

# Climate Crisis Plan

*How to reduce your emissions, as well as influence  
industries and government to take action on  
climate change now*

Philip Kent-Hughes



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# INTRODUCTION: ALL LIGHTS BLINKING RED

After 30 years of recognizing the problem, the situation with climate change has continued to get worse, and I wanted to know why. In 2021, world leaders met in Glasgow to discuss new pledges on climate action, and I watched with apprehension. At the conclusion, the United Nations Environment Programme judged the new reduction targets to be insufficient.<sup>1</sup> They estimated that this failure will commit global temperatures to warm by 2.4°C.<sup>2</sup> I was appalled and disappointed because I thought that after decades of meetings like this, real progress might happen this time.

The Chair of the IPCC (Intergovernmental Panel on Climate Change) addressed the delegates at Glasgow and provided an assessment of the dire situation that faces people all over the world:<sup>3</sup>

- Indisputably, human activities are causing climate change.
- Human influence is making extreme climate events, including heat waves, heavy rainfall, and droughts, more frequent and severe.
- Climate change is already affecting every region on Earth.
- Without immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to 1.5°C and even 2°C will be pushed beyond our reach.

After the pandemic started in 2020, global carbon dioxide (CO<sub>2</sub>) emissions went down a little, but it was only temporary, they rebounded to their highest level in history the following year.<sup>4</sup> The relentless increase in CO<sub>2</sub> means that levels are 50% higher than just 200 years ago.<sup>5</sup>

One thing is clear, for decades politicians, industry, and institutions have failed to reduce greenhouse gas emissions, and we cannot rely on them anymore. The promise of this book is to show how we—the people of the world—can encourage, influence, and compel urgent action now.

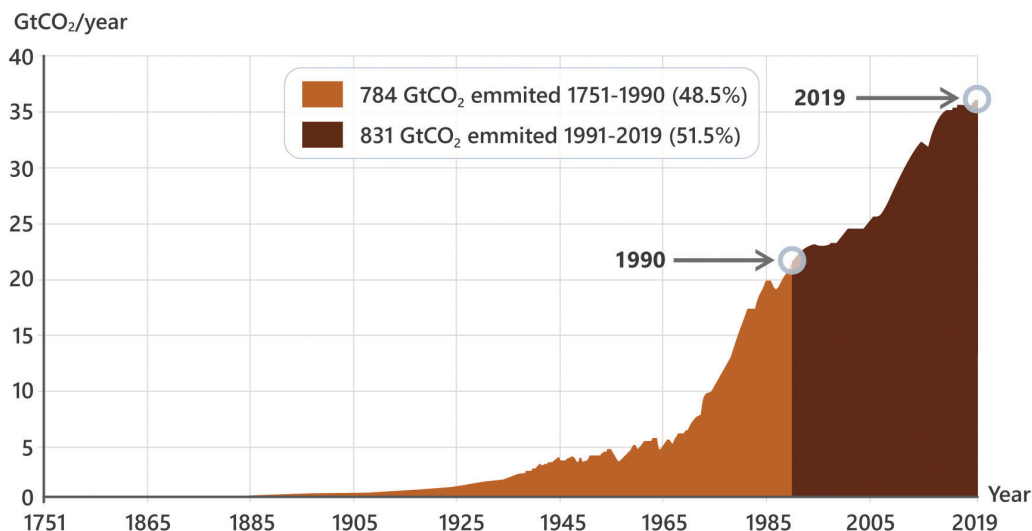
## Traditional Solutions Have Failed

The global science community raised the alarm at the First World Climate Conference in 1979.<sup>6</sup> Eleven years later, at the Second World Climate Conference, leaders agreed that “nations should now take steps towards reducing sources of greenhouse gases.”<sup>7</sup> However, instead of going down, global carbon dioxide emissions rose for the next three decades.<sup>8</sup> The situation has become so bad that more than half of all carbon emissions since 1751 were emitted since the 1990 agreement.<sup>9</sup>

Some people have said that technology will create all the solutions we need and solve the climate crisis for us. How has that worked out so far? Solar panels were first developed in 1883, and the energy industry took 137 years to develop the technology and begin implementing it. By 2021, solar only made up 3.6% of global electricity production.<sup>10</sup> New technology represents an essential opportunity; however, we can’t rely on technology alone. It will take people, industry, and governments working together to implement the technology on a wide scale so that emissions will reduce in time.



