

Shelter from the Storm

An Exploration of Climate Change and the Affordable Housing Crisis

Climate change and the affordable housing crisis might seem like separate issues, but they overlap in more ways than you might know. In our carelessness, we humans have created the perfect storm, and now we need shelter.



As we release more and more greenhouse gases into the atmosphere, we increase the likelihood that people will lose their homes to ecological disasters. We also make survival more difficult for people who are already unhoused.

This exhibit explores the intersecting problems and achievable solutions. As bleak as the situation seems, there are many reasons for optimism. We have it in our power to save our home and to shelter the unhoused. We lack only the will to act.



The Dust Bowl: An Ecological Calamity

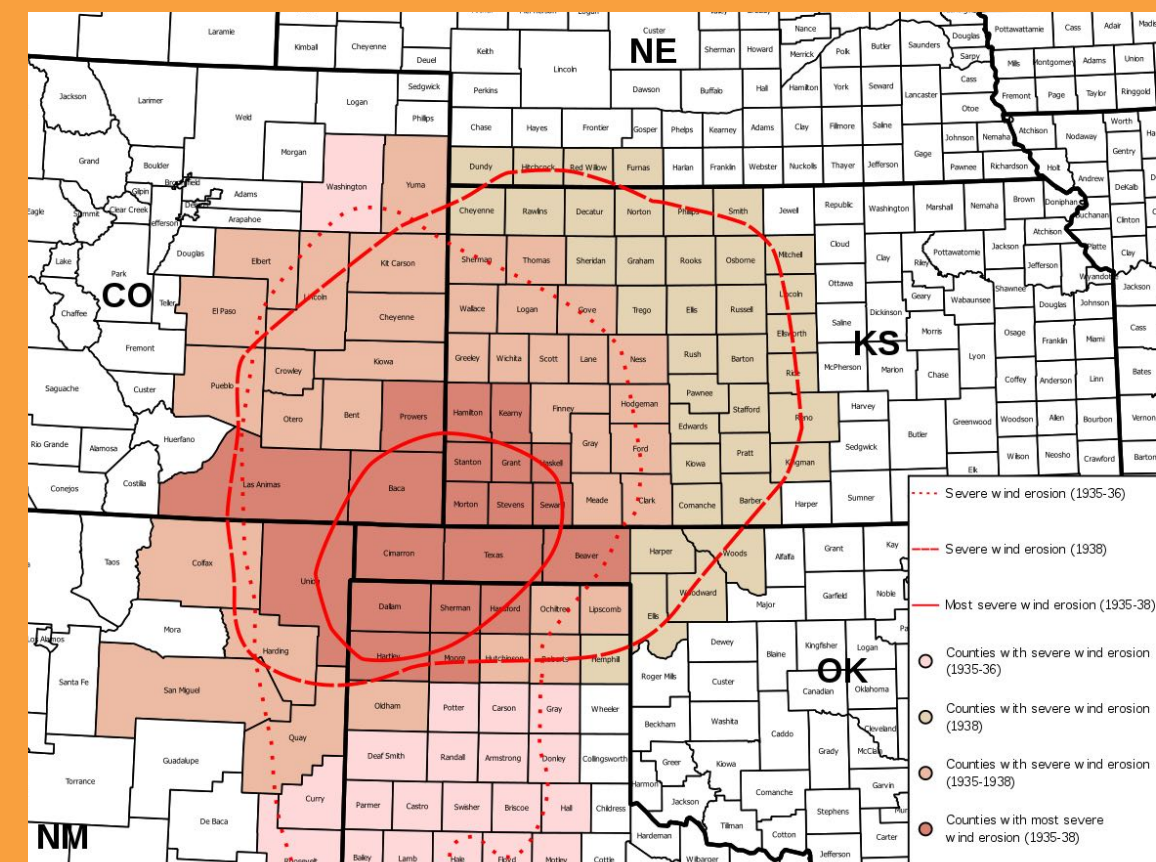
1. Great Expectations

During World War I, US farmers mobilized to grow wheat for a starving Europe. After the war, a wheat boom brought “suitcase farmers” from the cities to the Great Plains to try their hand at farming.

During the “Great Plow-Up,” farmers in the Great Plains used “one-way” plows to chop up the deep-rooted prairie grasses and topsoil that held in dirt and moisture, making the land vulnerable to changes in the climate.



