*** [is] *a Climate Reality Leader from Colorado* [and] *is a young person working for a brighter world for her generation – and generations to follow. And she believes in speaking truth to power, not only confronting her climate denier congressman on his views but urging her local utility board to embrace renewables.*

- ***Nicole Horseherder*** *is the executive director of Tó Nizhóní Ání, 'Sacred Water Speaks' in Navajo. She fights on behalf of the environment and her people in the Black Mesa region of Arizona. She and her group recently helped draft a bill that would move the Navajo Nation from reliance on coal to 100 percent renewable energy sources."*

    - Source: The Climate Reality Project. (2019, July 12). *12 women leading the way on climate*. Climate Reality. https://www.climaterealityproject.org/blog/12-women-leading-way-climate

- *"Each year, the Grist 50 identifies emerging leaders in climate, equity, and sustainability."* Highlighted here are the women leaders, *"everyday climate champions"* who are

"shaping the future of our planet" in Arts & Media, Business & Technology, Climate & Energy, Food & Farming, and Policy & Advocacy.*"*

- Source: Grist. (2022a, March 22). *Grist 50 2022: Meet the fixers*. https://grist.org/fix/grist-50/2022

Arts & Media

- **Kristy Drutman** - Environmental Media Host, Hoboken, New Jersey, *"launched Brown Girl Green as a podcast, then increased its presence with a blog, social media, and video. The project, now four years old, sits at the intersection of inclusive intersectional environmental storytelling, science communication, and creative dialogue."*
  - Source: Grist. (2022s, April 20). *Grist 50 2022: Kristy Drutman*. Fix. https://grist.org/fix/grist-50/2022/#kristy-drutman

- **Allison Janae Hamilton** - Visual Artist, New York, New York, "*has deep roots in the landscapes of the rural South. Climate change and environmental justice are woven through her work as feelings and suggestions rather than as explicit mentions…* [In her film installation, 'A House Called Florida,'] *a family is slowly pushed out of their home, part of her ongoing meditation on climate migration and environmental justice."*
  - Source: Grist. (2022b, April 20). *Grist 50 2022: Allison Janae Hamilton*. Fix. https://grist.org/fix/grist-50/2022/#allison-janae-hamilton

- **Nina Misuraca Ignaczak** - Founder & Editor, Planet Detroit, Detroit, MI *"wanted to see a news organization focus on public health, equity, and the effects of environmental hazards in a highly segregated city like Detroit and tell those stories from the perspective of the people who live* [in Detroit,] *so she started one. Planet Detroit launched in 2019…* [and] *covers issues ranging from clean transportation and outdoor equity to the disproportionate impacts of flooding, lead poisoning and asthma on Detroit's BIPOC communities.*"
  - Source: Grist. (2022aa, April 20). *Grist 50 2022: Nina Misuraca Ignaczak*. Fix. https://grist.org/fix/grist-50/2022/#nina-misuraca-ignaczak

- **Pita Juarez** - Filmmaker; National Communications & Creative Strategies Director, Chispa LCV, Phoenix, AZ, *"works on independent films and targeted campaigns for Chispa, a program of the League of Conservation Voters focused on building grassroots power among Latino communities in the fight for climate justice. As the head of communications, Juarez directs a range of projects, like a recent ad campaign showing the many ways people participate in environmental justice each day, from composting to protesting to teaching their kids about science… One of her most recent projects is a short film examining her ancestral roots in Guatemala, how her family has experienced climate changes over the years, and the connection to land and water that her Indigenous ancestors held.*

Her grandmother is a main character, played by a young actor in a fictional narrative woven through the documentary."

- Source: Grist. (2022ac, April 20). *Grist 50 2022: Pita Juarez*. Fix. https://grist.org/fix/grist-50/2022/#pita-juarez

- **Maya Lilly** - Film & TV Producer, The YEARS Project, Palisades, NY, *"join*[ed] *The YEARS Project as lead producer for digital initiatives and develop*[ed] *short videos that click with social media audiences. An outgrowth of the Years of Living Dangerously TV series, the project has amassed a vast following on social media — in 2020, its digital video views exceeded 1 billion. Lilly's goal is to help the climate movement get better at telling its own tales — which doesn't always mean through documentaries."*
  - Source: Grist. (2022w, April 20). *Grist 50 2022: Maya Lilly*. Fix. https://grist.org/fix/grist-50/2022/#maya-lilly