### Annual Global CO<sub>2</sub> Emissions



Sources: Carbon Budget Project (2017), Global Carbon Budget (2019), Peter Frumhoff (2014)

## Why I Started Writing This Book

In 2007, I was feeling disillusioned. Greenhouse gas emissions continued to increase, and no one seemed to have the answers. I wanted to act, so I joined climate protests and signed petitions calling on the government to show leadership on climate change. Despite changing community attitudes, politicians continued failing to take serious action. It frustrated me because the system didn't seem to work. I wanted to do more, so I created a website. I thought if people had the right information, then change would follow. I wasn't sure what difference I would make, but I needed to try.

## Screenshot of My Website in 2008



In 2015, when world leaders arrived in Paris for a major climate summit, I thought perhaps progress would be made. A treaty was signed with a goal to limit global warming, and it was agreed to reach peak greenhouse gas emissions as soon as possible.<sup>11</sup>

I was feeling optimistic in 2016 as there was no growth in emissions, but this didn't last long. Emissions increased again, and it wasn't an accident.<sup>12</sup> I thought I would try a different approach and started writing this book.

I had been working in emergency management for several years, helping organizations prepare for incidents that may threaten people's lives. I then began consulting in crisis management as well. This operates at a higher level, preparing the leadership team to respond to events that can threaten the viability of an organization.

I'd been working with the leadership teams from organizations in a range of industries, including education, manufacturing, transportation, and energy. Some of the clients I worked with had unusual circumstances and writing a plan for them required a tailored or even an unconventional approach. I have written responses, for instance, for an active armed offender, a hostile vehicle, and even a dangerous animal escape procedure for a zoo.

In 2019, there was debate in the media about declaring a climate emergency. This inspired me to include some principles of crisis and emergency management in this book. But something was still missing. I thought about how, when writing a crisis management plan, I talk with clients about anything that might prevent them from responding effectively. I realized that to create positive action on climate change, an important step would be to identify the problems and obstacles preventing progress.

One of the main obstacles has been fossil fuel corporations working against attempts to reduce emissions (outlined later in the "Establish the Situation" section.) They knew about the greenhouse effect and spent hundreds of millions of dollars on disinformation campaigns and political donations to delay a proper response. I realized that because the standard approaches of social movements were not working fast enough to address the climate crisis, we might need to use unconventional methods to create meaningful change. As a result, I decided to apply my experience in developing highly specialized emergency procedures to writing a plan to confront the climate crisis.

## A Better Vision for the Future

The climate crisis can sometimes look too complicated and large to be solved. But how can we change the future so that emissions start going down? The climate crisis we all face creates tension between the world we live in now and the one we are in the process of creating. But how do we get through the tension created by change? A few years ago, I experienced an interesting starting point. I volunteered with a local ecological group to help them write a strategy for action on climate change. After splitting into two groups, we were asked to close our eyes for a few minutes and imagine a future society in the year 2030. We were asked to picture in our minds what that lifestyle would look like and all the positive changes we wanted to see happen. Each group was asked to write “2030” in the middle of a large sheet of paper and then write all our ideas around it. At first, I found it difficult to imagine the future, but when we shared our ideas, it became easier.

