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# Introduction to the Climate Crisis Kit

**Note:** clickable links to the web pages listed in this binder can be found at <https://cslkits.cvlites.org> and in the digital version of the binder included on the USB key.

“As the effects of global warming become more and more difficult to ignore, will we react by finally fashioning a global response? Or will we retreat into ever narrower and more destructive forms of self-interest? It may seem impossible to imagine that a technologically advanced society could choose, in essence, to destroy itself, but that is what we are now in the process of doing.”

– Elizabeth Kolbert, *Field Notes from a Catastrophe: Man, Nature, and Climate Change*

## Purpose

Climatologists and scientists in general are in overwhelming agreement: the planet is heating and that heating is caused by greenhouse gas emissions as a direct result of human activity.<sup>1</sup> There is widespread acceptance of the threat of the mounting climate crisis. According to a Yale study, 72% of American adults agree that global warming is happening, but only 35% discuss global warming at least occasionally.<sup>2</sup> With this kit, the Colorado State Library provides you with the tools needed to help make this necessary conversation easier to have, as well as ways that you can help protect the planet.

The main purposes of the kit:

- To provide libraries and other cultural heritage institutions across the state of Colorado with tools to facilitate **community dialog** on the climate crisis.
- To provide **educational resources** containing the scientific facts of what is happening to the global climate, what the root causes are, and what present-day conditions are contributing to human-made global heating.
- To combat feelings of powerlessness and “doom and gloom thinking” by providing **positive guidance** for making changes for the good of the environment and the ways in which institutions and individuals can **take action** by working **together** toward **practicable solutions**.

<sup>1</sup> <https://climate.nasa.gov/scientific-consensus/>

<sup>2</sup> <https://climatecommunication.yale.edu/visualizations-data/ycom-us/>

## Who is this kit for?

The climate crisis is a heavy subject, but one we must all grapple with. We hope the kit will provide its users not with feelings of doom and gloom but with a renewed energy to tackle this threat. This kit is intended for people of all ages, and has resources for library staff as well as patrons. It includes activities for:

### Youth learning about the climate crisis

Younger people are the key audience for this kit as the burden of the climate crisis will undoubtedly be heaviest on our youngest generations and the generations to come. You will encounter age-appropriate information on the climate crisis and suggestions of how the youth of today and tomorrow can become leaders who make a difference in their own sphere of influence.

### Adults learning about the climate crisis

This kit includes suggested readings that are intended to reflect the full scope of the climate problem. The activities and information in this binder will also give suggestions for making an impact as we go about our day-to-day lives.

### Internal staff

We've included materials to help library staff from all areas of the library to help bring climate education into the library and make your library a model organization in the fight for climate justice. The books included in this kit are intended to be browsed by kit users, and serve as recommendations for titles to include in public library collections and displays or other programming.

## Note on up-to-date information

As Brian Buma writes in *The Atlas of a Changing Climate*, "The future is a moving target." The field of climatology (as well as the climate itself) is constantly changing, and consequently all of the content in this binder is subject to re-evaluation as the science evolves and climate-related events occupy more of the daily news.

While the preparers of the kit have taken great pains to include up-to-date information and intend to update it as needed, users should remember that the field of climatology and other relevant fields are extremely active at this time and new findings are regularly discovered. To stay up-to-date on the latest climate developments, check the Resources chapter at the end of this binder.

## Feedback and Sharing

Please help us improve this kit by sharing your comments, experiences, and suggestions. You can contact Kit Support ([KitSupport@coloradovirtuallibrary.org](mailto:KitSupport@coloradovirtuallibrary.org)) for guidance at any point along your journey. When you return the kit, please fill out and include the Feedback Form found on the clipboard. Help us learn from your experiences and share those learnings with others.

## Loan period

The loan period for the Climate Crisis Resource Kit is 2 months. If you would like to keep it longer, please contact Kit Support ([KitSupport@coloradovirtuallibrary.org](mailto:KitSupport@coloradovirtuallibrary.org)) to make arrangements before the loan period expires. If it is not on hold for another institution, we will do our best to extend the loan by another month.

## Returning the kit

As you prepare to return the kit, please verify that it is complete using the *Kit Contents* checklist on the clipboard enclosed. Also, be sure to include your completed Feedback Form so that we can improve the experience for everyone.

## Acknowledgements

The information in this binder was researched and cited, but should not be read as a substitute for the findings of qualified climate science experts. The preparers of the kit recognize that the kit's existence, its contents, the ongoing transportation of the kit, and the resulting environmental footprint of the kit could be viewed as contradictory to some of the guidance provided within. Although we took care to construct the kit with sustainability (and durability) in mind, we realize that the kit cannot be 100% carbon free or result in zero waste. However, it is our hope that its positive impact will at the very least serve to neutralize its emissions over time. As this kit is a reusable resource, it will provide long term education to many people across Colorado and will be a continued resource for libraries and library users for reducing emissions and encouraging others to do the same. Knowing that the impact of the kit (in terms of emissions data) cannot be measured to any degree of accuracy, we choose to be optimistic in hoping that, after all, the ends will justify the means. This hope relies solely on users like you, and so we thank you in advance for making our endeavors worthwhile.

## Chapter Glossary

**Climate Crisis** | The situation of imminent environmental catastrophe brought about by climate change, this term is used to convey the seriousness of our climate predicament

**Climatologists** | Experts who study climate, meaning long-term weather patterns and the changes in these patterns taking place over at least a thirty year period

**Climatology** | Climate science or the study of weather patterns taking place over at least a thirty year period of time

**Community dialogue** | Sharing and listening to information and perspectives from all parts of a community

**Doom and gloom thinking** | A feeling of pessimism, hopelessness, and/or grief which can lead to inaction and stagnation

**Emissions** | The production and discharge of something, often referring to gas or radiation

**Environment** | The conditions that a living organism exists within

**Environmental Footprint** | The total amount of greenhouse gasses emitted by an individual or entity

**Greenhouse gas** | A gas that traps heat within Earth's atmosphere, contributing to climate change

**Neutralize** | Rendering something ineffective or harmless.

**Practicable solutions** | Solutions that are feasible and can be put into practice with the resources available

**Sustainability** | The ability to interact within the environment while maintaining a balanced ecosystem, so resources can be replenished indefinitely

# Kit Contents

Please verify that this resource kit is complete before returning it to Colorado State Library at Courier Code C912. You may copy any of the pages from the binder, or download it for later. Clickable links to the web pages listed in this binder can be found at <https://cslkits.cvl/sites.org> as well as in the digital version of the binder included on the USB key. Contact [KitSupport@coloradovirtuallibrary.org](mailto:KitSupport@coloradovirtuallibrary.org) with any questions.

## IMPORTANT NOTES FOR LIBRARY STAFF

- This kit contains **sharp and potentially dangerous tools** that should not be used by young children without adult supervision.
- When checking that the kit is complete, remember that this kit contains giveaways for patrons, highlighted in red below and explained in the Activities section of the binder. We do not expect these items back — instead, we hope that patrons will take them away to inspire their own climate-positive efforts.

## Items

Please use the check boxes to ensure the kit is complete and complete the feedback form before returning.

- Clipboard
  - Quick start guide
  - Evaluation form to **complete** (we really want your feedback!)
- Green Climate Crisis Kit binder
  - Green key-shaped USB drive
- Red binder containing further reading
- 'Escape the Climate Crisis!' escape room activity (blue strongbox)
  - 6x painted wood boxes containing clues and solutions
  - 6x 3-digit code padlocks (each padlock/box is numbered)
- UV flashlight for escape room
- Timer for escape room
- Sample books (16 total)
  - All We Can Save: Truth, Courage, and Solutions for the Climate Crisis* edited by Ayana Elizabeth Johnson & Katherine K. Wilkinson
  - The Atlas of a Changing Climate* by Brian Buma
  - Can I Recycle This?* by Jennifer Romer
  - The Carbon Almanac: It's Not Too Late*
  - The Climate Book: The Facts and the Solutions* by Greta Thunberg
  - Climate Change is Racist* by Jeremy Williams
  - Drawdown* ed. by Paul Hawken

- A Field Guide to Climate Anxiety: How to Keep Your Cool on a Warming Planet* by Sarah Jaquette Ray
- Field Notes from a Catastrophe* by Elizabeth Kolbert
- Not for me, please! I choose to act green* by Maria Godsey and Christoph J Kellner
- Our Planet* by Alastair Fothergill and Keith Scholey
- On Fire: The Burning Case for a Green New Deal* by Naomi Klein
- The Parents' Guide to Climate Revolution* by Mary DeMocker
- Renewable Energy: Discover the Fuel of the Future with 20 Projects* by Joshua Sneiderman and Erin Twamley
- The Uninhabitable Earth* by David Wallace-Wells
- Youth to Power: Your Voice and How to Use It* by Jamie Margolin
- Metal stamp/token creation mini kit in black zip pouch
  - Orange and gray hammer with brass and steel heads
  - Small bag of blank metal washers for stamping
  - Permanent marker for punch highlighting
  - Pouch containing 10x 3mm metal punctuation punches
  - Pouch containing 27x 3mm metal letter punches
  - Pouch containing 8x 3mm metal number punches
  - waxed cotton string
- Bubble bag containing craft supplies
  - Small bubble bag containing Crayola Supertips markers
  - 24 pack erasable Crayola colored markers
  - 24 pack of classic Crayola crayons
  - 2x paper folding tools
  - Pencil sharpener
  - 3x Elmer's glue sticks
  - 3x safety scissors in bubble bag
  - Extra pencils and sharpeners
  - Staedler geometry set containing ruler, protractor, set squares and pens
- Bubble bag containing colored cardstock/craft paper
- Solar Charger power bank portable charger
- PN2000 Electricity Usage Monitor
- The Mindfulness Game cards
- 'Global Warning' board game

### **Giveaways (no need to return these)**

- Bag containing reusable straws and cleaners to give away
- Bag containing seed pencils to give away
- Bag containing small brown journals to give away
- Bag containing printed comics – ["A kid's guide to climate change"](#)

# What is the Climate Crisis?

“It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.”  
– 2021 Intergovernmental Panel on Climate Change Report<sup>1</sup>

## Terminology

Talk of climate change and global warming is nothing new, but what exactly is the climate crisis/emergency? Why not just say climate change?

As with any major global issue, the language we use when talking about it takes on great importance and has enormous power to influence people’s views. Terms like “global warming” and “climate change” have long been in the public imagination and are **not wrong**, but in recent years scholars, scientists, journalists, and public officials have recognized that such terms alone do not properly convey the seriousness of the current climate situation. The term “climate crisis” has therefore become increasingly standard. As Stephan Lewandowsky, cognitive psychologist, puts it, “[climate crisis] strikes an appropriate balance of conveying urgency without hyperbole.”<sup>2</sup>

To expand, “climate change” is neutral and debateable in its meaning. You might ask, hasn’t the climate always been changing? What if it’s changing for good? “Climate change” does not come as close to conveying the seriousness of the present-day crisis. Although the term “climate crisis” is sometimes criticized as being unnecessarily alarmist, the word “crisis” is an accurate description of where the problem actually stands as of this moment:

“Climate crisis is a term used to show a greater sense of emergency and urgency about climate change. That is, the climate isn’t just changing—it’s causing a crisis and, if humans don’t do something about it now, the consequences may be catastrophic.”<sup>3</sup>

A glossary of terms can be found at the end of multiple sections of this binder, and a full Glossary can be found in its own chapter towards the back of the binder.

<sup>1</sup> [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_SPM\\_final.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf)

<sup>2</sup> <https://www.sciencealert.com/is-it-time-to-call-it-a-climate-crisis>

<sup>3</sup> <https://www.dictionary.com/e/tech-science/climate-crisis/>

## What is the climate crisis?

In 2019, 40 years after the First World Climate Conference (in Geneva, 1979), over 11,000 scientists from **153 nations declared that “planet Earth is facing a climate emergency.”** The declaration further states: “The climate crisis has arrived and is accelerating faster than most scientists expected. It is more severe than anticipated, threatening natural ecosystems and the fate of humanity.”<sup>4</sup>

Anthropogenic global warming (the heating of the planet caused by human activity), is perhaps the greatest threat to humanity (as well as ecosystems and other species), and there is one main culprit: **burning fossil fuels**. Fossil fuels have been relied upon since the Industrial Revolution for most of our energy needs. The fuel in itself is not the problem. The problem is the emissions produced as a byproduct of burning fossil fuels, also known as **greenhouse gases**. Since these greenhouse gases (like carbon dioxide and methane) have not been captured and safely stored over the past 200+ years, they have been free to enter into the air and stay in the planet’s atmosphere. The gradual accumulation of greenhouse gases in the atmosphere has, over time, increased global temperatures through the **greenhouse effect**. As the diagram below illustrates, the greenhouse effect is how gases trap solar radiation from the sun, which has an overall heating effect on the earth’s surface. This is just like what happens in an actual greenhouse, where warmth from the sun’s rays is trapped by the glass walls of the greenhouse.

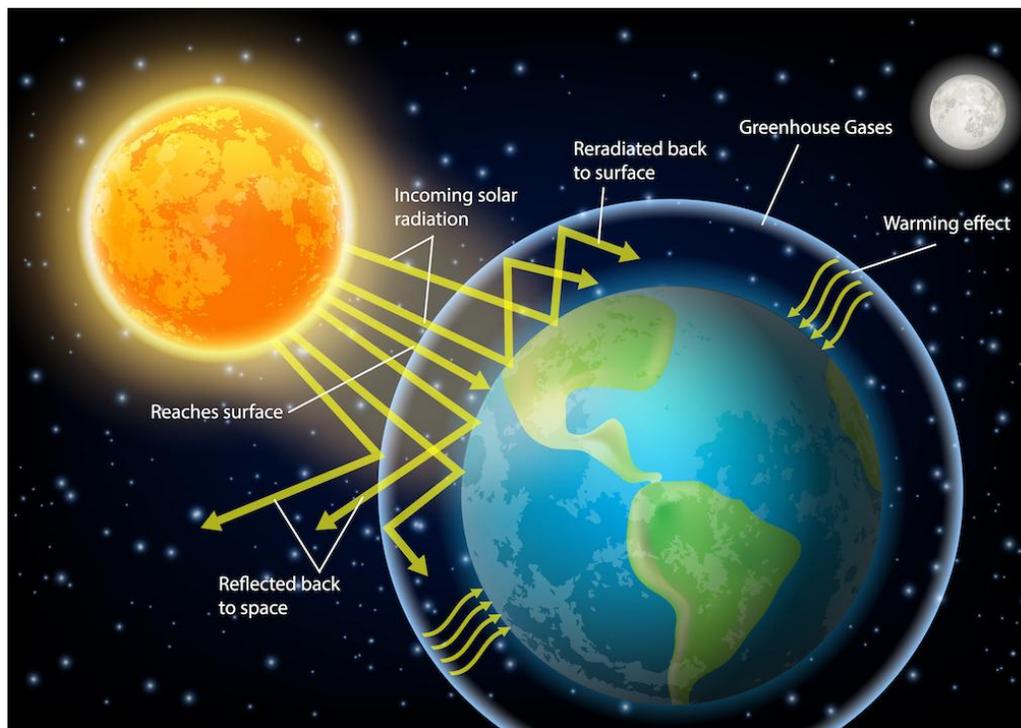
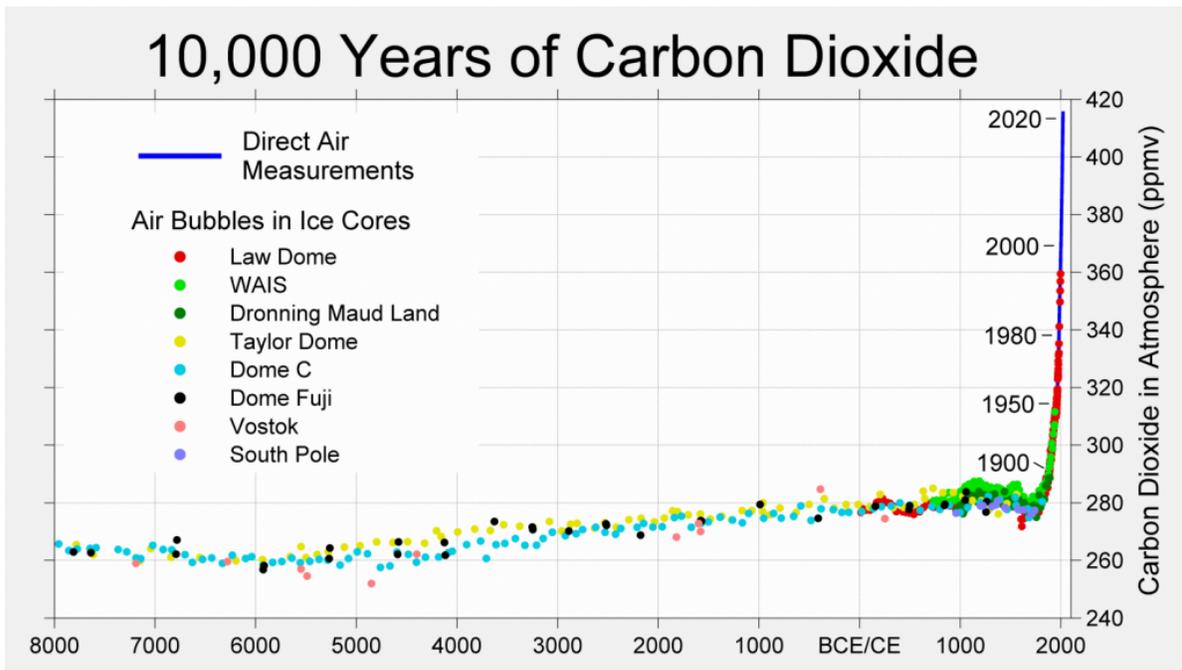
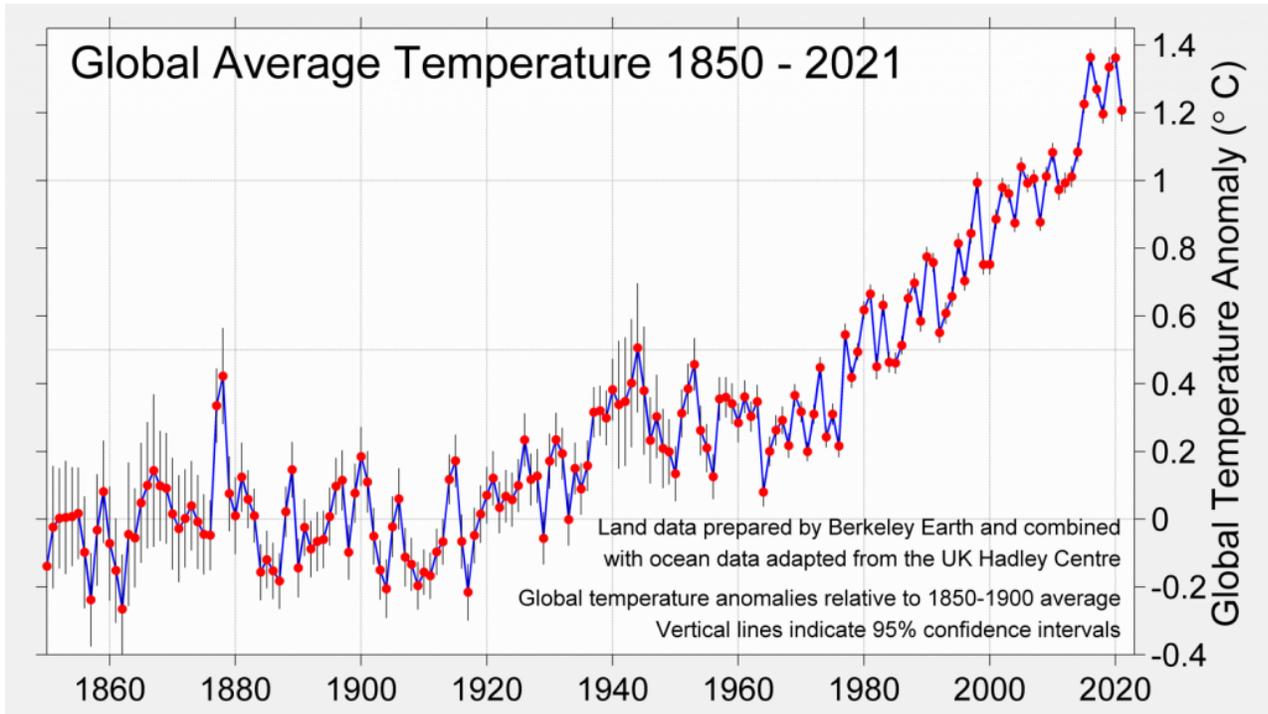


Image courtesy of Space.com

<sup>4</sup> <https://academic.oup.com/bioscience/article/70/1/8/5610806>

This warming over time has caused the planet's average surface temperature to rise approximately 0.9 degrees Celsius (1.62 degrees Fahrenheit) since the late 19th century.<sup>5</sup> If emissions continue at their current rate, temperatures could rise to above three degrees Celsius by 2100.<sup>6</sup>



Source: [Berkeley Earth](https://berkeleyearth.org/)

<sup>5</sup> <https://climate.nasa.gov/evidence/>

<sup>6</sup> <https://www.un.org/en/un75/climate-crisis-race-we-can-win>

## Three degrees doesn't sound too bad...does it?

Although three degrees C sounds like a small increase and 2100 sounds like a long time away, the implications of such an average increase in global average temperature will be devastating for ecosystems across the globe. Besides, disastrous consequences will begin to emerge before we hit 3 degrees C. As David Wallace-Wells writes in *The Uninhabitable Earth*:

“One 2018 paper sketches the math in horrifying detail. In the journal *Nature Climate Change*, a team led by Drew Shindell tried to quantify the suffering that would be avoided if warming was kept to 1.5 degrees [Celsius], rather than 2 degrees – in other words, how much additional suffering would result from just that additional half-degree of warming. Their answer: 150 million more people would die from air pollution alone in a 2-degree warmer world than in a 1.5-degree warmer one. Later that year, the IPCC [Intergovernmental Panel on Climate Change] raised the stakes further: in the gap between 1.5 degrees and 2, it said, hundreds of millions of lives were at stake.”<sup>7</sup>

## Global Effects<sup>8</sup>

Here are just some of the effects of global warming that are already happening and likely future effects if emissions are not steeply curbed.

- Glaciers and ice sheets are melting faster than ever, causing **sea levels to rise**. Almost **two-thirds of the world's cities with populations of over five million** are in areas at risk of sea level rise.
- Entire districts of New York and many other major cities around the world could find themselves underwater within our lifetimes, **displacing many millions of people**.
- Climate change is a direct cause of **soil degradation**. Some 500 million people today live in areas affected by erosion.
- Climate change also **limits the availability and quality of water** for drinking and agriculture.
- Global warming is likely to make **economic output** between the world's richest and poorest countries **grow wider**.
- Disasters linked to climate and weather extremes are becoming more frequent<sup>9</sup> and intense. No continent is left untouched, with heatwaves, droughts, megadroughts, typhoons, wildfires, monsoons, and hurricanes causing mass destruction around the world. 90 percent of disasters are now classed as weather- and climate-related, costing the world economy **520 billion USD each year**, while **26 million people are pushed into poverty** as a result.

<sup>7</sup> David Wallace-Wells, *The Uninhabitable Earth*, pg. 28.

<sup>8</sup> <https://www.un.org/en/un75/climate-crisis-race-we-can-win>

<sup>9</sup> <https://www.bbc.com/news/science-environment-60847942>

- Climate change is a major threat to international **peace and security**. The effects of climate change **heighten competition for resources** such as land, food, and water, fueling socioeconomic tensions and, increasingly often, leading to **yet more mass displacement**.
- Climate makes worse already existing challenges. Droughts in Africa and Latin America directly feed into political unrest and violence. The World Bank estimates that, in the absence of action, more than **140 million people** in Sub-Saharan Africa, Latin America, and South Asia will be **forced to migrate** within their regions by 2050.

## Local Effects

More locally, how has the climate crisis affected the state of Colorado? Any Coloradan in the summer months can attest with the all-too-familiar haze of wildfire smoke filling the air from this or other Western states. According to the United States Environmental Protection Agency, our state is already seeing the effects of global warming.<sup>10</sup>

- The snowpack measured in April has declined 20-60 percent at most monitoring sites in Colorado.
- Water availability has decreased, leading to more severe droughts.
- Drought is causing more severe and longer wildfire seasons.
- Pests such as the pine beetle are pouncing on Colorado forests.
- Human health is being affected: higher temperatures mean more heat stroke and dehydration and the increase in smog can aggravate asthma and cause heart and lung disease.

## Climate change is racist

Climate change is worsening iniquities that already exist. For more information, find a copy of the book *Climate Change is Racist* by Jeremy Williams included in this kit. Also:

- Colorado Coalition for the Homeless Climate Change Issue Brief 2022
- Committing To Climate Action: Equitable Pathways For Meeting Colorado's Climate Goals

## Is it already too late?<sup>11</sup>

There is some debate about whether the planet is already past the point where we can stop the worst effects of climate change from taking place and whether there should be more focus on mitigation efforts instead of stopping global warming. While so-called “tipping point” temperatures have yet to occur (which would have disastrous effects, or “tipping elements”

<sup>10</sup> EPA, *What Climate Change Means for Colorado*:

<https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-co.pdf>

<sup>11</sup> <https://climate.nasa.gov/faq/16/is-it-too-late-to-prevent-climate-change/>

such as the Greenland ice sheet melting), such temperatures may be closer than previously thought.<sup>12</sup> And domino effects (also known as chain reactions), are predicted to happen if such tipping elements actually happened - for example, melting permafrost will release yet more greenhouse gases into the environment.

The heating effect of greenhouse gas emissions has a delayed or “lag” effect and we are only now seeing the increased temperatures resulting from gases emitted decades ago. This delayed effect has an unfortunate side-effect: not everyone is convinced by the realities of global warming since a tangible global catastrophe is not upon those of us in lesser-affected places as of this moment. It will be decades before we see the worst catastrophic effects of warming on a global level, as outlined above. But there is some uncertainty about how global warming will truly end up in decades to come. Wallace-Wells explained in his 2019 book, “the uncertainty of what will happen—that haunting uncertainty—emerges not from scientific evidence but, overwhelmingly, from the open question of how we respond.”<sup>13</sup>

But what we can say with a great deal of certainty is, if emissions are not steeply curbed as soon as possible, the consequences will come sooner or later. This is why acting now is the best, or really, the only reasonable course of action. A lack of action means more suffering for the people of planet Earth. It’s never too late to reduce suffering as much as possible, and every positive action done for the environment counts towards reducing this suffering, no matter how small.

## **We know that change is possible because it is already happening**

The focus on only the most extreme climate scenarios and the most negative or frightening prospects of the climate crisis may be both unhelpful (as it encourages people to “switch off” from the problem), and unnecessary, as the future is simply not decided as yet and there is a possibility for great change, and consciousness of these issues is at an all-time-high. Indeed, there are some international commitments being made in recent years such as the Paris Accords in 2016 and the Kunming-Montreal Global Biodiversity Framework in late 2022, setting out comprehensive plans for countries fighting ecological collapse.<sup>14</sup> However, the effectiveness of these commitments remains to be seen and they are unlikely to solve the problem in the immediate future.

There may in fact be many different outcomes from the climate’s changes, with some scenarios being more catastrophic than others. Which scenario happens depends on the amount of actual warming.<sup>15</sup> In 2022, David Wallace-Wells published a somewhat optimistic

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<sup>12</sup> ‘Climate ‘points of no return’ may be much closer than we thought’  
<https://www.space.com/climate-tipping-points-closer-than-realized>

<sup>13</sup> David Wallace-Wells, *The Uninhabitable Earth*, pg. 43.

<sup>14</sup> COP15: historic global deal for nature and people -  
[https://ec.europa.eu/commission/presscorner/detail/en/ip\\_22\\_7834](https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7834)

<sup>15</sup> ‘Emissions – the ‘business as usual’ story is misleading’  
<https://www.nature.com/articles/d41586-020-00177-3>

essay in the New York Times called 'Beyond Catastrophe: A New Climate Reality Is Coming Into View'<sup>16</sup> in which he wrote the following:

“Thanks to astonishing declines in the price of renewables, a truly global political mobilization, a clearer picture of the energy future and serious policy focus from world leaders, we have cut expected warming almost in half in just five years.”... “For me, the last few years provide arguments for both buoyant optimism and abject despair. They have made me more mindful of the inescapable challenge of uncertainty when it comes to projecting the future, and the necessity of nevertheless operating within it.”

## Mindfulness Moment

### What needs to be done globally?

- An immediate abandonment of fossil fuels and transition to cheap, accessible, and practical renewable & sustainable fuels.
- Mitigation for the damage global heating has already caused to our ecosystems.

### What needs to be done locally?

- Fact finding, organization building, raising awareness as a means of amassing a critical number of activists and policymakers across the planet.

### What can be done by you?

- Be your best advocate by deepening your understanding of what exactly the climate crisis is, how it is manifesting, and what solutions we can employ individually and worldwide.
- Stay calm by incorporating mindfulness practices.

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<sup>16</sup> 'Beyond Catastrophe: A New Climate Reality Is Coming Into View, By David Wallace-Wells'  
[https://www.nytimes.com/interactive/2022/10/26/magazine/climate-change-warming-world.html?campaign\\_id=9&emc=edit\\_nn\\_20221027&instance\\_id=75759&nl=the-morning&regi\\_id=121492291&segment\\_id=111175&te=1&user\\_id=d609c5e4c4d20cbf6689168cc57ff04f](https://www.nytimes.com/interactive/2022/10/26/magazine/climate-change-warming-world.html?campaign_id=9&emc=edit_nn_20221027&instance_id=75759&nl=the-morning&regi_id=121492291&segment_id=111175&te=1&user_id=d609c5e4c4d20cbf6689168cc57ff04f)

## Chapter Glossary

**Anthropogenic** | Of, relating to, or resulting from the influence of human beings on nature

**Carbon Dioxide** | A colorless gas made of one carbon atom and two oxygen atoms, produced through actions such as breathing, plant decay and the burning of fossil fuels

**Climate change** | Long-term shifts in temperatures and weather patterns, human activities have been the main driver of climate change since the 1800's, primarily due to burning fossil fuels like coal, oil and gas

**Drought** | A prolonged period of abnormally little rainfall that can have significant impacts on the ecosystem if it persists

**Economic output** | The total value of all goods and services produced in an economy

**Erosion** | The movement and wearing down of earth from the elements

**Fossil fuels** | A liquid, gas, or solid form of carbon created by the compression of organic matter over millions of years

**Global warming** | The gradual increase in average temperatures due to the accumulation of greenhouse gasses in our atmosphere which trap heat

**Greenhouse Effect** | The accumulation of gasses in our atmosphere, due to the burning of fossil fuels, which traps heat from the sun in our atmosphere instead of allowing it to reflect off the Earth and back into space

**Greenhouse gas** | A gas that traps heat within Earth's atmosphere, contributing to climate change

**Industrial revolution** | The historical transition to an economy driven by industry and machine manufacturing

**Kunming-Montreal Global Biodiversity Framework** | At the UN Biodiversity conference COP15 in Montréal, Canada, the EU joined 195 countries in the historic Kunming-Montreal Global Biodiversity Framework. This framework contains global goals and targets aiming to protect and restore nature for current and future generations, ensure its sustainable use as well as spur investments for a green global economy. Together with the Paris Agreement on climate, it paves the way towards a climate-neutral, nature-positive and resilient world by 2050. [EU](#)

**Lag effect** | The ability of the ocean to absorb and store greenhouse gas emissions which delays the effect of these emissions until they are slowly released from the ocean

**Methane** | The second most abundant greenhouse gas in our atmosphere after carbon dioxide which is over twenty-five times more potent than carbon dioxide

**Migrate** | When humans or animal species move in large numbers from one region to another

**Mitigation efforts** | The act of limiting harm from something bad

**Paris Accords** | The Paris Agreement, often referred to as the Paris Accords or the Paris Climate Accords, is an international treaty on climate change. Adopted in 2015, the agreement covers climate change mitigation, adaptation, and finance. [Wikipedia](#)

**Snowpack** | The total amount of packed and compressed snow on the ground

**Soil degradation** | The depletion of soil and organic matter due to poor management and erosion

**Solar Radiation** | Sunlight

**Tipping elements** | Parts of the Earth's natural systems that were previously stable but could reach a point, due to climate change, where they change drastically and significantly disrupt the natural processes around them

**U.S. Environmental Protection Agency (EPA)** | The federal agency charged with conserving natural resources and preserving land, air and water for future generations

**World Climate Conferences** | A series of international meetings, beginning in 1979 and organized by the World Meteorological Organization (WMO), about global climate issues, climate research, and forecasting

# Crisis as Opportunity

"You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make." — Jane Goodall

## A call to action! Where there is a crisis there is also an opportunity.

As of this moment of writing, the planet is steeped in a different crisis: the coronavirus pandemic. As terrible as the pandemic is, this momentous event has proved something beyond doubt: when humanity faces an imminent threat, nations can and will make massive systemic changes (even changes that were unthinkable before) to attempt to contain that threat. What would happen if the whole world recognized the climate crisis for the threat that it is, its potential to create much more suffering even than a pandemic — and gave it the same “crisis treatment” as COVID-19? **What if the world at large took the climate crisis as seriously (or much more so) as the coronavirus crisis?**

## Beyond politics

As Naomi Klein writes in *This Changes Everything* (a copy of which can be found in the kit):

“Climate change has never received the crisis treatment from our leaders, despite the fact that it carries the risk of destroying lives on a vastly greater scale than collapsed banks or buildings... But we need not be spectators in all this: politicians aren’t the only ones with the power to declare a crisis. Mass movements of regular people can declare one too.”<sup>1</sup>

Klein gives historical examples of exactly those moments in history where ordinary people have pushed for positive change, and change, sooner or later, arrived: abolitionism, the civil rights movement, feminism, anti-apartheid. The difference between those historical movements and the climate crisis is that **the climate is not limited to being a political issue**. Its implications go far beyond politics. Global warming threatens to strike at the core of everything and no nation, group, or ethnicity has the privilege to be exempt.

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<sup>1</sup> Naomi Klein, *This Changes Everything*, pp. 6

## Battling our own psychologies

Each of us, as inhabitants of the planet, the country, and the locality in which we live has the duty of being the stewards of our environment. We all share the blame and responsibility for the climate crisis. **Realizing that our individual actions (and equally, our inactions) directly contribute to global warming is the first step to tackling the climate crisis and becoming successful stewards of the environment.** This is easier said than done. It is hard to admit that, taken collectively, our individual lifestyles have an effect on the climate. But of course they do. It is much easier to shift the blame purely to foreign or domestic governments, big businesses, energy companies, lobbyists, or just about anyone else whose carbon footprint is bigger than our own. Certainly, all these entities have a responsibility to the environment. Most businesses are not motivated by the health of the planet; we have the power to choose whether to support them with our money. In democratic countries, we have the power to choose our representatives.