Business & Technology

- **Jenette Ashtekar** - Head of Product, CIBO Technologies, Boston, MA. At *"the ag-tech firm CIBO,... she's developing ways of quantifying the impact of regenerative practices like planting cover crops and reducing erosion. Such methods allow row-crop farmers to store more carbon in the soil, but it's hard to pinpoint just how much. Ashtekar combines models, simulations, and satellite data so farm managers can better measure the value of what they sequester and get reimbursed for the carbon offsets they provide. The goal is to eventually enable growers to report this info throughout the supply chain, so companies can then market 'carbon-smart' foods in the vein of organic or fair-trade products."*
  - Source: Grist. (2022n, April 20). *Grist 50 2022: Jenette Ashtekar*. Fix. https://grist.org/fix/grist-50/2022/#jenette-ashtekar

- **Carla Gautier Castro** - Founder, KONTi Design Build Studio, San Juan, Puerto Rico, *"moved back home to Puerto Rico in 2017, just a few months before Hurricane Maria devastated the island. FEMA hired Gautier Castro as a construction inspector. Visiting hundreds of destroyed homes, she learned that many people had built them with available materials and without permits or adherence to building codes. They simply couldn't afford to do it any other way. Then* [Gautier Castro] *remembered…* [that] *steel shipping containers are designed to withstand heavy abuse. The structures fare better than concrete in earthquakes — which Puerto Rico also experiences. Besides, container homes can be produced offsite, loaded onto trucks, and installed anywhere, greatly reducing labor costs. KONTi Design's first home, a comfortable one-container house, was ready in 2019… Gautier Castro envisions building and distributing container-based units worldwide for quick disaster relief — a homegrown industry helping people suffering through what Puerto Ricans have also endured."*

        - Source: Grist. (2022h, April 20). *Grist 50 2022: Carla Gautier Castro*. Fix. https://grist.org/fix/grist-50/2022/#carla-gautier-castro

    - **Anyeley Hallová** - Founder, Adre, Portland, OR, *"found work as an urban designer, but realized that developers hold the real power in sustainability. They're the ones who assemble the team and make the big decisions about the details of a project. So even with good intentions, if a developer didn't really get it, all those sustainability pledges fell by the wayside. She decided to become a developer who gets it…* [Hallová] *launched her own development firm, Adre, with equity at the core… 'thinking about whose land it is to who invests in the project, who makes the buildings, and who occupies them.' She's building a center for the Black United Fund of Oregon, a Portland foundation, to house a consortium of organizations and programs focused on racial equity and sustainability. Hallová is also vice-chair for the state's commission for land conservation and development, which is now working on improving housing equity and climate-friendly planning."*
        - Source: Grist. (2022f, April 20). *Grist 50 2022: Anyeley Hallová*. Fix. https://grist.org/fix/grist-50/2022/#anyeley-hallova

    - **Julia Marsh** - Co-founder & CEO, Sway, Berkeley, CA. *"Other inventors had tinkered with seaweed plastics, but Marsh thought she could do more.* [Her company,] *Sway, won a competition organized by a consortium of companies like CVS Health, Target, and Walmart, and has funding to the tune of $2.5 million. Its first two products, which Marsh hopes to have in production by the end of 2022, will be retail bags and poly-bag sleeves that protect products during shipping. After that: Other applications will include mailers, bubblewrap, pouches, food wrappers, and other pervasive thin-film plastics."*
        - Source: Grist. (2022o, April 20). *Grist 50 2022: Julia Marsh*. Fix. https://grist.org/fix/grist-50/2022/#julia-marsh

    - **Ciara Imani May** - Co-founder & CEO, Rebundle, St. Louis, MO, *"was experiencing scalp irritation from plastic hair extensions, products commonly used by Black women. She also wasn't wild about all the plastic she threw away every time she got her hair done. When she couldn't find a sustainable alternative, she decided to make one. She launched Rebundle in early 2021. Its first line of itch-free, biodegradable hair extensions, made from banana fiber, sold out almost immediately… As it turns out, one in three women experience the same kind of scalp irritation from synthetic hair that May herself did. Rebundle also recycles plastic extensions for anyone not yet ready to make the switch…* [and] *created a space for Black women to have a voice around what sustainability looks like in our personal lives, with our personal care products."*
        - Source: Grist. (2022i, April 20). *Grist 50 2022: Ciara Imani May*. Fix. https://grist.org/fix/grist-50/2022/#ciara-imani-may