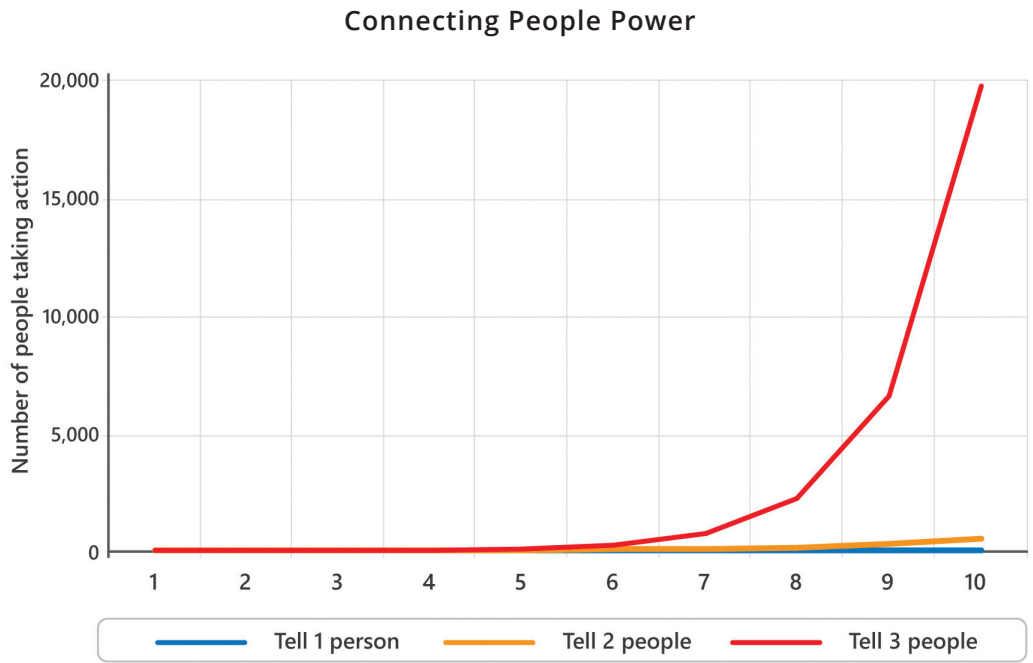
I did the same for this book. I started by trying to look over the horizon and imagine a better world that I could help create. I imagined a starting point for the future where there is a stable temperature favorable to life, people have access to healthy food, clean air, and water. This also included reliable power, transportation, and products provided sustainably, while protecting ecosystems and biodiversity. I also wanted the change to be something everyone could take part in. It’s not just about avoiding the many awful consequences of rising temperatures—there are many other benefits. If we remove fossil fuel air pollution, especially in cities, then the number of people affected by asthma will decrease. Cardiovascular disease and cancer will also decrease.<sup>13</sup> We can protect healthy forests, vibrant coral reefs, and a diverse array of life. I invite you to take a deep breath, then close your eyes and imagine the kind of future you want to help create. While you are doing this, imagine the feeling you will have living in a healthier and happier sustainable world. You could get a piece of paper and write “2030” in the middle and note some of these impressions so we can use them later.

Before a positive outcome can take place, an idea must happen first—then a decision to act, followed by the action itself. Once we decide what type of future we want, we can then turn it into reality.

## How Participating Can Help Cause Rapid Change

History has shown us that when large numbers of people stood up for an important issue, then transformational change soon followed. In the last 100 years, there have been many social movements that changed government policy, such as voting rights for women, civil rights in the United States, and marriage equality.

Greg Satell observed in his book *Cascades* that in the 21st century, there was a shift from the central role of a leader to the growing importance of networks. We can create significant momentum through regular and meaningful communication. For example, if I encourage 1 person to take action on climate change and they also encourage 1 person, then after 10 steps there will be 10 people taking action. That is pretty good, and this is already 10 times better than 1. However, if I tell 2 people and they each encourage 2 people to take action, then after 10 steps there will be 512 people taking part. If we encourage 3 people to act, then the number increases to 19,683! You can see this in the chart on the next page.



In real life, this happened when the idea for an international climate strike was inspired at the Global Youth Summit in 2015. Students from more than 70 countries took part while the United Nations Climate Summit was being held in Paris.<sup>14</sup> Then the numbers grew again when Swedish activist Greta Thunberg began protesting. People started telling and encouraging others through social media. Soon exponential growth was achieved, and millions of school children were protesting all around the world. Through expanding networks, the climate movement has grown rapidly to millions of people in more than 1,600 cities in nearly every country around the world.<sup>15</sup> When this grows to tens or hundreds of millions of people, we will change the course of history.

## Connecting People All Over the World



Source: Vit\_Mar on iStock

A United Nations Global Climate poll of 50 countries found that 64% of people believe that “climate change is a global emergency.” It concluded, “The voice of the people is clear—they want action on climate change.”<sup>16</sup> We need to recognize our power as a group. Now, more than at any time, people can change the course of history. We can share information with each other, shift our buying patterns, and demand positive action for all areas of business and industry. When we get many people to take action, we can create the momentum for permanent change. We have the power to influence corporations, industries, and governments. It’s up to us what kind of world we live in; we all have an interest in the future. We will solve the climate crisis when many people act at the same time to influence how industry operates.