At the time, farmers relied only on rain to water their crops. When a severe drought hit the Southern Great Plains in 1930, the wheat started dying.



The farmers were “next year” people, who believed that next year’s crop would be better. They had no idea they were beginning a decade of misery.



2. Grapes of Wrath

When strong winds, which are common in the Great Plains, picked up the dirt beneath rotting crops and upturned topsoil, they created “black blizzards” that could rise 10,000 feet high and stretch 200 miles wide. The dust storms could make the daytime sky “darker than two midnights in a jug.”

Black blizzards blew dust all over the country (and 300 miles into the Atlantic Ocean). President Roosevelt is said to have wiped dirt from the Great Plains from his desk in the Oval Office. The “Dust Bowl” was now every American’s problem.

During the 1930s (a.k.a. the “Dirty Thirties”), dozens of black blizzards struck the Great Plains, sometimes depositing so much dirt on a homestead that a farmer could walk from a new dune to his roof. One storm blew 5 million acres of dust, twice as much dirt as the US excavated to dig the Panama Canal.

3. Watership Down

The dust wreaked havoc on the people’s health. An estimated 7,000 people—including many young children—died from “dust pneumonia.” The Red Cross made thousands of face masks, but many people refused to wear them.



After farmers killed coyotes, jackrabbits multiplied and invaded farms. To protect family gardens, towns organized jackrabbit drives, inviting families to bring clubs and bats.



Then came swarms of grasshoppers so thick that they blocked out the sun. The insects were starving, and they ate everything in sight, including the bark on fence posts. Desperate farmers poured a poison called strychnine onto the ground to kill the insects.

The Dust Bowl: A Humanitarian Crisis

1. Dirt & Poverty

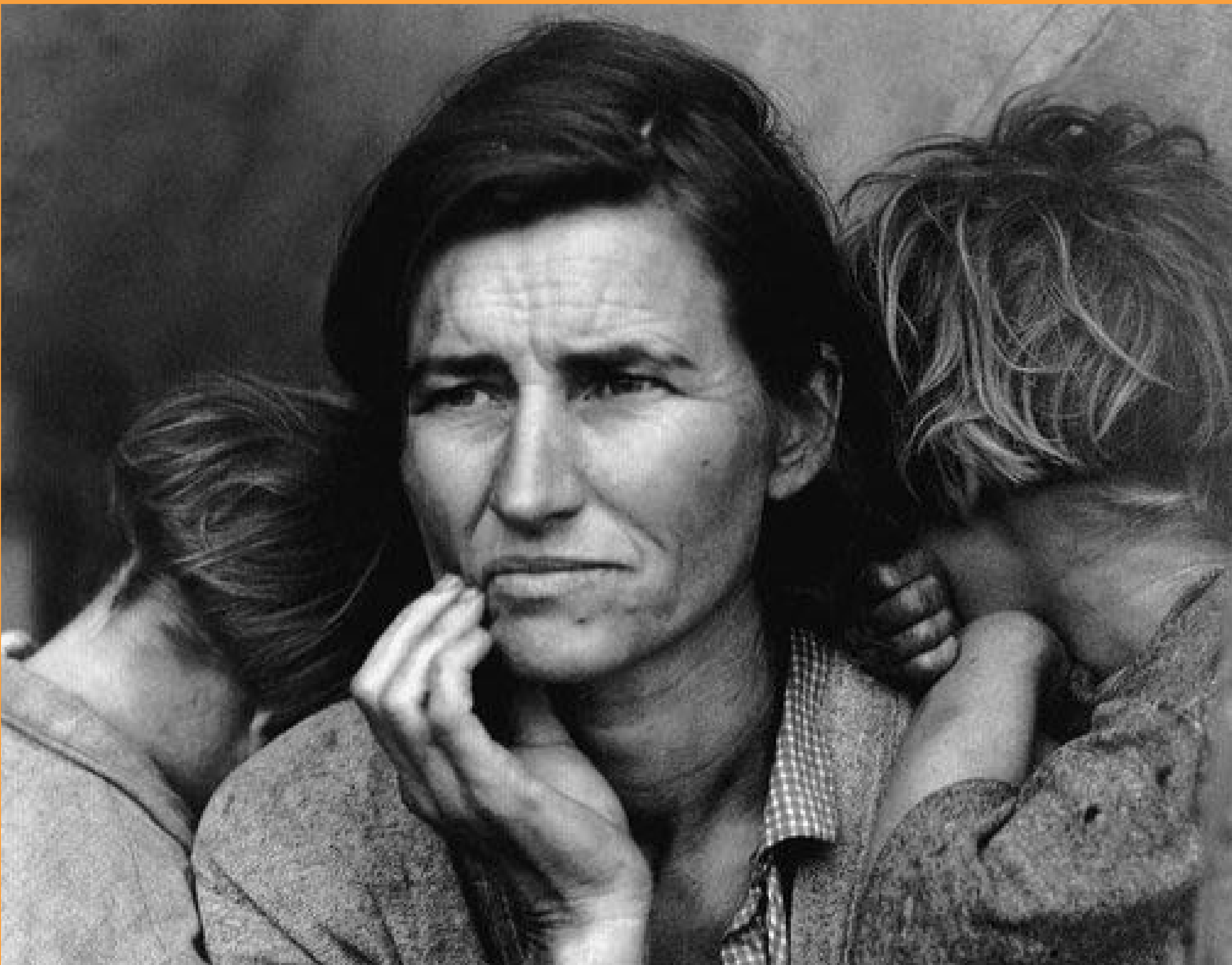
The drought and dust storms that hit the Great Plains in the 1930s, during the peak of the Great Depression, made already hungry people even hungrier.