- **Sophie Purdom** - Writer & Investor, New York, NY, *"with the help of* [Brown University's] *president,* [Sophie] *and the staff started a sustainable investment fund out of the school's endowment — something that had never been done before. To ensure that other students would carry on that work after she graduated, Purdom and a lecturer wrote and taught a sustainable investing curriculum… today the bulk of Purdom's time goes to running the twice-weekly newsletter Climate Tech VC — a hub for demystifying all things related to climate innovation and the money deals going down in the world of green. In just two years, the newsletter has garnered 20,000 subscribers."*
  - Source: Grist. (2022ad, April 20). *Grist 50 2022: Sophie Purdom*. Fix. https://grist.org/fix/grist-50/2022/#sophie-purdom

- **Gia Schneider** - Co-founder & CEO, Natel Energy, Larkspur, CA, *"founded Natel Energy in 2009 with the goal of creating a hydropower system that would actually benefit ecosystems, while also bringing carbon-free energy to the grid. Schneider wanted to build a turbine that could keep the movement of a river as close to its natural state as possible…* [making it] *'safe for passing fish.' The company builds new small dams and also modernizes existing structures, including a site at a historic canal in Oregon built in the 1940s. Schneider is also excited to see how the company can take on additional river-restoration projects at its worksites — things like extending or restoring wetlands and reconnecting rivers to flood plains. All of this work is aided by Natel's digital-services arm: an AI platform driven by satellite imagery and weather data that can help forecast things like water flow for hydropower and other applications."*
  - Source: Grist. (2022l, April 20). *Grist 50 2022: Gia Schneider*. Fix. https://grist.org/fix/grist-50/2022/#gia-schneider

Climate & Energy

- **Kelly Leilani Main** - Co-founder & Executive Director, Buy-In Community Planning, Oakland, CA, *"tackled evictions, gentrification, and other forms of unjust displacement around the world. But after hurricanes Matthew, Harvey, and Maria barreled through, she saw a new reality: Climate change, urban planning, and human rights are all mixed up together, forming their own turbulent, powerful vortex… Main launched Buy-In Community Planning to build a better buyout process for flood-affected communities and individuals. The nonprofit helps residents and local authorities navigate the buyout bureaucracy, providing them with expertise, connections, and insight to secure funding and distribute it equitably. In De Soto, Missouri, for instance, they're partnering with local organizations and officials to offer an option for residents of flood-prone areas to relocate… Main also has begun building a national database to track who is leaving and where they're going so governments across all levels can make smarter planning decisions."*

        - Source: Grist. (2022p, April 20). *Grist 50 2022: Kelly Leilani Main*. Fix. https://grist.org/fix/grist-50/2022/#kelly-leilani-main

    - **Megan O'Connor** - Co-founder & CEO, Nth Cycle, Salem, MA, *"knew the transition to clean energy will require vast amounts of cobalt, nickel, and rare earth minerals to build batteries, turbines, and electric motors. Yet so much is wasted through inefficient mining and by dumping old devices in landfills… For her PhD, she adapted* [a filtration method] *to glean valuable metals from e-waste. The day after she defended her thesis in 2017, she and her professors decided to launch Nth Cycle to bring the technology to the world. Recyclers can use it to extract cobalt or nickel from dead batteries. It's an alternative to shipping bulky waste thousands of miles to a facility that scorches the stuff at thousands of degrees to free the metals. The Nth Cycle system is designed to be set up at a mine or recycling plant, and will soon be in pilot mode."*
        - Source: Grist. (2022x, April 20). *Grist 50 2022: Megan O'Connor*. Fix. https://grist.org/fix/grist-50/2022/#megan-oconnor