## We Can Do This

Since the First World Climate Conference in 1979, more than 40 years have been wasted by delayed action; and the longer we wait to act, the more we will lose and the more the cost to adapt increases. With people and ecosystems already being affected globally, now is not the time to sit back and watch the world burn.

Think about this question: what are you willing to do to protect yourself and the people you care about? If you care about yourself and other people or life on this planet, you can easily become terrified or discouraged about how bad things are now. However, positive change never comes from submission, resignation, or despair. By acting now, we can be less worried about the future and know that we are playing our part in making the world a better place. How we decide to act now will determine the future of life on this planet. We already have many of the solutions, but to make this happen, we need as many people and organizations as possible to be involved to accelerate change.



*Source: Karsten Würth on Unsplash*



You can be part of this defining moment that changes the course of history. To back up this promise, I'll explain how I have changed my own life, and how I'll continue to make more changes. Together we can transform the world and make a better and more positive future for all life on Earth. If history has taught us one thing about change, it is that those who show up and take action shape the future. We should not wait for permission, and we should not wait for industry or governments anymore.

According to the IPCC 2022 report, there are "options in all sectors to at least halve emissions by 2030."<sup>17</sup> Therefore, there is no excuse for any failure to reduce emissions now. One day, the history books will tell the story of our time. I hope that because of what we do now, it will say that despite many obstacles, millions of people around the world rose together. And that every day more and more people took action, until there was an overwhelming tide of change, making the world a better place and protecting our beautiful home.

When enough people reduce emissions, communicate, and connect with each other, as well as influence industry and government to change, then we can cause global emissions to peak before 2025. Our continued commitment will then ensure that emissions will go down from that point on. We will change the direction of economies and human history. We will feel positive about the future, so that the earth and Nature are better off, and we will feel good about our place in the world.

## Earth from Space



# Using Crisis Management for the Climate Crisis

The layout of this book follows a similar structure to the process I use when writing a crisis management plan. I've adapted this approach to the climate crisis, as outlined below.

## **PART 1 The initial response and planning**

### **Step 1. Notifications**

How scientists have warned about climate change and its impacts

### **Step 2. Assessment**

Is climate change a crisis and what could escalate the problem?

### **Step 3. Mobilization**

Who can we encourage to be part of the solution?

### **Step 4. Establish the situation**

Defining problems and identifying obstacles

### **Step 5. Develop the crisis action plan**

The process and your personal objectives

## **PART 2 Implementing the actions**

### **Step 6. Implementation**

Step-by-step action checklists to help you reduce emissions, encourage others, and influence positive change

## **PART 3 Reviewing and updating the plan**

### **Step 7. Review progress**

See how much you have reduced your emissions and find out what areas need additional attention

### **Step 8. Update the plan**

Plan any additional actions and future progress

At the beginning of each step, a text box briefly explains the crisis management process. In some areas, additional detail has been moved from the main body of the book and into the appendixes. You can refer to them as you go along or read them at the end.

This book will help to provide a range of ways to reduce your own emissions and to communicate and connect with people. Some people might be happy using social media, or speaking face-to-face with friends, while others may prefer to work on their own. Other sections focus on how to influence and compel industries and government to act. Many ways are presented to help create change, so you can choose the ones that suit your situation. There will be some easy actions to start with, and I'll also give examples of how I applied them myself so you can see how they work.

# PART 1

## The Initial Response and Planning

“Without a sharp decline in greenhouse gas emissions by 2030, global warming will surpass 1.5°C in the following decades, leading to irreversible loss of the most fragile ecosystems, and crisis after crisis for the most vulnerable people and societies.”