Malnutrition was a serious problem in the region. Mothers were often so malnourished that they couldn't produce milk for their babies.



When the people of the Dust Bowl migrated to other parts of the country, well-fed Americans thought the migrants looked "racially different."

One-quarter of the people of the Dust Bowl migrated, especially to California. From 1930 to 1940, roughly 2.5 million people (about 2% of the US population) fled the Great Plains. It was the largest migration in American history. Most families had nothing but what they could fit into the family car, if they had one. Many had to hitchhike, walk, or ride freight trains to escape dust and destitution.



2. Migration

About 400,000 migrants moved to California to find jobs and shelter. The people who lived where the migrants sought refuge called them names like "bums," "hillbillies," and "fruit tramps." The term "Okie" (from "Oklahoma") was the most common insult hurled at anyone who migrated from the Great Plains.

Dust Bowl migrants faced much discrimination. Police officers formed "bum blockades," stopping migrants at state borders. Those who organized the blockades thought migrants were inherently violent, but the blockaders often perpetrated the violence.

Nativism was partly to blame for the discrimination, but this "American exodus" happened at a time when jobs were scarce and bellies were empty. The places where the migrants fled were often little better off than the Dust Bowl states.

3. Hoovervilles

Dust Bowl migrants often stayed in makeshift tents or shanties built from scraps. They were exposed to the elements and vulnerable to predators, rodents, and insects.

Migrants sometimes formed refugee camps or shantytowns called "Hoovervilles," named after President Herbert Hoover, who was in office when the Great Depression began. Toilets were usually just a hole in the ground, so sanitation-related diseases spread quickly through camps.



Dust Bowl migrants struggled to find clean drinking water. They often drank from and bathed in irrigation ditches contaminated with pesticides and feces.