    - **DeAndrea Salvador** - North Carolina State Senator, Charlotte, NC, *"won the election* [in 2019] *and became the youngest person serving in the state's Senate — and its newest climate champion. As a freshman senator, Salvador helped negotiate a law that requires significant emissions cuts for the energy sector by 2030 and carbon neutrality by 2050… and passed with bipartisan support. Next, she has her sights set on infrastructure and transportation, such as ways to support the governor's recent executive order to increase sales of electric vehicles. Technically it's a part-time job, so she's still involved with Renewable Energy Transition Initiative, the nonprofit she founded in 2014 to help educate residents about energy options and advocate for equity in the shift from fossil fuels."*
        - Source: Grist. (2022j, April 20). *Grist 50 2022: DeAndrea Salvador*. Fix. https://grist.org/fix/grist-50/2022/#deandrea-salvador

    - **Laura Zapata** - Co-founder & CEO, Clearloop, Nashville, TN, together with former Governor Phil Bredesen, and former campaign manager, Bob Corney, *"launched Clearloop in 2019… to generate more funding for solar projects by assembling investors seeking climate solutions, including carbon offsets… Clearloop focuses on building in parts of the country where the grid remains very 'dirty' — solar provides just 0.4 percent of Tennessee's electricity, for example… Clearloop's first small solar farm, in Tennessee, should be fully operational this summer; Zapata says two plants in Mississippi and another in Appalachia are in the works."*
        - Source: Grist. (2022t, April 20). *Grist 50 2022: Laura Zapata*. Fix. https://grist.org/fix/grist-50/2022/#laura-zapata

Food & Farming

- **Amy Huang** - University Innovation Manager, Good Food Institute; Co-founder, Alt Protein Project, Seattle, WA *"*[wants] *to improve the lives of the trillions of animals raised for slaughter every year, as well as those of the billions of people now and in the future who deserve a clean, habitable planet… The Good Food Institute, where Huang works, wants to replace meat with ingredients made from plants, animal cells, and other sources that can provide the taste and nutrition without the cruelty and ecological cost. Her role in this transformation? Inspiring and training university students to create the future of alternative protein themselves… She and her collaborator realized that students were perfectly positioned to advocate for new classes or projects that could advance the alt-protein cause. Huang is adapting her approach in the hopes of launching hundreds more* [alt-protein classes and student groups] *worldwide."*
  - Source: Grist. (2022d, April 20). *Grist 50 2022: Amy Huang*. Fix. https://grist.org/fix/grist-50/2022/#amy-huang

- **Kimberlie Le** - Co-founder & CEO, Prime Roots, Berkeley, CA "*was turned off by the taste and long ingredient lists of many plant-based options. Her company, Prime Roots, looked instead to another kingdom: fungi. All of its products are made from koji, the same tasty mycelium that gives its umami flavor to soy sauce and miso paste. Its fibers naturally replicate the texture of meat, but it grows in just a few days and uses only a fraction of the resources that livestock farming requires, from land to water to fossil fuels. The company started out making a range of products, from lobsterless lobster to baconless bacon, based primarily on input from consumers. Now, it's turned its attention to the deli… Prime Roots lunch meats and charcuterie will launch later this year, starting in restaurants and then grocery stores."*
  - Source: Grist. (2022r, April 20). *Grist 50 2022: Kimberlie Le*. Fix. https://grist.org/fix/grist-50/2022/#kimberlie-le

- **Leah Lizarondo** - Founder & CEO, Food Rescue Hero, Pittsburgh, PA *"came across a 2012 report that estimated 40 percent of the food in the U.S. is wasted. Galvanized, Lizarondo found collaborators and marshaled a brigade of volunteer food-deliverers — organized at first by text messages, then through social media, and then, as their numbers swelled, an app. They took their project to established hunger-relief organizations, but they weren't interested. So in 2015, they founded the nonprofit 412 Food Rescue, and she launched the tech platform Food Rescue Hero the following year… The technology works like DoorDash but in reverse, and for extra food. Volunteers sign up to collect surplus from restaurants and groceries, and deliver it to kitchens and pantries… Local food-relief organizations license the app and use it to organize driver networks… Food Rescue Hero's goal is to add 10 cities each year, hitting 100 by 2030. At that rate, it will have saved 2.5 billion pounds of food from the landfill by then."*

        - Source: Grist. (2022u, April 20). *Grist 50 2022: Leah Lizarondo*. Fix. https://grist.org/fix/grist-50/2022/#leah-lizarondo