Although governments, businesses, and other powerful entities must realize their respective duties and work together to combat this threat, refusing to take individual responsibility amounts to a sort of denial. We might “believe” in the overwhelming scientific fact of global warming, but we must also consider all of the factors that go into global warming, which includes the lives we lead and the energy we consume in our everyday existence. Klien writes that our avoidance is understandable: “We deny because we fear that letting in the full reality of the crisis will change everything. And we are right.”<sup>2</sup>

## It is not all doom and gloom

One positive we can take away from a crisis is the **opportunity it gives us to reassess our values** and other things of fundamental importance, those essential things we cannot do without. The planet, of course, the air we breathe, our oceans, habitats and ecosystems – humans cannot live without these. We cannot, therefore, allow ourselves and each other to bury our heads in the sand and shift the blame. Resigning ourselves to “doom and gloom thinking” is not the way forward. Saying that *the problem is just too big*, or *it's already too late to make a difference*, that *one person cannot make a difference*, and choosing therefore to ignore the problem will not come close to solving the problem - it will actually worsen it. **Doom and gloom thinking is a part of the larger problem because it makes us want to switch off. It makes us complacent.** It takes courage and humility to accept the extent of the problem and our own involvement in it. But courage and humility are the two personal attributes we need the most if we are to have a chance of confronting and solving the crisis to the greatest extent possible. Choosing to think positively is just as important as

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<sup>2</sup> *Ibid*, pp. 4.

acting positively. Refer to the chapter on Making a Real Difference in this binder for ways in which you can make positive changes that benefit the planet, and in the long run yourself and future generations.

## Mindfulness Moment

### What needs to be done globally?

- Apply disaster management on a worldwide scale as during a pandemic.
- Learn lessons from the ways in which the COVID pandemic was mishandled.

### What needs to be done locally?

- Raise awareness of the climate situation as a crisis that local communities must respond to, not as something entirely out of our control.
- Local residents should build community and allyship with people concerned about the climate.

### What can be done by you?

- Consider the idea that a crisis can present opportunities for fixing long term problems. How does this thinking change your view of the challenge we face?
- If you start to feel overwhelmed or that the crisis will never be solved, focus on small actionable things that you can do to make a tangible impact.
- Recognize that it's okay to feel bad or nervous about these things – you should listen to these feelings and resolve to pour your energies and your feelings into having a positive impact.

## Chapter Glossary

**Abolitionism** | The movement to end slavery

**Anti-apartheid** | The movement opposing racial segregation policies in South Africa

**Ecosystem** | A biological community of interacting organisms and their physical environment

**Feminism** | Advocacy for women's rights to reach social, economical, and political equality

**Humility** | The understanding of importance outside of yourself and ability to admit mistakes

**Lobbyist** | A Professional who works to change laws

**Steward** | Someone who both utilizes and protects the natural world in a responsible manner

**Systemic Changes** | Change that extends to industry, corporations and governments affecting how society thinks and acts

**The Civil Rights Movement** | The political movement to end institutional racial segregation and discrimination throughout the United States

# Keeping Calm

"Burnt-out people aren't equipped to serve a burning planet ... [so] the well-being of our hearts and souls must be reestablished to their rightful place as relevant, essential."

– Susi Moser, *All We Can Save*, Published 2020

## You are not alone<sup>1</sup>

Britt Wray, a Stanford University researcher stated that the climate crisis "is becoming a No. 1 threat to mental health." Each year more people are feeling the effects of the climate crisis on their mental health. Many have already been directly affected by a climate related disaster. More than fifty percent of Americans are now feeling anxious that the climate crisis is impacting their mental health.

Younger individuals are especially vulnerable. A survey spanning 10 countries reported that three out of four people aged 16-25 were "frightened for the future." However, "frightened" does not fully encompass the dread that many are feeling, as more than half in this study said that humanity was doomed. In the face of this global crisis, experts agree that feeling the mental health effects personally is a natural and perfectly understandable reaction.

It is also important to acknowledge that the climate crisis is not affecting us all equally. Populations with more wealth are the ones contributing more greenhouse gasses into the atmosphere, increasing the problem. These populations are also better equipped to adapt as the environment changes. This means that vulnerable populations with less negative impact on our climate, face a greater threat. Additionally, younger populations are at a greater risk as they will face more impacts of the climate crisis within their lifetime. With these disparities in mind, nobody should assume they understand the toll the climate crisis is taking on anybody but themselves.

## Definitions

In this binder the term eco-anxiety is used to encompass the emotional responses that stem from fear for oneself, one's community, humanity, and the diversity of life on earth in the face of the climate crisis.

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<sup>1</sup> 'How Climate Change Inflicts a Toll on Mental Health'

<https://www.nytimes.com/interactive/2022/03/09/us/mental-health-climate-change.html>

The ability to identify and name the feelings we experience can bring us a greater awareness and sense of control. Additionally, once we identify the emotion, it is easier to find a community with similar experiences and receive support, decreasing feelings of isolation. This is why the language evolving around the climate crisis is a critical tool for raising awareness of the crisis while taking care of our mental wellbeing along the way.

Some of the terms that describe the emotional toll awareness of the climate crisis can bring beyond anxiety include climate change distress, eco-trauma, eco-angst, climate grief and ecological grief.

Of course, not everyone will have the same emotional experience while learning about the climate crisis. Acknowledging the different terms is important to allow individuals to identify with the language that fits best for them and realize the range of feelings that can arise. In this binder, eco-anxiety is used most widely.

## Coping Mechanisms

Eco-anxiety is inherently tied to the destabilization of the Earth's systems, which can feel unreachable to the individual. Feeling powerless is one of the most detrimental symptoms of eco-anxiety. A healthy goal is not to erase or suppress our feelings about the situation but to harness them as a motivator for action, collaboration and discussion. Of course, this is more easily said than done. With the understanding that solutions are not "one size fits all" and maintaining one's mental wellbeing in the midst of the climate crisis is an ongoing journey, here are a few strategies to increase our resilience and stay energized for climate action.

### 1. Understand our role

We all live within a social system that has relied on fossil fuels for power since the industrial revolution. As Bill McKibben, an American environmentalist states, "environmentalists also live in the world we're trying to change: We take airplanes and rent buses for rallies; we make a living, shop for groceries. None of this should demand an apology. Changing the system, not perfecting our own lives, is the point. "Hypocrisy" is the price of admission in this battle<sup>2</sup>."

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<sup>2</sup> 'Embarrassing Photos of Me, Thanks to My Right-Wing Stalkers'

<https://www.nytimes.com/2016/08/07/opinion/sunday/embarrassing-photos-of-me-thanks-to-my-right-wing-stalkers.html>

If we all thought that in order to speak about the climate crisis we had to first live a net zero carbon lifestyle, the environmental movement would be unable to move forward. While being conscious of the environmental impacts our everyday actions have is important to understand the climate crisis, even if our individual personal carbon emissions were eliminated, the course of global emissions would be unaffected. However, that does not mean that our individual actions are insignificant. We are each an important part of the larger communities we surround ourselves with, and our individual actions have an effect on those we interact with. We can influence, inspire, and inform those around us to also live a more sustainable lifestyle. Additionally, making more sustainable decisions in our everyday life feels good. When our values align with our lifestyle it is easier to overcome feelings of powerlessness. Seeing the influence our actions have on those around us is especially empowering. It is possible to find a balance between awareness of our individual impact and feeling frozen by guilt or helplessness because we live in today's society. Work to find where that balance is in your life and help those around you to do the same along the way.

## 2. Continue Learning

It may be tempting to detach ourselves from the climate crisis issue when it begins to feel overwhelming. However, simply ignoring the issue is not a sustainable solution for taking care of ourselves or the planet. There is real harm in closing ourselves off from the wealth of information available on the climate crisis. Education is empowering, and being informed is the first step towards seeing a solution. Additionally, learning more about the climate crisis may give us confidence to speak about the issue with others. There is also a wealth of resources available for finding supportive communities if we keep ourselves open to the information at hand. While there is plenty of doom and gloom out there, there are also real people putting innovative solutions into action. Ignoring the climate crisis will not change the situation we are in, and staying informed will strengthen our resilience while opening doors for us to be a part of the solution.

Stay informed, connected, and involved by joining local chapters and organizations such as [Citizens' Climate Lobby](#)<sup>3</sup>, [The Climate Reality Project](#)<sup>4</sup>, or [Fridays for Future](#)<sup>5</sup>.

## 3. Know when to unplug

While it is important to be educated on the climate crisis, we are flooded with an immense amount of advertising and messaging constantly. It is difficult to always have our guard up

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<sup>3</sup> Citizen Climate Lobbies Chapters <https://citizensclimatelobby.org/about-ccl/chapters/>

<sup>4</sup> Climate Reality Project Chapters <https://www.climate realityproject.org/chapters>

<sup>5</sup> <https://fridaysforfutureusa.org/>

against misinformation. Additionally, the news, posts, and ads we see on a daily basis may be influencing us without us even realizing it<sup>6</sup>. The amount of information at our fingertips is overwhelming. When coupled with eco-anxiety, it can even be harmful. We need to make sure we give ourselves time to be present in our own lives. If you are a social media user, taking a break from these platforms can also bring a refreshing change of perspective.

Unplugging is a great way to personally reset and remind yourself of your own values. One way to do this is through *mindfulness*. To learn more about practicing mindfulness, see our [mindfulness guide](#) and related activities in this binder.

#### 4. Immerse ourselves in nature

Studies have consistently shown that spending time in nature increases health and wellbeing. Enjoying the natural world around us helps us feel connected to the ecological systems that surround us. Understanding how these natural systems support us on a fundamental level, can inspire us to form reciprocal relationships with the environment. It can strengthen our resolve to support these systems as well as give us space to breathe fresh air and temporarily distance ourselves from the fossil fuel filled world we exist within. Spending time in nature has been shown to reduce stress, increase concentration, sharpen cognitive function and improve mood, all of which can help control eco-anxiety. It is important to note that it is not necessary to visit a national park or backpack through the wilderness to feel these effects. Simply walking through open space in your community, spending time in a garden, or even just listening to nature sounds can have positive effects on wellbeing and mental health<sup>7</sup>. To feel these beneficial effects try a simple mindfulness activity in nature, such as listening to bird song, balancing stones or leaf collecting. Descriptions of these activities, additional ideas and more detailed instructions can be found at [healingforest.org](http://healingforest.org).

#### 5. Share our concerns

Eco-anxiety can be an isolating feeling, but it does not have to be. Discussing it with others who are supportive of our feelings can be incredibly relieving. Facing the climate crisis is not something we are equipped to do on our own and luckily we don't have to. If you do not have a supportive community already around you, there are many online communities happy to welcome new members. Writing down your feelings or your story is a great first step to opening up, even if you do not share it with anyone. Remember that those around you may also be struggling with similar feelings as you, but if we are all silent we can not

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<sup>6</sup> 'What to know about eco-anxiety' <https://www.medicalnewstoday.com/articles/327354#summary>

<sup>7</sup> 'Nurtured by nature' <https://www.apa.org/monitor/2020/04/nurtured-nature>

help each other. Resources such as **Stories of Colorado**, which can be found at [stories.cvlcollections.org/](https://stories.cvlcollections.org/), allow people from across our state to share pieces of our culture and history. This platform is available to anyone who wants to submit their work, and it can be incredibly relieving to share your perspective and help somebody better understand your view of the climate crisis.

An NPR article from 2020 “[How Stories Connect And Persuade Us: Unleashing The Brain Power Of Narrative](#)” shares that when we listen to a story “your brain waves actually start to synchronize with those of the storyteller.”<sup>8</sup> Scientific studies have now shown how the connections and emotional reactions built through storytelling are so ingrained between us that they manifest as synchronized brain waves that can be viewed and measured by MRI scans.

## 6. Find (or create) a team

Whether you would like help finding ways to discuss the climate crisis, or you are already eager to speak with anyone you can, finding a team to tackle these issues with is crucial. Starting small is okay. Getting our friends or family involved with fun, sustainable oriented activities is a great way to start creating a circle of support and inspire others. If you would like to expand your circle, joining a book club that discusses the climate crisis or volunteering for an environmental organization gives you an outlet to discuss these issues with others on a regular basis. We do not need to start from scratch. There are many organizations and clubs out there that love to welcome newcomers.

Attending public meetings or comment sessions for local community planning is also a great way to meet people who are standing up for sustainable initiatives. At work, finding like minded coworkers is the first step to implementing more sustainable practices in our workplaces. If you are taking classes, are there groups on campus or at school to join or like minded students organizing sustainability initiatives? Collaborating with others will not only have a further reaching impact, but will also provide a healthy social network and structured activities that work towards a common goal. This is a useful and engaging tool for battling the impacts of the climate crisis on mental health.

## 7. Reach out to professionals

Eco-anxiety can have very real impacts on our mental health and wellbeing, manifesting itself through feelings of shock, depression, helplessness, fatalism and fear<sup>9</sup>. Chronic stress

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<sup>8</sup> ‘How Stories Connect And Persuade Us: Unleashing The Brain Power Of Narrative’ <https://www.npr.org/sections/health-shots/2020/04/11/815573198/how-stories-connect-and-persuade-us-unleashing-the-brain-power-of-narrative>

<sup>9</sup> ‘What to know about eco anxiety’ <https://www.medicalnewstoday.com/articles/327354#do-i-have-it>



stemming from eco-anxiety can have negative impacts on physical health as well. Luckily eco-anxiety is now more widely recognized by healthcare professionals. Although it is not yet an official medical diagnosis, more mental health workers are being trained to help people cope with eco-anxiety<sup>10</sup>. If we are unable to control symptoms of eco-anxiety on our own, or it is affecting our ability to take care of ourselves, work, or enjoy life, we should talk to a mental health care professional. Regardless of the extent of the symptoms, speaking with mental health professionals can increase our resilience when facing life's challenges.

## Chapter Glossary

**Eco-anxiety** | Extreme and persistent worry for the current and future environmental degradation caused by humans

**Environmentalist** | An advocate for the protection of the environment

**Mindfulness** | The practice of maintaining a nonjudgmental state of heightened or complete awareness of one's thoughts, emotions, or experiences on a moment-to-moment basis

**Reciprocal relationships** | Relationships that are mutually beneficial to both parties

**Resilience** | The ability to recover and thrive after difficulties or harm

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<sup>10</sup> 'Climate Change Taking a Toll on Your Mental Health? How to Cope With 'Eco-Anxiety'  
<https://www.healthline.com/health/eco-anxiety>

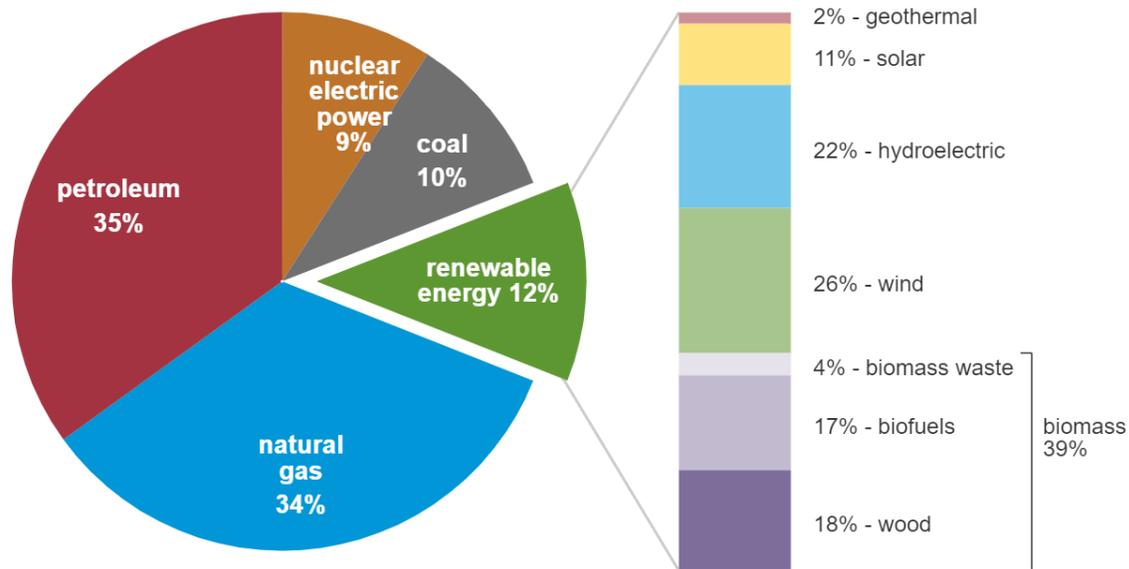
# Energy

"Over the last twenty-five years, the cost per unit of renewable energy has fallen so far that you can hardly measure the price, today, using the same scales (since just 2009, for instance, solar energy costs have fallen more than 80 percent). Over the same twenty-five years, the proportion of global energy use derived from renewables has not grown an inch. Solar isn't eating away at fossil fuel use, in other words, even slowly; it's just buttressing it. To the market, this is growth; to human civilization, it is almost suicide. We are now burning 80 percent more coal than we were just in the year 2000." -- *The Uninhabitable Earth*, published 2019 (pp. 177-178).

## U.S. primary energy consumption by energy source, 2020

total = 92.94 quadrillion  
British thermal units (Btu)

total = 11.59 quadrillion Btu



Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3 and 10.1, April 2021, preliminary data



Note: Sum of components may not equal 100% because of independent rounding.

“As the major source of global emissions, the energy sector holds the key to responding to the world’s climate challenge.”<sup>1</sup>

- International Energy Agency

## Our Energy Needs

As already mentioned, the cause of global heating is human energy consumption - specifically, the burning of fossil fuels such as coal, oil (petroleum), and natural gas. Fossil fuels are the remains of plants and animals that lived millions of years ago. They made the Industrial Revolution possible and are one of the major reasons - if not *the* reason - why we have technologically advanced societies in countries such as the U.S.

Fossil fuels are not “bad” in and of themselves. Coal, gas, and oil present a problem when they are burned for fuel, as they are when used directly (mainly in transportation) and indirectly (for example, when creating usable electricity). The emissions from burning these fuels do not disappear after the energy is used. Instead, gas pollutants are released into the air before being trapped in the earth’s atmosphere, over time trapping heat energy from the sun due to the greenhouse effect. Additionally, emissions from burning fossil fuels such as coal include toxic gases such as sulfur dioxide and nitrogen oxide, which form acid rain.<sup>2</sup>

Fossil fuels underpin the global economy. Our daily lives are reliant upon fossil fuels in every respect, from the groceries we buy, to the transportation we take, the services we use, and the devices that connect us. None of this would be possible without fossil fuels. The irony is painful to consider: fossil fuels forged modern civilization, but our reliance on them threatens the long term safety of life on Earth.

Added to this is another problem that underscores the need for better sources of energy: fossil fuels are a limited resource. We are not sure how much fuel remains in the ground, but it is predicted that we could run out of fossil fuels in the next 100 years or so (by which time the damage to the environment will be irreparable, if global emissions are not steeply curbed in the meantime).<sup>3</sup> Regardless of when fossil fuels run out (it is a matter of when, not if), it is abundantly clear that the current situation is not sustainable in the long run. It is therefore crucial that a meaningful transition from fossil fuels is undertaken on a global scale now.

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<sup>1</sup> Net Zero by 2050 A Roadmap for the Global Energy Sector  
<https://www.iea.org/reports/net-zero-by-2050>

<sup>2</sup> Why Clean Coal Is A Myth  
<https://www.greenamerica.org/fight-dirty-energy/amazon-build-cleaner-cloud/coal-why-it-dirty>

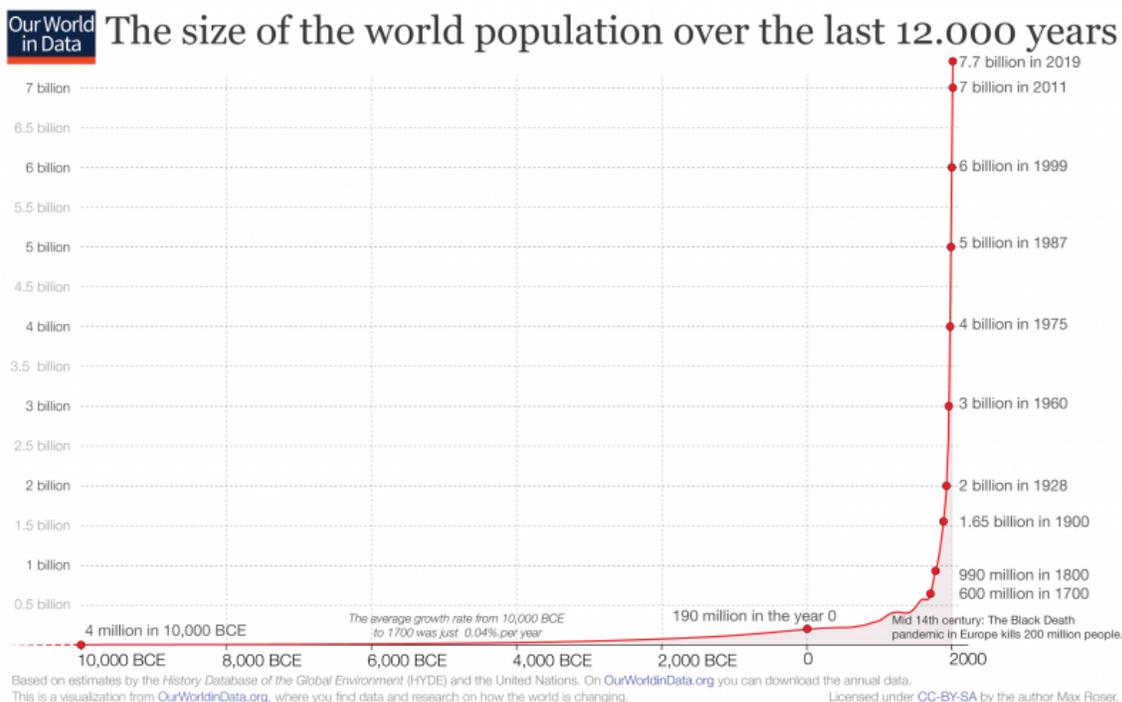
<sup>3</sup> ‘How long before we run out of fossil fuels?’  
<https://ourworldindata.org/how-long-before-we-run-out-of-fossil-fuels>

## Why does the planet continue to run on fossil fuels when the technology exists for gaining power from other, more sustainable sources?

The answer to this question brings us to the crux of the climate crisis. The problem has been well documented for decades, the evidence that human activities are the cause is as close to certain as science can allow, and it is clear that the climate crisis poses an existential threat to our species. Given the long term unviability of fossil fuels, why does the global economy still rely so heavily on fossil fuels? There is no one definitive answer, as the problem is complex and far-reaching, but here are some factors to consider<sup>4</sup>:

### Population equals demand

We are consuming more energy now than in the history of life on this planet. The current all time high consumption of fossil fuels - specifically, coal, gas and oil - has coincided with the highest global population the earth has ever seen. In the year 1900, the world's population was around 1.65 billion. Now, that figure is closer to 8 billion.<sup>5</sup> With this extreme growth over a relatively short period of time is an equally extreme demand for energy. Fossil fuels made the Industrial Revolution possible, and while we have devised ways to make our fuel usage more efficient, there has been no large-scale effort to transition our energy use away from the tried and tested fuel we (seemingly) have available in abundance.



<sup>4</sup> 'Why are fossil fuels so hard to quit?'

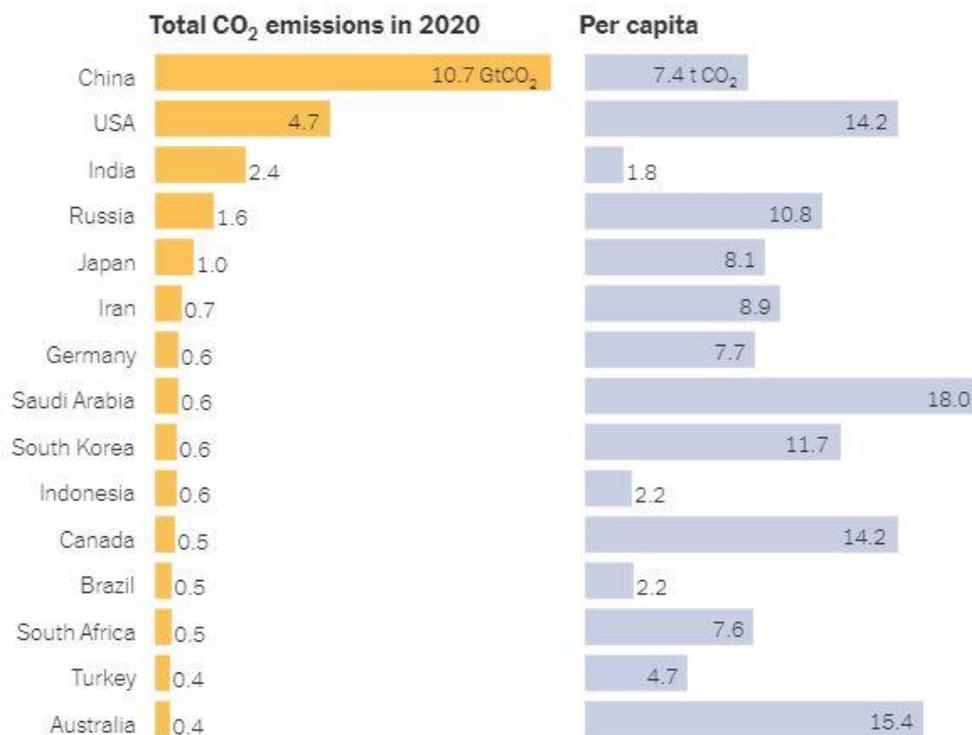
<https://www.brookings.edu/essay/why-are-fossil-fuels-so-hard-to-quit/>

<sup>5</sup> 'World Population Growth' <https://ourworldindata.org/world-population-growth>

## Infrastructure & Cost

“Rich countries, including the United States, Canada, Japan and much of western Europe, account for just 12 percent of the global population today but are responsible for 50 percent of all the planet-warming greenhouse gases released from fossil fuels and industry over the past 170 years.”<sup>6</sup>

Fossil fuels are deeply embedded in the global economy, and their universal use means that current infrastructure (e.g., transportation and the energy system itself) cannot function without them. A transition to alternative fuels means that the systems that make up our infrastructure would either need to be upgraded, if possible, or completely replaced, which represents large costs. Even if technologically advanced countries such as the USA suddenly switched to 100% alternative energy sources (which is entirely possible, given how rich the USA is), developing countries are not capable of making such a transition. The replacement of fossil fuels therefore has to be undertaken on a global scale, requiring the single vision, cooperation, and financial investment of all the world’s richest and most influential countries - those same countries that are also among the highest energy consumers, per capita.



Source: Global Carbon Project

<sup>6</sup> 'Who Has The Most Historical Responsibility for Climate Change?' <https://www.nytimes.com/interactive/2021/11/12/climate/cop26-emissions-compensation.html>



Such a massive undertaking has never actually been attempted and while physically possible, its execution in the short term is unlikely. Instead, individual countries are setting their own climate goals, most of which are focused on reducing emissions or ideas that fall far short of fundamentally changing the source of energy being used or completely upgrading energy systems.

As “cost” is sometimes cited as a central reason for this slow and insufficient global response, it is important to remember that the costs of a climate crisis extend far beyond just economic concerns. While the financial cost of overhauling the world’s infrastructure may well be the most expensive global initiative in history, the real cost to the environment and to life on Earth will be far greater than the results of even the worst economic crises. However, even without considering the damage to the natural world and to humanity, the risks of inaction are expected to be extremely costly at around \$2 trillion per year in the USA alone by 2100.<sup>7</sup> This is due to the fact that there will be many other expensive issues to contend with, such as climate-related natural disasters, more frequent and increasingly extreme weather events, and conflicts between countries over land or other resources, as a result of climate heating making some countries (such as Middle Eastern countries) uninhabitable.

## Political and Economic Will

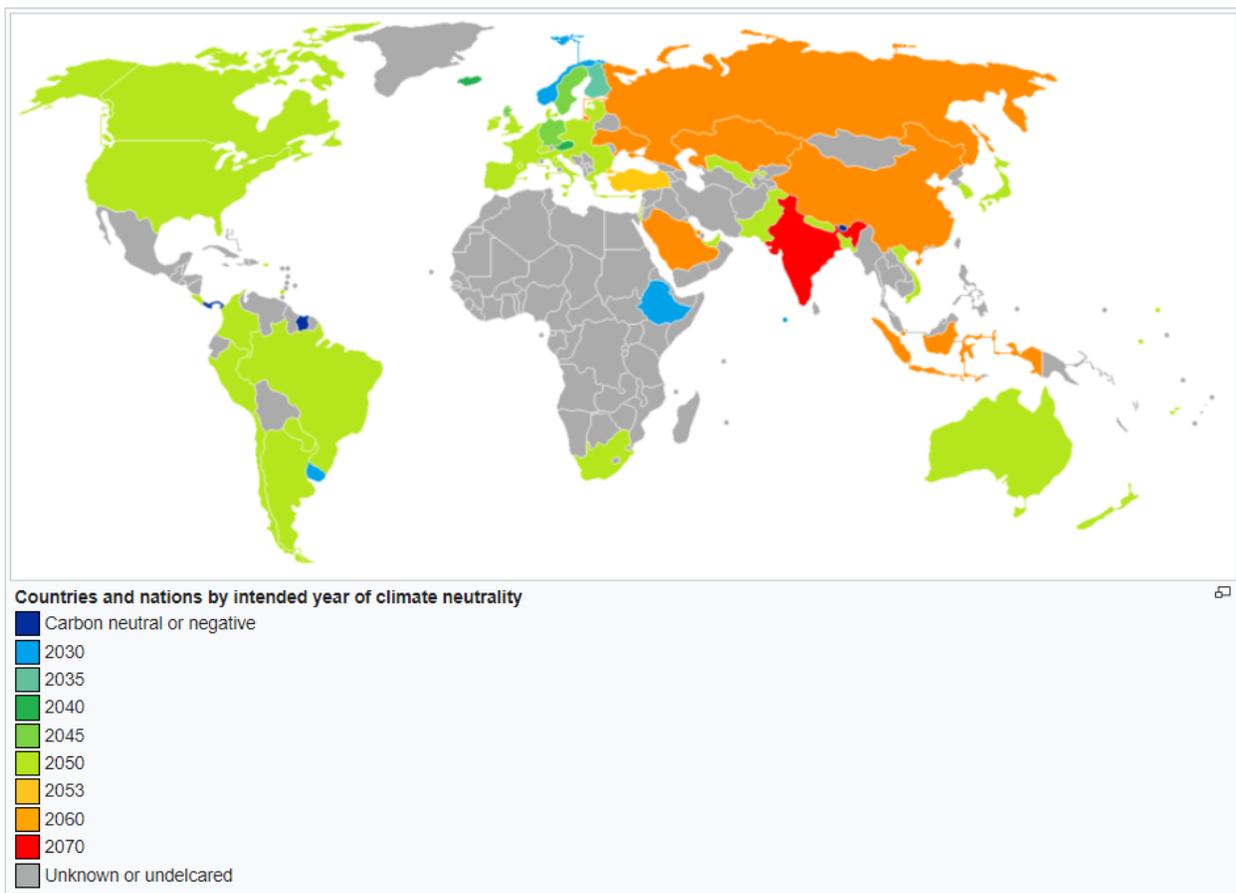
This is arguably the most important factor. While it is crucial that individual people recognize their own impact on the environment and make changes to their lifestyles to lessen their burden on the environment, for any meaningful change to take effect there has to be the will to do so by those entities that hold the most power and wealth, and as a result can exercise the most influence. Such entities and individuals include local, national, and international governments; leaders and elected representatives; media; corporations; and any person or entity with significant authority, power, or influence over a large number of people. While there is undoubtedly *some* will to effect positive change by those who hold this power (and this is hopefully on the increase as the extent of the crisis becomes more and more plain to see) it is not yet sufficient enough to make a meaningful impact on the trajectory of global warming. We are living through an extremely polarized time, one in which there is little faith in elected officials or business leaders to solve pressing problems such as climate change, yet these and other powerful individuals or entities must be pressured into prioritizing the safety of the planet and humanity as a whole, far above all other considerations.

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<sup>7</sup> ‘Climate change could cost U.S. \$2 trillion each year by the end of the century, White House says’ <https://www.cnbc.com/2022/04/04/climate-change-could-cost-us-2-trillion-each-year-by-2100-omb.html>

“Those pushing to end fossil fuel production now are missing the point that fossil fuels will still be needed for some time in certain sectors. Eliminating unpopular energy sources or technologies, like nuclear or carbon capture, from the conversation is short-sighted. Renewable electricity generation alone won’t get us there – this is an all-technologies-on-deck problem. I fear that magical thinking and purity tests are taking hold in parts of the left end of the American political spectrum, while parts of the political right are guilty of outright denialism around the climate problem. In the face of such stark polarization, the focus on practical solutions can get lost – and practicality and ingenuity are the renewable resources humanity needs to meet the climate challenge.” - [Samantha Gross](#), Brookings

## Carbon Neutrality



World map of pledges as of July 2022. From [Wikipedia](#)

It is becoming standard for governments to pledge themselves to net-zero carbon emissions by a certain date, commonly 2050, with a few countries committing to sooner than 2050. As of 2022 most world governments had made some sort of pledge towards net-zero carbon dioxide emissions. “Net-zero” includes removing emissions (also known as carbon offset), as well as preventing emissions from being created in the first place.

## Carbon Offset

Carbon offset is a “compensatory measure made by an individual or company for carbon emissions, usually through sponsoring activities or projects which increase carbon dioxide absorption, such as tree planting.”<sup>8</sup> While any measures that bring down carbon emissions should in theory be encouraged, there are some concerns by climate activists over the efficacy of using carbon offsetting to keep the earth’s average temperature increase below 1.5 degrees celsius, as businesses and individuals may be tempted to keep a “business as usual” mindset while believing that carbon offsetting releases them from other environmental or climate related obligations.

## Renewable, Alternative, and Sustainable Fuels

“Renewable energy, also called alternative energy, [is] usable energy derived from replenishable sources such as the Sun (solar energy), wind (wind power), rivers (hydroelectric power), hot springs (geothermal energy), tides (tidal power), and biomass (biofuels).”<sup>9</sup>

The best case scenario for our energy needs is a planet run entirely on non-polluting renewable energies, where fossil fuels are nothing more than relics of the past. As of 2021, in the US the vast majority of the energy used (around 80%) came from fossil fuels, and only a small percentage (around 12%) came from renewable sources such as wind power, solar power, and hydroelectric energy. The US is far behind other countries who have made renewable energy a high priority, such as Iceland which is operating with almost 100% renewable energy. Here are some of the viable alternative fuels which will be critical for the transition away from fossil fuels into a cleaner future. Note that many of them produce electricity as usable energy, and the International Energy Agency (IEA) predicts that this form of energy will be the core of the energy system of the future.<sup>10</sup>

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<sup>8</sup> Definition of 'carbon offset' <https://www.collinsdictionary.com/dictionary/english/carbon-offset>

<sup>9</sup> <https://www.britannica.com/science/renewable-energy>

<sup>10</sup> Net Zero by 2050 A Roadmap for the Global Energy Sector  
<https://www.iea.org/reports/net-zero-by-2050>



Source: [Wikipedia](#)

## Solar

Illustrating the potential of solar energy, the Solar Energy Technologies Office estimates that, “The amount of sunlight that strikes the earth's surface in an hour and a half is enough to handle the entire world's energy consumption for a full year.”<sup>11</sup>

Solar energy, in one form or another, is the original source of much of the energy in use, including fossil fuels and wind energy. Today, we have the means to capture energy from sunlight and convert it into usable electricity. One way solar energy is commonly gained is from the science of photovoltaics (PV). Photovoltaic cells (the materials that make up solar panels) convert light into electric currents via the photovoltaic effect, a scientific phenomenon that was first demonstrated in the 19th century. Solar energy can also be harnessed through concentrated solar power (CSP) which uses mirrors or lenses to convert solar energy into heat energy to then create steam which can be used, by generators for example, to produce electricity.

Although the use of solar energy is increasing and the costs for private installation have decreased by as much as 70% since 2014, significant investment is still needed to make this technology more widespread, accessible, and affordable to consumers. While there are some downsides to solar (the sun isn't always shining in a given place and initial costs are high), the benefits are clear: once installed, solar panels are a clean, renewable source of energy that do not produce any greenhouse gases. Refer to Activity G to learn more about the solar power bank included in the kit.