—Intergovernmental Panel on Climate Change (IPCC)

*Special Report: Global Warming of 1.5°C*

## STEP 1. NOTIFICATIONS

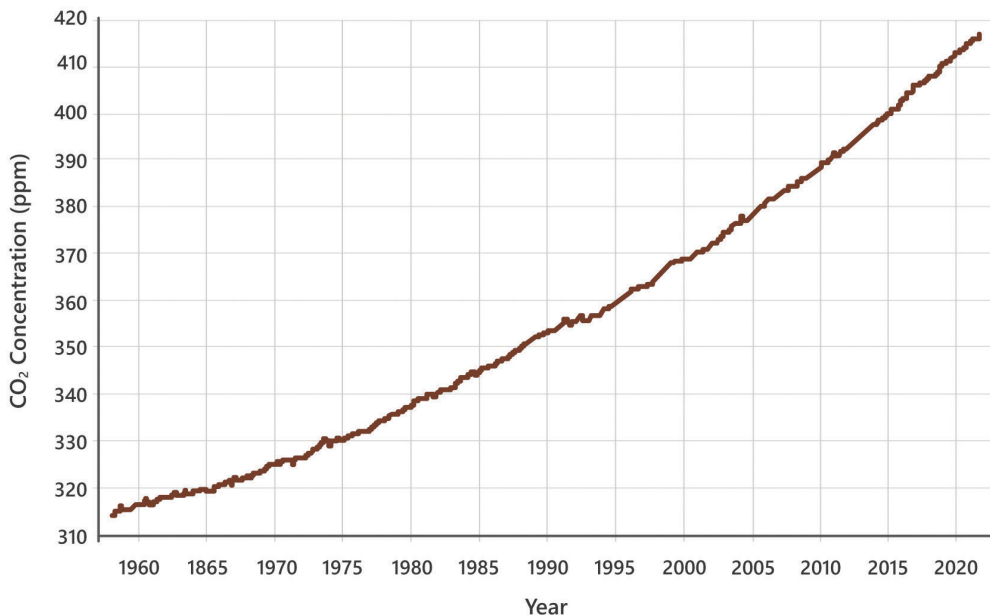
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As soon as an incident is identified, the crisis management team must be notified. It is essential that an early response is initiated, as this may save lives and, in some cases, even prevent a crisis from developing.

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One of the most important warnings to humanity was made by Dr. Ralph Keeling in the 1960s. He reported that the concentration of carbon dioxide (CO<sub>2</sub>) in the atmosphere was rising every year.<sup>18</sup> When CO<sub>2</sub> levels hit 415 parts per million (ppm) in 2019, it was higher than in the last 3 million years.<sup>19</sup>

Atmospheric Carbon Dioxide Sampled at Mauna Loa Observatory



Source: National Oceanic and Atmospheric Administration<sup>20</sup>

There have been many international gatherings to discuss the warnings on climate change:

- **1979** – First World Climate Conference held in Geneva.<sup>21</sup>
- **1988** – Intergovernmental Panel on Climate Change (IPCC) was established by the United Nations to review the science of climate change, anticipate impacts, and advise on potential response strategies.<sup>22</sup>
- **1990** – Second World Climate Conference agreed nations should reduce greenhouse gases and cautioned that the remaining uncertainties must not be an excuse for postponing the response.<sup>23</sup>
- **1997** – Kyoto Climate Summit committed industrialized countries to limit and reduce greenhouse gases.<sup>24</sup>
- **2015** – Paris Climate Agreement aimed to keep the temperature rise to 1.5°C or 2°C at a maximum by committing countries to submit plans for reducing emissions.<sup>25</sup>
- **2019** – “World Scientists’ Warning to Humanity”: “Despite 40 years of global climate negotiations, with few exceptions, we have generally conducted business as usual and have largely failed to address this predicament.”<sup>26</sup> This statement was signed by 11,258 scientists from 153 countries.<sup>27</sup>

The UN Secretary-General António Guterres made a speech in New York and acknowledged that “Climate change is the defining issue of our time — and we are at a defining moment.” He also said that “Scientists have been telling us for decades. Repeatedly. Far too many leaders have refused to listen. Far too few have acted with the vision the science demands.”<sup>28</sup> At critical points, some industries have been undermining the message of the science community and deliberately complicating the emergency response.

## STEP 2. ASSESSMENT

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The next step is to assess the situation and decide if it is a crisis. This determines whether the crisis management team is mobilized. It is also important to identify anything that may cause the situation to escalate rapidly.