    - **Haley Russell** - Founder & CEO, Chippin, Arlington, VA, *"wanted to make a nutritious treat pets would go crazy for… Could we bring more planet-friendly proteins to the pet-food space?* [Her company]*, Chippin, is exploring three kinds of alternative proteins: insects, invasive or overpopulated species, and algae. Its first line of kibble is made with silver carp, an invasive fish posing a threat to the Great Lakes region."*
        - Source: Grist. (2022m, April 20). *Grist 50 2022: Haley Russell*. Fix. https://grist.org/fix/grist-50/2022/#haley-russell

    - **Pandora Thomas** - Afro-Indigenous Permaculture Designer, Farmer & Facilitator, Berkeley and Sebastopol, CA. *"Permaculture can be described as a way of thinking, a subculture, and a system of ecological design principles for sustainable agriculture. In its best-known version, it focuses on technologies like solar power and rainwater catchment. But the version Thomas is developing includes sustainable social systems and older techniques that have been or could be adopted from Indigenous practices, such as reviving traditional crops that could build soil or withstand drought… Her big project is Earthseed Farm – 14 acres of orchards, berry bushes, and herbs in California's Sonoma County… The farm will be an education and retreat center that hosts programming for diverse communities taught by people of Afro-Indigenous ancestry, including permaculture techniques; training in community organizing; and casual get-togethers, such as 'Black to the land' gatherings."*
        - Source: Grist. (2022ab, April 20). *Grist 50 2022: Pandora Thomas*. Fix. https://grist.org/fix/grist-50/2022/#pandora-thomas

Policy & Advocacy

    - **Moñeka De Oro** - Community Affairs Board Director, Micronesia Climate Change Alliance, Saipan, Northern Mariana Islands, advocates *"for the people of the Northern Marianas, Guam, and neighboring nations, such as the Federal States of Micronesia, Palau, and the Marshall Islands. Her efforts include campaigns for sovereignty and self-determination, and demilitarization of U.S. territories like Guam and the Northern Marianas… She joined the fledgling Micronesia Climate Change Alliance as a staff member in early 2020, working on community-based solutions for problems such as illegal dumping… The group also assisted in launching a climate-focused youth coalition that has grown to more than 100 members and is organizing an island-wide competition to create art from trash… With support from Guam Green Growth Initiative and the Massachusetts Institute of Technology, De Oro is developing a climate literacy curriculum for K-12 students throughout the Mariana Islands… to ensure the next generation is equipped with the tools to be resilient."*

        - Source: Grist. (2022z, April 20). *Grist 50 2022: Moñeka De Oro*. Fix. https://grist.org/fix/grist-50/2022/#moneka-de-oro

    - **Bekah Hinojosa** - Gulf Coast Campaigner, Sierra Club; Member, Another Gulf Is Possible Collaborative, Brownsville, TX *"volunteer*[ed in Brownsville] *on campaigns against three proposed liquified natural gas (LNG) terminals* [and] *joined the Sierra Club as an organizer. Hinojosa also works with the grassroots collaborative Another Gulf Is Possible to oppose plans by Elon Musk's SpaceX to build an LNG plant near Brownsville and launch the Starship craft with its enormous Super Heavy rocket."*
        - Source: Grist. (2022g, April 20). *Grist 50 2022: Bekah Hinojosa*. Fix. https://grist.org/fix/grist-50/2022/#bekah-hinojosa

    - **Amara Ifeji** - Director of Youth Engagement and Policy, Maine Environmental Education Association, Bangor, ME, is headed for *"a career in climate education and justice…* [She] *works on mobilizing youth to vote on climate issues…* [Ifeji] *also organized Maine's first-ever climate education summit and is part of a group advancing legislation to fund teacher training on the subject."*
        - Source: Grist. (2022c, April 20). *Grist 50 2022: Amara Ifeji*. Fix. https://grist.org/fix/grist-50/2022/#amara-ifeji