The Dust Bowl: A Triumph of Optimism

1. A Dire Warning

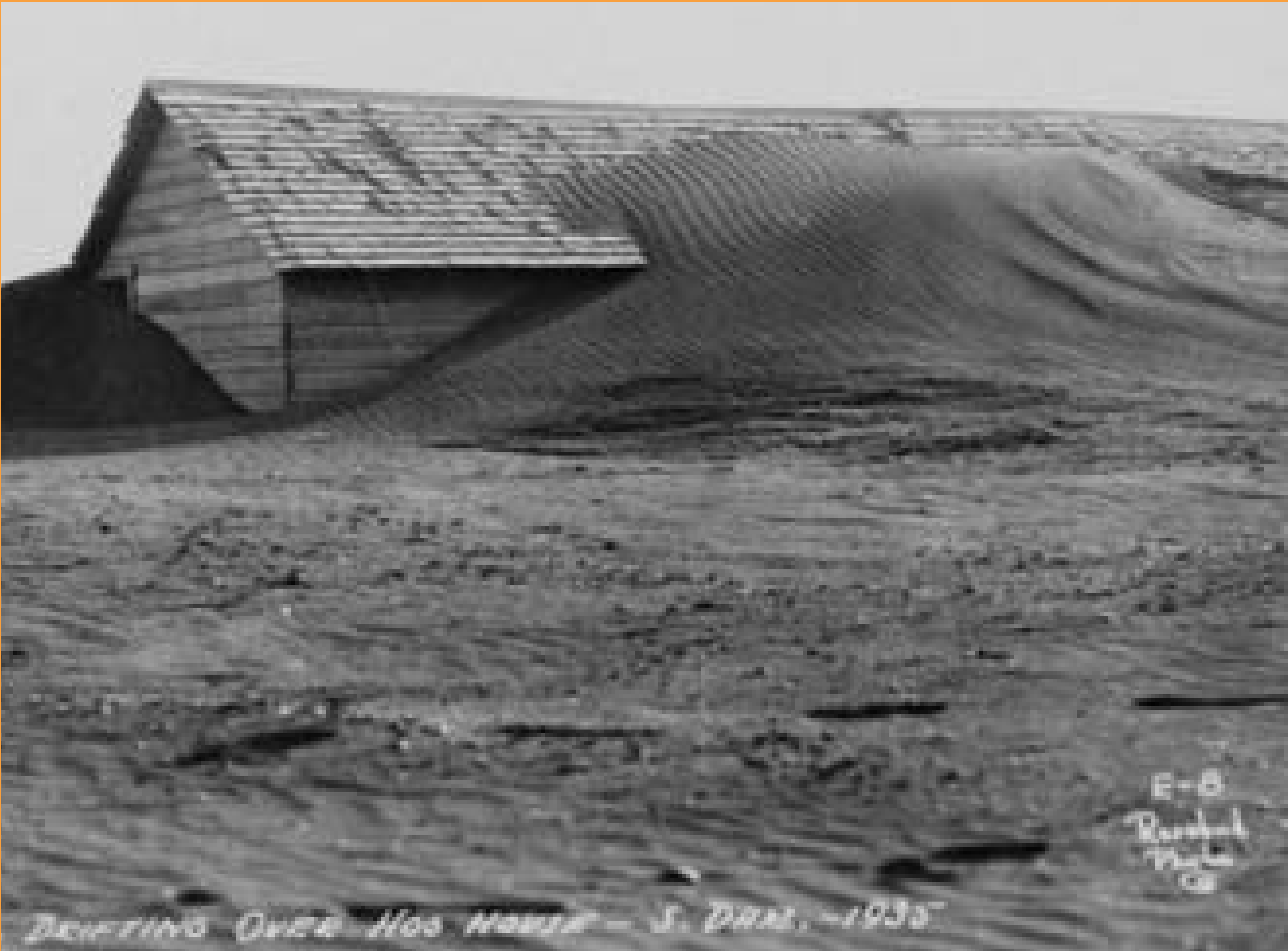
“Unless immediate steps are taken to restore grass to millions of these sun-scorched, wind-eroded lands, we shall have on our hands a new, man-made Sahara where formerly was rich grazing land.”

— Hugh Hammond Bennett, Director of Soil Conservation Service, father of soil conservation

Some farmers believed that black blizzards were punishment for their sins. In a way, they were right. The mistakes that farmers made in the decades before the Dust Bowl caused the crisis.

The Dust Bowl was a human-made ecological calamity, but we humans also crafted the solutions that helped end “the worst hard time.”

Many of President Franklin D. Roosevelt’s advisors believed it had been a mistake to grow crops in the Great Plains, and they suggested that he allow the region to lie fallow. But FDR believed the US could and should save the area.



2. Call to Action

Beginning in 1935, FDR sent a “tree army” into the Dust Bowl states. Laborers from the Works Progress Administration (WPA) and the Civilian Conservation Corps (CCC) planted more than 220 million trees to protect the land from wind erosion.

FDR’s tree army also encouraged farmers to plant trees to protect their homes and livestock. They suggested that farmers plant strips of trees known as “shelterbelts.”

Shelterbelts reduced wind erosion, kept moisture in the soil, and protected crops from high winds. Over seven years, the WPA and the CCC planted roughly 19,000 miles of shelterbelts on 33,000 farms.



3. Let’s Not Repeat History!

Government experts also convinced farmers of the benefits of contour farming, planting rows perpendicular to prevailing winds. The practice creates little dams that slow the flow of water, allowing it to sink into the soil during rainstorms. It also prevents erosion by tilling.

In 1948, a farmer invented the “center-pivot sprinkler” system, which allowed farmers to irrigate land easily using underground water. Center-pivot irrigation helped farmers transform the “Great American Desert” into the “American Breadbasket.”