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<sup>11</sup> 'How Does Solar Work?' <https://www.energy.gov/eere/solar/how-does-solar-work>



Source: [Wikipedia](#)

## Wind

For millennia, humans have harnessed the power of the wind for sailing ships and rotating windmills. In modern times we have learned to use wind power to generate electricity using wind turbines. Wind energy is generated on a small scale (such as small wind turbines attached to an individual house) or in wind farms that can be located either on land or offshore, and both have their pros and cons. For example, building new onshore wind farms is opposed by some because of the visual effect on the landscape, especially in places of natural beauty. Offshore wind farms on the other hand do not have much of a visual impact (although some offshore farms can be viewed from land and are opposed by some for this reason). Offshore farms also yield higher energy as offshore wind tends to be steadier and faster than on land.<sup>12</sup> However, building wind farms offshore presents high costs and difficulties for building and maintenance.

Despite the clear climate-related benefits of this technology, the expansion of wind energy faces some opposition, partly due to misinformation about wind energy. There are unfounded medical-type claims such as supposed radiation from turbines causing cancer, a

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<sup>12</sup> 'What are the advantages and disadvantages of offshore wind farms?'

<https://www.americangeosciences.org/critical-issues/faq/what-are-advantages-and-disadvantages-offshore-wind-farms>



myriad of symptoms such as tinnitus and headaches supposedly caused by the noise from the turbines, and other health concerns allegedly caused by wind turbines. A wealth of studies have found no reason to believe that wind turbines have any harmful effects on human health (aside from annoyance at the sound, if that can be counted as a harmful health effect).<sup>13</sup> One explanation for the unproven health claims is thought to relate to the power of the mind, also known as a psychosomatic response: hearing negative suggestions or thinking negatively about wind power can subconsciously create the experience or sensation of symptoms that do not relate to an actual illness in the body.<sup>14</sup> This effect - similar to the placebo effect - has been called the “nocebo” effect.

Wind power is growing in popularity and has come to produce around 5% or more of the electricity worldwide,<sup>15</sup> with the US increasing its wind power capacity 30% year over year,<sup>16</sup> making it America’s largest source of renewable energy.<sup>17</sup>

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<sup>13</sup> ‘Can Wind Turbines Make You Sick?’

<https://www.pbs.org/wgbh/nova/article/can-wind-turbines-make-you-sick/>

<sup>14</sup> ‘The Link between Health Complaints and Wind Turbines: Support for the Nocebo Expectations Hypothesis’ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4227478/>

<sup>15</sup> ‘World gross electricity production by source, 2019’ Last updated 6 Aug 2021

<https://www.iea.org/data-and-statistics/charts/world-gross-electricity-production-by-source-2019>

<sup>16</sup> ‘Wind Energy Basics’ <https://www.energy.gov/eere/wind/wind-energy-basics>

<sup>17</sup> <https://cleanpower.org/facts/wind-power/>



Grand Coulee Dam. Image from [Wikipedia](#)

## Hydropower

Like wind energy, humans have harnessed the power of water for thousands of years,<sup>18</sup> such as with flour production in ancient Greece. Even before the Industrial Revolution businesses used watermills to generate energy for producing goods. By the late 19th century, the electrical generator was invented and hydroelectricity could be made on an industrial level for the first time. It generally works in much the same way as wind power: the energy in moving water (usually fast-running or falling) turns a turbine, which in turn creates electricity.

Hydropower plants can come in many different shapes and sizes, from small scale operations, to tidal operations, to enormous dams such as the Grand Coulee Dam in Washington State, the largest plant in the USA. According to the 2020 Hydropower Special Market Report by the International Energy Agency (IEA), "In 2020, hydropower supplied 17% of global electricity generation, the third-largest source after coal and natural gas."<sup>19</sup>

Like any other energy source, hydropower can have some disadvantages/limitations such as dam construction harming river ecosystems and causing habitat loss. And large reservoirs of water like dams are not without risk: failures can be catastrophic when they occur and

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<sup>18</sup> <https://www.irena.org/hydropower>

<sup>19</sup> Hydropower Special Market Report Executive summary  
<https://www.iea.org/reports/hydropower-special-market-report/executive-summary>



decaying organic matter in reservoirs are a source of greenhouse gas emissions, albeit a small one in comparison to the major polluters.

However, these concerns do not discount hydropower's value as an alternative energy source. While hydropower is gaining popularity (its capacity rose by roughly 70% globally in the first two decades of the 21st century), it remains an underutilized energy source by most of the world, specifically in the underinvestment in technology for capturing tidal energy - energy that is created by the movement of the ocean:

“The U.S. Department of Energy estimates that tidal and wave energy hold up to 1,400 Terawatt hours (TWh) of potential energy each year. The U.S. requires about 4,000 TWh of energy each year.”<sup>20</sup>

Some countries make heavy use of hydropower; for example, 98% of Norway's electricity is generated from renewable sources, with the vast majority coming from hydropower.<sup>21</sup> While this progress is a great step forward, the IEA says that more efforts are needed by countries across the world to make this energy source more streamlined, accessible, and sustainable.

<sup>22</sup>

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<sup>20</sup> What are the Pros and Cons of Hydropower and Tidal Energy

<https://populationeducation.org/what-are-pros-and-cons-hydropower-and-tidal-energy/>

<sup>21</sup> 'Renewable energy production in Norway'

<https://www.regjeringen.no/en/topics/energy/renewable-energy/renewable-energy-production-in-norway/id2343462/>

<sup>22</sup> IEA - Hydropower <https://www.iea.org/reports/hydropower>



Source: [Conserve Energy Future](#)

## Nuclear

“The generation of electricity from a typical 1,000-megawatt nuclear power station, which would supply the needs of more than a million people, produces only three cubic metres of vitrified high-level waste per year, if the used fuel is recycled. In comparison, a 1,000-megawatt coal-fired power station produces approximately 300,000 tonnes of ash and more than 6 million tonnes of carbon dioxide, every year.”<sup>23</sup> -  
World Nuclear Association

Providing 52% of the “clean” energy being produced today in America, nuclear fuel is considered one of the most reliable energy sources available.<sup>24</sup> Nuclear power is not generally considered a renewable fuel source because fossil fuels are required to mine uranium, a key ingredient needed to produce the reaction (nuclear fission) that generates heat energy, which in turn produces steam, from which electricity can be generated into usable energy. Nuclear power is a low-carbon fuel (which is what makes it “clean,” or at least

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<sup>23</sup> ‘What is nuclear waste, and what do we do with it?’

<https://world-nuclear.org/nuclear-essentials/what-is-nuclear-waste-and-what-do-we-do-with-it.aspx>

<sup>24</sup> ‘INFOGRAPHIC: Five Fast Facts about Nuclear Energy (2020)’

<https://www.energy.gov/ne/articles/infographic-five-fast-facts-about-nuclear-energy-2020>

much cleaner than fossil fuels) and when it is used to generate electricity it does not in itself release the greenhouse gasses that are so detrimental to the environment.



U.S. Operating Commercial Nuclear Power Reactors



Source: [NRC](#)

This alternative fuel has clear potential for helping to fulfill our energy needs, but its reputation is not as clean, partly due to well known disasters from the past like Three Mile Island, PA (1979), Chernobyl, USSR (1986) and Fukushima, Japan (2011) and lingering fears about the stability/safety of nuclear power stations, effects of radiation on health, as well as concerns over nuclear waste. As discussed in other parts of this binder, our energy needs will likely only increase in future. Therefore, while there are questions about the safety and usefulness of nuclear energy, it still offers a much safer alternative to fossil fuels making it an important technology for transitioning to a carbon-free future. As of January 2023, there were 92 commercial nuclear reactors in the US, and the total number of operable nuclear reactors around the world was around 438.<sup>25</sup>

<sup>25</sup> 'World Nuclear Power Reactors & Uranium Requirements'  
<https://www.world-nuclear.org/information-library/facts-and-figures/world-nuclear-power-reactors-and-uranium-requireme.aspx>

## Other types of fuels

There is a variety of other alternative fuels available on the global market and some new emerging fuels, including:

- Hydrogen is the most abundant chemical element in the universe. It can be used as a fuel in a fuel cell (comparable to a sort of battery) and this technology is increasingly being used in electric vehicles (also known as fuel cell electric vehicles or FCEVs). When hydrogen is used in this way, the only byproduct is water, which is great from an emissions standpoint.<sup>26</sup> However, the processes for making a usable hydrogen fuel are still rather intensive, requiring the use of fossil fuels. While hydrogen has sometimes been touted as almost a cure all for future transport fuel needs, there are some concerns about the safety of hydrogen as an alternative to fossil fuels, including worries about the warming effects of hydrogen.<sup>27</sup>
- Biomass/biofuels: As opposed to fossil fuels, which are made over the course of millions of years, biofuels are produced quickly by humans from processed plant material known as biomass. Like fossil fuels, however, their energy comes from combusting the fuel, which creates emissions (albeit with cleaner emissions than petroleum<sup>28</sup>). The most common biofuels in use today are ethanol and biodiesel which are regularly blended with other fuels for transportation. It is questionable whether biofuels represent a truly viable alternative to oil as they still require large amounts of energy to produce on an industrial level.<sup>29</sup>
- Propane: a “cleaner” liquid fuel derived from fossil fuels. It produces carbon dioxide when burned, but little else. As it “burns clearer” it is considered more environmentally friendly than other fossil fuels such as coal which emits many different harmful chemicals when burned.<sup>30</sup>

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<sup>26</sup> Hydrogen Fuel Basics <https://www.energy.gov/eere/fuelcells/hydrogen-fuel-basics>

<sup>27</sup> For hydrogen to be a climate solution, leaks must be tackled  
<https://www.edf.org/blog/2022/03/07/hydrogen-climate-solution-leaks-must-be-tackled>

<sup>28</sup> Biofuels explained - Biofuels and the environment  
<https://www.eia.gov/energyexplained/biofuels/biofuels-and-the-environment.php>

<sup>29</sup> Biofuel - Britannica <https://www.britannica.com/technology/biofuel>

<sup>30</sup>

<https://www.globalfueleconomy.org/transport/gfei/autotool/approaches/technology/fuels.asp#propane>

## Mindfulness Moment

### What needs to be done globally?

- A meaningful transition to clean, renewable energy must be undertaken on a worldwide scale while fossil fuels must also be abandoned as soon as is practicable.
- Governments, businesses, and anyone who has influence or authority must center clean energy solutions in their work.

### What needs to be done locally?

- Policymakers must push to make alternative energy accessible to everyday people. Not only should it be accessible, there should be a clear benefit of using it over any available fossil fuel.
- Local residents must apply continual pressure to policymakers to meet this challenge head on and create reliable infrastructure.
- Local residents must find ways to organize as a means to hold their local authorities, local businesses, and community leaders accountable for not meaningfully transitioning to the abundant alternatives we have available.

### What can be done by you?

- Investigate your own energy consumption versus your energy needs.
- Invest in renewable/sustainable energy.
- Find ways to cut your energy use in the home and on the road.
- Ensure you are never wasting energy.
- Research, collaborate, and organize with other community members about energy use in your local community.

## Chapter Glossary

**Acid Rain** | Caused by pollutants produced during the burning of fossil fuels, this rain has a higher level of acidity than normal which can dissolve minerals and nutrients that are essential for forests to live and thrive

**Biofuels** | Fuel derived from biomass (organic plant-based materials)

**Byproduct** | A secondary result, unintended but inevitably produced in doing or producing something else

**Chernobyl nuclear disaster** | An accident in 1986 at the Chernobyl nuclear power station in the Soviet Union, the worst disaster in the history of nuclear power generation

**Existential** | Consciously considering the existence of humanity and the individual

**Generators** | A machine that converts mechanical energy into electricity

**Hydropower** | When water is used to generate power by turning turbines to run a generator, this is often achieved by disrupting the water's natural flow with a dam

**Infrastructure** | The basic organizational structure of regions such as cities and states, which includes public resources such as roads, water supply, power and telecommunications

**Net zero carbon** | Balancing the amount of carbon that is added and removed from the atmosphere, so in theory, the carbon one produces is completely offset by removing carbon elsewhere and no additional carbon is added into the atmosphere

**"Nocebo" effect** | The opposite of the placebo effect where negative consequences are more likely to occur if they are expected

**Nuclear fission** | Splitting the nucleus of an atom which releases large amounts of energy

**Photovoltaics (PV)** | The conversion of light into electricity using semiconducting materials

**Photovoltaic cells** | A device that converts light energy into electricity

**Photovoltaic effect** | The generation of electricity from exposure to light

**Placebo effect** | The phenomenon where a beneficial reaction occurs if it is expected or believed to occur without any actual tangible stimulus for that reaction

**Pollutants** | A substance in an environment which exists at a level of concentration that harms organisms



**Renewable energy** | Energy produced from sources that can not be depleted

**Solar energy** | The renewable energy produced by light and heat from the sun

**Wind energy** | Electricity produced when wind rotates turbines to run a generator

**Wind turbines** | The mechanism that wind rotates to generate electricity

# Ecosystems

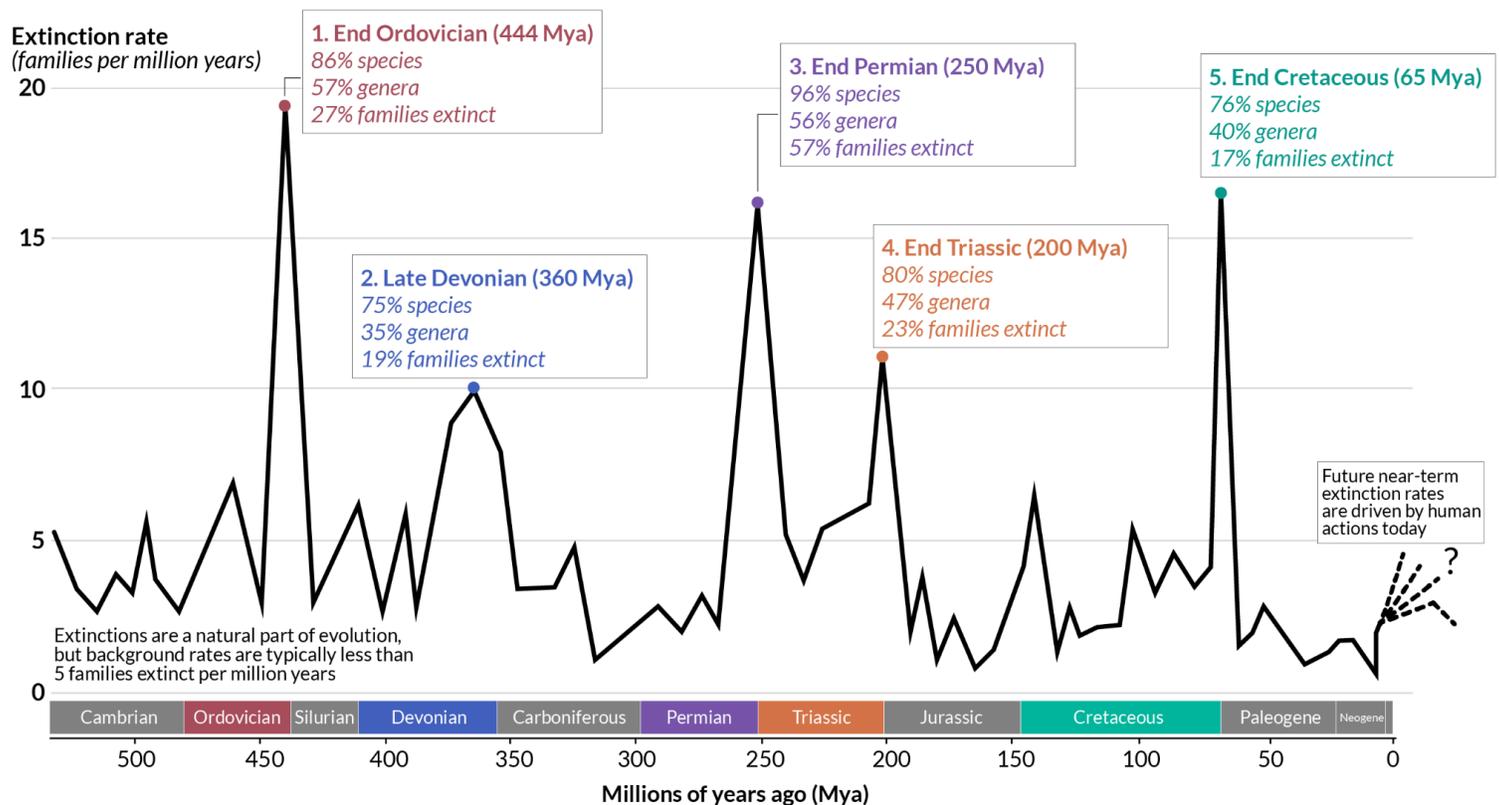
"There is a deep interconnectedness of all life on earth, from the tiniest organisms, to the largest ecosystems, and absolutely between each person."

– Bryant McGill

## 'Big Five' Mass Extinctions in Earth's History

A mass extinction is defined by the loss of at least 75% of species within a short period of time (geologically, this is around 2 million years).

Our World  
in Data



Sources: Barnosky et al. (2011); Howard Hughes Medical Institute; McCallum (2015). Vertebrate biodiversity losses point to a sixth mass extinction.

OurWorldinData.org - Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the author Hannah Ritchie.

Source: [Our World in Data](https://ourworldindata.org)

## Introduction

The Earth consists of countless diverse species living within a vast array of environments. It is impossible to give the attention to each one that it deserves in this binder. However, it is important to pay close attention to how these ecosystems interact with each other, our role within them, and the impact the climate crisis is having.

Throughout history there have been five natural events that have caused the mass extinction of species across the globe. For example, the dinosaurs disappeared during a mass extinction event. Now, human activity is the root cause of a sixth mass extinction because the climate crisis is causing environmental changes at a rate faster than many species are able to adapt<sup>1</sup>.

The many reasons we should care for the health of our ecosystems range from moral to scientific and even selfish. Everything that we rely on is produced from the ecosystems around us. As our growing population demands more resources, we will be unable to produce them if we do not care for our environment.

While it may be difficult to imagine how, for example, a snail going extinct will impact your everyday life, all species are interconnected, and some species are keystone species within an ecosystem. This means that if they disappear it will affect enough other species that a chain reaction will take place leading to the deterioration of the ecosystem as a whole. Additionally, many of our most important medicines are derived from plants and animals. Once a species is extinct, we will no longer be able to discover and study the scientific marvels it may have held.

Since it is important to understand our connection to the ecosystems we live within, let's take a look at how the climate crisis and other human activity is changing ecosystems both within the Western United States and around the world.

## Wildfire

Possibly one of the most noticeable changes is the increased frequency and severity of wildfires. Wildfires can start from natural occurrences, such as lightning, and their impact is not always negative. When a low severity fire starts in a healthy forest it can actually clean it up by removing debris, allowing more light to reach the forest floor, adding nutrients to the soil, and weakening diseases and pests<sup>2</sup>. However, fire suppression efforts by humans have interfered with natural cycles of wildfire for decades, leaving large amounts of unburned woody debris throughout forests. Additionally, the diversity of these forests is weakened by a history of unsustainable logging practices and the changing climate. Less diverse forests are more susceptible to pests and diseases. Widespread diseases and pests, such as the Mountain Pine Beetle, leave large amounts of dead, dry trees that burn easily. These conditions, alongside human factors that start wildfires, such as electrical lines and negligent behavior, set the stage for frequent, severe and fast moving wildfires.

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<sup>1</sup> '6th mass extinction happening now? These scientists say yes'

<https://earthsky.org/earth/6th-mass-extinction-in-progress-invertebrates/>

<sup>2</sup> 'Benefits of Fire' <https://www.fire.ca.gov/media/5425/benefitsoffire.pdf>

The severity of a wildfire influences a forest's ability to regenerate. A low severity fire will not burn everything in its path. When some trees are left unharmed, they can spread their seeds, and offer some protection for the saplings, allowing the forest to recover faster. High severity wildfires, which are becoming more common, can destroy everything in their path<sup>3</sup>. Trees can not spread their seeds as easily through a large completely burnt expanse of land. Saplings that do regenerate in an intensely burned area face harsh conditions due to exposure, erosion, drought and increasing temperatures of the climate crisis<sup>4</sup>. Wildfires are, therefore, changing ecosystems in the west, as some species in severely burned areas are unable to reestablish and other, often invasive, species take over.

## Grazing

Before settlers significantly reduced the bison population in the United States, their large herds roamed the plains as a vital part of the grassland ecosystem. They moved through the landscape fairly quickly, driven by predators and the need for food and water. Bison ate grass, left feces and their hooves disturbed the ground. Then the herds moved on, giving the land time to recover. Constant rejuvenation after these disturbances created resilient grassland ecosystems with healthy topsoil that stored large amounts of carbon.

European settlers changed these conditions by eliminating the bison herds and introducing livestock. Cattle are not driven across vast landscapes by predators as bison once were, which leads to overgrazing of specific plant species particularly in convenient locations such as low lands and near water resources. This concentrated grazing does not give the land time to recover, leading to the degradation of soil, less plant diversity and more bare ground. As we lose ground cover and topsoil, we also lose the capacity to store carbon in plants and soil, adding to the carbon in our atmosphere which contributes to the climate crisis.

Luckily, we now understand why these changes are occurring. Grazing itself is not always detrimental, but it must be done in a manner that mimics the natural cycle of the bison herds. If cattle are moved frequently and enough time is given for the land to recover from their disturbance before they return to graze again, then livestock can play a positive role in restoring grasslands. A healthy grassland will take more carbon out of the atmosphere, cycle more nutrients, hold more water and overall provide more value to both humans and the planet<sup>5</sup>!

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<sup>3</sup> 'Area burned at high severity is increasing in western U.S. forests'  
<https://www.fs.usda.gov/rmrs/science-spotlights/area-burned-high-severity-increasing-western-us-forests>

<sup>4</sup> 'Colorado forests may never be the same after historic 2020 wildfires'  
<https://www.9news.com/article/news/state/colorado-climate/colorados-forests-2020-wildfires-impact/73-b26eb963-b78f-4c59-8e3f-0b0384359558>

<sup>5</sup> 'Managing Grazing to Restore Soil Health, Ecosystem Function, and Ecosystem Services'  
<https://www.frontiersin.org/articles/10.3389/fsufs.2020.534187/full>

## Water Shortages

Our supply of available freshwater is shrinking. There are numerous factors that contribute to the depletion of our freshwater supply. Agricultural practices, pollution, increased evaporation, drought, and decreased snowpack all contribute to this decline in the Western United States.

In Colorado, decreased snowpack is especially visible because of the effects it has on the ski industry and outdoor recreation. However, a shorter ski season is not the only negative effect of less snowpack. Seventy percent of Colorado's freshwater supply comes from snowpack<sup>6</sup>, and ninety percent of the water that flows in the Colorado River is made up of snow and rain in the Rocky Mountains. The river's flow has already decreased by twenty percent. Many states that rely on the Colorado River are creating plans to handle an impending water shortage. Successful planning requires collaboration between seven states ( Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming) , the U.S. federal government and Mexico, all of which use water from the Colorado River Basin.

Of course, a decreasing freshwater supply is not only detrimental to humans, countless animal and plant species rely on freshwater habitats and about half of all fish species live in freshwater. Due to dammed rivers, destroyed wetlands, pollution, and the climate crisis, freshwater fish populations are collapsing around the globe. The climate crisis affects the water cycle by increasing evaporation causing more extreme precipitation events. Globally, some areas will experience heavy rainfall and flooding while other places will see significant droughts<sup>7</sup>.

## Deforestation

Both in the Western United States and around the globe, deforestation is significantly changing our forest ecosystems. The history of deforestation is ancient compared to our awareness of the climate crisis. Timber has always been a crucial resource, and forests are also cut to allow for agriculture, grazing, and construction. The equivalent of 30 soccer fields worth of forest are cut down every minute<sup>8</sup>. A third of the world's forests have been lost throughout history, which is enough forest to cover an expanse of land twice the size of the United States<sup>9</sup>.

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<sup>6</sup> 'Climate Change in Colorado' <https://350colorado.org/climate-change-in-co/>

<sup>7</sup> 'How Climate Change Impacts Water Access' <https://www.nationalgeographic.org/article/how-climate-change-impacts-water-access/>

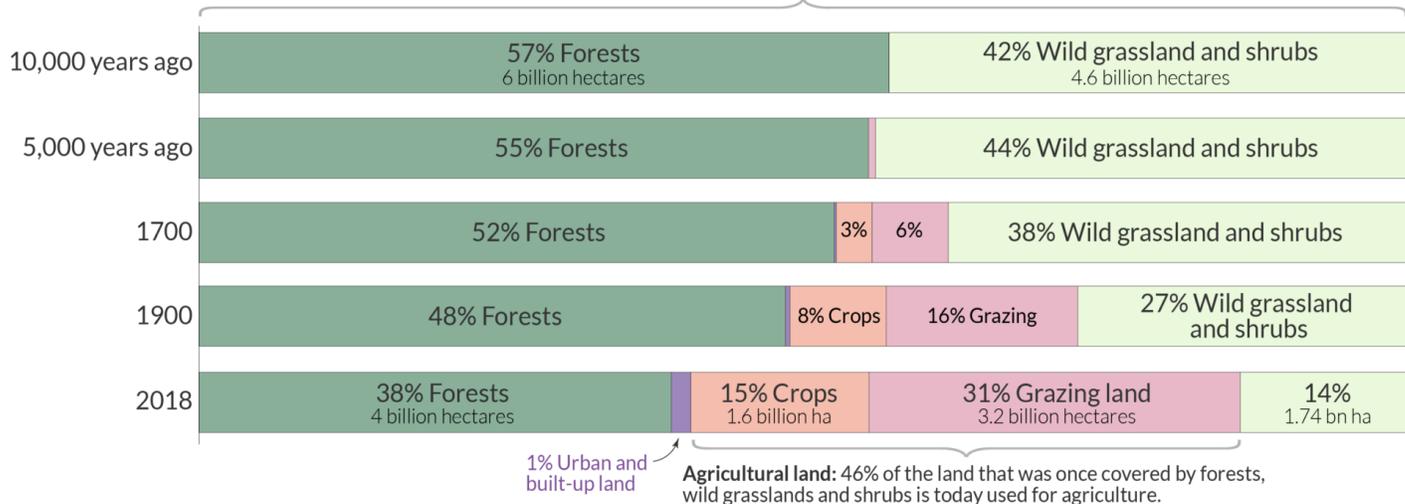
<sup>8</sup> 'Enough rainforest to fill 30 football pitches destroyed every minute last year' <https://www.independent.co.uk/climate-change/news/tropical-rainforest-lost-destroyed-football-pitches-every-minute-a8886911.html>

<sup>9</sup> 'The world has lost one-third of its forest, but an end of deforestation is possible' <https://ourworldindata.org/world-lost-one-third-forests>

## Humanity destroyed one third of the world's forests by expanding agricultural land

Agriculture is by far the largest driver of deforestation. To bring deforestation to an end humanity has to find ways to produce more food on less land.

10,000 years ago, 10.6 billion hectares – 71% of the earth's land surface – were covered by forests, shrubs, and grasslands. The remaining 29% are covered by deserts, glaciers, rocky terrain and other barren land.



Data: Historical data on forests from Williams (2003) - Deforesting the Earth. Historical data on agriculture from The History Database of Global Environment (HYDE). Modern data from the FAO. OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC-BY by the authors Hannah Ritchie and Max Roser.

Of course, taking away such a large amount of habitat has significant consequences. There are many different types of forests, three broad categories being boreal, temperate, and tropical. Tropical rainforests are the most diverse terrestrial ecosystem on Earth, and forests globally are home to 80 percent of terrestrial life<sup>10</sup>.

When habitat is reduced, resources become scarce, leading vulnerable species to become endangered or even extinct. Sometimes, wildlife is forced to relocate to areas more heavily populated by humans. If species are unable to adapt to these changing environments they will not survive.

Deforestation also contributes directly to the climate crisis. Trees store carbon and produce oxygen. When they are cut, and decompose or burn, they release carbon dioxide and other greenhouse gasses into the atmosphere. Additionally, clearing forests destabilizes the watershed by increasing the risk for drought or floods and water pollution through erosion or wildfire.<sup>11</sup> The good news is that forests can be replanted. However, this takes a lot of time and needs to be done with great care to replicate the species diversity that existed before being harvested. If forests grow back with less diverse species the ecosystem is left at risk to disease, invasive species, and wildfire.

<sup>10</sup> 'Terrestrial Ecosystems' <https://earthwatch.org/research/terrestrial-ecosystems>

<sup>11</sup> Global Forests Watch Topic on Water <https://www.globalforestwatch.org/topics/water/>

## Coral Reefs

Although they are further from our home state of Colorado, coral reefs deserve acknowledgement as the most diverse ecosystems on Earth battling the climate crisis. Coral reefs are the result of a symbiotic relationship between tiny plant and animal organisms<sup>12</sup>. Unfortunately, warming ocean temperatures, pollutants, harmful fishing practices, invasive species, and ocean acidification are all harming coral reefs. When under stress, the coral (which is the animal organism) dispel the algae that they partner with which turns the coral white, known as bleaching<sup>13</sup>. The coral is not dead when it is bleached, but it is stressed and in danger.



Source: [Carnegie Science](#)

Thousands of species call a single coral reef home and worldwide, it is estimated that over a million species live in coral reefs. Whether predator or prey, plant or animal, all of these organisms have a role that they play within the reef's ecosystem. In addition to providing a home for aquatic life, coral reefs protect human populations by acting as an underwater defense system from tropical storms. The coastal communities they protect also depend on the reef for food and income through fishing and tourism. Coral reefs are tied closely to the livelihood of at least **400 million people**<sup>14</sup>

<sup>12</sup> 'Are corals animals or plants?' <https://oceanservice.noaa.gov/facts/coral.html>

<sup>13</sup> *Ibid.*

<sup>14</sup> 'Coral Reef' <https://oceana.org/marine-life/coral-reef>

## Conclusion

This is only a glimpse of how a few of the world's ecosystems are affected by the climate crisis and human activity. As our population increases, it will be necessary to produce more food and resources on less land, as well as take better care of the land we do use so it can sustain thriving ecosystems for years to come. Luckily, advancing technologies in food production and our growing understanding of the interconnected ecosystems we exist within are beginning to make this possible. The Earth is resilient and powerful enough to recover from much of the damage we have inflicted if we give it the chance!

### Mindfulness Moment

#### What needs to be done globally?

- Awareness needs to spread about how global heating is doing damage to ecosystems around the world at this very moment.
- Governments need to introduce stronger protections for our animals, woodlands, oceans, and other ecosystems.
- People need to start thinking about the natural world as a place that must be protected for all of humanity, rather than a resource to plunder for the enrichment of the few.

#### What needs to be done locally?

- Increase education about the climate and its interactions with local ecosystems, including weather, water resources, wildfire, plants and insects, and other wildlife.
- Launch campaigns and strengthen policymaking to protect local natural spaces.

#### What can be done by you?

- Ensure your waste is properly disposed of.
- Donate to charities or nonprofits that protect nature.
- Volunteer for organizations whose mission is to improve the environment.
- Form connections and relationships with others who love nature or who are already engaged in conservation efforts.

## Chapter Glossary

**Adaptation** | The act or process of changing to better suit a situation, entire species may adapt to their environment by evolving specialized traits over many generations

**Coral bleaching** | When water is too warm and corals expel the algae living in their tissues causing the coral to turn completely white

**Deforestation** | The clearing of the world's forests by humans for purposes such as agriculture, livestock grazing, wood products and construction

**Diversity** | Made up of differences, having a variety of traits and unique characteristics or a number of different species present in an ecosystem

**Endangered** | At high risk of extinction

**Extinction** | the termination of a species after the final individuals are deceased

**Fire suppression** | Taking actions to prevent wildfire from spreading

**Habitat** | A natural space that provides organisms with the resources they need to survive

**Invasive species** | Species that begin to thrive in environments they are not native to often at the expense of the native species

**Keystone species** | Species that stabilize an ecosystem through interactions, as prey or predator, with other species. The collapse of this population would cause widespread harm to other species and result in a drastic change or collapse of the ecosystem as a whole

**Organism** | Any individual life form, from a plant or animal to a single living cell

**Symbiotic** | A mutually beneficial relationship where organisms survive and thrive in close proximity to each other and each one fulfills a need of the other

# Food and Waste

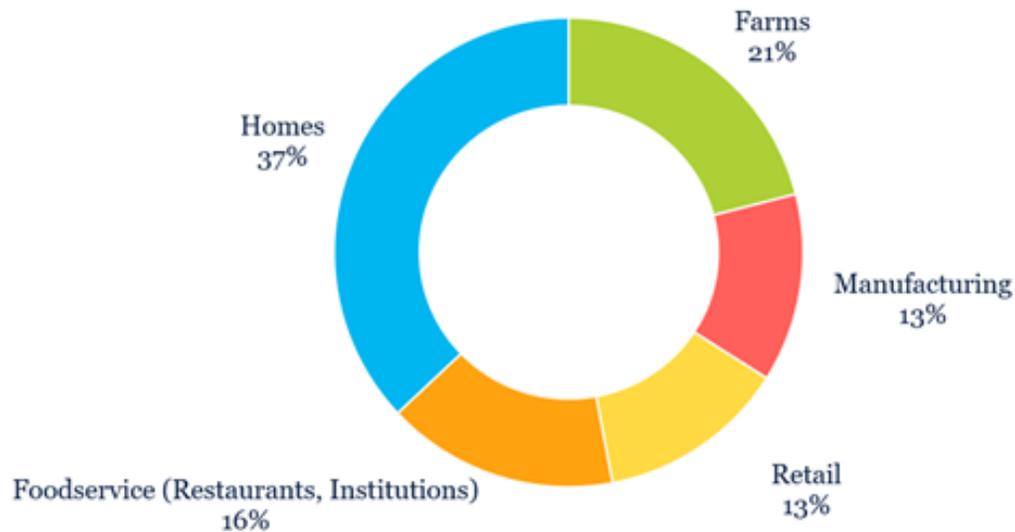
"Cutting food waste is a delicious way of saving money, helping to feed the world and protect the planet."

- Tristram Stuart

## Life Cycle Thinking

Life cycle thinking involves considering the entire journey of a resource from its origins to the end of its life. Doing so gives us a better understanding of where and when environmental impacts occur. When considering how the food we eat and the waste that stems from this industry impacts the climate crisis, life cycle thinking is essential. It is estimated that 30-40% of our total food supply is wasted<sup>1</sup>. Considering the choices we make at the grocery store and how we reduce waste in our own kitchen is important, but this is only one part of food production as a whole which accounts for around 35% of global greenhouse gas emissions<sup>2</sup>.

### Food Waste Throughout Its Lifecycle



Source: [ReFed Insights Engine](#)

<sup>1</sup> 'Food Waste FAQs' <https://www.usda.gov/foodwaste/faqs>

<sup>2</sup> 'How much do crops contribute to emissions?'

<https://www.greenbiz.com/article/how-much-do-crops-contribute-emissions>

## Origins

As the world's population increases, so does global food demand. Ensuring that our agricultural practices can meet this demand while also building healthy soil, conserving water, maintaining diverse habitats, and reducing fossil fuel consumption is a key challenge we face. It is estimated that around 21% of all food waste takes place before the food has even left the farm<sup>3</sup>. In the United States our farming practices range from industrial agriculture to small, local farms. Like most other industries, agriculture is still heavily dependent on fossil fuels. However, the use of sustainable practices is growing as the benefits they bring become clear.