    - **Ugbaad Kosar** - Deputy Director of Policy, Carbon180, Washington, D.C., *"joined Carbon 180, a carbon-removal policy development and advocacy organization. She was particularly interested in questions of equity, such as: Since the U.S. and Europe are responsible for more than their share of emissions, shouldn't they assume more responsibility for getting rid of excess carbon? On a local level, if specific carbon-removal projects create jobs, or increase resilience to extreme weather, or lead to cleaner air and water, can they be built in disadvantaged communities that pay the biggest price from climate change? Kosar hopes to influence how* [these questions] *play out by working with the federal government to shape policies and regulations… The organization is also involved in redistributing funds to environmental justice groups so that their members can also learn about the potential."*
        - Source: Grist. (2022ae, April 20). *Grist 50 2022: Ugbaad Kosar*. Fix. https://grist.org/fix/grist-50/2022/#ugbaad-kosar

    - **Marcela Mulholland** - Political Director, Data for Progress, Brooklyn, NY, *"joined a new youth activist group, the Sunrise Movement, and* [went] *door-knocking for climate candidates in Florida....* [Mulholland] *joined the polling firm and think tank Data for Progress. Their emphasis is on generating and analyzing polling data that can help progressive candidates decide how best to frame climate concerns, and they also test the popularity of climate policies. Mulholland translates the wonky data analytics to the campaigns and organizers who need it to fine-tune their appeals."*

        - Source: Grist. (2022v, April 20). *Grist 50 2022: Marcela Mulholland*. Fix. https://grist.org/fix/grist-50/2022/#marcela-mulholland

    - **Eliza Nemser** - Executive Director, Climate Changemakers, San Francisco, CA, realized that *"good climate policy was essentially a matter of more votes for better candidates who could enact real solutions…* [She] *began giving candidates advice on climate, and making sure they could run on it, win on it, and legislate on it. To get more people involved* [and create a way to take effective action]*, she and others launched the organization Climate Changemakers in 2020. Volunteers are invited to advocate on behalf of climate candidates, or write letters to the editor, reach out to policymakers, or connect with utility companies or local agencies. Rather than ask for money, Climate Changemakers asks for time. More than 1,800 folks have signed up, and more than half of them are new to political action. She aims to reach the three out of 10 Americans who say they would take political action on climate if the right person asked."*
        - Source: Grist. (2022k, April 20). *Grist 50 2022: Eliza Nemser*. Fix. https://grist.org/fix/grist-50/2022/#eliza-nemser

    - **Khanh Pham** - Oregon State Representative, Portland, OR, *"joined the Asian Pacific American Network of Oregon, building out its environmental justice program. She also championed a citywide coalition, led by communities of color, to back the Portland Clean Energy Fund. That landmark project, approved by voters in 2018, adds a 1 percent surcharge to the business license fee for companies with over $1 billion in revenue. The fund generates roughly $60 to $80 million annually for clean energy projects and job training* [for] *low-income communities of color that are being left out of the green economy. Following that success, she ran for a vacated state legislature seat in 2020 and won. Many of the same groups who backed PCEF joined forces to draft legislation that set a 100 percent clean energy standard, establish a discount electricity rate for low-income Oregonians, and provide $10 million in weatherization funds. All three bills passed. Among other projects, Pham is now building a PAC to recruit and elect more climate justice candidates."*
        - Source: Grist. (2022q, April 20). *Grist 50 2022: Khanh Pham*. Fix. https://grist.org/fix/grist-50/2022/#khanh-pham

    - **Missy Stults** - Sustainability and Innovations Director, City of Ann Arbor, Ann Arbor, MI, *"has helped lead the city to one of the nation's most aggressive municipal climate policies. The big goal is achieving carbon neutrality by 2030 — and there's an actual roadmap for getting there: A2ZERO, which came together in just 82 days and was adopted in June 2020. Among other accomplishments, the city has supported the installation of rooftop solar on 350 houses, designed the first net-zero fire station east of the Mississippi River, and launched a program to help low-income seniors with both energy efficiency and safety*

upgrades like grab bars. The next phase includes an effort to decarbonize the diverse Bryant neighborhood, while improving health and safety."