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### Impacts of Climate Change

#### Displacement

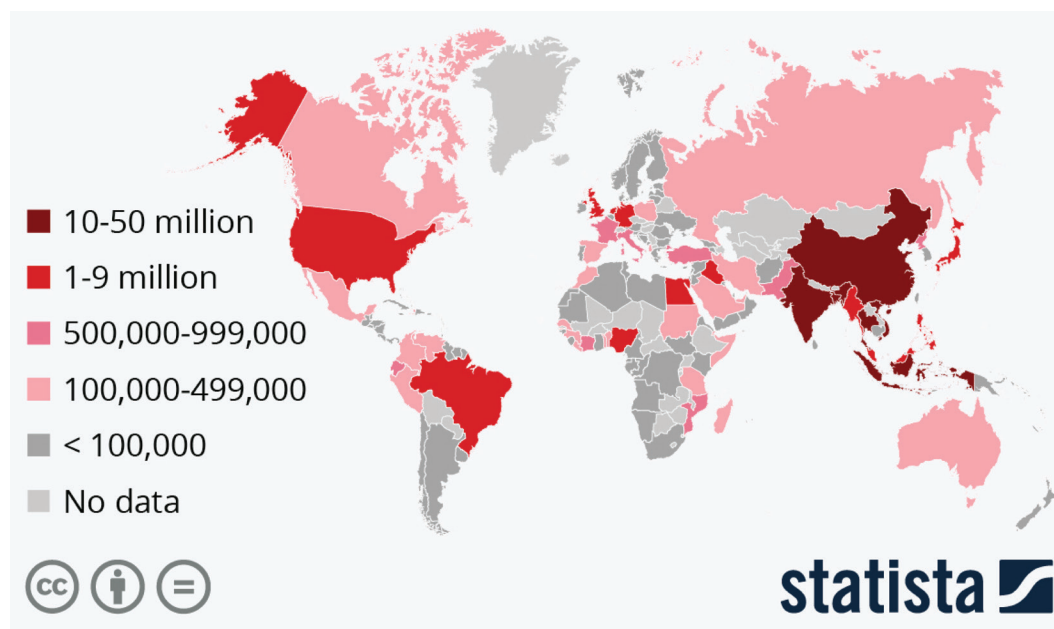
Rising sea levels are displacing people all over the world. Communities in Bangladesh, Fiji, Kiribati, Papua New Guinea, Solomon Islands, Tuvalu, the United States, and many others have lost their homes to sea inundation.<sup>29</sup> Every year, more and more people will lose their homes, and based on current projections 360 million people will be threatened by annual flood events by 2100 in a +2°C scenario.<sup>30</sup>

Studies led by NASA scientists show that the average global temperature on Earth has increased by at least 1.1°C (1.9°F) since 1880.<sup>31</sup> As temperatures continue to rise, many people will be living in areas that will become too hot for humans. This will affect an estimated 1.5 billion people by 2070 in southern Africa, Central and South America, Southeast Asia, Australia, India, Mexico, and the Middle East.<sup>32</sup> What happens if tens or hundreds of millions of climate refugees go on the move?<sup>33</sup> Climate change is affecting people all over the globe now, and with each passing year, it becomes everyone's problem.



The map below shows the number of people per country living on land expected to be under sea level by 2100. This is assuming a rise in sea levels of 50-70cm (2°C temperature increase/not taking into account ice sheet instability).<sup>34</sup>

Where Most People Are Affected by Rising Sea Levels



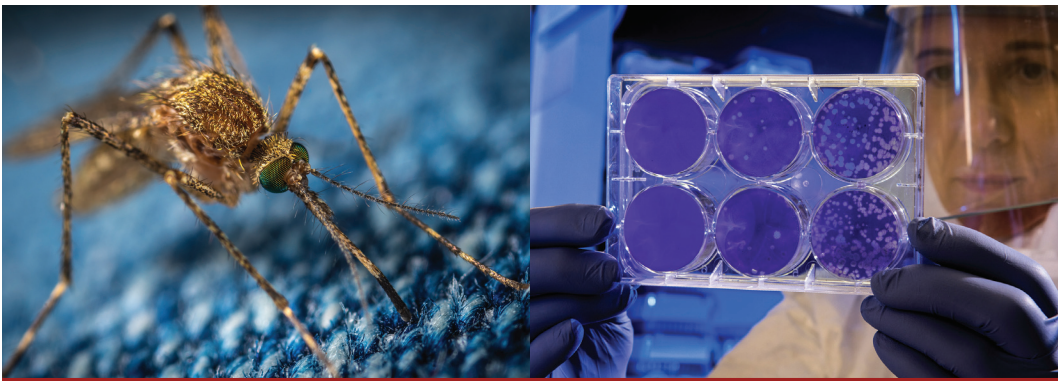
Source: Scott A. Kulp and Benjamin H. Strauss, *Nature Communications* [diagram by Statista]