## Industrial Agriculture

Industrial agriculture accounts for the majority of food in our grocery stores. These giant farms efficiently produce large amounts of food through advancing technologies that decrease labor needs and consumer costs. If not carefully managed with environmental concerns in mind, the negative impacts of these farms are significant and may include pesticide use, unsanitary conditions, harmful use of antibiotics, animal cruelty, soil degradation, and considerable greenhouse gas emissions.

## Sustainable Agriculture

Sustainable agriculture differs from current industrial agriculture by incorporating practices such as no-till farming, crop rotation, planting cover crops, minimizing pollutants, wisely integrating livestock and crops, and conserving water<sup>4</sup>. These practices are scientifically proven to not only limit environmental harm, but promote biodiverse landscapes leading to more resilient farms.

Farms can save their soil, air and water by reducing or eliminating their application of pesticides. In place of pesticides, integrated pest management plans use knowledge of pests' natural vulnerabilities alongside the least harmful, yet effective, pest control option to keep crops healthy. An organic farm is a farm that uses no synthetic fertilizers or pesticides<sup>5</sup>. If a farm takes steps to not only sustain the health of the land but actively restore and improve it through farming it is known as regenerative agriculture

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<sup>3</sup> 'Preventing Wasted Food Across the Food Supply Chain'  
<https://www.nrdc.org/experts/nina-sevilla/preventing-wasted-food-across-food-supply-chain>

<sup>4</sup> <https://www.ucsusa.org/resources/what-sustainable-agriculture>

<sup>5</sup> <https://www.epa.gov/agriculture/organic-farming>

## Alternative Foods

Meat heavy diets have a significantly greater carbon footprint than plant based diets because it takes more energy and produces more greenhouse gasses to raise livestock. In response to the meat industry's contributions to the climate crisis, some experts are rethinking the food system entirely and turning to alternative food production methods. A few examples of these alternatives include lab grown meat and other animal products, kelp (seaweed) farming, and edible insects. While all of these options are more eco-friendly than our current system, people must first learn to accept these solutions, and changing societal norms such as the foods we eat is no small task.



Lab grown meat

## Processing

Food processing encompasses all the steps involved to make raw food materials from the farm ready for distribution, including packaging. An estimated 13% of all wasted food is thrown out during this part of food production. Food may be thrown out due to damage, contamination, spoiling, mislabeling, or even if it is just considered ugly. Delays or canceled orders also cause food waste during processing<sup>6</sup>.

## Packaging

Food packaging is for preservation, convenience, cleanliness and safety. However, too much of this packaging is still ending up in our landfills. Even recyclable materials still end up in landfills. For example, according to the EPA (Environmental Protection Agency), in the United States around 40% of glass beer and soft drink bottles are recycled and just over 50% of beer and soft drink aluminum cans are recycled<sup>7</sup>. Not everyone has easy access to recycling services. Diverting significantly more food packaging from the landfill will require even more infrastructure to support recycling efforts. Also, recycling regulations vary, so

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<sup>6</sup> <http://www.cec.org/flwm/sector/processing-and-manufacturing/>

<sup>7</sup> <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/frequent-questions-regarding-epas-facts-and#FoodWaste>

remember to check with your local services to ensure you are recycling the correct materials.

Single use plastics are difficult to recycle. After plastic is discarded it still exists on our planet for hundreds of years whether in landfills or our ecosystems. An emerging alternative to single use plastic packaging is biodegradable packaging. There are a variety of biodegradable packaging products out there, from completely plant based materials to more traditional petro products built to break down faster. Biodegradable packaging is made with less greenhouse gas emissions than traditional plastic packaging, it does not drive the continued use of fossil fuels, and it breaks down faster than plastic, taking up less room in our landfills<sup>8</sup>. Because there is such a variety of biodegradable packaging products now available, be sure to educate yourself on the product you are using and how to properly dispose of it. Not all products labeled biodegradable are easily compostable.

Visit [erasethewasteco.com](https://erasethewasteco.com) for helpful recycling tips and take the “No Glass in the Trash” pledge. Libraries can be part of the solution by ensuring they have recycling bins in their building and encouraging recycling habits. Check out [denverlibrary.org/Oso-Barnum-Bear](https://denverlibrary.org/Oso-Barnum-Bear) to see what a Denver Public Library branch created from recycled and repurposed materials in partnership with Denver Arts and Venues.

## Retail

In order to get from the farm, through processing, and finally to the store there is a lot of transport involved which, of course, also emits greenhouse gasses. This is particularly energy intensive when food items must be kept cool. Buying locally produced food lowers these emissions while supporting farms in our communities and state. Local food sales are increasing due to consumer demand which proves the power consumers have to influence markets based on what they buy.

In grocery stores and restaurants combined, 29% of overall food waste occurs. Waste during retail may occur for reasons such as excess inventory, displaying an abundance of produce at once and inaccurately predicting consumer demand. As mentioned previously in the processing section, food may also be thrown out by the retailer simply because it does not meet high cosmetic standards. Obviously, just because a carrot is crooked or a pepper is misshapen does not mean it holds less nutritional value or flavor, but regardless, these misshapen foods are more likely to be left on the shelves and go to waste. Luckily

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<sup>8</sup>

<https://www.conserve-energy-future.com/advantages-disadvantages-uses-biodegradable-plastics.php>

there are organizations such as [Imperfect Foods](#)<sup>9</sup> and [Misfits Market](#)<sup>10</sup> that allow people in participating areas to order “ugly” food with the mission of reducing food waste. This food is often sold at a cheaper price, meaning these services reduce food waste and save us money at the same time.

## At Home

Our actions at home create around 37% of all wasted food, making them the largest contributor of waste in the food production cycle<sup>11</sup>. Therefore, as consumers, our actions have a significant impact on this issue. We can do our part to reduce food waste by meal planning, eating leftovers, properly storing food, buying only what we need at the grocery store, and making shopping lists, among other strategies.

Expiration dates are also a significant contributor to food waste in the home. Of course, expiration dates are displayed as a valid safety precaution and “use by” dates should be taken seriously. However, “best by” and “sell by” dates often prompt people to throw out perfectly good food if it is close to or past its date because they immediately assume the food is bad or do not want to take any chances on it. Checking to make sure the food is actually bad before you throw it out will save you money and waste. These dates provide some flexibility, and often food doesn’t actually spoil until long after the date on its label.

Simple tricks like organizing your kitchen to make your food more visible, learning the proper way to store different foods for longer amounts of time, and exploring new uses for food scraps, will all help you run a less wasteful kitchen. While these steps may require some conscious effort in the beginning, they will ultimately save you time and money. Remember, when a plate of leftovers is saved from the landfill, not only the space in the landfill is saved but also all the time and energy required to grow, process, transport and store this food is no longer wasted.

## End of Life

We Don’t Waste is a nonprofit organization working with food pantries, soup kitchens, shelters, schools and daycare programs in the Denver area to ensure that food that would otherwise be wasted is accessible and free for those in need. Check out [wedontwaste.org](http://wedontwaste.org) for more information.

<sup>9</sup> <https://www.imperfectfoods.com>

<sup>10</sup> <https://www.misfitsmarket.com>

<sup>11</sup> ‘80.6 million Surplus Food Tons were generated in All Sectors across All States in 2019’  
[https://insights-engine.refed.org/food-waste-monitor?break\\_by=sector&indicator=tons-surplus&view=detail&year=2019](https://insights-engine.refed.org/food-waste-monitor?break_by=sector&indicator=tons-surplus&view=detail&year=2019)

## Composting

Composting may be the key to a sustainable food system. The same food we waste is also a source of the nutrient rich soil we need to sustain our crops. The Earth is losing its topsoil, in part due to intensive agricultural practices that deplete the soil of nutrients and cause erosion. In addition to reducing greenhouse gas emissions, the benefits of compost include erosion control, water retention, reduced need for chemical fertilizers, and healthier soil. When food scraps are composted, and that compost is used to grow new crops, the life cycle of food is complete.

So if composting is such a fantastic solution to the climate crisis, why is it not a more widespread practice? The issue mainly comes down to accessibility. Only around 27% of the United States has access to municipal composting programs<sup>12</sup>. Backyard composting is fairly common, but many people do not have the space, knowhow, or interest to take this on themselves. Additionally, composting may attract wildlife, such as racoons or bears, which can lead to serious safety concerns. Since backyard composting is not a good solution for everyone and every situation, providing more widely available municipal composting programs is necessary to implement composting on a larger scale. Increasing education on the benefits of composting would also greatly improve our food system and help fight the climate crisis!

## Landfills

Food scraps cannot break down to create soil once they end up in a landfill. In a landfill food scraps combine with other, often toxic, substances and are contained so chemicals do not leach into the surrounding land and water. Due to the lack of oxygen in landfills, food scraps release the greenhouse gas methane, contributing to the climate crisis. When food scraps decompose in compost, methane is not emitted due to the presence of oxygen<sup>13</sup>. Methane is a much stronger greenhouse gas than the most common greenhouse gas, carbon dioxide. Globally, food waste produces around 8% of all greenhouse gas emissions<sup>14</sup>. The disposal of excess food at all levels of the food system is not only a waste of greatly needed energy, land, and resources but is also having global consequences and accelerating the climate crisis.

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<sup>12</sup> <https://greenblue.org/work/compostingaccess/>

<sup>13</sup> <https://www.agric.wa.gov.au/climate-change/composting-avoid-methane-production>

<sup>14</sup> <https://www.drawdown.org/solutions/reduced-food-waste>

## Conclusion

In total, food waste makes up almost a quarter (**24.1%**) of U.S. landfills and that doesn't even take into account the large amount of food packaging in landfills. Not only is our current food system a large contributor to the climate crisis, but it is atrocious that so much food is wasted when almost 10% of the world population lives with food insecurity. Many organizations are stepping up to reduce both food waste and hunger. However, reducing food waste needs to be a collaborative effort between outside organizations, government, and individuals across all aspects of the food system.

### Mindfulness Moment

#### What needs to be done globally?

- A shift in attitudes away from food as a disposable commodity (applies mainly to rich countries).
- Better alternatives to high emissions food such as meat and dairy.
- A massive increase in education about the food supply chain, from growing food to landfill.
- Reliable food climate friendly waste programs, such as composting and expanded recycling services.
- Policymaking to ensure that the food and restaurant industries do not waste food or else dispose of it in an equitable and climate friendly manner.
- Increase ways to connect those in need with food that would usually be wasted.

#### What needs to be done locally?

- Investment in better, more accessible recycling and composting services throughout residential areas.
- Increase focus on food and food waste through grassroots campaigning.
- Pressure local businesses into using alternative foods and packaging that are better for the climate, properly disposing of waste, and acting as models for local improvement.

#### What can be done by you?

- Always eat leftovers when possible.
- Refuse, reduce, reuse, and recycle.
- Prioritize foods that are made with fewer emissions and waste.
- Use your voice to demand better from your representatives and other authorities.
- Remember to apply your mindfulness moment to moment.

## Chapter Glossary

**Biodegradable** | Capable of being decomposed, or broken down, by bacteria or other living organisms

**Biodiversity** | The variety of life in the world or in a particular habitat or ecosystem

**Chemical Fertilizers** | Any inorganic material of completely or partially synthetic origin that is added to soil to sustain plant growth

**Composting** | The act of collecting and storing plant material so it can decay and be added to soil to improve its quality

**Cover crops** | A crop grown for the protection and enrichment of the soil when the seasonal crop grown for harvest is not planted

**Crop rotation** | Changing the crops that are grown on a plot of land to avoid nutrient depletion

**Decomposition** | Living organisms breaking down organic matter into smaller parts

**Industrial agriculture** | Producing food in mass with the use of industry and technology to limit the time and resources needed

**Integrated Pest Management** | The implementation of pest prevention and control through increased understanding of natural lifecycles and environmentally conscious efforts

**Kelp farming** | Cultivating and harvesting seaweed from the ocean to provide a more environmentally friendly, alternative nutrient source to current agriculture practices on land

**Lab grown meat** | Meat that is artificially cultivated through the scientific manipulation of cells, an alternative to raising livestock to be slaughtered

**Landfills** | Areas in the ground designated for our waste and then covered by layers of soil.

**Life Cycle Thinking** | The consideration of something's environmental impact throughout its existence, from the resources used to create it to its deterioration after it is disposed of

**Livestock and crop integration** | An agricultural practice that manages livestock and crops in the same space so they can mutually benefit from each other

**No-till farming** | Planting without turning up the top layer of soil, this can increase organic matter and decrease erosion

**Organic farming** | Farming without the use of synthetic fertilizers or pesticides

**Pesticides** | A mixture of substances, hazardous to humans and the environment, used to prevent or kill pests, including insecticides, herbicides and fungicides

**Sustainable agriculture** | Farming to meet human needs while maintaining a healthy ecosystem and natural resources for future generations

**Synthetic Fertilizers** | Fertilizers that are man made, inorganic, and not occurring naturally in the environment

**Topsoil** | The top layer of soil made of organic matter and microorganisms which provide essential nutrients

# Making a Real Difference

If the climate crisis is going to be solved, then meaningful, sustainable action needs to be taken by people, governments, and businesses everywhere. The world economy must transition energy consuming operations to renewables, while working to mitigate the effects of human-made climate change that are already being well documented, and are expected to worsen in coming decades. Momentous structural changes must come from the top, by our leaders, institutions, and influential movers and shakers, but history often teaches us that big changes in society are unlikely to happen if it is not the will of many people, and when change *does* happen it is because **people fought hard for it and made sacrifices**.

The key to doing better for the planet is  
**Self-reflection**  
&  
**Mindfulness**  
on the actions we take *(or fail to take)*  
as we go about our daily lives.

This chapter covers:

- **Carbon footprint**
- **Being mindful**
- **Talking about the climate**
- **Educating yourself**
- **Countering misinformation**
- **Shopping & eating better for the planet**
- **Consumerism and the Three Rs: Reduce, Reuse, Recycle**
- **Information on recycling**
- **Activism**
- **Suggestions for library staff**

These topics touch on just some of the ways to minimize our own environmental impacts, becoming a force for good for the environment, as well as advice for getting into the habit of thinking in a more climate positive way. For more in-depth information, refer to the links cited and the books included in the kit.

## A list of suggestions for individuals looking to make a difference

Humans are creatures of habit. Reflect on your habits regularly and you will see ways to improve on them. You've probably heard of some of the common personal habits and small daily adjustments we can all adopt to help the environment. The major piece of advice (which can be applied to many of the following) is to **reduce, reuse, and recycle in that order of importance:**

- Reduce your consumption of material things and energy resources (this is by far the most important and impactful of the Three Rs)
- Refuse single use plastics
- Reuse what you can
- If you can't reuse something, try your best to recycle it before resorting to trashing it
- Avoid unnecessary waste (e.g., food, plastic, printing, clothing)
- Turn off lights when you leave a room for a significant period of time
- Upgrade bulbs to energy efficient LEDs. (Apply this concept elsewhere: when buying something new, opt for more energy efficient products, whether it be a new car or a kitchen appliance.)
- Unplug devices that you aren't currently using
- Make use of reusable products such as straws and grocery bags instead of passively accepting single use plastics (reusable straws are free in this kit!)
- Compost food scraps
- Use less water (e.g, don't waste water when showering, consider different landscaping if you have a yard)
- Eat more locally grown or locally made foods
- Eat less of the foods whose production causes higher emissions (e.g., meat, dairy)
- Be efficient with shopping
- Drive less and instead use other methods of transportation, such as walking, biking, or public transport
- Fly less and always try to fly direct when traveling
- Organize events such as community clean-ups or a scrap wrapping paper holiday get together, and through them form relationships/allyships
- Advocate for the environment

...to name just a few. These actions don't require a huge commitment, often just a slight shift in our thinking and our actions. Some of them might even be fun or at least give you a sense of accomplishment. Oftentimes we don't realize the impact we are having (either good or bad) because we simply are not in the habit of being thoughtful about it. But soon enough, if you make new, positive habits and incorporate them mindfully into your daily routines, they will become second nature, leading to a more sustainable existence. For more discussion on the points above, continue reading this chapter. Also, be sure to check out 170 Actions to Combat Climate Change in the **Publications** chapter in the binder for all the myriad ways you can do better for the planet.



Go to [footprintcalculator.org](https://www.footprintcalculator.org) to find out about your ecological footprint. Also see the activity on footprints in the Activities chapter of the binder.

## Carbon footprint

The concept of a personal “carbon footprint” was popularized due to an influential advertising campaign conducted by British Petroleum (BP) circa 2005. Some saw this as an attempt to shift the blame for the mounting climate crisis onto consumers and away from fossil fuel companies. Although it was pushed by an obviously biased source, it is a useful concept based on the preexisting idea of an “ecological footprint,” which is a method promoted by the Global Footprint Network to measure human demand on natural resources. According to the Nature Conservancy, “The average carbon footprint for a person in the United States is 16 tons, one of the highest rates in the world. Globally, the average carbon footprint is closer to 4 tons.”<sup>1</sup> Although we (people, businesses, and governments) all must bear some responsibility for the climate crisis, not everyone bears the same responsibility, simply because we all make different impacts on the environment. Logically, those who produce more emissions should bear more responsibility (and therefore should take equally proportional measures to offset their more serious impact) than those who produce less emissions. For example, a large international shipping company bears more environmental responsibility than the average family living in the USA, and that family bears more responsibility than an average person living as part of a nomadic community in Mongolia.

<sup>1</sup> ‘Calculate Your Carbon Footprint’  
<https://www.nature.org/en-us/get-involved/how-to-help/carbon-footprint-calculator/>



Source: [noma.org](http://noma.org)

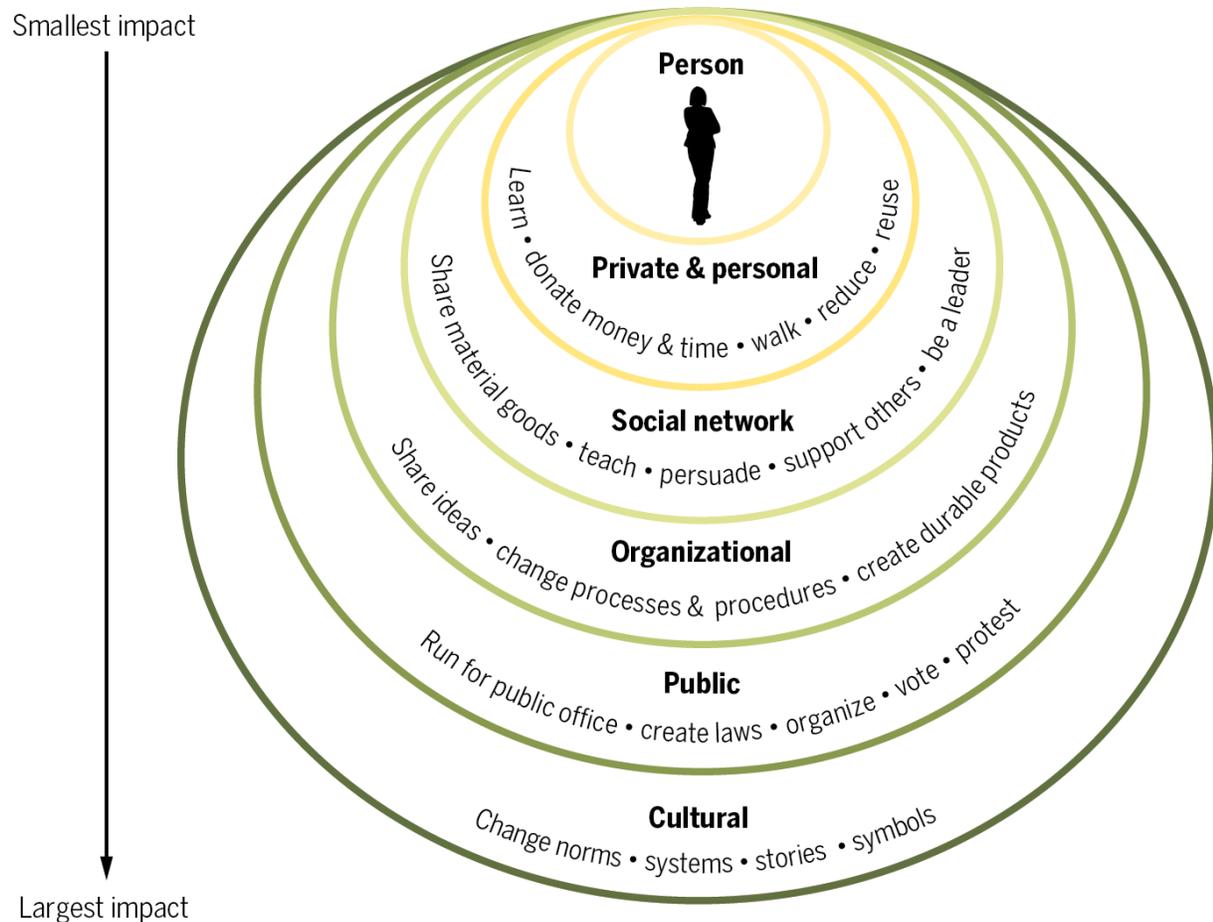
## Be mindful

One of the single biggest changes an individual can make is to incorporate a mindfulness of the environment, and the ways in which we all directly and indirectly affect it, into daily life. This does not mean that you need to constantly worry about the crisis or beat yourself up in order to have a positive impact - in fact, such feelings should be mitigated because they could prevent you from having a positive impact (see the chapter on **Keeping Calm** in this binder). You don't need to upend your whole lifestyle, but examining the key aspects of your lifestyle (energy use, diet, transportation, and spending) will undoubtedly set you on the right path to becoming a more climate positive person.

While the subject is scary and making personal changes can be challenging, remember that our impact on the environment is variable and can change day-to-day. Making small positive changes is much more preferable to trying to make huge but unsustainable changes, so be kind to yourself on your journey and avoid absolute, black and white thinking when it comes to assessing your own environmental impact. Be willing to make adjustments as you learn more and develop your instincts through constant engagement and thoughtfulness.

## Talk about it

Without being obnoxious (which can have just the opposite effect of what you want), don't be afraid to talk about the climate crisis with friends, family, neighbors, coworkers, and governmental representatives – these are the people within your sphere of influence. You may be surprised to learn that good things can come from initiating these conversations, including the potential for starting long-term partnerships. Having sustained dialog around a shared goal can be a recipe for creating meaningful, impactful relationships. People (and movements) are stronger when they work together towards reaching common solutions. Refer to the Activism section below to learn more about connecting with your people, and the Activities chapter of this binder for conversation prompts.



*An individual's spheres of influence. Individual actions have the greatest effect when they impact broader systems.*

Source: [American Association for the Advancement of Science \(AAAS\)](#)



Source: [Tibco.com](https://www.tibco.com)

## Educate yourself

Knowledge is power. It's a cliché, but it's true, and it's especially true of the climate crisis (particularly when combined with **action**). While you don't need to be an expert to be a greener person, it pays to know the facts about the climate and by extension living sustainably in general. How can we help solve a problem if we don't understand what, precisely, we are trying to solve and the viable ways of going about solving it, both on individual and societal levels? Stay informed on the latest climate science by keeping up with the findings of the Intergovernmental Panel on Climate Change (IPCC) who publish regular large scale assessment reports and summary documents at [www.ipcc.ch](http://www.ipcc.ch) that are extremely well researched and deeply peer reviewed. Whilst finding totally unbiased news is becoming harder and harder, some sites have active climate desks, such as the BBC, The Guardian, The New York Times, and NPR local stations, all of which have a proven track record of providing valuable, fact-based, and for the most part, intelligent reporting.

Global warming is a local issue as well as a worldwide issue. Conducting research in the companies you buy products from, the representatives who ask for your vote, and your own energy use will deliver valuable insights about your own power to make change in the immediate world. It is not difficult to investigate the ways in which global heating has affected your environment, especially here in Colorado. The challenge comes with taking that knowledge and acting on it by working with local leaders (such as grassroots groups, community/cultural leaders, policymakers, board members, government representatives, or other officials) to mitigate those effects.

Whilst a Google search will take you so far, it pays to be extra cautious on all corners of the internet and retain a healthy skepticism of what you are being presented with, especially on less prominent sites, outlets known to be heavily biased, or on social media sites. The books included in this kit include a wealth of information about particulars of the climate crisis, including some of the solutions on the table and discussions on what future solutions will look like, making them a great jumping off point for gaining in-depth and actionable knowledge.

## Counter misinformation

The climate crisis is a real, demonstrable problem that we all face. Sadly, there is a great deal of misinformation out there about the true extent of the crisis, and certain cable news and social media outlets are rampant with climate denialism, influencing the views and understanding of a large portion of the population on this topic. For more on this issue, consult the Skepticism chapter in this binder.

Misinformation can, and some would say should, be disputed as it arises. You might never convince a climate denier, so be careful not to waste your own energy, but it is best to counter misinformation and the denial of objective reality with established truths, especially in a public forum. It is also reasonable to ask for clarifying evidence for any assertion or purported “fact,” especially if it can be proved or disproved.

A note of caution: apply critical thinking as to the appropriateness and safety of countering misinformation on a case-by-case basis and do not waste energy in petty or potentially dangerous arguments. Refer below and to the Resources chapter in this binder for some of the authorities to look to for evidence-based facts.

## Shop better

It is common for companies to have some sort of statement on what they are doing to help the environment on their website. There is much more concern these days from consumers about the environmental impact of their shopping, and companies, recognizing this concern and wishing to prioritize customer satisfaction to give them a competitive edge, are devising ways to appeal to this trend. However, there is little control over companies that market their goods to *seem* more ethical than they really are, so be careful not to take these claims on face value. Be aware of a practice known as **greenwashing** where organizations make misleading, exaggerated, or false statements about their products in order to capitalize on growing concern about the environment:

Lisa Ramsden, Greenpeace USA Senior Plastics Campaigner, said: “Corporations like Coca-Cola, PepsiCo, Nestlé, and Unilever have worked with industry front groups to promote plastic recycling as the solution to plastic waste for decades. But the data is clear: practically speaking, most plastic is just not recyclable. The real solution is to switch to systems of reuse and refill.”<sup>2</sup>

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<sup>2</sup> ‘New Greenpeace Report: Plastic Recycling Is A Dead-End Street—Year After Year, Plastic Recycling Declines Even as Plastic Waste Increases’  
<https://www.greenpeace.org/usa/news/new-greenpeace-report-plastic-recycling-is-a-dead-end-street-year-after-year-plastic-recycling-declines-even-as-plastic-waste-increases/>

## How can you use your purchasing power to support the environment, instead of contributing to its destruction?

- Avoid buying frivolous, single-use or otherwise wasteful products when possible. Instead, buy lasting, reusable, and ideally low-waste products that you really need.
- Shop local. Locally grown and locally made products are generally going to be lower in overall emissions as compared to items that are imported from faraway countries. This also means sticking to foods that are in season, as out of season foods usually come with steeper emissions costs.
- Just because something is labeled “recyclable” or “eco-friendly” doesn’t mean it is the truth. In fact, such claims may be completely bogus.
- Understand the positives and negatives of traditional in-store buying vs. buying online.

The last point deserves expansion. A Google search will churn up hundreds of articles telling you to stop online ordering, but this logical-sounding advice (shipping goods = more emissions) may overlook the fact that e-commerce can, in some circumstances, actually be **more** environmentally friendly than shopping in-person, and as companies take steps to green their operations, this *may* become increasingly true in the future.

**It all has to do with efficiency.** You can be smart about your shopping whilst still enjoying the convenience and choice of online ordering if you do your research about the companies you support and make your buying efficient, which requires a little bit of planning. Some tips<sup>3</sup>: According to Boston Consulting Group, transportation accounts for 17% of global greenhouse gas emissions as of 2020.<sup>4</sup> So, think in terms of limiting trips as much as possible. Remember going to the store requires a trip, often in a car, and online ordering also requires a vehicle to make a trip to your house. Knowing which one is going to be more efficient depends in part on your personal shopping habits and the needs of you and your family: “One van delivering 50 packages is much more efficient than 50 people driving to the store.” Therefore, avoid shopping online impulsively and group online purchases in order to limit the trips needed to transport goods. Utilize slower delivery options for the same reason, as it gives the retailer the opportunity to more efficiently transport goods. As tempting as it is, opting for overnight delivery is much less preferable in terms of emissions than exercising patience for your goods that are delivered (in theory) more efficiently. Only buy those things online that you can’t buy when you are already shopping in person. In other words, **use online shopping in place of in-person shopping, not as a supplement to it.** This might mean delaying a purchase for a while (if possible), if it means you can maximize an upcoming trip of your own to a brick and mortar store.

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<sup>3</sup> ‘How to Shop Online More Sustainably’

<https://www.nytimes.com/wirecutter/blog/shop-online-sustainably/>

<sup>4</sup> ‘Climate Action Pays Off in Transportation and Logistics’

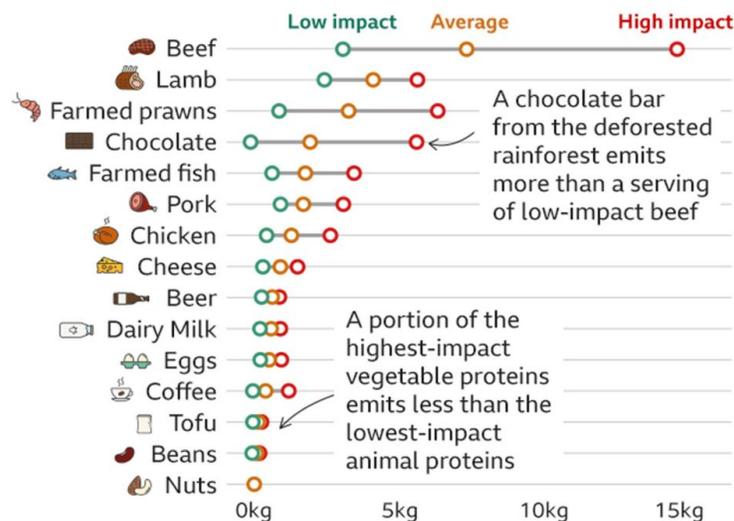
<https://www.bcg.com/publications/2020/climate-action-pays-off-in-transportation-and-logistics>

## Eat more sustainably.

Americans eat the most meat in the world.<sup>5</sup> Globally, the UN estimates that livestock makes up more than 14% of human caused greenhouse gases.<sup>6</sup> Eat less meat (and dairy) and you will instantly have a positive impact on the climate. This is an uncomfortable fact for many people to even contemplate, especially in places where a high meat diet is the standard, but it doesn't make it any less true! Meat eating (and the emissions that underpin the meat that reaches dinner tables) is clearly not good for the environment, therefore limiting it in your diet is a tangible, practical, and immediate way to reduce your own environmental impact. Around a quarter of global greenhouse gas emissions comes from agriculture, according to the United Nations.<sup>7</sup> The infographic below shows the range of impacts different types of foods can have, depending on how they were sourced, cultivated, or grown.

### Beef has the biggest carbon footprint – but the same food can have a range of impacts

Kilograms of greenhouse gas emissions per serving



Note: The figures for each food are based on calculations using data from 119 countries. Serving sizes are from the British Dietetic Association (BDA) and Bupa.

Source: Poore & Nemecek (2018), Science

BBC

Another way to eat more sustainably is to reduce the food you waste by eating leftovers and not throwing out edible food just because it has passed the labeled use-by date. For more discussion and tips on food, refer to the chapter **Food and Food Waste**.

<sup>5</sup> 'The Countries That Eat The Most Meat'

<https://www.statista.com/chart/3707/the-countries-that-eat-the-most-meat/>

<sup>6</sup> 'Climate change: Do I need to stop eating meat?' <https://www.bbc.com/news/explainers-59232599>

<sup>7</sup> *Ibid.*

## Consume less, waste less (or, Reduce, Reuse, and Recycle!)

Materialism/consumerism are tough subjects to broach in highly capitalist societies like the USA, because the simple fact is this: materialism is often at odds with sustainability.<sup>8</sup> It is undeniable that the USA places a great deal of importance on material things, and it is also true that Americans have some of the worst carbon footprints in the world. Every day, advertisements out in the world and online bombard our senses and beckon us to buy more. A lot of advertisement leads us to believe that buying more things will make us happier, more fulfilled people, even though studies show that to be false.<sup>9</sup>

The climate crisis at its core is strongly related to people's materialism and to consumer capitalism in general, as temperatures started rising *after* the Industrial Revolution took place. How do we reconcile ourselves with the dilemma that, on the one hand we "need" material things to have a decent standard of living, and on the other hand these very materials cause greater emissions and contribute to destructive waste?

The answer, on an individual level at least, is to introduce a renewed mindfulness to your consumer habits. **Remember, our spending is one way that we all directly impact the environment, and this is something we have constant, direct control over.**

**Mindfulness is the basic human ability to be fully present, aware of where we are and what we're doing, and not overly reactive or overwhelmed by what's going on around us.**

**Mindfulness is a quality that every human being already possesses, it's not something you have to conjure up, you just have to learn how to access it.<sup>10</sup>**

What if we took pains to be mindful when we are about to make a purchase or use a resource? What if we were more thoughtful about what we *think* we "need"? What if we reflected for a few seconds about our true needs first? If you begin mindfully asking such questions enough, your brain will catch on, and before long it will start to do the work for you automatically. If we all made small adjustments in our spending habits, if we all took the time to consider where our purchasing power is going, if we thought of the planet instead of our convenience first, it would represent a huge shift in the global culture of consumerism. **But a shift in culture has to begin on an individual level first and foremost.**

<sup>8</sup> 'The Problematic Role of Materialistic Values in the Pursuit of Sustainable Well-Being' <https://www.mdpi.com/1660-4601/19/6/3673/pdf>

<sup>9</sup> 'Why Over-Consumption Is Making Us Unhappy' <https://www.psychologytoday.com/us/blog/buddhist-economics/201803/why-over-consumption-is-making-us-unhappy>

<sup>10</sup> 'What is Mindfulness?' <https://www.mindful.org/what-is-mindfulness/>



Source: [Saint Louis City Recycles](#)

## Applying your mindfulness

The Three Rs are helpful reminders for reducing consumption and waste, something you can remember like a mantra at any time to put you into a waste-reducing mindset. If you can't reduce (which is surely the most impactful of the Three Rs), look for ways to reuse or recycle. For example, take plastic bags. How can you apply one or all of the Three Rs?

- **Reduce** your use of them by buying (and consistently using!) reusable grocery bags;
- **Reuse** your plastic by saving any plastic bags you come by for multiple uses instead of thinking of them as purely disposable;
- **Recycle** excess plastic bags (and other plastic film) at grocery stores; find accepting, nearby grocery stores by searching Google or [plasticfilmrecycling.org](http://plasticfilmrecycling.org).

You will soon see, if you spend some time thinking about it and doing a little bit of research, how you can almost always apply the Rs (either individually or together) to sustainable thinking in general, beyond just material waste, to reducing your overall carbon footprint.

For example, apply the idea of **reducing** to your energy use by taking quicker showers, switching off lights when you are not using them (meaning you are not in that particular room for a significant period of time), upgrading your bulbs to energy efficient LEDs, unplugging devices when not in use, driving less, and flying less, to name just a few ideas.

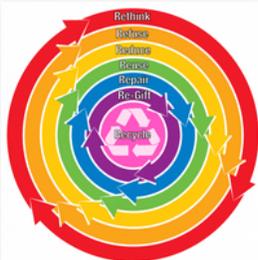
**See Activity 5 - Start a journal** in the Activities chapter to begin noting your reflections, which you can use for making commitments to yourself and strategizing on ways to become a better consumer.