- Source: Grist. (2022y, April 20). *Grist 50 2022: Missy Stults*. Fix. https://grist.org/fix/grist-50/2022/#missy-stults

- **Andrea Vidaurre** - Co-founder & Policy Lead, The People's Collective for Environmental Justice, Inland Empire, CA, *"launched The People's Collective for Environmental Justice to bring* [warehouse] *workers and residents together. In a project with students, they mapped the region's warehouses, finding that 80 percent are in communities of color — textbook environmental racism. The collective has successfully pushed the regional air district to require every warehouse to reduce emissions by adding rooftop solar, buying zero-emission vehicles, or building charging infrastructure for electric vehicles. Working with the nonprofit Warehouse Worker Resource Center, Teamsters, and others, the group has a grant to create worker-training programs in San Bernardino for electric trucks and green jobs in logistics."*
  - Source: Grist. (2022e, April 20). *Grist 50 2022: Andrea Vidaurre*. Fix. https://grist.org/fix/grist-50/2022/#andrea-vidaurre

- *"Black youth are at the crossroads of climate injustice like no other group. That's why young Black leaders are standing up for the planet, and in the process, are pushing the global climate movement toward higher ideals:*
  - ***Oladosu Adenike** is a passionate proponent of youth climate action. That, and of emphasizing the connection between women's rights and environmental rights. Focused particularly on the devastating climate impacts already taking place in the Lake Chad region of Nigeria, Oladuso's efforts highlight how the climate crisis is clearly already impacting real people.*
    - Source: The Climate Reality Project. (2021a, February 19). *Young Black activists remaking the climate movement*. Climate Reality. https://www.climaterealityproject.org/blog/young-black-activists-remaking-climate-movement

- **Wanjiku"Wawa" Gatheru** *"founded Black Girl Environmentalist, an intergenerational community of Black girls, women and non-binary environmentalists. This past February, Wawa spearheaded Black Girl Environmentalist's 'Reclaiming Our Time' campaign - one of the largest Black youth-led environmental initiatives in years - with partners including the Sierra Club, Intersectional Environmentalist, Mark Ruffalo and Anne Hathaway. She is currently a co-host on 'The Green Table Talks' an intergenerational series centering Black and Latinx perspectives on environmental topics."*
  - Source: Gatheru, W. (n.d.). *About*. Wawa Gatheru. https://www.wawagatheru.org/about

- **Wangari Maathai** *"was the first African woman to receive the Nobel Peace Prize. She was also the first female scholar from East and Central Africa to take a doctorate (in biology), and the first female professor ever in her home country of Kenya. In 1977 she started a grass-roots movement aimed at countering the deforestation that was*

threatening the means of subsistence of the agricultural population. The campaign encouraged women to plant trees in their local environments and to think ecologically. The so-called Green Belt Movement spread to other African countries, and contributed to the planting of over thirty million trees. Maathai's mobilization of African women was not limited in its vision to work for sustainable development; she saw tree-planting in a broader perspective which included democracy, women's rights, and international solidarity."

  - Source: The Norwegian Nobel Institute. (n.d.). *Wangari Maathai facts*. Nobel Prize. https://www.nobelprize.org/prizes/peace/2004/maathai/facts

- **Hattie Carthan**, Bedford-Stuyvesant, Brooklyn. *"For New York City in the 1960s and 70s… [t]he city back then looked a lot different than it does today. … A sharp economic decline, coupled with white flight when people left the city for the suburbs, meant there was mass disinvestment. Buildings were abandoned or left in disrepair, especially in the city's lower income neighborhoods. What was left was urban decay, and thousands of vacant lots.*
  One of the areas facing mass disinvestment in the 1960s and 70s was here, in the Bedford-Stuyvesant, or Bed-Stuy, neighborhood of Brooklyn. It's where, in the 1960s, a resident named Hattie Carthan noticed something: Bed Stuy didn't have enough trees. Usually, trees dot the streets of New York City because the city has invested in planting them. But Bed-Stuy was one of the city's most heavily redlined neighborhoods - a racially discriminatory practice where mortgage lenders and insurance companies denied services to people in certain neighborhoods, which pushed Black people into specific areas. … Many redlined areas lack access to green space and have far fewer trees. It isn't just an aesthetic problem: Research has shown trees offer improved air quality and cooler temperatures. And it's part of the reason why, as one study showed, temperatures in redlined areas are approximately 2.6 degrees Celsius warmer than in non-redlined areas…
  [Hattie] *wanted tree-lined blocks again, so she set out to make it happen. At first, raising money within the neighborhood for her efforts was a huge obstacle. She said, 'There was no money there, no inclination, and I guess everybody felt I was too old.' But at 64 years old, she was relentless. Through her continued pressure, she got the city to offer a tree matching program. They'd give her six trees for every four planted. She took the offer and as some of the only archival footage of Hattie shows - she got right to work. Hattie started a group called the Tree Corps, enlisting local kids to join her. Her helpers have grown from three kids to 30, now fanning out into Bed-Stuy to help to bring living, growing things back to their streets. In less than a decade, she led grassroots efforts to plant 1,500 trees in Bed-Stuy.*
  Hattie became known as 'the tree lady of Brooklyn,' but her work transforming the community didn't end there. In 1968, as part of a wave of redevelopment and urban renewal, the city of New York was slated to demolish four abandoned brownstones in Bed-Stuy, along with the nearly-century-old magnolia grandiflora tree towering outside them. For two years, Hattie organized against the redevelopment project until she was able to procure historical landmark status for the tree. In fact it's the only living thing in the city still landmarked today. Saving the magnolia spiraled into a way to reclaim three of the brownstones too: she convinced the city to sell them to her for $1,200. She turned