Research by the United Nations showed that there is a vicious cycle, where people living in poverty suffer more than others from the adverse effects of climate change, resulting in even worse inequality.<sup>35</sup> People in poverty are less likely to afford insurance or be able to pay for repairs from the damage due to natural disasters.<sup>36</sup> These impacts are already pushing around 100 million additional people into poverty every year.<sup>37</sup> Therefore, climate action is also an issue of social justice.

## Disease

During a pandemic, the last thing anyone wants to hear is that warming temperatures will mean more diseases. Yet researchers at Stanford University found that as it gets warmer, mosquitoes will roam beyond their current habitats.<sup>38</sup> This will increase the risk of dengue fever, zika and West Nile virus, for about 1 billion people in Europe, Russia, northern Asia, and North America over the next 50 years.<sup>39</sup>

Mosquito and a Scientist Examining Virus Particles



Source: Ezop Камелев and Centers for Disease Control and Prevention (CDC) on Unsplash

## Ecosystem destruction

Climate change is contributing to the collapse and death of entire ecosystems. Wildfires have been sweeping across the Amazon, Australia, Canada, China, Europe, and the United States, affecting wildlife and communities. In the polar regions, the loss of sea ice affects marine ecosystems, which includes polar bears, seals, birds, fish, and whales.<sup>40</sup>

Fire in the Amazon



Source: Brasil2 on iStock

### Polar Bear Mother and Her Cub



*Source: Alexey Seafarer on iStock*

Ocean heatwaves are causing the mass die-off of coral reefs, kelp forests, seagrass, and mangroves.<sup>41</sup> Apart from processing large amounts of carbon dioxide, these ocean forests are the homes, shelter, and feeding grounds of thousands of marine species.<sup>42</sup> They act as nurseries for millions of fish that people rely on for food.<sup>43</sup> Living coral has declined by 50% and coral reef biodiversity has declined by at least 60% since the 1950s.<sup>44</sup> But all is not lost—there is still time to preserve and protect ecosystems and biodiversity.



### A Healthy Coral Reef Ecosystem



Source: Olga Tsai on Unsplash

### Dead Coral Reef from Bleaching



Source: Rich Carey on iStock

## STEP 5. DEVELOP THE CRISIS ACTION PLAN

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The crisis action plan gives direction for the response.  
It is important to develop clear objectives.

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When training a new crisis management team, one thing I've observed is enthusiasm for jumping straight in to begin problem solving. However, it can often be more effective to take a few moments to decide on the objectives and then to work out different actions for implementation.

### How the Actions Work

Most of the global greenhouse gas emissions come from energy use, food, waste, transportation, products, and services.<sup>70</sup> We can influence the economy with the purchasing choices we make in our everyday life. That is why the implementation section is divided into four main sections:

- Food
- Production and Consumption
- Energy
- Transportation

Each of these sections includes an introduction that covers the situation, objectives for each area of change, and how we can achieve them.

Throughout the book there will be ways for you to make a difference on the climate crisis. These have been classified into five action methods:

1. taking personal actions to reduce your emissions,
2. communicating,
3. connecting with others,
4. influencing, and
5. compelling industries and government to act.

Each action method has an icon, a color, and a banner, as shown below.

#### Action Methods

	PERSONAL ACTIONS	REDUCING YOUR OWN GREENHOUSE GAS EMISSIONS
	COMMUNICATE	SHARING INFORMATION OR YOUR EXPERIENCES
	CONNECT	CONNECTING FAMILY AND FRIENDS, OR JOINING GROUPS
	INFLUENCE	ENCOURAGING POSITIVE CHANGE
	COMPEL	HELPING THOSE RELUCTANT TO CHANGE

When a crisis management team begins work on implementing the objectives, they often refer to checklists. I have created the same type of step-by-step checklist you can go through for each of the action methods. As you work through each section, go through the checklists, and attempt as many actions as possible. Begin with the personal actions to reduce your own emissions, then on the other action methods that work best for you. Some people might enjoy communicating on social media while others might prefer connecting by joining groups. Some actions might be relatively easy, while others might be more difficult.