Once you get into the habit of remembering the 3 R's, it will start to occur to you when consuming or purchasing a product or resource, stopping you from mindlessly defaulting only to the easiest or most convenient practices. This waste-reducing mindset prevents you from introducing needless waste materials into the environment, giving you more control over your lasting legacy from being a consumer on this planet.

## Aim for zero waste

“Zero waste” is a term that has become very common these days to describe the aspiration to reduce waste as much as possible, ideally to nothing. Refer to the University of Colorado’s Zero Waste website to learn about the steps for living with zero waste at <https://www.colorado.edu/center/zero-waste/live-zero-waste>

### 7 Steps to Zero Waste



The 7 steps to Live Zero Waste

#### Step 1 Rethink

Adopt a Zero Waste lifestyle! Rethink the way you live and interact with people, things and the Earth.

#### Step 2 Refuse

If you don't buy it, or use it in the first place, then you don't have to deal with it as a waste.

#### Step 3 Reduce

Using less materials from the start leads to less waste and less energy use. Reduce your waste in the first place!

#### Step 4 Reuse

Can you avoid buying a new product? Thrift, share, repurpose, adapt items to a new use, etc.

#### Step 5 Repair

Fix or upgrade your existing objects before you throw them in the landfill. Get creative with repairs for a new life!

#### Step 6 Regift

It is okay to pass along a gift that doesn't serve you. It doesn't have to be a holiday to re-gift.

#### Step 7 Recycle

If all else before this step fails... Recycle all that you can to create new products, including composting your organic materials. Buy recycled content products to Close the Loop!

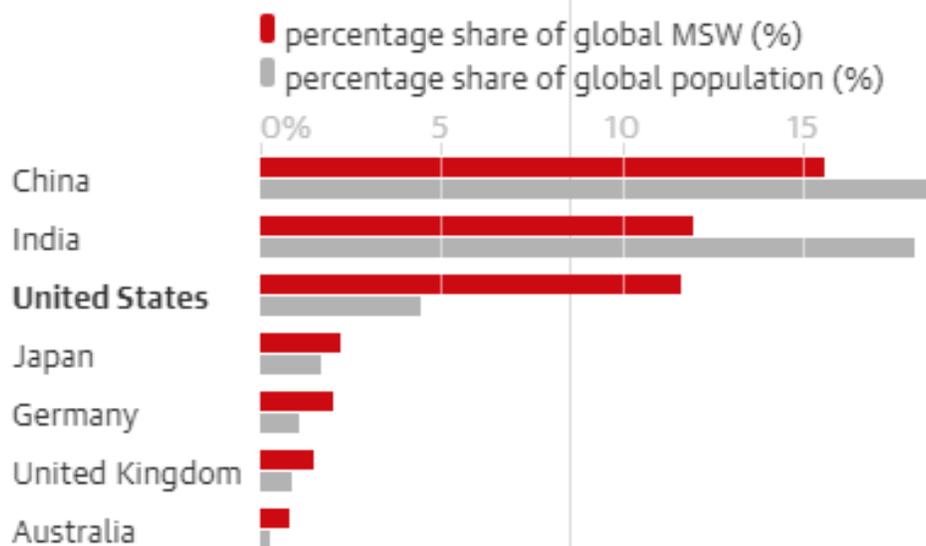
## Learn about recycling

*“Globally, more than 2.1bn metric tons of municipal waste are generated each year – enough to fill 822,000 Olympic-size swimming pools, the report said. Only 16% of that waste is recycled. Humans have made 8.3bn tons of plastic since 1950.”*

- The Guardian (2019)<sup>11</sup>

According to fairly recent EPA figures, around a third of waste is recycled in the US, in stark contrast to Germany which recycles the majority of its waste.<sup>10, 12</sup> On average, Americans send almost five pounds of municipal solid waste (MSW) to landfills every day.<sup>13</sup> Not all MSW is strictly “trash” - much of it can often be recycled or composted which are much better alternatives for the environment than simply packing trash into landfills.

### The US represents 4% of the global population but generates 12% of global municipal solid waste



Guardian Graphic | Source: Verisk Maplecroft, 2019

<sup>11</sup> 'US produces far more waste and recycles far less of it than other developed countries'

<https://www.theguardian.com/us-news/2019/jul/02/us-plastic-waste-recycling>

<sup>12</sup> 'National Overview: Facts and Figures on Materials, Wastes and Recycling'

<https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials#NationalPicture>

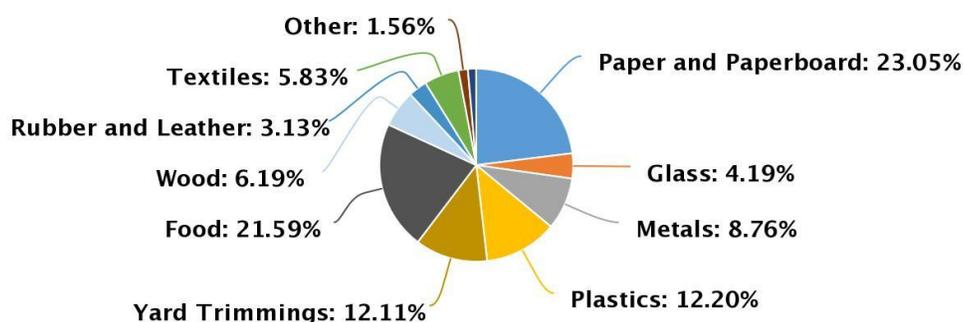
<sup>13</sup> 'National Overview: Facts and Figures on Materials, Wastes and Recycling'

<https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials>

It's clear why reducing and reusing represent benefits for the environment (reducing the need to make more "stuff" means fewer emissions and waste), but what about recycling? By definition, if something can be recycled it has already been made – the object has already had some sort of environmental impact. Recycling in and of itself does not necessarily make up for that initial environmental impact, but the practice is positive because it reduces the need to make something new, which is more energy intensive.<sup>14</sup>

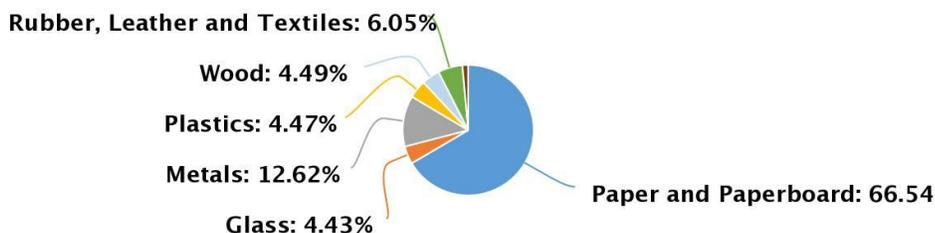
### Total MSW Generated by Material, 2018

292.4 million tons



### Total MSW Recycling by Material, 2018

69.1 million tons



Source: [EPA](#)

<sup>14</sup> 'Frequently Asked Questions'  
<https://lbre.stanford.edu/pssistanford-recycling/frequently-asked-questions>

While recycling efforts in the US as a whole are not nearly accessible or responsive enough at this time, the nonprofit Recycle Colorado says that the news is actually worse closer to home:

“Colorado is not doing a great job with recycling relative to the rest of the nation. In 2018, 17% of the municipal waste stream was recycled or composted in Colorado; the rate for the rest of the nation was about 35%. About half of the counties in Colorado have recycling available for residents at the curb. In 2021, the municipal solid waste diversion rate rose slightly from 15.3% to 16%, while the total diversion rate fell from 35.8% to 31.2%.”<sup>15</sup>

Perhaps you have heard stories about the waste that actually does get put in the correct recycling bin also ending up in landfills. In fact, this might be something of a myth because of a key detail:

“Recyclables have value and once separated from trash and collected as recyclables, are very rarely thrown into landfills. Recyclables are sold to markets for a profit (revenues can vary depending on local and international economies). It does not make business sense to separately collect recyclables and then pay to put something in a landfill that has value in the markets.”<sup>16</sup>

There are many ways of recycling materials that don't fall into typical household waste programs, and every city or municipality should have publicly available information online about the recycling programs available to you. However, this might not help you with some of the more difficult items, so here are some other suggestions for dealing with the materials in your life:

- Donate unwanted clothing
- Put some time and effort into recycling plastic film, and other recyclables that don't go in your household recycling bin
- If available in your area, consider subscribing to a service (or registering your interest if they are not yet available in your area) that helps you with hard to recycle materials such as Ridwell (this is not an endorsement)
- Research local nonprofits or organizations that accept hard to recycle items. Realize there are many organizations out there that want to help you recycle. For example, check out Rubicon's Tick or Trash program, which helps people and organizations recycle candy wrappers around Halloween (again, not an endorsement)

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<sup>15</sup> 'Recycling Basics' <https://www.recyclecolorado.org/recycling-basics>

<sup>16</sup> *Ibid.*



Recyclables have value in theory, but in practice there is one culprit that is particularly difficult to deal with, and it's also one of the most widely used substances in modern society: **plastic**. According to a report by Greenpeace, "Most plastic simply cannot be recycled"<sup>17</sup> and it is also being recycled less, while plastic use increases every year. Clearly, plastics are bad for the environment:

“Over 99 percent of plastic is made from fossil fuels, and as big brands continue their addiction to this harmful material, they are fueling climate impacts and jeopardizing communities in the name of profits. All over the world, communities of color face disproportionate health impacts from the plastics industry, whether through incinerators, landfills, petrochemical facilities, polluted waterways, or the harmful plastic packaging pushed on communities.

The [2022 Greenpeace plastics report<sup>18</sup>] urges companies to take several additional steps to mitigate the systemic problems associated with plastic recycling, including phasing out single-use plastics, committing to standardized reusable packaging, and adopting a Global Plastics Treaty to help set international standards.”<sup>19</sup>

The lack of access to recycling programs is something that needs to be corrected in the local services available to people, which is firmly in the hands of local authorities and, by extension, the voters who elect their leaders. The huge amounts of plastic waste is perhaps just as hard a problem to correct, but the solution probably lies in policymaking, creating legal requirements and ensuring that businesses follow them. Do not let these facts deter you from recycling to the best of your ability; although we don't have all the perfect solutions right now, it is still a good habit to do as it sets you up for a lifetime of consciousness about your waste. See below for some helpful recycling tips from a range of sources. Always check with your local authority if you're unsure.

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<sup>17</sup> 'New Greenpeace Report: Plastic Recycling Is A Dead-End Street—Year After Year, Plastic Recycling Declines Even as Plastic Waste Increases'  
<https://www.greenpeace.org/usa/news/new-greenpeace-report-plastic-recycling-is-a-dead-end-street-year-after-year-plastic-recycling-declines-even-as-plastic-waste-increases/>

<sup>18</sup> 'Circular Claims Fall Flat Again'  
<https://www.greenpeace.org/usa/reports/circular-claims-fall-flat-again/>

<sup>19</sup> *Ibid.*



# WHAT CAN I RECYCLE?



- ## TOP 10 IN THE BIN
1. CARDBOARD
  2. PAPER
  3. FOOD BOXES
  4. MAIL
  5. BEVERAGE CANS
  6. FOOD CANS
  7. GLASS BOTTLES
  8. JARS (GLASS & PLASTIC)
  9. JUGS
  10. PLASTIC BOTTLES AND CAPS

**ALSO RECYCLABLE  
BUT NOT IN CURBSIDE BIN**

PLASTIC BAGS AND WRAPS 

ELECTRONICS 

TEXTILES 

Find out about your local recycling options here:  
[www.iwanttoberecycled.org](http://www.iwanttoberecycled.org)



## Tips to Recycle Responsibly



**Try to reduce plastic waste at home.**

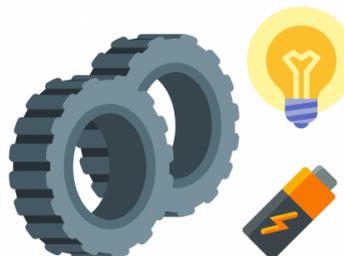
**Ensure the plastic waste you put in your recycling bin can be recycled in your community.**

**Find out by searching: "How do I recycle?" at [www.epa.gov](http://www.epa.gov).**



**Buy and use more recycled materials.**

**For special materials such as batteries, tires, or light bulbs, check with your community's waste management department for proper disposal regulations.**



# Recycling Resin Codes

 Typically accepted by curbside pickup

 Programs Vary

 Not typically accepted by curbside pickup

 **PET(E)**  
Polyethylene terephthalate

**Examples:**  
Water and soda bottles, mouthwash bottles, peanut butter containers

 **PE-HD or HDPE**  
High-density polyethylene

**Examples:**  
Milk jugs, shampoo bottles, juice bottles, cereal box liners, trash bags

 **PVC**  
Polyvinyl chloride

**Examples:**  
Plastic food wrap, detergent bottles, cooking oil bottles

 **PE-LD or LDPE**  
Low-density polyethylene

**Examples:**  
Squeezable bottles, dry cleaning bags, shopping bags

 **PP**  
Polypropylene

**Examples:**  
Medicine bottles, cups, straws

 **PS**  
Polystyrene

**Examples:**  
Egg cartons, meat trays, disposable plates and styrofoam cups

 **O (Other)**  
All other plastics

**Examples:**  
Sunglasses, cell phone cases, syrup bottles, bioplastics, compostable plastic-ware, PLA trashliners and bottles

Source: [Simplegreen.com](http://Simplegreen.com)

# IS IT COMPOSTABLE?

Here's how to know which PRODUCTS are truly compostable in your compost bin.

## ✓ YES, IF IT'S A PAPER PRODUCT WITH NO PLASTIC COATING.

Many foodservice paper products are lined with petroleum-based plastics that contaminate our soils when composted.

 These paper products are free of plastic and can be safely composted.



bagasse

paper only, no plastic coating

greasy pizza boxes

paper towels and paper napkins

 THESE PAPER PRODUCTS ARE PLASTIC-COATED AND GO IN THE TRASH.



plastic-lined butcher or deli paper

## ✓ YES, IF IT'S A CERTIFIED COMPOSTABLE "PLASTIC."

If it looks like it contains plastic, it must be a certified "bio-plastic" to be safe for soils.

 Products that appear to contain plastic must be certified compostable by BPI.



These labels also mean certified compostable:

ASTM D6400    ASTM D6868

   must have letters PLA

 These labels **DO NOT** mean compostable.

MADE FROM PLANTS  
MADE FROM PLANT STARCH  
BIODEGRADABLE  
OXO-DEGRADABLE  
BIO  
ECO-FRIENDLY  
EARTH-FRIENDLY  
MADE WITH RECYCLED CONTENT  
GREEN

✓ Find and purchase compostable products with our time-saving tools at [www.ecocycle.org/compost](http://www.ecocycle.org/compost)





Just Stop Oil activists threw soup on Van Gogh's *The Arles Sunflowers* in Oct. 2022. Source: [NPR](#)

## Activism

**Note: This section is not an endorsement of any particular form of climate activism, but rather a brief discussion of climate activism in general.**

“...Fridays for Future and Extinction Rebellion have not only renewed the climate movement, but also accelerated climate action. Germany’s outgoing chancellor Angela Merkel has acknowledged Fridays for Future expedited the nation’s response to climate change. Climate activists now have a powerful role to play in ensuring governments implement the Glasgow Climate Pact. They may not only force change from the outside. Governments and businesses are increasingly engaging and hiring young activists to help with their climate strategies.” - *The Conversation*<sup>20</sup>

The climate crisis itself shows the power that mass human behavior has to impact the environment (in a negative sense, clearly). Activism, or organizing with groups of like minded people, and the awareness that this brings about in people all over the world, is illustrative of the power of the collective to have a different, and ideally positive, impact.

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<sup>20</sup> ‘Climate activism has gone digital and disruptive, and it’s finally facing up to racism within the movement’  
<https://theconversation.com/climate-activism-has-gone-digital-and-disruptive-and-its-finally-facing-up-to-racism-within-the-movement-172481>



Source: [Time](#)

"I have learned you are never too small to make a difference." – Greta Thunberg

A sustained global movement of **non-violent** environmental activists is one of the most promising solutions to tackling the climate crisis. People together have the power to create change. Community organization, beginning at the grassroots level, can indeed have an effect on who holds power. In the US (and, by definition, other places of democracy), it is the right of the people to form their own government. This means that people have the ability to make their voices heard, whether by literally communicating with their elected representatives, by campaigning for ballot measures, by using their voting power, and running for office to directly affect policy making. The threat of global warming has been made clear for decades, but all too often, cynicism about human nature, politics, corruption, and profiteering has prevented people from recognizing their individual and collective power to effect change.

Capitalizing on this cynicism, during the last decades there has been a sustained counter effort to deny that climate change amounts to a crisis caused by people burning fossil fuels. Perhaps it is redundant to state that this denial came from controlling business interests who continue to lobby to prevent climate friendly policies from being enacted and discredit activism.<sup>21</sup>

So, what does it actually mean to be a climate activist? Climate activism can take many forms, with some being more impactful or controversial than others. Activism could be as

<sup>21</sup> 'How decades of disinformation about fossil fuels halted U.S. climate policy'  
<https://www.npr.org/2021/10/27/1047583610/once-again-the-u-s-has-failed-to-take-sweeping-climate-action-heres-why>

simple as making some of the individual changes laid out earlier in this chapter, talking about the climate crisis within your sphere of influence, posting on social media, lobbying your elected representatives, or attending marches/protests/strikes. Others go further to organize some form of direct action, or engage in more confrontational practices such as civil disobedience, highway shutdowns, and even vandalism. Again, to be very clear, this is not an endorsement of illegal practices, but these are the sort of activism that make the headlines, and there is a very active debate about the effectiveness of such activism as the Just Stop Oil protests pictured above. Clearly, though, a true worldwide mass movement of activism would bring about profound change, as it would force leaders into action.

“Nonviolent conflict has been found to be successful in bringing about such large-scale social transformations if a critical mass of 3.5% or more of the population participates in the activism. In other words, if 11.5 million Americans march in the streets, there is a chance that this action would motivate some concessions from policymakers. Beyond responses to repressive and autocratic rule, though, there are very few examples of sustained activism at this level of engagement. Accordingly, it is unrealistic to imagine that this percentage of the United States, let alone the same percentage in numerous other countries, would mobilize and engage in peaceful climate activism without some sort of large-scale disaster as motivation.” - Brookings<sup>22</sup>

As we are nowhere near sustained critical mass at this point, the efforts of individuals may be best placed in mobilizing within their sphere of influence by forming connections and partnerships with like minded individuals, beginning on a local level. Many young people who grasp the full extent of the crisis are extremely worried, as they will bear the full brunt of global warming and the so-called state of “permacrisis” that they will be forced to deal with in their later years when the leaders, policymakers, and influencers of today are long gone. Here are some resources for those interested in joining the climate movement:

- *Youth to Power: Your Voice and How to Use It* by Jamie Margolin (included in this kit)
- <https://350colorado.org/>
- <https://www.environmentalgroups.us/colorado/>
- <https://www.greenpeace.org/usa/take-action/>
- <https://servecolorado.colorado.gov/colorado-climate-corps>
- <https://www.dosomething.org/us/causes/environment>
- <https://www.unicef.org/environment-and-climate-change/youth-action>
- Youth UNESCO Climate Action Network YoU-CAN <https://en.unesco.org/youth/you-can>
- <https://climatechangeresources.org/youth/>
- There are **many** different organizations working to fight climate change. Find a list at <https://climatechangeresources.org/organizations/>
- Follow activists on social media: <https://izea.com/resources/climate-activists/>

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<sup>22</sup> ‘What will it take to get to successful climate action?’ <https://www.brookings.edu/blog/fixgov/2022/05/12/what-will-it-take-to-get-to-successful-climate-action/>

## What can libraries and library staff do to help?

Libraries are responsive to their communities' needs, and as climate change has more of an impact on local communities, every local library branch is obliged to find ways of supporting their community through their specific challenges, as they did during the COVID-19 pandemic. While funding is different for each library and it can be difficult for some locations to make improvements or launch new initiatives due to underfunding, there are always ways that you can make your library more eco-friendly, setting the stage for incremental improvements for the future and fostering a culture of accountability within your particular organization. Raising awareness of the issue is a great first step, as well as beginning to look at the climate impact of the library itself. If you are a library staff member, here's your activity! Take a few minutes and jot down some simple ways you can increase patrons' awareness. Chances are you will come up with some cost effective ideas. For example, setting up a display of relevant books costs very little time, effort or money. Then, think more broadly about what your library could reasonably start working towards. Apply your research and critical thinking skills to the task! Here are some initiatives/ideas that you might consider bringing up with your team members.

- Create climate crisis displays, website/social media content, and book lists.
- Forge relationships and partnerships with local groups. How might you be able to help them in their goals? Help spread the word, write a program together, or set aside space in the library for meetings, to name just a few ideas.
- Analyze your location's energy use and find ways of saving energy.
- Reduce waste by encouraging less printing - for example, post a notice near computers offering help using email instead of defaulting to printing
- Consider signing your library up for the Sustainable Libraries Initiative <https://sustainablelibrariesinitiative.org/>
- Reach out to your local waste authorities for advice on waste and energy use, and consider setting up a hard-to-recycle recycling station/organizing drives
- If you have an outdoor space, consider starting a program about raised bed planting, showing the value of locally and homegrown food, and offering gardening support for patrons
- Designate a staff member as your library's climate officer (this should not be a "voluntold" type designation, but based on that person's capacity and interest)
- Regularly revisit policies and procedures and focus on improving them through a climate/equity lens
- Develop your collection to include useful up-to-date resources, such as those titles included in this kit
- Curate a list of local resources that can be provided to patrons

This guide from the Illinois Library has a wealth of resources that are worth checking out, including library sustainability recommended titles, calculators and other useful guidance: <https://guides.library.illinois.edu/green-libraries/overview/library-specific>

## Mindfulness Moment

### What needs to be done globally?

- People everywhere must recognize the level of their individual responsibility and make appropriate changes to their lives to reduce their ecological footprint.
- In recognizing how we can make a difference when we change how we behave on a day-to-day basis, we understand that we can only have the required impact when we work together as a global community.
- The organization of a non-violent climate protest movement including a critical mass of people.

### What needs to be done locally?

- Residents, local groups, leaders, businesses, and policymakers need to come together with a common vision that prepares their community for the mounting challenges.
- Local communities can prove to the world how individual places can be a model for others and contribute to the greater worldwide climate positive movement.

### What can be done by you?

- Incorporate a mindfulness of the climate into your everyday activities.
- Refuse, Reduce, Reuse, Recycle.
- Create connections and build relationships with like-minded people.
- Use your voice.

# Global Warming Denial

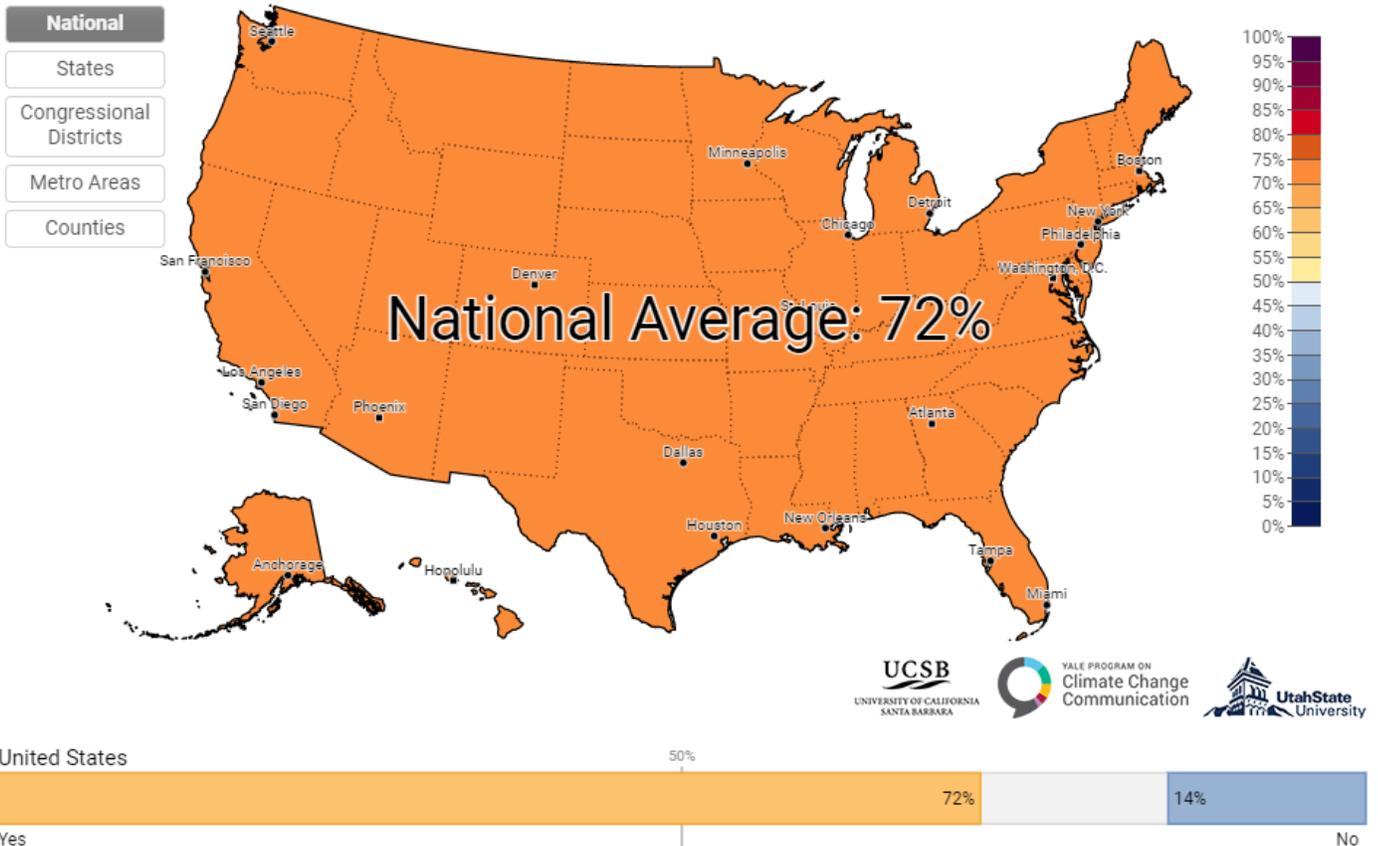
“At first when I heard about climate change, I was a climate denier. I didn’t think it was happening. Because if there really was an existential crisis like that, that would threaten our civilisation, we wouldn’t be focusing on anything else.”

- Greta Thunberg

Estimated % of adults who think global warming is happening (nat'l avg. 72%), 2021

Select Question:  Absolute Value

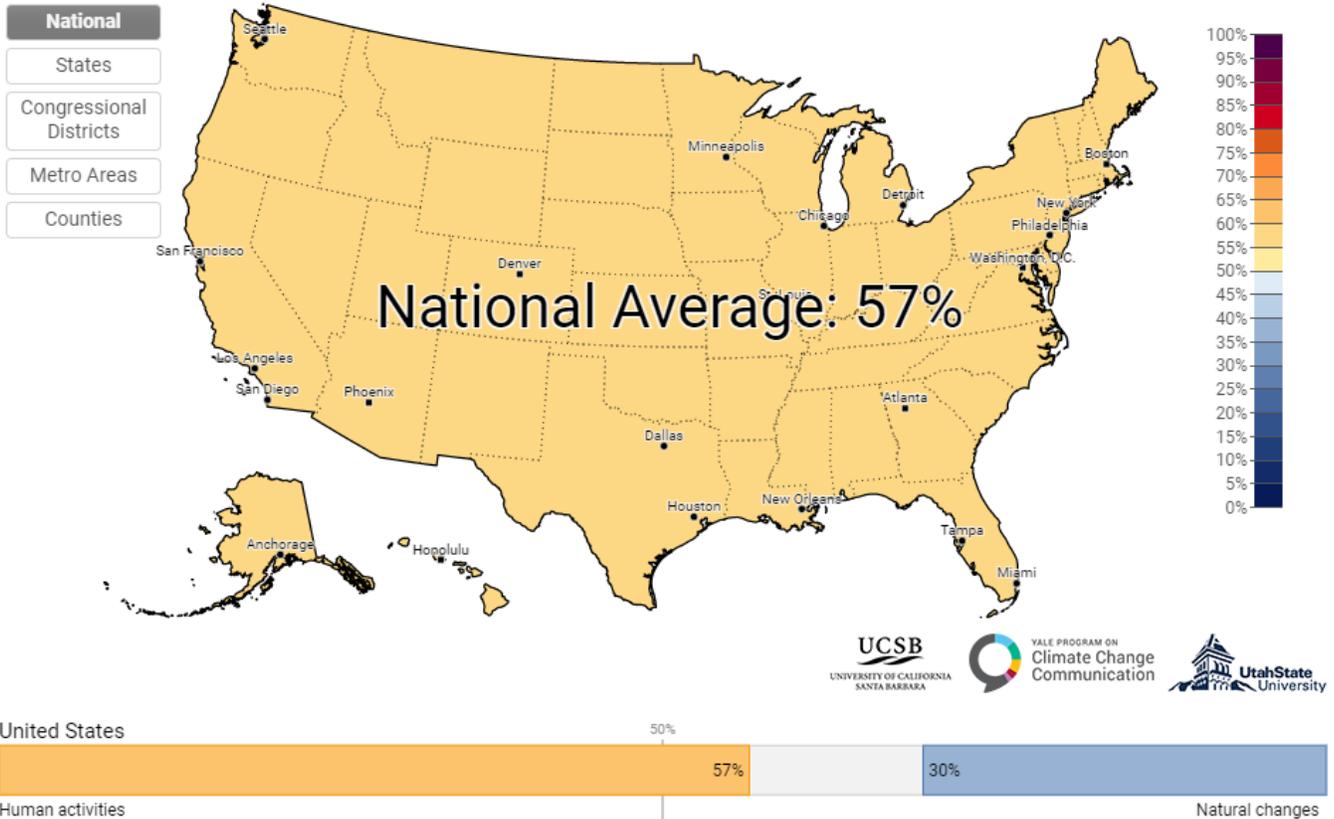
Click on map to select geography, or:



## Estimated % of adults who think global warming is mostly caused by human activities (nat'l avg. 57%), 2021

Select Question:  Absolute Value

Click on map to select geography, or:



As you can see from the data above, 72% of adults in the US believe that global warming is happening, but only 30% of adults think that global warming is mostly caused by natural changes and not as a result of human activities (i.e., burning fossil fuels). Global warming denialism is causing untold harm to the environment as it is used as justification by people in powerful and influential positions all around the world for not acting strongly against the threat of global heating. There is really no reasonable justification for denialism. It should therefore be countered with strong opposition.

Often we hear about the so-called climate “debate,” as though it was really a matter of opinion and not extremely solid science. But the only real debate centers around how to tackle this problem we all face (also known as climate mitigation). The science that proves beyond any reasonable doubt that global warming is a reality caused by humans burning fossil fuels is backed up by extensive evidence and the scientific consensus (more than

99.9% of studies agree that humans caused climate change<sup>1</sup>). Scientists rarely claim anything with **absolute** certainty, because to do so would be against the idea of the scientific method, which always leaves room for reaching deeper understanding ***when new and compelling evidence is presented***. It is healthy to have some skepticism about the information we are presented with and to be open to learning more before being totally convinced on a topic, but this does not mean that it is **reasonable** to therefore embrace climate denialism, which requires ignoring a large body of extremely well established facts and cherry picking the “experts” we to listen to. In light of the wealth of exceedingly strong evidence, it is **unreasonable and irresponsible** to believe the theories put forward by climate deniers. Climate deniers are almost always not actual climate experts, or have unrelated credentials which they use to add gravitas to their arguments (for example, a medical doctor is not a climate expert just because they are a doctor, and therefore any claims they make that differs from the scientific consensus should be met with serious skepticism). For more on the body of scientific evidence, refer to chapter 3 - **What is the Climate Crisis?**

## What do deniers argue?

The arguments of climate deniers are not backed up by current science. As their arguments are not backed by science, deniers have had to resort to other ways of discrediting the truth by, for example, attacking and undermining scientists. One of the major “theories” (*not in the scientific sense of the word*) put forth by climate deniers is that scientists and therefore science itself are somehow “corrupt” – that their conclusions were not reached in good faith, but in order to make money, an idea that has been often repeated by some influential figures in America and throughout the world. We can understand that these ideas came to the public’s consciousness through a targeted propaganda campaign by deniers motivated by industrial (i.e., fossil fuel companies and lobbyists) and ideological (political) concerns:

“Personal attacks proliferated. Leading researchers were assaulted with countless questions and demands for information, often disingenuous, and even investigations and lawsuits. They were insulted, slandered, and sent so many death threats that some had to take security measures. The only comparable case in science was the vilification and threats showered on prominent defenders of Darwin’s theory of evolution. Even that did not reach the broad scale and public prominence of the attacks not only on individuals, but on the community of climate scientists as a whole.”<sup>2</sup>

For a full breakdown of specific denier arguments and what the science actually says, consult this webpage (the printer friendly version is included in the Further Reading binder included in the kit): <https://skepticalscience.com/argument.php>

<sup>1</sup> More than 99.9% of studies agree: Humans caused climate change  
<https://news.cornell.edu/stories/2021/10/more-999-studies-agree-humans-caused-climate-change>

<sup>2</sup> ‘Global warming: How skepticism became denial’  
<https://journals.sagepub.com/doi/pdf/10.1177/0096340210392966>

COLORADO



Public Opinion on Climate Change, 2021

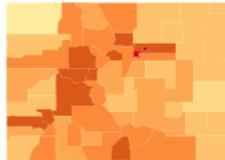
Public opinion data come from the Yale Climate Opinion Maps (YCOM), which are based on a statistical model that employs nationally representative Climate Change in the American Mind (CCAM) surveys conducted between 2008 and 2021. The model combines geographic, census, socioeconomic, and political data with CCAM survey data collected by the Yale Program on Climate Change Communication and George Mason University Center for Climate Change Communication (combined n > 28,000). For more information about the survey question wording and methodology, please visit YCOM: [climatecommunication.yale.edu/visualizations-data/ycom-us](https://climatecommunication.yale.edu/visualizations-data/ycom-us)

Beliefs

Global warming is happening



Colorado



Colorado counties

Global warming is caused mostly by human activities



Most scientists think global warming is happening



Global warming is affecting the weather

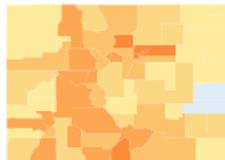


Risk Perceptions

Worried about global warming



Colorado



Colorado counties

Global warming will harm future generations



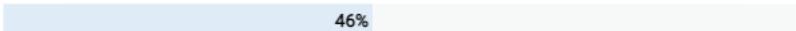
Global warming will harm people in the developing countries



Global warming will harm people in the US



Global warming will harm me personally

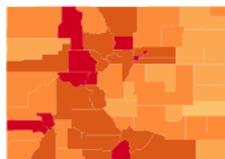


Policy Support

Schools should teach about global warming



Colorado



Colorado counties

Fund research into renewable energy sources



Provide tax rebates for energy efficient vehicles or solar panels



Regulate CO<sub>2</sub> as a pollutant

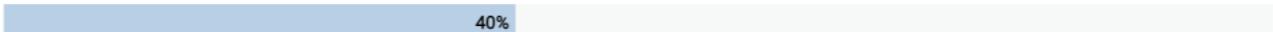


Set strict CO<sub>2</sub> limits on existing coal-fired power plants

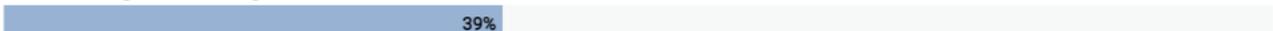


Behaviors

Discuss global warming at least occasionally



Hear about global warming in the media at least once a week



Who should do more about global warming?