the brownstones into the Magnolia Tree Earth Center - a space for children to get environmental education, including horticultural workshops, and lessons on how to care for and plant street trees. It's a place where Hattie's story continues to inspire generations of urban gardeners."

- Source: Chakraborty, R. [Vox]. (2021, June 7). *Missing chapter: How radical gardeners took back New York City* [Video]. YouTube. https://www.youtube.com/watch?v=_g2CaF12xxw&feature=youtu.be

- **Liz Christy**, Lower East Side, Manhattan. *"It started with a seed bomb, in the Lower East side. At the time, it was another neighborhood struggling with abandonment and disinvestment. And in 1973, a local named Liz Christy was hoping to change it. 'At the very beginning, we were very radical.' That's Fon Loggins, one of Liz's friends and fellow gardeners. 'So we made these seed bombs, would go out in the evening and toss them over the fences. And next year it was full of flowers like a little meadow.' They had no legal access to spaces, but made it a mission to re-green unloved parts of the city. They started to call themselves the Green Guerillas.*
  Soon, the group turned their attention to one vacant lot here on Houston Street. She was walking by one day, this lot, and it was full of trash, three or four feet of trash. She went back home, called a bunch of us up and said, 'We have a project you might like to work on.' The group spent a year removing trash, and adding soil, fencing and plants. To take a space that was full of garbage and trash and green it, was a radical concept back then. What originally happened was the city came in and said, 'This is our property. You can't use it as a garden." In response, Liz called up the press and tried to get the word out about the Green Guerillas. And eventually, the city backed off.
  In April 1974, the City Office of Housing Preservation and Development offered them a lease for $1 a month to make it legal. The Green Guerillas named it the 'Bowery Houston Community Farm and Garden.' It became the first New York City-approved community garden. Soon, residents began planting vegetables, hosting workshops, and sharing knowledge with other gardeners. The community gardening movement exploded. People all across the city started getting $1 leases to turn abandoned lots into green spaces in their own communities. By 1985, there were around 1,000 gardens across the city."
  - Source: Chakraborty, R. [Vox]. (2021, June 7). *Missing chapter: How radical gardeners took back New York City* [Video]. YouTube. https://www.youtube.com/watch?v=_g2CaF12xxw&feature=youtu.be

Conclusion: The Ecosystem Connects Us All

- "*When environmental groups are not thinking broadly enough on racial justice, we get what we have right now. We have beautiful parks and things that have been outlined as a place to go experience nature, but we don't have nature throughout our existence. We don't see ourselves as part of an ecosystem. We see the ecosystem as a thing over there to go drive to on the weekends and be a part of. We commodify the very thing we need to survive when the environmentalists don't bring in racial justice. When you bring in racial justice, you cannot just focus on the rivers that you like to kayak. You've got to*

focus on the communities that are poisoned every day for you to get your gas to get to the river and go get in the kayak." - Colette Pichon Battle

- Source: Johnson, A.E., & Blumberg, A. (Hosts). (2020, September 24). Black lives matter and the climate (No. 7) [Audio podcast episode]. In *How to Save a Planet*. Gimlet Media. https://gimletmedia.com/shows/howtosaveaplanet/39habgl/black-lives-matter-and-the-climate (includes Transcript)

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