The irrigation of the Great Plains has come at the expense of the Ogallala Aquifer, a massive underground reservoir that farmers are quickly draining. The Great Plains could hit “peak water” by 2040, then food production could decrease quickly.

To avoid another Dust Bowl, we must conserve water and change policies that encourage waste.



Drought and Homelessness: A Solution within a Problem

Ecological Challenges

For most of the past twenty years, California has faced a water crisis. Climate change dried up rivers and reservoirs, and Californians emptied aquifers faster than rain and snow could replenish them.

The rain that fell in the winter of 2023 filled many reservoirs and replenished some aquifers, but that historic deluge was an aberration.

Until 2023, the aquifer under Corcoran had been so depleted that parts of the California town had sunk almost 12 feet.

Until the beginning of 2023, about 95% of the Golden State was experiencing severe drought, and the state's largest reservoirs were at "critically low levels." Shasta Lake, California's biggest reservoir, was only 40% full until last winter. The San Luis Reservoir was at 10% capacity.

This water shortage impacts California's agriculture industry, which accounts for about 80% of the state's annual water usage and produces about a quarter of America's food.

Some crops are thirstier than others. Almond trees require about 10% of California's annual water use.



Effects on Homelessness

Our water crisis has also contributed to homelessness in the Golden State. When California farm workers lose jobs to drought, many turn to cities for work, but they often struggle to find jobs that can cover rent.

The minimum amount of water needed for sanitary living is about 13 gallons per day. About 64% of unhoused people in San Francisco use less than one gallon per day. Housed San Franciscans use about 42 gallons each day.

Water scarcity is also worsening matters for unhoused people, whose top priority is often finding sufficient water to meet basic needs.

A lack of clean drinking water, sanitary toilets, and hand-washing stations in San Diego is blamed for a 2017 Hepatitis A breakout that sickened 584 unhoused people and killed 20.

The UN High Commissioner for Refugees' standards require one water tap for every 80 people, one shower for every 50, and one toilet for every 20. Almost no American city meets those standards for unhoused populations.

Solutions

Desalination is an increasingly popular solution to drought, but the process can be energy intensive, and it creates brine waste.

Desalinated water also costs two to three times more than other water. Still, eco-friendly processes will provide much of our future water.

The most cost-effective solutions are conservation (using less) and reclamation (treating wastewater).

Housed people could learn much from unhoused folks about conservation. Because water is so hard for unhoused people to find, they waste little. If we were all so water-wise, we could prolong the lives of our water sources.

Agriculture uses four times more water than cities, so farmers must adopt efficient methods like drip irrigation, vertical farming, and dry farming. We can also opt not to buy foods that require much water to grow.

California Wildfires: Black Smoke, Silver Linings

Ecological Challenges

Over the past decade, California has suffered more drought-induced wildfires than any other state. In 2021 alone, 9,260 wildfires burned 2.23 million acres of the Golden State.

Roughly 2.7 million Californians live in areas at very high risk for future wildfires.

When a weather-related disaster destroys a home in a disaster zone, a person may not receive insurance money or federal support if they didn't have catastrophe insurance. And insurance companies often flee areas struck by weather-related disasters. Homes in parts of California may soon be uninsurable.

If it becomes impossible to insure homes, Californians will flee to other parts of the state or to other states. In San Francisco and Los Angeles, where affordable housing is already scarce, "climate migrants" often end up unhoused. In 2020, wildfires forced more than 100,000 Californians from their homes.



Solutions

California forest services are spending more money each year to suppress wildfires, leaving less money to prevent them. Many fires are fueled by dead trees that forest services could remove, but that requires spending money that governments often don't have.

Governments can recoup some of the money that they spend on prevention by selling the wood they remove from forests. Companies can turn the wood into products like paper and furniture. The most ecological choice is often the most economical one.

As bleak as the situation seems, there is a silver lining. For decades, climate change deniers have prevented the federal government from addressing climate change. But burned homes make it more difficult for deniers to find an audience to buy their denials.

Effects on Homelessness

The trauma of watching fire consume everything you own can cause anxiety and depression. Mental health issues can worsen money problems, contributing to poverty and homelessness.

When fire destroys homes in a state already facing an affordable housing crisis, the number of people competing for a shrinking supply of homes increases, driving up rents and worsening homelessness.

Smoke from wildfires also endangers the lives of unsheltered people, who often have compromised health. The consequences can be dire for someone who can't escape toxic outdoor air.