The President



Congress



My Governor



My Local Govt. Officials



Citizens



Corporations



Color Legend



For help / questions, please contact: [climatechange@yale.edu](mailto:climatechange@yale.edu)

## So, what to do about this harmful denial?

As you can see from the infographic on the previous page, 40% of Coloradans discuss global warming at least occasionally, and 39% hear about global warming in the media at least once a week. This means that a huge portion of residents are simply not engaged in this subject, although they may not be deniers. We hope that this kit will help to increase awareness and foster engagement in the subject to help bring skepticism down, while increasing the public's resolve to take action on the environment. This is where you — yes YOU! — can have a direct impact: through having intentional conversations. If you are someone who really grasps the gravity of the crisis and personally knows a climate denier, refer to Activity C for guidance on having productive conversations about the environment.

## Reflections for climate deniers/skeptics reading this page

If you are a climate denier or skeptic, then it's great you have read this far! But please don't stop just yet. Take some time to really engage with the kit's materials — it will be well worth the time and effort! Try to put aside whatever preconceptions and political biases you hold, and be open to having your mind changed about this crucial issue. Help yourself to a free notepad and pencil (included as giveaways in the kit) and jot down your thoughts and reactions so far. Here are few question prompts, just to get you started:

- What new information or resources might change your view on the climate crisis? How might you go about finding this information or resources?
- How have weather patterns changed in your lifetime? Have you noticed more extreme or strange weather patterns? Why do **you** think this might be? (The emphasis is on your own feelings, as opposed to what you have heard from others or the media.)
- Even if global warming was not a serious threat and you don't accept the scientific consensus as the truth, is it still not our duty to protect the planet, its ecosystems, and its animals? What are the downsides of working to reduce waste and pollution?
- What benefits might renewable/sustainable energies bring to your local community?
- If the average heating projections are proved right in the coming decades, how might humans have to adapt to survive on planet Earth? What will happen to the people in countries that become uninhabitable due to extreme weather? How might your local area need to respond to such a scenario?

These are indeed huge questions and they are difficult to contemplate and may make you uncomfortable or wish to switch off. Take the opportunity to sit with it and be really mindful of your discomfort.

If you are having some of these feelings, and it feels overwhelming, or you just want more information on mindfulness, check out the **Keeping Calm** chapter in this binder.

## Mindfulness Moment

### What needs to be done globally?

- Anti-disinformation campaigns should be launched worldwide to set the record straight on the crisis.
- People of influence who deny or otherwise lie about the climate crisis should be strongly countered with the overwhelming evidence available.
- Fact-based standards for talking about the climate should be set in place everywhere, as the time for “debate” is long passed. Instead, the conversation must turn to mitigation and solving the energy needs of the planet.

### What needs to be done locally?

- Awareness needs to be raised of evidence based facts regarding how the climate crisis pertains to your particular local community.
- Local communities should hold public, accessible meetings/town halls/discussions with climate experts where residents can be given useful and relevant information.
- Ensure there are abundant, accessible resources available to residents to learn, understand, and help them take action on the climate from their particular local perspective.
- Use the news, social media, and traditional ways of communication to make it as easy as possible for people to understand what it is they should do as they go about their daily lives.

### What can be done by you?

- Have conversations about the crisis with people within your sphere of influence (see Activity C on having productive conversations).
- Counter misinformation, denialism, and lies about the climate with facts and evidence.
- Act as a model, educator, or mentor for those who have not reached your level of understanding.
- Remember we are all at different places in our journey, so be patient with others, and seek to spread a positive message about the climate, rather than a negative one.

# Activities in this Kit

## Activity A - Escape the Climate Crisis!

Gather the solutions and help humanity escape the eco emergency! Refer to the blue lockbox included in the kit for instructions.

## Activity B - Create an affirming memento

This one might get loud! Create a climate positive token to remind you daily that you can and will help make this world a better place. Your token is tailored to you as an individual and will support you on your journey.

## Activity C - Let's Talk About It

This activity is all about having productive conversations about the climate crisis.

## Activity D - Let's get creative!

Using the makerspace materials provided in this kit, take the opportunity to express your response to the climate crisis we are facing.

## Activity E - Observe the data for yourself

How are scientists so sure that the climate is in an emergency? The data proves it! See for yourself how some of the data can be understood and observed, including future temperature predictions and historical observations recorded from around the world.

## Activity F - Start a journal

Grab a free journal and pencil and get into the habit of thinking critically about the climate and your own lifestyle through the practice of regular journaling.

## Activity G - Get hands-on with the eco gadgets

Use the powerbank and electricity usage monitor included in the kit to better understand all things energy.

## Activity H - Plan a community project

What are some ways that you can get involved (and involve others) in your local community by doing better for the planet? Start planning your community project TODAY!

## Activity I - Practice mindfulness

As stated often throughout the binder, practicing mindfulness of the planet and the ways you impact it will undoubtedly bring about positive change. But what exactly does it mean to be mindful?

## Activity J - Write a letter

One of the most influential actions you can take to tackle the climate crisis is speaking up. Writing a letter is a personable way to communicate that conveys care and thoughtfulness. Climate activists are continually writing letters to influence those in positions of power to act on the climate crisis, and you can join them!

## Tab K - Activities to Take Away

Just some of the DIY ideas for the amazing things you can do!

- Be a Hero at Home: Save food waste and your wallet
- Make Art from Recycled or Repurposed Materials
- Make a Climate Change PSA

Use these instructions to play the escape room contained in the blue case! If you are stumped on the clues, find the cheat sheet in an envelope in the back pocket of this binder.

# ESCAPE THE CLIMATE CRISIS!

In this lockbox are solutions to the climate crisis. Discover what these are and help humanity escape the eco-emergency by finding the padlock codes hidden throughout the kit. Note, the solutions focus on individual and systemic topics. For information on the scientific/technological solutions to the climate crisis, refer to the Resources section of the green binder.

**COMPLETION TIME:** you have 30 minutes to gather solutions and thereby “escape” the crisis.

Time yourself with the clock in the kit. Play without a countdown if you prefer, but remember, the clock really is ticking when it comes to the climate! If you are playing as part of a group, take turns reading the clues and solutions outloud.

**HINT:** the numbers you need to open the combination locks may be written out as percentages (e.g. 89.5% would translate to padlock code 895). If you are unable to advance, refer to the cheat sheet found in an envelope in the green binder’s inside pocket.

## START THE CLOCK!

### CLUE # 1

FOR THE LEFT LOCK, RIDDLE ME THIS:

THE CLIMATE SITUATION IS DIRE, WITH MELTING GLACIERS AND WILDFIRE.

THE BINDER SAYS IT ISN’T RIGHT TO BE A DENIER:

THE SCIENTIFIC CONSENSUS COULDN’T BE HIGHER!

HOPEFULLY YOU GOT THAT IN QUICK TIME BECAUSE TIME’S-A-TICKIN’!

NEXT CLUE. FOR THE RIGHT LOCK, LOOK ALSO TO THE BINDER:

THE FOOD WE EAT IMPACTS THE PLANET DIRECTLY. EATING LEFTOVERS REQUIRES NO SKILL.

DISPOSE OF FOOD WASTE CORRECTLY – IT MAKES UP ALMOST A QUARTER OF LANDFILL!

# Activity B - Create an affirming memento

## Introduction

Changing the world is a HUGE undertaking, but one way to start changing the direction of the global climate crisis is to start with you. Be mindful of your interactions with the world around you and know that you can make a difference by changing your own actions. Make conscious choices in everything you do and keep this bracelet or key fob with you as a daily reminder that you can and will make this world a better place. By focusing on changing ourselves, we can together start changing the world.



## Intended Audience

Teens and adults that want a fun way to help ground themselves in their commitment to change, and to help all participants find a calming way to focus their energies and make a difference to the global climate crisis starting with themselves.

## Activity Goals

- Encourage participants to select a word that provides them with inspiration, motivation, or clarity for their new journey forward with mindfulness
- Create fun and functional bracelets or key fobs to remind them of the changes they want to make to their own actions

## Description

Mindfulness accessories can come in many shapes and sizes, but for this exercise we will be creating word bracelets or key fobs to help focus our thoughts to make change happen. Participants are guided to select a word that helps them focus, or a word that inspires them to consciously change their behavior or actions and brings them back to living more in the present.

## Materials Needed (\*provided within the kit)

- A-Z, 1-9, & punctuation metal stamps (3mm)\*
- Hammer and metal base\*
- Blank stainless steel washers\*
- Sharpie black permanent marker\*
- Alcohol pads\*
- Scissors and a ruler or tape measure\*

- Assorted 1mm waxed cord approximately 15 or 30 inches long\*
- Key ring split rings\*
- Meeting space for maker activity
- Flame such as a lighter (not provided in kit) for melting cord ends

## Discovering your “word”

### STEP 1: START WITH A QUESTION

Choose two of the following questions and jot down the first words that come to mind:

- What is a goal of yours?
- What brings you joy?
- Is there something that you want to let go of?
- Is there something you want to improve upon?
- What energizes you or makes you feel like your true self?



### STEP 2: DEVELOP

What’s holding you back from achieving the answers in Step 1? What word, as a daily reminder, would help you achieve what you seek from Step 1?

For example, if you want to start your own business but have some doubts you’d like to overcome, you could choose a word such as *BELIEVE*, *COURAGE*, or *IGNITE*. If you’re feeling overwhelmed, you may choose a reminder like *BREATHE*, *STRENGTH*, or *FAITH*.

### STEP 3: IDENTIFY YOUR WORD

You may have come up with a few words, and that’s ok, but what is the **one word** that is the most important, the priority, to begin working on today?

“My Word is \_\_\_\_\_!”

\*\*For some hints on words that you could use, see the inspirational words page in this activity guide.

## Using Metal Stamps

**Note:** Always hold the metal stamping hammer in your dominant hand. Use your non-dominant hand to pick up and hold the metal stamps.

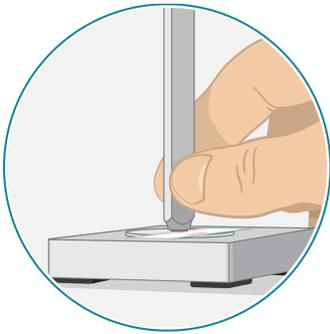
Use the stamp tools found in the black case in the Climate Crisis Kit. In the kit you will find stamps for letters of the alphabet A-Z, numbers 1-9 [for 6 & 9, use the same stamp], and punctuation symbols [\$ " ! , ? @ . # ].

**STEP 1:** Place blank washer on the round metal stamping block.

**Note:** Make sure the stamping block is on a hard, sturdy surface.

**STEP 2:** Map out what you plan to stamp on the washer. Do your best to space the letters evenly and keep them aligned. But remember - this is for you and imperfections can be fun.

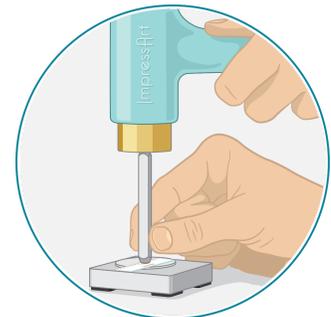
**STEP 3:** Hold the stamp at a 90-degree angle on the blank washer.



**Tip:** Make sure the letter, number, or punctuation stamp is facing the right way. There are no markings on the stamp to give you guidance in the correct direction. The bottom of the letter should be facing you, and the letter should be facing towards the right.



**STEP 4:** Lightly drag the stamp towards the spot on the washer where you want to add the letter. Hold the stamp flat and firmly in place before striking the stamp.



**STEP 5:** Hold the stamp flush and firmly in place by applying a little bit of pressure and anchoring the side of your hand on your workspace. Strike the stamp once with medium force using the metal stamping hammer. Repeat to complete desired word or phrase.

**STEP 6:** To make the impression stand out, highlight the engraving with a black permanent marker. Let the ink dry, and then wipe off the excess with an alcohol pad.



## Creating a String Bracelet

**STEP 1:** Cut two pieces of 1mm waxed cord about 13 inches long. You can use the same color or choose two different colors.

**STEP 2:** Take one of the pieces of cord and fold it in half.



**STEP 3:** Insert the folded (looped) end through the hole in the washer, from the back side.

**STEP 4:** Insert the loose ends of the cord through the top of the loop created by the folded end of the cord. Do this one at a time for simplicity.

**STEP 5:** Pull the ends all of the way through this loop, until the loop is snug against the washer. **OPTIONAL** - add a drop of glue to hold the loop snug.

**STEP 6:** Tie a knot near the end of the two loose ends of the cord, to help hold them together.

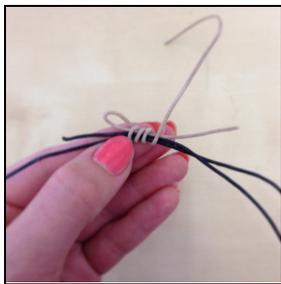
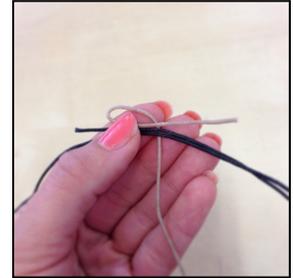
**STEP 7:** Repeat with the other cord on the opposite side of the washer.

**STEP 8:** Cut the excess cord close to the knots. You (or an adult) can use the flame of a lighter to burn the sticking out ends from the knot to secure them. If a flame is not available, you can also use glue for this purpose.

## Adding a Simple Sliding Knot (images taken from <https://www.metalclay.co.uk/>)

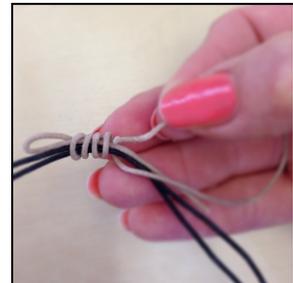
**STEP 1:** Cut a short length of cord to make your sliding knot. You'll need about 5 inches to work with, if it is too short it will be hard to hold on to it and wrap it.

Lay the four bracelet cord ends along each other with the knotted ends pointing away from each other. Make a loop at one end of the 5 inch cord (AKA knot cord), leaving one leg shorter, about 1.25 inches - it needs to be a little longer than your finished sliding knot will be. Lay the knot cord alongside the bracelet cords, keeping them all straight and not crossing over each other.



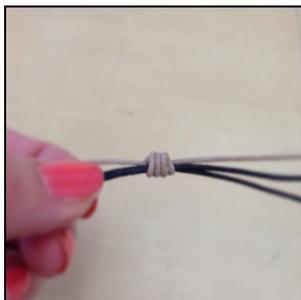
**STEP 2:** Start wrapping the long end of the knot cord around the cord bundle. Make the wraps loose, as you'll need to thread the cord back through all the loops later.

**STEP 3:** Keep wrapping until you have at least five wraps - the amount of wraps will determine the size/length of your knot. *Don't forget to keep the looped wraps loose.*



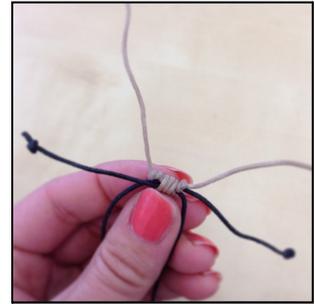
**STEP 4:** Thread the cord back through the loops you've just done. Keep all the cords straight and alongside each other.

**STEP 5:** Pull the cord through until you see something looking like this: the knot cord will now have two ends, and two loops.



**STEP 6:** Slowly start pulling on the two ends to tighten up your knot. Whilst pulling, make sure the loops stay in their place, and don't start slipping over each other. Gently coax them into place, whilst tightening up the knot. It will look a little messy, but don't worry, it'll soon come together and will look great in the end!

**STEP 7:** Your knot should now look like this, with tight loops. Don't pull too hard, or it will be difficult for your bracelet ends to slide through the knot.



**STEP 8:** Make a knot on each end of the knot cord and slide them up towards the main knot itself as you are pulling them close.

**STEP 9:** Using a flame, carefully burn off the excess knot cord on each end of the sliding knot.

**ADVANCED TECHNIQUES:** Once you have the basics mastered for this activity - try making the bracelet more fancy by including a snake knot or a cobra knot design on the side straps. The process is the same - but the end results can be really fun. Use a single color or different colors to create spiral effects. Instructions to create these different side strap styles can be found in the youtube videos found in the additional resources at the end of this activity.



## Creating a Key Fob

If you are not interested in wearing a bracelet, there are other ways to keep your affirming token with you. I made one for a friend of mine who used the basic bracelet (minus the slip knot) to wrap around his wallet. He kept it with him always and saw it every day at least once. Another way to keep it close is attaching it to a key fob. A simple key fob is easy to make using some cord, a repeating snake knot, and a key ring.



**STEP 1:** Cut two pieces of 1mm waxed cord about 30 inches long. You can use the same color or choose two different colors (like the picture above). If using two colors, cut a 30 inch piece of each color and treat them in steps 1-5 as if only one chord folded in half rather than two.

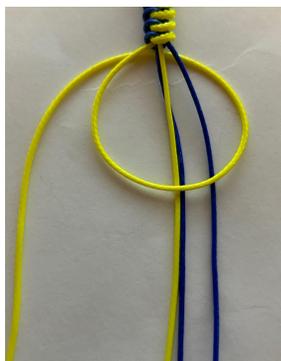
**STEP 2:** Take the pieces of cord and fold them in half.

**STEP 3:** Insert the folded (looped) ends through the hole in the washer from the back side.



**STEP 4:** Insert the loose ends of the cord through the top of the loop created by the folded ends of the cords. Do this one at a time for simplicity.

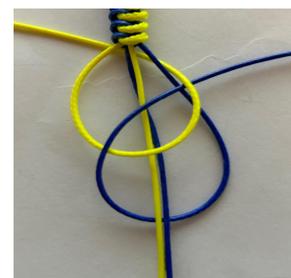
**STEP 5:** Pull the ends all of the way through this loop, until the loop is snug against the washer. **OPTIONAL** – add a drop of glue to hold the loop snug.

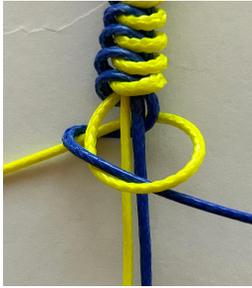


**STEP 6:** Loop one strand over the other, as shown in the picture to the left.

**Note:** If you are using 2 colors, only work with the outer two strands (one of each color) and leave the other two strands in the middle of the knot. You will be knotting around them for the duration of the project.

**STEP 7:** Loop the second strand as shown right. It helps to practice with two different colors of cord, so you can clearly see how the strands pass under and over each other.





**STEP 8:** Pull the knot tight...

**STEP 9:** Repeat steps 6-8 about 25 times or until the fob reaches the length that you want.

**STEP 10:** To finish the fob, take the 2 center cords and loop them over with the ends running back up the fob and then loop them again to create a figure eight.

**STEP 11:** Using the trailing ends from the snake knot, wrap both strands around the cord bundle (the join of the figure eight along with the top of the snake knots strands themselves) three times - like you are creating a sliding knot, feeding the ends of the snake knot cords into the loops at the top of the figure eight.



**STEP 12:** Pull the ends of the snake knot cords through the top loop of the figure eight at the same time as pulling the dangling ends of the center cords that make up the figure eight. This should close the entire bundle together in a knot.

**STEP 13:** Cut off all of the extra cord close to the knot and use a flame to melt the ends and secure the knot.

**STEP 14:** Using the keyring, slide the ring over the loop and feed through until the ring is fully attached through the loop.



## Promotion

Make a plan for promoting this activity or program. Your plan doesn't have to be extensive, but it should address:

- the people involved and their roles (Youth/Family staff to facilitate discussion),
- budget; (Consider including healthy snacks/drinks),
- the overall message,

- any existing library marketing or branding guidelines,
- how you will promote the activity, which could include:
  - Social media
  - Website
  - Email newsletter
  - Printed materials like posters or bookmarks
  - Cross-promoting with partner organizations
  - Local news media,
- creating promotional materials, such as graphics, press releases, or printed materials,

## Resources

You tube videos about how to stamp, how to create bracelets, slip knots, and key fobs.

Stamping Guidance:

[How to hand stamp a metal pocket token](#)

[5-minute metal stamping tutorial for beginners](#)

[How to stamp on metal: Metal stamping for beginners](#)

[How to stamp metal](#)

[How to plan perfect spacing for bracelets with two words](#)

<https://www.youtube.com/watch?v=rLFf2fnIYMc>

How to make simple bracelets and knots:

<https://www.youtube.com/watch?v=jmxotvLdalQ&t=10s>

[How to create a simple adjustable sliding knot bracelet](#)

[How to tie round bracelets](#)

[How to adjust your MyIntent bracelet](#)

<https://www.youtube.com/watch?v=GADPBpqIF4k>

<https://www.youtube.com/watch?v=JyJqIPdqKU4>

<https://www.kernowcraft.com/jewellery-making-tips/beading-and-threading-techniques-and-advice/how-to-make-a-sliding-knot>

How to make simple friendship bracelets:

[DIY friendship bracelets for beginners](#)

[3 Easy beginner friendship bracelets](#)

[Candy stripe tutorial](#)

How to make key fobs:

[Macrame Wristlett Key Chain #1](#)

[Macrame Wristlett Key chain #2](#)

[Rapture paracord key chain](#)

[Three models of macrame key fob](#)

## **Extending the activity**

There are many ways that this activity can be extended, depending upon the skills and experience of the group or people involved. Consider adding complexity to the bracelet by creating more complex patterns or incorporating beads into the mix. Let the group be creative and take their thoughtfulness to the next level.

# INSPIRATIONAL WORDS

Accomplish	Dare	Fresh	Innovative	Now	Risk
Achieve	Day	Fulfillment	Inspiration	Nurture	Role
Act	Dedicate	Game	Inspire	Obstacles	Safe
Action	Dedication	Glory	Instigate	Opportunity	Safety
Active	Desire	Glow	Integrity	Optimistic	Satisfaction
Admire	Desperation	Glowing	Interest	Outstanding	Satisfy
Adventure	Determination	Goal	Intuition	Overcome	Secure
Alive	Determine	Gold	Joy	Passion	Security
Ambition	Discipline	Golden	Joyful	Patience	Self
Ambitious	Divine	Good	Kind	Peace	Skill
Appreciate	Dream	Goodness	Kindness	Peaceful	Skilful
Attain	Dreams	Gracious	Know	Peacefulness	Skillfulness
Attitude	Drive	Gratitude	Knowledge	Persevere	Spirit
Balance	Duty	Great	Lasting	Perseverance	Spirited
Beautiful	Eager	Greatest	Laugh	Persist	Spur
Beauty	Earnest	Grow	Lavish	Persistence	Stimulus
Belief	Empower	Growing	Lead	Persuade	Strength
Believe	Encourage	Gumption	Leader	Plan	Strong
Believable	Endurance	Happiness	Leading	Planner	Succeed
Best	Endure	Happy	Learn	Please	Success
Bliss	Energetic	Harmony	Learner	Positive	Sustain
Breakdown	Energy	Help	Life	Possibilities	Sustenance
Breakthrough	Enjoy	Helped	Live	Possible	Teach
Breathtaking	Enjoyment	Helpful	Limitless	Power	Teachable
Build	Enthusiasm	History	Love	Powerful	Time
Calm	Envision	Honesty	Loving	Practice	Trust
Catalyst	Escape	Honor	Luxury	Present	Trustworthy
Challenge	Excellence	Hope	Luxurious	Pride	Truth
Character	Experiences	Hopeful	Mindful	Prioritize	Understand
Clarity	Faith	Humble	Mindset	Reach	Understood

## Climate Crisis Kit | Activity B - Create an affirming memento

Commit	Faithful	Humility	Mission	Recover	Value
Commitment	Fearless	Hunger	Meaning	Redeem	Values
Compassion	Ferocious	Imagination	Meaningful	Redemption	Versatile
Complete	Fighter	Imagine	Memories	Relax	Will
Concentrate	Finish	Impetus	Momentum	Relentless	Willpower
Confidence	Finisher	Improve	Motivate	Resilience	Winner
Content	Fire	Improvement	Motivated	Resilient	Wisdom
Control	Fix	Incentive	Motivation	Rest	Wise
Conquer	Focus	Ineffable	Motive	Revive	Worthy
Courage	Focused	Initiative	Move	Revitalize	Yearn
Create	Forgive	Inline	Movement	Rise	Yearning
Daily	Freedom	Innovate	Moving	Risen	Yes

## FINDING YOUR FOCUS

### STEP 1: START WITH A QUESTION

Choose one or two of the following questions and jot down the first words that come to mind:

- What is a goal of yours?
- What brings you joy?
- Is there something that you want to let go of?
- Is there something you want to improve upon?
- What energizes you or makes you feel like your true self?

### STEP 2: DEVELOP

What's holding you back from achieving the answers in Step 1? What word, as a daily reminder, would help you achieve what you seek from Step 1? For example, if you want to start your own business but have some doubts you'd like to overcome, you could choose a word such as *BELIEVE*, *COURAGE*, or *IGNITE*. If you're feeling overwhelmed, you may choose a reminder like *BREATHE*, *STRENGTH*, or *FAITH*.

### STEP 3: IDENTIFY YOUR WORD

You may have come up with a few words, and that's ok, but what is the **one word** that is the most important, the priority, to begin working on today?

“My Word is \_\_\_\_\_!”

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“My Word is \_\_\_\_\_!”

## Activity C - Let's Talk About It

*“Stories about climate change are going to come from conversations we have with friends, family, and colleagues – we need to all become multipliers of this message. And in order to do so, we need to think deeply about this issue and understand how it will affect us. So we need to think critically about what kind of story we are telling. Are we telling a story of despair and so-called inevitability? Are we telling a story about negative emissions, feedback loops, tipping points, or other things most people don't understand at all? Or are we telling a story of hope, possibility, and human agency? More importantly, are we making it clear when we talk about this that there are choices that we can make, which will determine what kind of future we are going to have.” - Maria Virginia Olano, Climate XChange<sup>1</sup>*

It is often repeated that simply talking about the climate crisis is one of the most important things we can do as individuals in order to have a positive impact. But let's face it – this is a tricky subject to talk about. The topic seems to many of us to be overwhelming – a frightening and unresolved conflict, and people tend to be conflict averse. In the face of this complex and difficult topic, many of us simply prefer to think of other things, but science tells us that we cannot afford to take this view. There is a great deal of apprehension about broaching this subject, especially in a public forum. **This need not be the case!** It is possible to have productive, interesting, and actionable conversations about the climate. And we don't have to make enemies in the process! Instead, we can create new relationships with our neighbors and form deeper bonds when we align ourselves toward a common purpose.

### Plan what type of conversation you want to have

It never hurts to be thoughtful and intentional in how these conversations proceed, so the very first thing we should do is plan what kind of conversation we wish to have. Each type of conversation, as we will see, will give rise to more questions that will get you to think about the sort of conversations that you might have, and ways of approaching them. Bear in mind that the topic of climate is inherently intertwined with public policy. It is therefore an inevitably political topic. However, as polarized as things are, this should not prevent people from different backgrounds from finding common ground – in fact, that is the exact

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<sup>1</sup> 'Communicating the Climate Crisis'

<https://climate-xchange.org/communicating-the-climate-crisis/>

challenge we are faced with: *we must find ways of moving beyond our individual perspectives for the good of everyone.*

- **Do you want to hold a focus group type conversation with a small group of strangers in the community? And/or a community town hall or larger forum?**

**Think about (and plan for) what these would mean for YOUR community as this will give you a good idea of how to structure your conversation:**

- Who is trusted within your community that could lead this conversation?
- Could subject matter experts be available for the discussion?
- What sort of community do you belong to?
  - Are topics like this commonly talked about? What are people's attitudes towards the climate, or science in general?
  - Is the community very politically biased one way or another?
  - Have people talked more about extreme weather or wildfire recently, and what do people attribute these changes to?
  - How can you preemptively deal with potential negative reactions to this topic being raised?
- Is there already active discussion about these matters?
  - Has climate change had any observable, documented impact on your community?
  - How are local leaders, businesses, and authorities responding to the challenge?
  - How could it affect your community if climate change is not addressed?
- **Do you want to bring the subject up with a family member or friend? Think about what this means for YOUR family member or friend:**
  - Ask yourself honestly, is it possible to have a productive conversation about the climate with this person?
    - How does this person usually respond to divisive or potentially controversial subjects such as the climate or politics?
    - Are they explicit about any of the biases they may hold against ideas, groups, or science?
    - Where do they get their information or other news from?
  - What is your conversation partner's level of knowledge about the climate, and what are the gaps?

- Can any of these gaps be addressed as part of a conversation, or can you provide them with helpful resources that might help?

### Conversation Agreements: How We'll Engage (~5 min)

*These will set the tone of our conversation; participants may volunteer to take turns reading them aloud. (Click [here](#) for the full conversation agreements.)*

- **Be curious and listen to understand.**
- **Show respect and suspend judgment.**
- **Note any common ground as well as any differences.**
- **Be authentic and welcome that from others.**
- **Be purposeful and to the point.**
- **Own and guide the conversation.**

Creating norms and expectations is never a bad idea - from [livingroomconversations.org](http://livingroomconversations.org)

## Use a guide to keep the conversation on track

There are many ways of going about having a conversation, and no one way is going to be right for every circumstance. Conversations are by their very nature improvisational and you can't plan for every scenario. And because each community is different, critical thinking and planning is required when tailoring a conversation. It is helpful (maybe even mandatory!) to have a guide that keeps the conversation where it should be: focused on the climate and the ways in which we can come together to explore, learn, and create solutions for the current crisis. It should go without saying that if you're talking to someone with whom you're very close or familiar, the presence of a guide might not be helpful. On the other hand, they can be surprisingly helpful in providing structure.

Conversation guides abound, so feel free to search them out on your own, or make your own, or use one (or a combination) of the guides linked below and printed in this binder. In general, though, a guide may keep the conversation flowing by having the following:

- Introductions or other icebreakers
- Norms/expectations/conversation agreements
- An agenda of specific topics

- Question prompts
- Accompanying materials such as table tents
- Interactive activities
- Closing reflections
- Ways to keep the conversation going
- Opportunities to connect with community projects

## External guides

- [Living Room Conversations](#) (these four are printed after this page)
  - [Climate Change](#)
  - [Climate of Unity](#)
  - [Energy and the Environment](#)
  - [Environment and Pollution](#)
- [Speak up for the planet: Your guide to having climate change conversations](#) - ClientEarth
- [Talk to children about the climate crisis](#) - Our Kids' Climate
- [A Guide to Talking About Climate Change](#) - nature.org
- [Climate Conversation Guide](#) - Climate for Change

## Agree to conversation rules/norms/expectations

Whatever direction you decide to take your conversation, remember to begin the session with some sort of statement that all participants agree to. This is a great opportunity to set norms and expectations in group scenarios (particularly among strangers, but it also applies to families and friends!). This is where you will need to consider the above to write a statement that fits your particular circumstances. Use this statement to guide the conversation back if needed. If the conversation becomes irretrievably off-topic, hostile, or unproductive, then end the session and try again with another group at another time.

## Talk about talking about it!

Share your conversation experiences on social media with the hashtag #ClimateCrisis and take the conversation online! You can also submit a story to Stories of Colorado at [stories.cvlcollections.org](https://stories.cvlcollections.org).

## Activity D - Let's get creative!

Using the craft materials provided in this kit, take the opportunity to express your response to the climate crisis we are facing. Take at least ten minutes (and continue for however long you need) to consider this and to make your piece. This activity is for people of all ages.

### Some Ideas

You could create a piece of artwork or write a personal statement, an opinion piece, a poem, a story, a to-do list, or a plan of action. The goal is to do something you might never have done before: **explore and document your own reaction** to the crisis we are all confronted with.

If you're not sure where to begin, use the *Our Planet* book included in this kit for inspiration. Flip the book open to a random spot and use the image you see as a reference point. Repeat this until you find an image that strikes your interest. It is your own **unique** response that's important, but remembering our place in the larger natural environment can be a great way to get grounded.

Another idea is to ask yourself the following questions:

- How do **my** everyday actions affect the environment I live in?
- What can I do to change my **local neighborhood** for the better?
- How does the climate crisis threaten my **core values**?
- What is **beautiful** about the world I live in?
- What do we stand to **lose**?

### Once You're Done

There should be a dedicated space in the library where your creation can be displayed for everyone to see.

Bonus points if you share your creation on social media with the hashtag **#ClimateCrisis**, and please also consider asking your library to add your creation to **Stories of Colorado** at [stories.cvlcollections.org](https://stories.cvlcollections.org).

# Activity E - Observe the data for yourself

***This activity is best for groups with access to a projector or larger screen that everyone can view, but can also be done solo on your personal device.***

We often understand and retain facts better in hands-on learning environments where we are free to discover information and draw conclusions for ourselves. Being told that the global average temperature is increasing will likely have less of an impact on you than, for example, seeing less and less snow in the mountains or more wildfire smoke in the air as you grow up. These indicators are apparent year to year, but other environmental changes are more subtle. We encourage you to notice changes taking place in the ecosystems around you, but to understand the subtle changes, it helps to track data over many years, so that is exactly what climate scientists are doing.

In this activity you will explore future temperature predictions and historical observations recorded from around the world. Navigate to [this link](#):

<https://www.carbonbrief.org/mapped-how-every-part-of-the-world-has-warmed-and-could-continue-to-warm/>

Once this page has loaded, you will see a world map colored in shades of blue, purple, orange, and yellow. First, let's learn what the colors on this map represent by following these steps.

1. Look to the bottom left corner of the map to see the map's legend. The legend will tell you what the colors on the map represent.

"Warming, °C" means that the colors indicate how much warmer the area is predicted to become in degrees celsius. The scale ranges from 0 to 4+ degrees celsius, with blue being the least amount of warming (0°C) and yellow being the most amount of warming (4+°C). Underneath the scale, the legend tells you that this predicted temperature increase will take place between the years 1880-1900 to 2080-2100.

- Based on this legend, over how many years is this warming predicted to take place?
2. Now that you understand what the colors represent, take another look at the map as a whole to answer the following questions.

- In what region or regions is the least amount of warming predicted?
- In what region or regions is the most amount of warming predicted?
- What might be a consequence of increased temperatures in the region where the most amount of warming is predicted?

Next, notice that the map is divided into small grid cells. These grid cells are located at every degree of latitude and longitude around the world. For the next step you will select three locations, or cells, on the world map and compare the data. You can choose a location that you live in, locations that are special to you, locations that you have always wanted to travel to, or locations you know nothing about, wherever interests you most.

3. Click on the first location you would like to learn about and look to the right side of the screen. You will see two graphs, one showing the historical recorded temperature data for this area and the other showing the future temperature predictions for this area. Record your answers to the questions below.
  - How many degrees celsius has this location warmed so far?
  - How many degrees celsius is this location projected to warm? (This is a range of numbers).
4. Click on the next two locations that you want to learn about and record the answers to the same two questions listed in step three.

Refer to the data you just gathered to answer the following questions.

- For each location you looked at, how does the temperature change in the past compare to the range of projected temperature changes in the future?
- Has the temperature already warmed less than halfway or more than halfway to the lowest projected future temperature change? What about the highest projected future temperature change?
- Does your data show temperatures changing at different rates depending on location? Why or why not might your data show different rates of temperature change between the three locations you chose?
- What additional conclusions can you draw from your observations?

## Bonus Challenge

1. Click the up arrow in the top right corner of the map's legend, so you can see the "Pathway" legend which includes RCP 2.6, RCP 4.5, RCP 6.0, and RCP 8.5.

If you don't know what RCP stands for, don't worry! Let's investigate the page to find out.

2. Scroll down to the article below the map and you will see glossary boxes describing what RCP is.

**NOTE:** RCP stands for Representative Concentration Pathways, meaning different projections for our global average temperature depending on the different levels of greenhouse gases that might be emitted in the future. RCP 2.6 is the lowest projected warming scenario and RCP 8.5 is the highest projected warming scenario shown on this map.

3. Click on the different RCP scenarios and observe how the map changes based on which scenario plays out.
  - In the highest warming scenario this map shows (RCP 8.5) name or describe where on the globe the temperature increase stays between 0-2°C.

## Activity F - Start a journal

In the kit supplies you should see a handful of small journals with brown covers. Take one!

(Need more giveaways? Email [KitSupport@coloradovirtuallibrary.org](mailto:KitSupport@coloradovirtuallibrary.org))

Use the art supplies to decorate it and make it your own, if you like. And make sure you take a free seed pencil too, which can be planted once the lead has run out!

This is your new pocket journal. Take it to places with you! It's really up to you how you use these pages. Sure, you could make notes on your phone, but in this case having a material object (that doesn't require you looking at screens and potentially being distracted) is much more preferable: it's just you and your thoughts.

If you make good use of it, it will help you think more critically about your own personal situation and the ways in which you can have a positive environmental impact, and get you into the habit of reflection and making positive changes in your own life. A few ideas to get you started:

- Keep a diary of your climate positive journey from *this moment on*. You may choose to write just one sentence daily that answers the question, ***"What did I do today for the good of the planet?"***
- Think about, describe, and deconstruct your daily consumption habits. What are your needs? What can or can't you live without? Pick a topic (for example, energy use) - how can you apply the Three Rs (Reduce, Reuse, and Recycle)? For more information, see **Chapter 9 - Making a Real Difference**.
- Set about making personal challenges or goals. Go one step further and consider making them SMARTIE goals! SMARTIE stands for Strategic, Measurable, Ambitious, Realistic, Time-bound, Inclusive, and Equitable. See the laminated sheet included in the front of the binder.
- Write about climate news you see. In what ways does the news help you become a better climate activist, or do you find that it has the opposite effect? In what ways are leaders stepping forward, and in what ways are they not doing all they can?
- To build on the prior point, write about your own mood, thoughts, and feelings. The climate is a very heavy subject. Intentionally dealing with negative thoughts and feelings (especially after viewing news) is an absolute must. Also see **Chapter 5 - Keeping Calm**.

- Write a list of people who you can connect with to form a local community action group. Who or what entities are in your sphere of influence? What sort of person would be helpful to have on your team? Where might you find them?
- Plan a future event (such as a gathering of friends or family) through a climate friendly lens. How would you approach hosting a holiday party, for example, while having a minimal carbon impact? In what ways might your approach be different now?

To learn more about different ways to journal, see below.

## Guide to Journaling

*"You don't have to rack your brain to consider what you'll write about. You don't have to research. It's all in you," --Aimee Chase*

### What is Journaling?

#### What does it mean to journal?

Most of the writing we do daily has an intended audience, but journaling is something you do just for you. It's a personal practice that you can do anywhere, at any time.

The purpose of journaling is different too. While most writing is about opening up and sharing, journaling is more about looking inward and exploring what makes you tick.

*"The purpose of journaling is to awaken conscious thinking, which is simply having an honest conversation with yourself," --Meera Lee Patel*

#### Types of journaling:

Journaling is an incredibly flexible practice that can be easily tailored to your needs and whims. Here are a few ways to do it:

**Free-form journaling:** This "Dear Diary" style is what most people imagine when they think of journaling. It involves writing about whatever's on your mind that day—the good, the bad, and the ugly. While licensed clinical psychologist Elena Welsh, Ph.D., sees value in this approach, she notes that it tends to be more time-consuming than other

journaling methods. It can also reinforce existing unhealthy thought patterns when not reread with a critical eye—which we'll touch on more later.

**Morning pages:** A more regimented form of free-form journaling, involves handwriting a set number of pages of thoughts first thing in the morning. The stream-of-consciousness method is meant to illuminate thought patterns and unlock creativity.

**Mindfulness journaling:** Mindfulness journaling involves describing your current surroundings or emotional experiences in detail—paying attention to all five senses. It's a way to get out of your own head and connect to the present moment.

**Gratitude journaling:** This is the journaling method that has been researched most extensively for its role in mental health. Gratitude journals are filled with things that you're grateful for. They can be larger things like your health or family, or smaller snippets like a cup of coffee or a funny conversation. The idea is that by bringing your awareness to positive situations, you're training yourself to notice them more often.

**Mood check journaling:** You can also use your journal to perform a quick mood check and write down how you're feeling in a particular moment. You can jot down a list, compose a paragraph, or even make a drawing; the goal is just to check in with yourself and your emotional state.

**Bullet journaling:** It combines elements of a calendar, to-do list, and notebook and allows you to reflect, plan, and daydream all in one place.

**Dream journaling:** Dream journals are a place for you to write down and analyze your dreams from the night before. In the process, you'll start to remember your dreams more clearly and might even get some insights into your subconscious.

## Benefits of journaling:

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- *Increased emotional awareness:* In today's demanding world, it can be difficult to find time to look within and consider how you're actually feeling. Journals give you the opportunity to do just that, and they grant you safe space to name all the different emotions you may be feeling at any given moment.
- *Improved mood:* Over time, journaling—particularly gratitude journaling—may improve mood. Calling your attention to positives may help restore balance. Train your brain to look out for the things that make you happy.

- *More mindfulness:* Writing about what's going on around you can help keep you in the current moment—and out of the past or future.
- *Better health overall:* Beyond reducing stress and boosting mood, research has shown that expressing gratitude may help lower blood pressure, deepen sleep, and improve self-reported health overall.
- *More resilience:* Journaling can be especially helpful during hard times.
- *Self-discovery:* Journaling can help you get to know yourself a little better.

# Activity G - Get hands-on with the eco gadgets

## Solar Power Bank:

- Take the power bank charger out of the packaging and unbutton the front to open the solar panels. This is the very same technology that is in large solar panels on houses!
- Now that it is open, it will begin charging seconds after sunlight reaches it. Note, you may need to move closer to a window to “wake it up,” but it should activate even indoors, although it will charge faster outside where the light is more abundant.
- Pause a second and consider the amazing technological achievement of harnessing energy from the sun’s rays! (Read more about this technology in the **Energy** chapter of the binder.)
- Pay attention to the blue lights that indicate the charge level on the side of the power bank. Notice when the power bank charges and when it does not; notice if the battery indicates that it is more charged after sitting in sunlight for a period of time.
- Make notes of the following:
  - What are your thoughts on solar energy?
  - Does this make you think any differently about our energy needs, and how we might make better use of the energy that surrounds us (especially here in Colorado!)?
  - Would you consider using solar panels to help your own home’s energy needs?

## Electricity Usage Monitor:

- Talk to a librarian to see where you may be able to plug this device in. Refer to the guide on the next page for how to use it.
- Make notes of the following:
  - What device in your house are you curious about testing out?
  - How does measuring the energy it takes to power something affect how you use it?
  - What other technology would be helpful to you in doing better for the environment?

## Activity H - Plan a community project

The Climate Crisis can only be solved if huge changes are made both on worldwide and local levels. One way of increasing local understanding and encouraging buy-in from your neighbors, is to tackle the problem together – through planning and executing a community project! Below are some ideas for community projects, but bear in mind that not all communities are alike, therefore, it is up to YOU to do your research, and maybe even come up with your own fun and interesting project ideas! Once you're set on an idea (or two, or three!), look for like-minded people and organizations within your community who you can partner with and who might be able to spread the word and, if needed, help you drum up some funding. You might make a lifelong friend, and at the very least you will have learned something and helped your community along the way.

1. Start a Climate Crisis interest/affinity group at school or work and brainstorm projects together
2. Plant trees
3. Start a bike to work program or plan community bike rides that are designed to get a lot of people out and raise awareness through the attention generated.
4. Plan a trash clean-up such as a river clean up, cigarette butt challenge, or target a specific area like a park
5. Speak to your local library about their greening efforts and volunteer
6. Create a wildflower/pollinator garden at the library or other public space
7. Distribute seed bombs in wasted land
8. Start a recycle program at a publicly accessible place such as the library
9. Plan a letter writing get-together and write to representatives, business leaders, and other influencers
10. Spread an awareness on a specific subject related to the climate, such as reducing consumption or a local issue
11. Start a community garden for growing food and composting
12. Help others recycle their waste or compost
13. Plan drives for hard-to-recycle materials
14. Have an art-making competition using waste materials
15. Start a trivia night, book club, or film club and have fun get-togethers or screenings

# Activity I - Practice mindfulness

As we learn about the climate crisis and take action, taking care of ourselves is just as important. Self-care looks different for everyone, but practicing mindfulness has been shown time and time again to improve both mental and physical health. Practicing mindfulness means being fully present in the moment through awareness and acceptance of your current thoughts and feelings. Below are just a few of the many exercises you can try to incorporate mindfulness into your life.

- Before you begin, it is important to find a place where you are comfortable practicing mindfulness. Consider whether you will be more content indoors or outdoors. Many libraries have an outdoor space where you can breathe some fresh air and surround yourself with nature. You could also reserve a quiet room indoors or find a comfortable corner of the library, with the understanding that external environmental factors may play a role in your exercise, and that is OK.
- As you decide where you would like to practice mindfulness, also consider which type of exercise you would like to complete. Some exercises are meant to increase awareness of the relationship between the world around you and your mind and body, while others encourage you to direct your focus inward.

## Mindfulness and the Environment

### 1. Mindful Listening

Mindful listening can be practiced anywhere, but it can be particularly fulfilling in nature. Mindful listening involves directing your attention towards what you can hear, acknowledging or naming each sound, and considering how your mind and body reacts. It may help to be still, close your eyes, and eliminate other distractions. To focus more intently on each sound you can ask yourself questions such as, what is the furthest away sound you can hear and what is the closest sound you can hear? How many different sounds can you identify?

If you are lucky enough to be in a place where you can hear bird song, this can be a great sound to focus on. Try noticing when different calls feel like they are responding to each other, or even when there is silence between calls.

## 2. Tracking

Tracking is a mindfulness activity that uses our sense of vision to be present. Pick a starting point in your environment and move your gaze very slowly across the space, acknowledging or naming each object your gaze lands on and examining it in more detail than you normally would. You can consider things such as the object's texture, shape, or color and how it connects to or stands out from everything around it. By looking at seemingly mundane objects more closely, you may see things in a new light and even find a new appreciation for what you are looking at.

If you are overwhelmed by the environment as a whole or want to focus on one object in particular, you can trace the outline of it with your eyes making detailed observations as you do. A leaf, for example, is a great place to start. Slowly tracing the edges of the lobes, teeth and stem may show you something about the leaf you never noticed before, slow down your thoughts, increase awareness, and allow you to be present.

Both leaf tracing and mindful listening are described in more detail on the [Healing Forest](#) website which is also mentioned in our **Keeping Calm** chapter.

Other ways to incorporate the environment into your mindfulness practice include directing your attention to each of your five senses one at a time to notice what each is telling you or walking with awareness of each step and the feeling of your feet connecting with the ground.

## Mindfulness Focused Inward

### 1. Body Scan

Starting with your toes and moving upward, guide your thoughts to each part of your body one at a time, becoming aware of each point, considering any feelings you notice there and acknowledging where you may be feeling tension or relaxation.

### 2. Mindful breathing

Focus on your breath to practice clearing your mind. If your thoughts begin to wander that is OK. Simply acknowledge that your thoughts wandered and gently return your focus to your breath. Have patience with yourself. Everyone's thoughts will wander eventually and

this is an exercise in noticing when they do and recentering, NOT a challenge to win or lose. Start this practice for just a couple minutes at a time and begin practicing for more time as you feel comfortable.

### 3. Sitting with your feelings

Sitting with your feelings means acknowledging and accepting your feelings in the moment, whether positive or negative, without trying to change them either way. By giving yourself the grace to feel just as you do, you can let go of any guilt or pressure to feel a different way.

## Conclusion

Facing the climate crisis can bring about a flood of emotions and everyone is going to experience their feelings differently. There is no right or wrong way to feel when learning about the climate crisis as long as we are honestly acknowledging our feelings and taking steps to care for ourselves along the way. For more information on this please see the chapter **Keeping Calm**.

Like everything else, mindfulness takes practice and we shouldn't expect to be an expert on our first try. Certain exercises may be more helpful for you than others so explore different techniques. Working a few minutes of mindfulness practice into your schedule regularly may help you regulate your emotions, reduce anxiety, and increase cognitive function.

# More on Practicing Mindfulness

*“The practice of maintaining a nonjudgmental state of heightened or complete awareness of one’s thoughts, emotions, or experiences on a moment-to-moment basis.” Merriam-Webster*

## What is Mindfulness?

Mindfulness is the basic human ability to be fully present, aware of where we are and what we’re doing, and not overly reactive or overwhelmed by what’s going on around us.

While mindfulness is something we all naturally possess, it’s more readily available to us when we practice it on a daily basis.

Whenever you bring awareness to what you’re directly experiencing via your senses, or to your state of mind via your thoughts and emotions, you’re being mindful. And there’s growing research showing that when you train your brain to be mindful, you’re actually remodeling the physical structure of your brain.

Mindfulness is available to us in every moment, whether through meditations, or mindful moment practices like taking time to pause and breathe when the phone rings instead of rushing to answer it.

## The Basics of Mindfulness Practice:

Mindfulness helps us put some space between ourselves and our reactions, breaking down our conditioned responses. Here’s how to tune into mindfulness throughout the day:

1. **Set aside some time.** You can practice anywhere, there’s no need to go out and buy a special cushion or bench or any sort of special equipment —all you need is to devote a little time and space to accessing your mindfulness skills every day.
2. **Observe the present moment as it is.** The aim of mindfulness is not quieting the mind, or attempting to achieve a state of eternal calm. There’s no bliss state or otherworldly communion. All you’re trying to do is pay attention to the present moment, without judgment.
3. **Let your judgments roll by.** When we notice judgments arise during our practice, we can make a mental note of them, and let them pass.

4. **Return to observing the present moment as it is.** Our minds often get carried away in thought. That's why mindfulness is the practice of returning, again and again, to the present moment.
5. **Be kind to your wandering mind.** Don't judge yourself for whatever thoughts crop up, just practice recognizing when your mind has wandered off, and gently bring it back.

That's the practice. It's often been said that it's very simple, but it's not necessarily easy. The work is to just keep doing it. Results will accrue.

## What You Need to Know Before Practicing Mindfulness:

1. **You don't need to buy anything.** You can practice anywhere, there's no need to go out and buy a special cushion or bench—all you need is to devote a little time and space to accessing your mindfulness skills every day.
2. **There's no way to quiet your mind.** That's not the goal here. There's no bliss state or otherworldly communion. All you're trying to do is pay attention to the present moment, without judgment. Sounds easy, right?
3. **Your mind will wander.** As you practice paying attention to what's going on in your body and mind at the present moment, you'll find that many thoughts arise. Your mind might drift to something that happened yesterday, meander to your to-do list—your mind will try to be anywhere but where you are. But the wandering mind isn't something to fear, it's part of human nature and it provides the magic moment for the essential piece of mindfulness practice—the moment when you recognize that your mind has wandered. Because if you can notice that your mind has wandered, then you can consciously bring it back to the present moment. The more you do this, the more likely you are to be able to do it again and again.
4. **Your judgy brain will try to take over.** The second part of the puzzle is the “without judgment” part. We're all guilty of listening to the critic in our heads a little more than we should. But, when we practice investigating our judgments and diffusing them, we can learn to choose how we look at things and react to them. When you practice mindfulness, try not to judge yourself for whatever thoughts pop up. Notice judgments arise, make a mental note of them, and let them pass, recognizing the sensations they might leave in your body, and letting those pass as well.
5. **It's all about returning your attention again and again to the present moment.** It seems like our minds are wired to get carried away in thought. That's why mindfulness is the practice of returning, again and again, to the breath. We use the

sensation of the breath as an anchor to the present moment. And every time we return to the breath, we reinforce our ability to do it again. Call it a bicep curl for your brain.

## How to Practice Mindfulness:

While mindfulness might seem simple, it's not necessarily all that easy. The real work is to make time every day to just keep doing it. Here's a short practice to get you started:

1. **Take a seat.** Find a place to sit that feels calm and quiet to you.
2. **Set a time limit.** If you're just beginning, it can help to choose a short time, such as 5 or 10 minutes.
3. **Notice your body.** You can sit in a chair with your feet on the floor, you can sit loosely cross-legged, in lotus posture, you can kneel—all are fine. Just make sure you are stable and in a position you can stay in for a while.
4. **Feel your breath.** Follow the sensation of your breath as it goes out and as it goes in.
5. **Notice when your mind has wandered.** Inevitably, your attention will leave the sensations of the breath and wander to other places. When you get around to noticing this—in a few seconds, a minute, five minutes—simply return your attention to the breath.
6. **Be kind to your wandering mind.** Don't judge yourself or obsess over the content of the thoughts you find yourself lost in. Just come back.

That's it! That's the practice. You go away, you come back, and you try to do it as kindly as possible.

## Activity J - Write a letter

One of the most influential actions you can take to tackle the climate crisis is speaking up. Writing a letter is a personable way to communicate that conveys care and thoughtfulness. This method of communication allows you to reach people around the world, from your parents or grandparents to state representatives and beyond. Climate activists are continually writing letters to influence those in positions of power to act on the climate crisis, and you can join them!

1. Start by identifying who you would like to write to. We suggest that you write to somebody of influence which may include:
  - Mentors and role models in your family, school, or community
  - Leaders in your community
  - Businesses
  - People you look up to and admire outside of your community
  - Your state representatives or other elected government officials

The people we elect have a duty to represent their citizen's best interests and concerns. If enough people voice their concerns about the climate crisis to our elected officials it will show them that, if they do not take actions to reduce fossil fuel emissions, they are ignoring the immediate concerns of the citizens who elected them. To help you get started, we've included templates and checklists from The World Wildlife Fund

[[https://www.wwf.org.uk/sites/default/files/2021-09/COP26 Letter to a Leader Writing Templates-Ages-7-9.pdf](https://www.wwf.org.uk/sites/default/files/2021-09/COP26_Letter_to_a_Leader_Writing_Templates-Ages-7-9.pdf)]. More templates can be found at <https://www.eldersclimateaction.org/sendaletter/>.

2. You can type and email your letter or hand write it. Handwritten letters may be even more persuasive than emailed letters. If you're unsure where to begin your letter, here are a few suggestions:
  - Share something about yourself (e.g. where you live<sup>1</sup>).
  - Clearly express your concerns
  - Back up your concerns with facts
  - Outline the actions you want the letter's recipient to take

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<sup>1</sup> <https://citizensclimatelobby.org/blog/advocacy/how-to-write-a-letter-to-congress/>

3. Try to keep your letter concise and to the point.
4. Once your letter is written, you can make sure it is ready to be delivered by referring to the Letter to a Leader Writing Checklist included in this binder. If you're unsure how to address your letter properly, you can ask your librarian for help.
5. Finally, don't forget to put a stamp on the top right corner of the envelope and put it in the mail for delivery!

# Activities to Take Away

Make a copy or take a picture of the suggested activities below and do them on your own time! And remember that the entire binder can be easily downloaded from our website at <https://cslkits.cvl/sites.org>.

## Be a Hero at Home: save food waste and your wallet

As we discuss in the Food and Food Waste chapter, the choices we are making in our kitchens are the cause of over a third of all the food wasted in the United States. When food is thrown away it emits greenhouse gasses as it takes up space in the landfill. Imagine if you could stop food scraps from ending up in the landfill and instead transform them into freshly grown produce for you to eat. Well, there's a long list of foods that can make this dream a reality!

Below you will find instructions for how to grow four different foods from their own scraps. We suggest you take a picture of these instructions, so the next time these foods start to grow old in your kitchen you will know how to give them new life!

### 1. Potatoes

Have you ever seen a potato that has sat out a little too long start sprouting on its own? Even if you don't see green sprouts yet, there may be little bumps on the potato that are the beginning of a sprout, called "eyes". If your potato has "eyes" you can plant it to grow more potatoes by following these steps:

- Identify a spot that has at least two of three good "eyes".
- Cut your potato in half or trim off a scrap at least two inches long with the "eyes" on it.
- Let your potato scrap (or half) sit out at room temperature to dry overnight.
- Plant your potato piece about 6-8 inches down in the soil with the "eyes" facing up. (They can be planted in large pots or outside if it is the right season.)
- Keep the soil moist and be patient. You should see your potato start to grow in a few weeks.

- In a few months (depending on the variety) you can cut the plant back and dig up homegrown potatoes!



Photo source: [gardengatemagazine.com](http://gardengatemagazine.com)<sup>1</sup>

Photo source: [farmersalmanac.com](http://farmersalmanac.com)<sup>2</sup>

## 2. Lettuce

If you buy a head of lettuce, you are likely not eating the base end. Instead of throwing out this scrap, consider placing it in some water to replenish your lettuce supply from home!

- Chop off the leafy parts from the base.
- Put the base in a bowl of shallow, warm water with the bottom of the plant in the water and the cut off end sticking up out of the water.
- Keep this bowl in a sunny spot and watch for leaves to begin growing.
- Once leaves and roots are growing you can keep it in water or transfer your lettuce into soil, covering the base so only the leaves are showing.

## 3. Onions

All types of onions can be regrown from scraps. If you are regrowing green onions simply cut off the green stems, stand the white root ends in some water, and keep them in the sunlight. For larger onions follow these steps:

- Cut off the root end of the onion, leaving at least half an inch of onion attached to it.
- Now you can either place this in shallow water with the root end facing down into the water, or you can place it directly in soil and cover it with a little soil.
- If you start the onion in water, you will want to transfer it to soil once it has begun to grow roots and sprout.

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<sup>1</sup><https://www.gardengatemagazine.com/articles/vegetables/edible-plant-guide/how-to-grow-potatoes-you-can-harvest-from-summer-to-fall/>

<sup>2</sup> <https://www.farmersalmanac.com/regrow-vegetables-from-kitchen-scraps-24373>



Photo Source: ruralsprout.com

#### 4. Celery

Growing celery from scraps is very similar to growing lettuce.

- Cut off the base of the celery and place it in some warm water with the base end facing down and the cut end facing up out of the water.
- It can be helpful to stick toothpicks into the sides of your celery base in order to prop it up in the water as shown in the image above. This helps give the roots some room to grow.
- Keep the celery in a sunny spot and change out the water frequently.
- Leaves should begin to grow in several days, and you can transfer the base into soil once roots are growing. Plant it so that only the leaves are above the soil.

Growing food from scraps is both sustainable and economical. There are many other foods that you can try to grow from scraps. Some will take more time and patience than others. If you're feeling ambitious, check out <https://www.ruralsprout.com/regrow-vegetables/> to see what else you can grow from scraps. For additional strategies to reduce food waste check out the Food and Food Waste section of this binder.

## Make Art or Crafts from Recycled/Upcycled or Repurposed Materials

- NASA Climate Kids Activities <https://climatekids.nasa.gov/menu/make/>
- 30 Crafts and Activities Using Upcycled Materials  
<https://www.weareteachers.com/earth-day-crafts-classroom-activities/>
- Recycled Art – Exploring Impressive Art Made From Recycled Materials  
<https://artincontext.org/recycled-art/>

## Make a Climate Change PSA

“After learning about the effects of climate change, students can make a PSA poster to inform the public! They can focus on the importance of recycling or other ways to reduce our carbon footprint. Or, they could focus on the effects of climate change that we are experiencing now or expected to experience in the future if the world does not change its behavior. Students should conduct research using school resources, then distill their research into important facts and details to include in their PSA.”

<https://www.storyboardthat.com/lesson-plans/global-warming/psa>

# Glossary

*"Like music and art, love of nature is a common language that can transcend political or social boundaries."* – Jimmy Carter

**Abolitionism** | The movement to end slavery

**Acid rain** | Caused by pollutants produced during the burning of fossil fuels, this rain has a higher level of acidity than normal which can dissolve minerals and nutrients that are essential for forests to live and thrive

**Adaptation** | The act or process of changing to better suit a situation, entire species may adapt to their environment by evolving specialized traits over many generations

**Anthropogenic** | Of, relating to, or resulting from the influence of human beings on nature

**Anti-apartheid** | The movement opposing racial segregation policies in South Africa

**Biodegradable** | Capable of being decomposed, or broken down, by bacteria or other living organisms

**Biodiversity** | The variety of life in the world or in a particular habitat or ecosystem

**Biofuels** | Fuel derived from biomass (organic plant-based materials)

**Byproduct** | A secondary result, unintended but inevitably produced in doing or producing something else

**Carbon dioxide** | A colorless gas made of one carbon atom and two oxygen atoms, produced through actions such as breathing, plant decay and the burning of fossil fuels

**Chemical fertilizers** | Any inorganic material of completely or partially synthetic origin that is added to soil to sustain plant growth

**Chernobyl nuclear disaster** | An accident in 1986 at the Chernobyl nuclear power station in the Soviet Union, the worst disaster in the history of nuclear power generation

**Climate change** | Long-term shifts in temperatures and weather patterns, human activities have been the main driver of climate change since the 1800's, primarily due to burning fossil fuels like coal, oil and gas

**Climate crisis** | The situation of imminent environmental catastrophe brought about by climate change, this term is used to convey the seriousness of our climate predicament

**Climate mitigation** | Refers to efforts to reduce or prevent emission of greenhouse gases. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices or consumer behavior. It can be as complex as a plan for a new city, or as simple as improvements to a cook stove design.

**Climatologists** | People who study climate, meaning long-term weather patterns and the changes in these patterns taking place over at least a thirty year period

**Climatology** | Climate science or the study of weather patterns taking place over at least a thirty year period of time

**Community dialogue** | Sharing and listening to information and perspectives from all parts of a community

**Composting** | The act of collecting and storing plant material so it can decay and be added to soil to improve its quality

**Coral bleaching** | When water is too warm and corals expel the algae living in their tissues causing the coral to turn completely white

**Cover crops** | A crop grown for the protection and enrichment of the soil when the seasonal crop grown for harvest is not planted

**Crop rotation** | Changing the crops that are grown on a plot of land to avoid nutrient depletion

**Decomposition** | Living organisms breaking down organic matter into smaller parts

**Deforestation** | The clearing of the world's forests by humans for purposes such as agriculture, livestock grazing, wood products and construction

**Denialism** | A person who does not acknowledge the truth of a concept or proposition that is supported by the majority of scientific or historical evidence; a denier

**Diversity** | Made up of differences, having a variety of traits and unique characteristics or a number of different species present in an ecosystem

**Doom and gloom thinking** | A feeling of pessimism, hopelessness, and/or grief which can lead to inaction and stagnation

**Drought** | A prolonged period of abnormally little rainfall that can have significant impacts on the ecosystem if it persists

**Eco-anxiety** | Extreme and persistent worry for the current and future environmental degradation caused by humans

**Economic output** | The total value of all goods and services produced in an economy

**Ecosystem** | A biological community of interacting organisms and their physical environment

**Emissions** | The production and discharge of something, often referring to gas or radiation

**Endangered** | At high risk of extinction

**Environment** | The conditions that a living organism exists within

**Environmental Footprint** | The total amount of greenhouse gasses emitted by an individual or entity

**Environmentalist** | An advocate for the protection of the environment

**Erosion** | The movement and wearing down of earth from the elements

**Existential** | Consciously considering the existence of humanity and the individual

**Extinction** | the termination of a species after the final individuals are deceased

**Feminism** | Advocacy for women's rights to reach social, economical, and political equality

**Fire suppression** | Taking actions to prevent wildfire from spreading

**Fossil fuels** | A liquid, gas, or solid form of carbon created by the compression of organic matter over millions of years

**Generators** | A machine that converts mechanical energy into electricity

**Global warming** | The gradual increase in average temperatures due to the accumulation of greenhouse gasses in our atmosphere which trap heat

**Greenhouse Effect** | The accumulation of gasses in our atmosphere, due to the burning of fossil fuels, which traps heat from the sun in our atmosphere instead of allowing it to reflect off the Earth and back into space

**Greenhouse gas** | A gas that traps heat within Earth's atmosphere, contributing to climate change

**Habitat** | A natural space that provides organisms with the resources they need to survive

**Humility** | The understanding of importance outside of yourself and ability to admit mistakes

**Hydropower** | When water is used to generate power by turning turbines to run a generator, this is often achieved by disrupting the water's natural flow with a dam

**Industrial agriculture** | Producing food in mass with the use of industry and technology to limit the time and resources needed

**Industrial revolution** | The historical transition to an economy driven by industry and machine manufacturing

**Infrastructure** | The basic organizational structure of regions such as cities and states, which includes public resources such as roads, water supply, power and telecommunications

**Integrated Pest Management** | The implementation of pest prevention and control through increased understanding of natural lifecycles and environmentally conscious efforts

**Invasive species** | Species that begin to thrive in environments they are not native to often at the expense of the native species

**Kelp farming** | Cultivating and harvesting seaweed from the ocean to provide a more environmentally friendly, alternative nutrient source to current agriculture practices on land

**Keystone species** | Species that stabilize an ecosystem through interactions, as prey or predator, with other species. The collapse of this population would cause widespread harm to other species and result in a drastic change or collapse of the ecosystem as a whole

**Lab grown meat** | Meat that is artificially cultivated through the scientific manipulation of cells, an alternative to raising livestock to be slaughtered

**Lag effect** | The ability of the ocean to absorb and store greenhouse gas emissions which delays the effect of these emissions until they are slowly released from the ocean

**Landfills** | Areas in the ground designated for our waste and then covered by layers of soil.

**Life Cycle Thinking** | The consideration of something's environmental impact throughout its existence, from the resources used to create it to its deterioration after it is disposed of

**Livestock and crop integration** | An agricultural practice that manages livestock and crops in the same space so they can mutually benefit from each other

**Lobbyist** | A professional who works to change laws on behalf of individuals or organizations

**Methane** | The second most abundant greenhouse gas in our atmosphere after carbon dioxide which is over twenty-five times more potent than carbon dioxide

**Migrate** | When humans or animal species move in large numbers from one region to another

**Mindfulness** | The practice of maintaining a nonjudgmental state of heightened or complete awareness of one's thoughts, emotions, or experiences on a moment-to-moment basis

**Mitigation efforts** | The act of limiting harm from something bad

**Net zero carbon** | Balancing the amount of carbon that is added and removed from the atmosphere, so in theory, the carbon one produces is completely offset by removing carbon elsewhere and no additional carbon is added into the atmosphere

**Neutralize** | Rendering something ineffective or harmless.

**“Nocebo” effect** | The opposite of the placebo effect where negative consequences are more likely to occur if they are expected

**No-till farming** | Planting without turning up the top layer of soil, this can increase organic matter and decrease erosion

**Nuclear fission** | Splitting the nucleus of an atom which releases large amounts of energy

**Organic farming** | Farming without the use of synthetic fertilizers or pesticides

**Organism** | Any individual life form, from a plant or animal to a single living cell

**Pesticides** | A mixture of substances, hazardous to humans and the environment, used to prevent or kill pests, including insecticides, herbicides and fungicides

**Photovoltaic cells** | A device that converts light energy into electricity

**Photovoltaic effect** | The generation of electricity from exposure to light

**Photovoltaics (PV)** | The conversion of light into electricity using semiconducting materials

**Placebo effect** | The phenomenon where a beneficial reaction occurs if it is expected or believed to occur without any actual tangible stimulus for that reaction

**Pollutants** | A substance in an environment which exists at a level of concentration that harms organisms

**Practicable solutions** | Solutions that are feasible and can be put into practice with the resources available

**Reciprocal relationships** | Relationships that are mutually beneficial to both parties

**Renewable energy** | Energy produced from sources that can not be depleted

**Resilience** | The ability to recover and thrive after difficulties or harm

**Snowpack** | The total amount of packed and compressed snow on the ground

**Soil degradation** | The depletion of soil and organic matter due to poor management and erosion

**Solar energy** | The renewable energy produced by light and heat from the sun

**Solar Radiation** | Sunlight

**Steward** | Someone who both utilizes and protects the natural world in a responsible manner

**Sustainability** | The ability to interact within the environment while maintaining a balanced ecosystem, so resources can be replenished indefinitely

**Sustainable agriculture** | Farming to meet human needs while maintaining a healthy ecosystem and natural resources for future generations

**Symbiotic** | A mutually beneficial relationship where organisms survive and thrive in close proximity to each other and each one fulfills a need of the other

**Synthetic Fertilizers** | Fertilizers that are man made, inorganic, and not occurring naturally in the environment

**Systemic Changes** | Change that extends to industry, corporations and governments affecting how society thinks and acts

**The Civil Rights Movement** | The political movement to end institutional racial segregation and discrimination throughout the United States

**Tipping elements** | Parts of the Earth's natural systems that were previously stable but could reach a point, due to climate change, where they change drastically and significantly disrupt the natural processes around them

**Topsoil** | The top layer of soil made of organic matter and microorganisms which provide essential nutrients

**U.S. Environmental Protection Agency (EPA)** | The federal agency charged with conserving natural resources and preserving land, air and water for future generations

**Wind energy** | Electricity produced when wind rotates turbines to run a generator

**Wind turbines** | The mechanism that wind rotates to generate electricity

**World Climate Conferences** | A series of international meetings, beginning in 1979 and organized by the World Meteorological Organization (WMO), about global climate issues, climate research, and forecasting

## Resources

[Britannica](#)

[Cambridge Dictionary](#)

[Collins Dictionaries](#)

[Diffen](#)

[EPA United States Environmental Protection Agency](#)

[Google Dictionary](#)

[Merriam-Webster Dictionary](#)

[NASA – Global Warming vs. Climate Change](#)

[National Geographic Resource Library](#)

[National Oceanic and Atmospheric Administration \(NOAA\)](#)

[United Nations – What Is Climate Change?](#)

[UN Environment Programme](#)

[Wikipedia](#)

# Resources

In this chapter:

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## Solutions

- Drawdown - Table of Solutions (also see the physical book included in the kit)  
<https://www.drawdown.org/solutions/table-of-solutions>
- United Nations Environment Programme - 10 ways you can help fight the climate crisis  
<https://www.unep.org/news-and-stories/story/10-ways-you-can-help-fight-climate-crisis>
- Individual Solutions to Climate Change - The Years Project  
<https://theyearsproject.com/latest/individual-solutions-to-climate-change>
- 9 things you can do about climate change - Imperial College London  
<https://www.imperial.ac.uk/stories/climate-action/>
- United Nations - Start with these ten actions! - <https://www.un.org/en/actnow/ten-actions>
- What are the solutions to climate change? - Greenpeace  
<https://www.greenpeace.org.uk/challenges/climate-change/solutions-climate-change/>
- 10 Solutions for Climate Change - Scientific American  
<https://www.scientificamerican.com/article/10-solutions-for-climate-change/>
- What You Can Do About Climate Change - United States Environmental Protection  
<https://www.epa.gov/climate-change/what-you-can-do-about-climate-change>
  - [Energy](#)
  - [Waste](#)
  - [Transportation](#)
  - [Water](#)
  - [Environmental Justice \(EJ\)](#)
  - [Do More!](#)
- Could new technology solve climate change? - London School of Economics  
<https://www.lse.ac.uk/granthaminstitute/news/could-new-technology-solve-climate-change/>
- Center for Climate and Energy Solutions
  - Home Improvement - <https://www.c2es.org/content/home-improvement/>
  - Reducing carbon footprint - <https://www.c2es.org/category/climate-solutions/reducing-your-carbon-footprint/>

## Organizations

- A list of environmental groups in Colorado: <https://www.environmentalgroups.us/colorado/>
- <https://350colorado.org/> - "The largest Colorado-based grassroots network focused on taking action to stop climate change."
- <https://www.sunrisemovement.org/> - "The Sunrise Movement is a youth movement to stop climate change and create millions of good jobs in the process. We're building an army of young people to make climate change an urgent priority across America, end the corrupting influence of fossil fuel



executives on our politics, and elect leaders who stand up for the health and wellbeing of all people.”