Rising Sea Levels: Learning to Build a Better Ark Future

Ecological Challenges

Unless we act to reverse the greenhouse effect, sea levels will rise about three feet over the next 75 years. Countries like Maldives and Kiribati could be almost completely submerged, and cities like Jakarta (Indonesia), Lagos (Nigeria), Miami, and New York City could also be under water.

In California, between \$8 billion and \$10 billion of property could be under water by 2050. San Mateo, Alameda, and Red Wood City are among the 20 most vulnerable US cities.

If Pacific Ocean saltwater washes into Central Delta waterways, 27 million Californians could be without drinkable water.

Last year in Surfside, Florida, a 12-story condo tower collapsed, killing 98 people. Scientists are testing the theory that rising sea levels forced saltwater into the building's foundation. That water likely seeped into the pores of the concrete support columns, corroding the reinforcing rebar, causing the collapse.



Solutions

Owners can retrofit vulnerable buildings to accommodate changing sea levels. Builders can create “amphibious” buildings that float permanently on water or that sit on a solid foundation when water levels are low and that rise when levels are high.

By building “living shorelines” made of lines of mangroves, salt marshes, and oyster reefs, cities like San Francisco can protect vulnerable buildings while restoring ecosystems.

San Francisco’s 2016 Sea Level Rise Action Plan includes seawall improvements, self-rising flood walls, terraced wetlands, floating islands, artificial reefs, living shorelines, and a newly developed community on Treasure Island that will serve as a model for sustainable living.

Effects on Homelessness

The collapse of additional multifamily homes could trigger the condemnation of other buildings in the area. Closures will increase homelessness. And people who live in nearby multifamily homes that aren’t condemned may struggle to find buyers for their property.

As the number of rental homes shrinks, competition for the remaining homes will intensify, causing rents to rise, making it impossible for people who are already barely scraping by to afford housing.

Rising sea levels could submerge the homes of about 760 million people worldwide, nearly 10% of the world’s current population. Unhoused people will migrate to other cities or to other countries. Many refugees will face violent resistance to their migration.

Billion-Dollar Weather Events: The High Cost of Short-Sighted Thinking

Ecological Challenges

Hurricanes, tornadoes, blizzards, floods, severe heat waves, killer cold spells—extreme weather events of all types are on the rise because we continue to release greenhouse gases into the atmosphere.

A “billion-dollar weather event” causes at least a billion dollars of property damage. From 1980 to 2013, the US experienced 6.3 such events each year, but from 2017 to 2021, the average jumped to 17.8 per year. By 2050, the US might have one every week.

In 2021, the US suffered 20 extreme weather events that caused about \$148 billion of property damage to 15 million homes. That’s about 10% of all residential structures in the US. These events might soon cost Americans trillions of dollars every decade.



Solutions

One way to reduce the impact of billion-dollar events is to build “natural disaster–proof” homes, using steel for frames and exterior surfaces. Even 150-mph winds won’t damage a steel exterior, and it makes homes less vulnerable to fire. Because steel is recyclable, it’s also eco-friendly.

“Tiny homes” are relatively inexpensive to build, and they require less energy to heat and cool. But they can’t withstand extreme weather events, so they are only temporary solutions.

If cities use natural disaster–proof materials to build multifamily homes for unhoused people, we can shrink unhoused populations and protect people from extreme weather events. Everyone is entitled to the protection of shelter. That goal is achievable if we just choose to build the homes.

Effects on Homelessness

If extreme events destroy homes every week, unhoused populations will swell. Some homeowners will discover that their insurance policies don’t cover many “acts of God,” and they won’t receive a payout. Middle-class people could become destitute overnight.

Extreme weather events will also make conditions worse for already unsheltered people. Some of the events won’t be survivable, and we are likely to see an uptick in exposure-related deaths.

Billion-dollar weather events will strain budgets. The more money governments spend helping people rebuild after a disaster, the less money they will have for mitigation efforts. Those disasters will also cause people to miss lots of work, shrinking the country’s tax base.

Learning from the Experiences of Unhoused People

Lessons from the Sidewalk

Too many housed people believe that homelessness is a moral failing. They argue that unhoused folks aren't trying hard enough, that they can lift themselves out of homelessness if only they act more like housed people. They also imagine that learning flows only from the housed to the unhoused. But housed people can learn much from unhoused folks.