- <https://www.ran.org/> - “Rainforest Action Network preserves forests, protects the climate and upholds human rights by challenging corporate power and systemic injustice through frontline partnerships and strategic campaigns.”
- <https://www.dosomething.org> - “Young people have ignited a global movement to solve our climate crisis, and you can join them. Whether it’s marching, recycling, planting trees, or conserving water, we’ve got easy and actionable ways to Do Something for the environment. Join a campaign below to get started. Let’s Do This!”
- <https://ourkidsclimate.org/> - “Our Kids’ Climate was started in 2015, by Swedish parent group Vara Barns Klimat to bring the perspective of concerned parents to the Paris Climate Summit.”
- <https://juliesbicycle.com/> - “Julie’s Bicycle is a pioneering not-for-profit, mobilizing the arts and culture to take action on the climate and ecological crisis.”
- <https://www.ienearth.org/> - “Established in 1990 within the United States, IEN was formed by grassroots Indigenous peoples and individuals to address environmental and economic justice issues (EJ). IEN’s activities include building the capacity of Indigenous communities and tribal governments to develop mechanisms to protect our sacred sites, land, water, air, natural resources, health of both our people and all living things, and to build economically sustainable communities.”
- <https://www.epa.gov/> - “The mission of [the United States Environmental Protection Agency] is to protect human health and the environment.”
- <https://www.c40.org/> - “A global network of mayors taking urgent action to confront the climate crisis and create a future where everyone can thrive.”
- <https://citizensclimatelobby.org/about-ccl/chapters/#> - “Citizens’ Climate Lobby organizes by establishing local chapters in congressional districts. If you don’t live near a CCL chapter, we will connect you with other CCL volunteers in your state. Working as a team, in your chapter or in your state, you’ll experience the profound difference people can make by empowering and inspiring their elected representatives, local media, and community.”
- <https://climatenetwork.org/> - “Climate Action Network (CAN) is a global network of more than 1,900 civil society organisations in over 130 countries driving collective and sustainable action to fight the climate crisis and to achieve social and racial justice. CAN convenes and coordinates civil society at the UN climate talks and other international fora.”
- <https://www.eldersclimateaction.org/> - “We are elders, including grandparents, great aunts and great uncles who care about the future for all children. As Elders Climate Action members, we are determined to do all we can to leave a sustainable planet for future generations.”

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- <https://www.foei.org/> - "Friends of the Earth International is the world's largest grassroots environmental federation with 73 national member groups and millions of members and supporters around the world."
  - <https://www.climatecardinals.org/> - "Climate Cardinals is an international youth-led nonprofit working to make the climate movement more accessible to those who don't speak English. We aim to educate and empower a diverse coalition of people to tackle the climate crisis."
  - <https://www.greenpeace.org/usa/> - "Greenpeace is a global network of independent campaigning organizations that use peaceful protest and creative communication to expose global environmental problems and promote solutions that are essential to a green and peaceful future."
  - <https://rebellion.global/> - "Life on Earth is in crisis. Our climate is changing faster than scientists predicted and the stakes are high. Biodiversity loss. Crop failure. Social and ecological collapse. Mass extinction. We are running out of time, and our governments have failed to act. Extinction Rebellion was formed to fix this."
  - <https://fridaysforfuture.org/> - "We are fighting for our future and our lives because they are directly threatened by the climate crisis and the ecological breakdown. We are taking action against it because we want to protect the beauty of the earth, the diversity of species and the lives of all beings. Our goal is to overcome the climate crisis and to create a society that lives in harmony with its fellow beings and its environment. "
  - <https://www.edf.org/> - Environmental Defence Fund - "We began in 1967, as a scrappy group of scientists and a lawyer on Long Island, New York, fighting to save osprey from the toxic pesticide DDT. Using scientific evidence, our founders got DDT banned nationwide. Today, we're one of the world's leading environmental organizations. In the U.S., Fortune magazine called our board one of the country's most influential nonprofit boards. And science still guides everything we do."
  - <https://earthjustice.org/> - "Earthjustice is the premier nonprofit public interest environmental law organization. We wield the power of law and the strength of partnership to protect people's health, to preserve magnificent places and wildlife, to advance clean energy, and to combat climate change."
  - <https://ecocycle.org/> - "A mission-driven, nonprofit social enterprise spreading Zero Waste solutions in Boulder County and beyond."
  - <https://www.ourclimatevoices.org/> - "Our mission is to humanize the climate disaster through storytelling, contribute to a shift in the climate change dialogue that puts the voices of those most impacted at the forefront of the conversation, and to connect people with ways to support the community-based climate solution-making work that frontline and vulnerable communities are already doing to combat climate impacts."
  - <https://www.wlrv.org/> - "Wildlands Restoration Volunteers (WRV) is a Colorado nonprofit 501(c)(3) that organizes thousands of volunteers each year to complete more than 150 conservation projects throughout Colorado." Their mission is, "Building diverse communities that care for the land."

Volunteering with Wildlands Restoration Volunteers is a great way to gain hands-on experience with natural resource conservation and connect to your community.

- <https://resourcecentral.org/>- Resource Central is “an award-winning nonprofit in Boulder, Colorado determined to make conservation so simple that you don’t even realize you’re doing it.” Resource Central provides programs to help front range community members save water, conserve energy, and reduce waste.
- <https://www.clientearth.org/> - “We are a team of over 250 people across eight offices, dedicated to protecting life on Earth. We work in over 50 countries, ingeniously using the law to create systemic change. We focus on the most pressing environmental challenges, because a future in which people and planet thrive together isn't just possible - it's essential.”
- <https://womeninsustainability.org/> - “Women in Sustainability is an inclusive organization that brings together women and allies who are passionate about environmental sustainability to connect, learn, and collaborate to fight climate change and social injustice through education and advocacy.”
- <https://coloradowaterwise.org/> - “Colorado WaterWise represents the Colorado water conservation community. We connect stakeholders that are invested in water efficiency in the State of Colorado in order to foster innovation and dissemination of education and technology.”
- <https://ecocycle.org/> - “Eco-Cycle is one of the oldest mission-based recyclers and Zero Waste organizations in the US, and an innovator in resource conservation. We perform mission-based business activities, such as operating the Boulder County Recycling Center, providing Zero Waste business services, and creating the nation’s first Center for Hard-to-Recycle Materials (CHaRM).”

## Colorado Specific

- Colorado State University extension provides extensive, quality resources on a variety of topics including agriculture, drought, energy and natural resources in Colorado.  
<https://extension.colostate.edu/>
- ‘How Colorado’s Changing Climate is Putting Children’s Health at Risk’  
<https://collective.coloradotrue.org/stories/how-colorados-changing-climate-is-putting-childrens-health-at-risk/>
- ‘Q&A: Colorado State climatologist on record heat, wildfire outlook and climate change’  
<https://source.colostate.edu/record-heat-colorado-uk-forecasts-wildfires/>
- ‘In Colorado, climate change presents a broad range of challenges’ - Colorado Water Board Conservation Board <https://cwcb.colorado.gov/focus-areas/hazards/climate>
- ‘Building on Success: Colorado Makes Big Additional Investments in Climate. What’s Next?’  
<https://rmi.org/colorado-makes-big-additional-investments-in-climate/>

- Recycle Colorado - Search for a recycling organization near you  
[https://www.recyclecolorado.org/index.php?option=com\\_mcdirectorysearch&view=search&id=2000400#/](https://www.recyclecolorado.org/index.php?option=com_mcdirectorysearch&view=search&id=2000400#/)
- Conservation in a Changing Climate <https://climatechange.ita.org/region-west/colorado/>
- 'New Report: Are Colorado's Communities Prepared for Climate Change's Impacts on Human Health?' - The Denver Foundation-  
<https://denverfoundation.org/2022/06/new-report-are-colorados-communities-prepared-for-climate-changes-impacts-on-human-health/>
- Colorado's climate policy profile by Climate XChange  
<https://climate-xchange.org/network/map/colorado/>
- Colorado recycling yearly totals from Colorado Department of Public Health & Environment -  
<https://cdphe.colorado.gov/colorado-recycling-totals>
- Colorado Climate Center - Providing information and expertise on Colorado's complex climate  
<https://climate.colostate.edu/>
- 'Charting Colorado's Vulnerability to Climate Change'  
<https://toolkit.climate.gov/case-studies/charting-colorado%E2%80%99s-vulnerability-climate-change>
- Climate risks in Colorado - <https://statesatrisk.org/colorado/all>
- Impacts in Colorado - CU Boulder Environmental Center  
<https://www.colorado.edu/center/energy-climate-justice/general-energy-climate-info/climate-change/impacts-colorado>
- 'Taking Action on Climate Change in Colorado'  
<https://www.nature.org/en-us/about-us/where-we-work/united-states/colorado/stories-in-colorado/climate-change-action/>

## Learning

- A list of the best available student and educators resources related to global climate change, including NASA products. <https://climate.nasa.gov/for-educators/>
- 'What is climate change? A really simple guide' - BBC -  
<https://www.bbc.com/news/science-environment-24021772>
- <https://climatescience.org>
  - Does Personal Action Matter? <https://climatescience.org/advanced-personal-action>
- Ecological Footprints
  - [www.footprintcalculator.org](http://www.footprintcalculator.org)
  - <https://data.footprintnetwork.org/>
  - <https://www.nature.org/en-us/get-involved/how-to-help/carbon-footprint-calculator/>

- 'Reliable scientific sources on the environment and climate change' - Humanist Climate Action - <https://humanists.uk/humanist-climate-action/reliable-scientific-sources-on-the-environment-and-climate-change/>
- Online Climate Resources to Explore With Your Grandchildren - Elders Climate Action - <https://www.eldersclimateaction.org/with-your-grandchildren-kidswebsites/>
- INFOGRAPHIC: Five Fast Facts about Nuclear Energy (2020) - <https://www.energy.gov/ne/articles/infographic-five-fast-facts-about-nuclear-energy-2020>
- <https://www.energystar.gov/> - "ENERGY STAR® is the government-backed symbol for energy efficiency, providing simple, credible, and unbiased information that consumers and businesses rely on to make well-informed decisions."
  - Find Energy Star certified products <https://www.energystar.gov/productfinder>
- Essential Wikimedia pages (for use as an introduction and not as a definitive source)<sup>1</sup>
  - Climate crisis [https://en.wikipedia.org/wiki/Climate\\_crisis](https://en.wikipedia.org/wiki/Climate_crisis)
  - Climate change [https://en.wikipedia.org/wiki/Climate\\_change](https://en.wikipedia.org/wiki/Climate_change)
  - Climate change denial [https://en.wikipedia.org/wiki/Climate\\_change\\_denial](https://en.wikipedia.org/wiki/Climate_change_denial)
  - Holocene extinction [https://en.wikipedia.org/wiki/Holocene\\_extinction](https://en.wikipedia.org/wiki/Holocene_extinction)
  - Anthropocene <https://en.wikipedia.org/wiki/Anthropocene>
  - Quotes about global warming from Wikiquote (includes quotes from a lot of different sources, including climate deniers): [https://en.wikiquote.org/wiki/Global\\_warming](https://en.wikiquote.org/wiki/Global_warming)
  - Quotes about sustainability <https://en.wikiquote.org/wiki/Sustainability>
- Online facts sheets by Earth Day <https://www.earthday.org/factsheets/>
- How Climate Change Affects the LGBTQ+ Community - Earth Day - <https://www.earthday.org/how-climate-change-affects-the-lgbtq-community/>

## Stories/Reporting

- Our Climate Voices is an anthology of stories that amplifies first-person climate change narratives - <https://www.ourclimatevoices.org/>
- Colorado stories from the Nature Conservancy - <https://www.nature.org/en-us/about-us/where-we-work/united-states/colorado/stories-in-colorado>
- Climate reporting from Colorado Public Radio - <https://www.cpr.org/category/environment/climate-change/>

<sup>1</sup> [https://en.wikipedia.org/wiki/Wikipedia:Wikipedia\\_is\\_not\\_a\\_reliable\\_source](https://en.wikipedia.org/wiki/Wikipedia:Wikipedia_is_not_a_reliable_source)

- Digital Storytelling Toolkit for the Climate Movement - 350 - <https://trainings.350.org/storytelling-toolkit/>
- The New York Times Climate Hub - <https://climatehub.nytimes.com/>
- How climate storytelling helps people navigate complexity and find solutions - The Conversation - <https://theconversation.com/how-climate-storytelling-helps-people-navigate-complexity-and-find-solutions-185354>
- How Storytelling Can Help the Climate Cause - New York Times Events - [https://www.youtube.com/watch?v=0rTkLRcvjU4&ab\\_channel=NewYorkTimesEvents](https://www.youtube.com/watch?v=0rTkLRcvjU4&ab_channel=NewYorkTimesEvents)
- Rich Americans Have Higher Carbon Footprints Than Other Wealthy People - Scientific American <https://www.scientificamerican.com/article/rich-americans-have-higher-carbon-footprints-than-other-wealthy-people/>
- Investments of 125 billionaires have the same carbon footprint as France, study finds <https://www.npr.org/2022/11/09/1135446721/billionaires-carbon-dioxide-emissions>
- 'Carbon footprint gap' between rich and poor expanding, study finds <https://www.theguardian.com/environment/2022/feb/04/carbon-footprint-gap-between-rich-poor-expanding-study>
- This is what we need to invent to fight climate change - Vox <https://www.vox.com/23042818/climate-change-ipcc-wind-solar-battery-technology-breakthrough>
- "An educational and artistic forum for sharing personal stories about the changing climate." <https://www.climatestoriesproject.org/>
- 'This Woman Wants to Destroy Your Lawn' ... And replace it with something better. Why Heather McCargo and the Wild Seed Project want us all to think differently about what we plant [https://downeast.com/land-wildlife/this-woman-wants-to-destroy-your-lawn/?utm\\_source=pocket-newtab](https://downeast.com/land-wildlife/this-woman-wants-to-destroy-your-lawn/?utm_source=pocket-newtab)
- 'This Maine home can stay 70 degrees without a furnace, even when it's freezing outside' <https://www.mainepublic.org/environment-and-outdoors/2023-01-25/this-maine-home-can-stay-70-degrees-without-a-furnace-even-when-its-freezing-outside>
- 'The enormous heat pumps warming cities' <https://www.bbc.com/future/article/20230131-can-city-dwellers-ever-have-heat-pumps>
- 'Is Peak Climate Alarmism Behind Us?' <https://www.nytimes.com/2023/01/18/opinion/climate-alarmism.html>
- 'Colorado River crisis is so bad, lakes Mead and Powell are unlikely to refill in our Lifetimes' <https://www.latimes.com/california/story/2023-02-05/colorado-river-reservoirs-unlikely-to-refill-experts-say>

## Games

- Games for a new climate: "In recent years the Climate Centre and its partners have designed at least 45 games about humanitarian issues like disaster preparedness, gender, food security, health, migration. Across five continents, Red Cross Red Crescent volunteers, government officials, farmers, schoolchildren, meteorologists, students and climate-policy negotiators have used our games." [https://www.climatecentre.org/priority\\_areas/innovation/climate-games/](https://www.climatecentre.org/priority_areas/innovation/climate-games/)

- “The Cranky Uncle game uses cartoons and critical thinking to fight misinformation.”  
<https://crankyuncle.com/>
- “The Cloud Institute uses The Fish Game to start the conversation about education for sustainability w/ students and stakeholders.: <https://cloudinstitute.org/fish-game>
- NASA Climate Kids includes games, resources, and activities that entertainingly teach important ecological concepts <https://climatekids.nasa.gov/menu/play/>
- Games for Change: “PLAY THESE GAMES ABOUT 'CLIMATE CHANGE' AND GET INSPIRED TO CREATE AN ORIGINAL GAME ON THE TOPIC!”  
<https://gamesforchange.org/studentchallenge/nyc/climate-change/>
- Museums & CLimate Change Network list of games: <https://mccnetwork.org/games>
- The Climate Game — Can you reach net zero? - Financial Times <https://ig.ft.com/climate-game/>

### Articles:

- ‘Can board games teach us about the climate crisis? Game creators say yes’  
<https://www.theguardian.com/environment/2023/jan/28/board-games-climate-crisis-daybreak>
- ‘Can video games change people’s minds about the climate crisis?’  
<https://www.theguardian.com/games/2023/jan/26/can-video-games-change-peoples-minds-about-the-climate-crisis>
- ‘Play Your Way to a Better World? 9 Video Games That Can Help Solve Environmental Issues’  
<https://www.ecowatch.com/video-games-climate-change.html>

## Free Online Videos

### Just Eat It: A Food Waste Story, 2020 (runtime: 1:13:20)

[https://www.youtube.com/watch?v=KUHdTDwdq8U&ab\\_channel=FREEMOVIES](https://www.youtube.com/watch?v=KUHdTDwdq8U&ab_channel=FREEMOVIES)

We all love food. As a society, we devour countless cooking shows, culinary magazines and foodie blogs. So how could we possibly be throwing nearly 50% of it in the trash? Filmmakers and food lovers Jen and Grant dive into the issue of waste from farm, through retail, all the way to the back of their own fridge. After catching a glimpse of the billions of dollars of good food that is tossed each year in North America, they pledge to quit grocery shopping and survive only on discarded food. What they find is truly shocking.

### Colorado Voices: Climate Change, 2022, Rocky Mountain PBS (runtime: 26:40)

[https://www.youtube.com/watch?v=-kPhi2AHNto&ab\\_channel=RockyMountainPBS](https://www.youtube.com/watch?v=-kPhi2AHNto&ab_channel=RockyMountainPBS)

Coloradans face climate change effects first-hand throughout all the seasons. From record high-temperatures to changes in water systems, the impacts are not going unnoticed. Many Coloradans are now coming up with big and small ways to do their part to help the environment.



### **Single-Stream Recycling -- Leading the Way to Zero Waste, 2011 (runtime: 15:16)**

<http://www.youtube.com/watch?v=5YaTpL8nl7c>

Get an in-depth look at the single-stream recycling process at the Boulder County Recycling Center. The 15-minute tour begins at the curbside recycling bin and follows the single-stream materials to the tipping floor of the Boulder County Recycling Center.

### **Plastic Bag by Ramin Bahrani, 2009 (runtime: 18:02)**

[https://www.youtube.com/watch?v=VkbT5007scc&ab\\_channel=GiganticStudios](https://www.youtube.com/watch?v=VkbT5007scc&ab_channel=GiganticStudios)

In a not too distant future, a Plastic Bag (voice of Werner Herzog) goes on an epic journey in search of its lost Maker, wondering if there is any point to life without her. ([Wikipedia](#))

### **Climate Scientist Answers Earth Questions From Twitter | Tech Support | WIRED, 2022 (runtime: 15:07)**

[https://www.youtube.com/watch?v=GR46\\_ohNh9U&ab\\_channel=WIRED](https://www.youtube.com/watch?v=GR46_ohNh9U&ab_channel=WIRED)

Climate scientist Dr. Peter Kalmus answers the internet's burning questions about our planet. Are there any other planets we can live on yet? Why is the coral reef dying? How does the carbon cycle work? How much longer until Florida is underwater? Dr. Kalmus answers all these questions and much more.

### **Causes and Effects of Climate Change | National Geographic (runtime: 3:04)**

What causes climate change (also known as global warming)? And what are the effects of climate change? Learn the human impact and consequences of climate change for the environment, and our lives.

[https://www.youtube.com/watch?v=G4H1N\\_yXBIA&ab\\_channel=NationalGeographic](https://www.youtube.com/watch?v=G4H1N_yXBIA&ab_channel=NationalGeographic)

### **Ted Talks (runtime generally less than 20 minutes)**

Climate change: It's real, and our response will take two forms: slowing it down if we can ... and learning to live with the change we can't stop anymore. Watch these TED Talks for a primer on the issue of our times.

<https://www.ted.com/topics/climate+change>



## **Michael Moore Presents: Planet of the Humans | Full Documentary | Directed by Jeff Gibbs (runtime: 1:39:56)**

Michael Moore presents Planet of the Humans, a documentary that dares to say what no one else will — that we are losing the battle to stop climate change on planet earth because we are following leaders who have taken us down the wrong road — selling out the green movement to wealthy interests and corporate America. This film is the wake-up call to the reality we are afraid to face: that in the midst of a human-caused extinction event, the environmental movement's answer is to push for techno-fixes and band-aids. It's too little, too late. Featuring: Al Gore, Bill McKibben, Richard Branson, Robert F Kennedy Jr., Michael Bloomberg, Van Jones, Vinod Khosla, Koch Brothers, Vandana Shiva, General Motors, 350.org, Arnold Schwarzenegger, Sierra Club, the Union of Concerned Scientists, Nature Conservancy, Elon Musk, Tesla.

[https://www.youtube.com/watch?v=Zk11vl-7czE&ab\\_channel=MichaelMoore](https://www.youtube.com/watch?v=Zk11vl-7czE&ab_channel=MichaelMoore)

## **Greta Thunberg to world leaders: 'How dare you? You have stolen my dreams and my childhood' (runtime: 4:34)**

'You have stolen my dreams and my childhood with your empty words,' climate activist Greta Thunberg has told world leaders at the 2019 UN climate action summit in New York.

[https://www.youtube.com/watch?v=TMrtLsQbaok&ab\\_channel=GuardianNews](https://www.youtube.com/watch?v=TMrtLsQbaok&ab_channel=GuardianNews)

## **Climate Change 101 with Bill Nye | National Geographic (runtime 4:09)**

Climate Change is a real and serious issue. In this video Bill Nye, the Science Guy, explains what causes climate change, how it affects our planet, why we need to act promptly to mitigate its effects, and how each of us can contribute to a solution.

[https://www.youtube.com/watch?v=EtW2rrLHs08&ab\\_channel=NationalGeographic](https://www.youtube.com/watch?v=EtW2rrLHs08&ab_channel=NationalGeographic)

## **Climate Scientist Answers Earth Questions From Twitter | Tech Support | WIRED (runtime: 15:07)**

Climate scientist Dr. Peter Kalmus answers the internet's burning questions about our planet. Are there any other planets we can live on yet? Why is the coral reef dying? How does the carbon cycle work? How much longer until Florida is underwater? Dr. Kalmus answers all these questions and much more.

[https://youtu.be/GR46\\_ohNh9U](https://youtu.be/GR46_ohNh9U)



## **Our Changing Climate, playlist of climate topic videos by PBD Terra (runtime varies)**

[https://www.youtube.com/watch?v=eGAVhTrVaXg&list=PLnNZYWyBGJ1HPCI4hskew4h-PxrkaKmfr&ab\\_channel=PBSTerra](https://www.youtube.com/watch?v=eGAVhTrVaXg&list=PLnNZYWyBGJ1HPCI4hskew4h-PxrkaKmfr&ab_channel=PBSTerra)

## **Earth currently experiencing a sixth mass extinction, according to scientists | 60 Minutes segment (runtime: 13:16)**

Leading biologist tells Scott Pelley humans would need “five more Earths” to maintain our current way of life.

[https://www.youtube.com/watch?v=6TqhcZsxrPA&ab\\_channel=60Minutes](https://www.youtube.com/watch?v=6TqhcZsxrPA&ab_channel=60Minutes)

## **Climate Lab, a six-part series produced by the University of California in partnership with Vox (runtime varies)**

Hosted by Emmy-nominated conservation scientist Dr. M. Sanjayan, the videos explore the surprising elements of our lives that contribute to climate change and the groundbreaking work being done to fight back. Featuring conversations with experts, scientists, thought leaders and activists, the series takes what can seem like an overwhelming problem and breaks it down into manageable parts: from clean energy to food waste, religion to smartphones.

[https://www.youtube.com/watch?v=DkZ7BJQupVA&list=PLJ8cMiYb3G5fP5oq01TBp9fgh70vDDSM&ab\\_channel=Vox](https://www.youtube.com/watch?v=DkZ7BJQupVA&list=PLJ8cMiYb3G5fP5oq01TBp9fgh70vDDSM&ab_channel=Vox)

## **Film lists:**

- Museums & Climate Change Network film list, including some links to streams: <https://mccnetwork.org/film>
- ‘10 Climate Change Movies To Watch in 2022’ <https://earth.org/climate-change-movies/>
- ‘6 Must-See Environmental Films and TV Shows of 2023’ <https://www.ecowatch.com/environmental-films-tv-shows-2023.html>
- Best Movies About Climate Change, Ranked <https://movieweb.com/best-movies-about-climate-change-ranked/#2040-2019>
- ‘Movies That Teach Kids About Climate Change’ <https://www.commonsemmedia.org/lists/movies-that-teach-kids-about-climate-change>
- ‘31 Must-Watch Climate Change Documentaries’
- <https://www.greenqueen.com.hk/best-climate-change-documentaries/>

## Conversations

- <https://livingroomconversations.org/>
  - [Climate Change](#)
  - [Climate of Unity](#)
  - [Energy and the Environment](#)
  - [Environment and Pollution](#)
- Speak up for the planet: Your guide to having climate change conversations - ClientEarth  
<https://www.clientearth.org/media/jhifo1e2/clientearth-guide-to-having-climate-conversations.pdf>
- Talk to children about the climate crisis - Our Kids' Climate  
<https://media.ourkidsclimate.org/2021/06/Talk-about-climate-guide-for-parents-2021-06-01.pdf>
- A Guide to Talking About Climate Change - nature.org  
<https://www.nature.org/en-us/about-us/where-we-work/united-states/idaho/stories-in-idaho/guide-to-talk-about-climate-change/>

[Climate Conversation Guide](#) - Climate for Change

Starting The Conversation – Five Tips On How To Talk To Climate Deniers In Your Family

<https://www.climaterealityproject.org/blog/starting-conversation-five-tips-how-talk-climate-deniers-your-family>

<https://rebellion.global/blog/2020/12/04/conversation-with-climate-sceptic/> 'How To Have a Conversation with a Climate Change Sceptic' - Extinction Rebellion

<https://climate-xchange.org/communicating-the-climate-crisis/> Communicating the Climate Crisis is a report by Maria Virginia Olano, Communications Director at Climate XChange. Includes resources and discussion on the challenges in climate communication & lessons on communicating the climate crisis.

<https://climatechangeconversationsinlibraries.org/resources/> – Ideas for climate change events; Material for reading, watching, listening; Solidarity, emotional support and inspiration; World Cafe (in a Box) –

## Podcasts

<https://www.degreespod.com/> A Matter of Degrees

“Join Dr. Leah Stokes and Dr. Katharine Wilkinson as they tell stories about the powerful forces behind climate change — and the tools we have to fix it.”

<https://gimletmedia.com/shows/howtosaveaplanet> How to Save a Planet

“Climate change. We know. It can feel too overwhelming. But what if there was a show about climate change that left you feeling... energized? One so filled with possibility that you actually wanted to

listen? Join us, journalist Alex Blumberg and a crew of climate nerds, as we bring you smart, inspiring stories about the mess we're in and how we can get ourselves out of it."

<https://podcasts.apple.com/us/podcast/the-climate-pod/id1469270123> The Climate Pod

"The Climate Pod is a wide-ranging conversation with leading experts on the politics, economics, activism, culture, science, and social justice issues at the heart of the climate crisis."

<https://podcasts.apple.com/us/podcast/reversing-climate-change/id1321759767> Reversing Climate Change

"A podcast about the different people, technologies, and organizations that are coming together to remove carbon dioxide from the atmosphere and reverse climate change."

[https://inlandoceancoalition.org/rising\\_tide\\_podcast/](https://inlandoceancoalition.org/rising_tide_podcast/) Rising Tide

"Hosted by Blue Frontier's Executive Director, David Helvarg and Inland Ocean Coalition's Executive Director, Vicki Nichols Goldstein. You will meet today's ocean champions, including senators, scientists, surfers, and youth activists. We will cover a range of issues, including climate change, overfishing, and plastic pollution. This podcast aims to give you information, inspiration, and motivation (along with a few laughs) to help understand our ocean world and make it better. The ocean is rising, so are we!"

<https://podcasts.apple.com/us/podcast/the-big-switch/id1571177675> The Big Switch

"To slow climate change, we need to transform our homes, buildings, cars, and economy quickly. "The Big Switch" explains how to rebuild the energy systems all around us. Dr. Melissa Lott of Columbia University brings together historical examples, current events, and incisive analysis to give listeners a deep understanding of the solutions to climate change."

<https://www.thisamericanlife.org/786/its-a-game-show/act-two-9> This American Life segment, 'You Bet Your Planet's Life!'

"Is it possible for the U.S. to reach the goals set by the Paris Agreement? What steps would we have to take to cut emissions by 50% by 2030? We challenge climate researcher Melissa Lott to get us to that number. (11 minutes)"

## Libraries

- "Library Leaders of the World Unite! The Sustainable Libraries Initiative (SLI) provides library leaders with a proven path forward to co-create libraries and communities that will thrive in the coming years." <https://sustainablelibrariesinitiative.org/>
- Green Libraries: Sustainable Libraries - Resources to help libraries go green. <https://guides.library.illinois.edu/green-libraries/overview/library-specific>
- "Resilient Communities: Libraries Respond to Climate Change, an initiative of the American Library Association (ALA), helps libraries engage their communities in programs and conversations that address the climate crisis." <https://www.ala.org/tools/programming/climatechange>

- 'A Call to Action on Climate Change for Libraries'  
<https://www.ala.org/news/member-news/2022/06/call-action-climate-change-libraries>
- 'Climate Change and Sustainability - Library programs focus on critical components of 21st-century science' <https://americanlibrariesmagazine.org/2019/10/09/climate-change-sustainability/>
- 'The Library's Role in Climate Literacy'  
<https://www.urbanlibraries.org/blog/the-librarians-role-in-climate-literacy>
- Supporting sustainability: what can librarians do?  
<https://www.springernature.com/gp/librarians/the-link/blog/blogposts-news-initiatives/what-librarians-can-do-to-support-sustainability/23146572>
- Advocacy and Action: How Libraries Across the Globe are Addressing Climate Change  
<https://worldlibraries.dom.edu/index.php/worldlib/article/view/594>
- WEBINAR: SUSTAINABLE THINKING FOR THE FUTURE OF LIBRARIES - Niche Academy  
<https://www.nicheacademy.com/blog/sustainable-thinking-for-the-future-of-libraries>

## Toolkits and other resources

- TURN IT AROUND! is a toolkit to help us radically reimagine education in response to the climate and ecological emergency. <https://turnitaroundcards.org/>
- <https://www.theclimateinitiative.org/toolkits/>
- <https://climatechangeresources.org/resources/>
- <https://www.pinterest.com/tcktcktck/climate-change-infographics/>
- <https://www.earthday.org/our-toolkits/>
- Digital Storytelling Toolkit for the Climate Movement - 350 -  
<https://trainings.350.org/storytelling-toolkit/>
- Create your own ecological footprint  
<https://www.overshootday.org/kids-and-teachers-corner/classroom-activities/>
- Free create your own jeopardy game  
[https://docs.google.com/presentation/d/1N\\_5IbXUY3y2PCuhFQ0YA7ZuREwC7ew1Q3fyILBnEBQA/edit#slide=id.p](https://docs.google.com/presentation/d/1N_5IbXUY3y2PCuhFQ0YA7ZuREwC7ew1Q3fyILBnEBQA/edit#slide=id.p)
- Create/print posters:
  - <https://www.canva.com/posters/templates/climate-change/>
  - <https://www.eldersclimateaction.org/action-tool-kit-2/posters-banners/>
  - <https://www.dearclimate.net/posters>
  - <https://www.raisingglobalkidizens.com/united-nations-sustainable-development-goals-coloring-poster/>
  - <https://www.printmag.com/illustration-design/posters-in-the-war-against-climate-change/>
  - <https://www.vecteezy.com/free-vector/climate-change-poster>



## Glossaries

- <https://www.unicef.org/lac/media/19321/file/climate-glossary-for-young-people.pdf>
- <https://greenecofriend.co.uk/eco-friendly-terminology/>
- Child Friendly Glossary Of Environmental Words  
<https://www.itsourplanettoo.co.uk/blog/child-friendly-environmental-glossary>
- ClimateChangeResources.org Glossary - <https://climatechangeresources.org/resources/glossary/>



Use your phone's camera to scan the QR code and download the digital version of this [binder](#).



# Further Reading

**Note:** PDFs of the documents listed below are available at <https://cslkits.cvlites.org> and in the digital version of the binder included on the USB key in the green binder.

## Contents

1. Fact sheet - North America Climate Change Impacts and Risks - Intergovernmental Panel on Climate Change (IPCC) - December 2022
2. Special Report: Global Warming Of 1.5 °C: Summary for Policymakers, IPCC
3. Climate Change FAQ, by the Environmental and Energy Study Institute - February 2021
4. Frequently Asked Questions, by the IPCC
5. Skeptic Arguments and What The Science Says, by skepticscience.com
6. Think Globally, Adapt Locally - Colorado Counties Health and Climate Index, by the Colorado Health Institute - June 2022
7. Colorado 2050: Why We Need Climate Resiliency To Protect Our Communities and Way of Life
8. Climate Change and Homelessness , by Colorado Coalition for the Homeless - Issue Brief 2022
9. Climate Change and Adaptation, Colorado Water Center - June 2021
10. Committing To Climate Action : Equitable Pathways For Meeting Colorado's Climate Goals, Evolved Energy, Gridlab, NRDC, Sierra Club - September 2020
11. Study: Climate Change Skepticism and Denial, by Oliver Mehling - January 2020
12. Report: The State of Recycling and Composting in Colorado 2022, by Eco-Cycle
13. Turn it around! An education guide to climate futures. Arizona State University and Artists' Literacies Institute - 2022
14. American Clean Power Association fact sheets
  - Clean Power Colorado
  - #JustTheFacts Clean Power + Climate
  - Wind Builds the Future in Host Communities, Quotes Sheet
  - Renewable Energy Makes the Grid More Reliable - American Clean Power
  - Wildlife and Windpower November 2020 - American Clean Power
15. Debunking Handbook, by various scholars - 2020
16. Climate glossary for young people, by UNICEF, 2020
17. CU Environmental Center Zero Waste Bullseye
18. Climate change questions for the classroom
19. Together We Can Make a Difference visualization, by the Environmental Protection Agency (EPA)
20. SMARTIE Goals Worksheet

# Feedback Form

## Instructions

Please tell us how you liked the Climate Crisis kit and help us improve by completing this paper feedback form. Please return the completed paper form with the kit at the end of your loan period. We really appreciate it!

## Part 1: Evaluation

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Community awareness about the Climate Crisis has increased as a result of this kit.					
Staff awareness about the Climate Crisis increased as a result of this kit.					
I am satisfied that the resources in this kit met the library's needs.					
This resource will help improve library services to the public.					
The loan period was adequate.					
I would recommend this kit to another library.					

(Over)

**Which parts of the kit did you find useful, and why?**

**Were there any parts of the kit that your library didn't use ? Why not?**

**How can we improve this kit?**

**Can you suggest additional topics?**

## **Part 2: How Your Library Used the Kit**

Please describe any of the activities or programs you used from this kit. Be as specific as possible. Include links, comments, and/or evaluation data when available.

\*\* Want another way to keep the conversation going and share your experiences with others? Visit our [online forum](#) and share what you are doing there. The forum is part of our online CSL Resource Kit web site: <http://cslkits.cvlites.org/discuss/> \*\*