Water Wisdom

Housed Americans use an average of 82 gallons of water each day, but many unhoused people survive on less water than a housed person uses in a single toilet flush. Their ability to survive on so little water shows what's possible.

Reducing Our Carbon Output

The average housed American produces around 40,000 pounds of CO₂ each year, but an unsheltered person might create as little as 200 pounds. To slow climate change, we must reduce our CO₂ output until our carbon footprint is as light as that of an unhoused person.



Coping with Discomfort

The energy we use to heat, cool, and light our homes accounts for 28% of global greenhouse emissions. Our desire to be comfortable all day every day is making our biosphere less hospitable. Unsheltered people must cope with constant discomfort. Housed people must learn to live with sweat in the summer and must pull on a sweatshirt in the winter.

Keeping It Simple

The average home built in 1950 was 983 square feet; in 2020, new homes averaged 2,261 square feet. The larger the living space, the more stuff we accumulate to fill it. Unsheltered people, on the other hand, can often fit all of their possessions into a backpack. Green living is minimalistic.

Practicing the Three R's

Recycling, reducing, and reusing—even the greenest housed person doesn't practice the three R's as strictly as an unhoused person. Unhoused people often bring to recycling centers the recyclables that housed people discard, reducing our carbon footprint and removing material from the waste stream.

Grit

Unhoused people deal with difficulties and indignities nearly every day, but those challenges equip them with a mental toughness that helps them better manage future problems. Housed people must learn that grit to meet climate change-related challenges.

Interdependence

It's incredibly difficult for most unhoused people to escape homelessness without help, but it's impossible for individuals to solve climate change-related problems without community buy-in. We're in this together!

Hope

In a country that celebrates the accumulation of wealth, homelessness can be incredibly humbling. And yet most unhoused people still have the audacity to hope, to believe that tomorrow can be better than today. We are facing some of the most daunting challenges we have ever encountered. We can only meet those challenges if we dare to hope.

Follow the Money: Funding Solutions to Climate Change

Federal Funding

The amount of money that the federal government spends to slow climate change in any given year depends heavily on which political party controls the levers of power. The US government spent \$80 billion on climate change-related programs in 2009, but under the next administration, Congress slashed climate-change spending.

State Funding

California's '21-'22 budget included \$15 billion in climate change-related spending, to be dispersed over the following six years. The governor's '22-'23 budget proposal includes an additional \$22 billion. That money will be used on eco-friendly vehicles, a clean electrical grid, and drought-mitigation, among other green projects.

City Funding

Cities like San Francisco play a significant role in climate change-mitigation efforts. Funding for projects like the Climate Action Plan come from a variety of sources, including bonds, fees, taxes, and grants. Since 2015, San Francisco has issued nearly \$2 billion in Green Bonds to fund renewable energy projects.



Global Funding

To prevent global average temperatures from rising 1.5°C, the nations of the world must collectively spend \$4.13 trillion on climate change-mitigation efforts each year by 2030. But in '19-'20, the global community only spent a total of \$632 billion to slow climate change.

Public sector funding accounted for about \$321 billion of '19-'20 global expenditures; private funding accounted for the other \$311 billion.

The European Union is the world's leader in public funding of climate change-mitigation programs. In 2020, the EU dedicated 20% of its spending to green projects. By 2027, it intends to spend 25%.

Individual Taxpayers

In 2020, American taxpayers donated about \$471 billion to nonprofit organizations, but a paltry \$8 billion went to environmental organizations. A mere 0.4% of those donation dollars funded organizations that work to reduce the emission of greenhouse gases like CO₂.

Political Frustrations

One of the greatest challenges to funding climate change-mitigation programs is America's two-party political system. The philosophic divide between the two parties prevents the country from taking meaningful, sustained action to curb greenhouse gases.

Red/Blue Divide

Although 60% of Americans believe that climate change is a major threat to the well-being of the United States, most are Democrats. While 88% of Democrats believe that climate changes is a serious threat to the US, only 31% of Republicans believe that climate change poses a significant danger.

Who Will Lead?

The United States is the world's only superpower, and we should be the global leader in green spending and eco solutions. But our political divide prevents us from taking a leadership role. The world is counting on the EU and the Asian powerhouses to lead humanity toward a greener future.

Follow the Money: Funding Solutions to Homelessness

Federal Funding

The 2021 US federal budget included more than \$51 billion in funding for programs created to address homelessness and to provide housing support to low-income people. Most of that money is passed down to state and local governments and to nonprofits.

State Funding

California's '21-'22 budget set aside \$10.7 billion to fund 50 programs. About \$1.5 billion of that money helped unsheltered people. Most of the money was used to build temporary shelters. About \$500 million was dedicated to finding shelter for people living beside highways and on medians.

City Funding

Cities spend much money on homelessness programs, but sometimes that money doesn't directly help currently unhoused people. Of the \$250 million San Francisco spent to address homelessness in 2017, two-thirds of the money didn't help unhoused people. But it did prevent more low-income people from becoming unhoused.



Nonprofit Organizations

Nonprofits are another major source of funding. The revenues of nonprofits that provide shelter to unhoused people were about \$8.5 billion in 2015, but some of that money came from the federal government. The money that nonprofits spend on permanent supportive housing programs saves cities upwards of \$100,000 in services per unhoused person per year.

Private Foundations

Private foundations also make sizable donations to homelessness projects, but it's difficult to know precisely how much they give because many don't publicize their donations. Much of that money is granted to organizations that provide direct services, but foundations also fund lobbyists who advocate for the unhoused.

Individual Taxpayers

Individual taxpayers are another significant source of funding. In 2020, individuals donated \$65.14 billion to human services. It's not clear how those funds were dispersed, but some chunk of that money funded organizations that meet the needs of unhoused people.

Building Tiny Homes

Building tiny homes is a smart solution, but some people argue that it's better to spend money only on long-term housing solutions. But tiny homes are relatively inexpensive to build, and they can get a roof over an unhoused person's head while governments craft those long-term solutions.

Universal Vouchers

A universal voucher program, which guarantees housing assistance to every low-income person in America, could help end homelessness and drastically reduce poverty. Only about one-quarter of eligible people receive housing vouchers today.

Adaptive Reuse

"Adaptive reuse" is another effective solution. By renovating abandoned buildings like motels, hotels, and malls, governments can create thousands of new homes for much less than the cost of building new structures. And unlike housing vouchers, this approach wouldn't require a monthly outlay of money.

Who's to Blame? The System or the Victim?

Perspectives and Incentives

We could provide shelter for every unsheltered person in the country. We have the money and the know-how, but too many of us lack the compassion necessary to build the homes.

How many times have you heard someone tell an unsheltered person to get a job? People who say such things believe that individual weakness is the cause of homelessness. For them, escaping homelessness is just a matter of filling out a job application.

Advocates on the other side point to systemic flaws as the cause of homelessness. They argue that the American economic system disincentivizes the construction of affordable housing and allows companies to pay workers less than a living wage.

So who's right?

Blaming the System

People who advocate for permanent supportive housing or seek to expand housing voucher programs believe that homelessness is the byproduct of an unjust economic system that prioritizes profits over people.

Those who blame the system point out that people working full-time jobs that pay minimum wage can't afford to rent a two-bedroom apartment in any US state. In fact, a person earning federal minimum wage (\$7.25) would have to work 97 hours each week to afford that apartment.

Most of the people fighting to end homelessness believe that housing is a universal human right. They argue that we can't call ourselves a just country if we continue to allow widespread suffering.

Blaming the Victim

When a person argues that laziness causes homelessness, they ignore the fact that about 40% of unsheltered people are employed and that nearly 20% of unsheltered people are children. They also downplay the role that physical challenges and mental health conditions play in homelessness.

In the 50 largest American cities, median rents have grown about 175% faster than median household incomes over the past 20 years. And the situation is much worse in cities like San Francisco, New York City, and Los Angeles.

Implied in the get-a-job argument is the belief that having a roof over one's head is a privilege. People who blame the victim are willing to permit great suffering because they think it's better to allow a hard-working person to struggle than to give a "lazy" person free housing.

Be Kind Whenever Possible. It Is Always Possible.

"But what about the high school dropout or the surfer who wants to ride waves all day? If they end up unsheltered, do they deserve free shelter?" asks the get-a-job advocate.

In a word, yes.

For a small percentage of unsheltered people, homelessness is triggered by poor personal choices or by a philosophic opposition to a deeply flawed economic system. But even those "free-riders" deserve the dignity of shelter.

Unsheltered people are our parents and our children, our siblings and our cousins, our neighbors and our best friends from elementary school. Whether they became unsheltered through bad luck or bad choices, they still deserve a home.