These are offered with the understanding that the only thing being asked is that we do the best we can, considering our own circumstances. While I have written this book with individuals in mind, many of the steps in the process can also apply to businesses and organizations.

### An Example of an Action Method Checklist



#### PERSONAL ACTION REDUCE EMISSIONS FROM HEATING AND COOLING

##### Smaller one-off tasks


- Reduce gaps under doors and around windows and skylights. Use block-out blinds, curtains, or window insulation film.
- Consider a smart thermostat, which can help fine-tune your usage.

## Free tools

As you work through the checklists, it may be useful to monitor and plan, especially regarding any items that might be a work in progress. To help make this easier, I have created a *Climate Crisis Plan Workbook*. You can use this to mark off any actions you've already taken and plan out future actions. The workbook also has more detailed information designed to help you with each step. This and other tools can be downloaded at [www.climatecrisisplan.com](http://www.climatecrisisplan.com).



### Climate Crisis Plan Workbook: Food Section Example

 Personal action				
Description of the Action	What An action summary	Who will do it	When to do it	Status completed
<b>Check freshness</b> Once or twice a week, go through the fridge and check meat, dairy, fruit, and vegetables for dates and freshness. Then prioritize eating food that could soon go bad. Use mature fruit and vegetables in smoothies or juices.	Check Fridge Check cupboards Check Freezer	Person A	Every time before shopping  Saturday morning	<input checked="" type="checkbox"/>
<b>Planning saves money</b> Taking a few minutes to plan what you are going to eat for the week can make the process easier. Deciding what recipes to use will help to work out the ingredients. Check what you have on hand, then make a shopping list. Also, avoid impulse buys.	Decide on main meals and review recipes  Check what you have and what you need to buy and make a list	Person B	Every time before shopping  Saturday morning	<input checked="" type="checkbox"/>
<b>Not typical is beautiful</b> We can help retailers reduce food waste by buying oddly shaped fruit and vegetables.	Buy fruit and vegetables which are not perfect	Person B	Every time shopping	<input checked="" type="checkbox"/>
<b>Make a date</b> The date you need to know is the "use-by" date, which is the last date recommended for the use of the product. <sup>12</sup> Use this to check freshness.	Only check the "use-by" date	Person A  Person B	Checking food you have  Shopping	<input checked="" type="checkbox"/>
<b>Store wisely</b> Put new food to the rear of the shelf and push older items to the front. This applies to the refrigerator, freezer, and cupboard. Use airtight containers to keep opened food fresh in the fridge and close packets.	Put new items at the back of the fridge, cupboard or freezer.  Use airtight containers	Person B  Everyone	After shopping  After opening new food	<input checked="" type="checkbox"/>
<b>Love your leftovers</b> Leftovers can be kept for about three days in the refrigerator. <sup>13</sup> If you don't think you'll be able to eat them soon, freeze them. Leftovers can be eaten for lunch or as ingredients to make pasta sauce or stew.	Use leftovers the next day for a meal.  Add ingredients to make a new meal.	Everyone	Next day after cooking	<input checked="" type="checkbox"/>

Example from the Climate Crisis Workbook



## PERSONAL ACTION DECIDE ON AN EMISSIONS REDUCTION OBJECTIVE

You can write an objective using the SMART criteria outlined below:

<b>SPECIFIC</b>	
<b>MEASURABLE</b>	
<b>ASSIGNABLE</b>	
<b>REALISTIC</b>	
<b>TIME FRAME</b>	

After you have completed writing your objective, you can add it to the *Climate Crisis Plan Workbook*.

### Milestones

Another thing to consider is to make achieving the objective easier. We can do this by splitting up our objective into parts or milestones to make it simpler to implement. The next section shows how to reduce your own emissions in the areas of food, production and consumption, energy, and transportation.

#### Emissions Reduction Milestones Example



The benefit of having a clear objective is that you can continue to work toward it with large or small actions on a regular basis until you achieve it. This is not like a game where you might win or lose. You will win if you continue to reduce your emissions and never give up.

# PART 2

## Implementing the Actions

“The climate we experience in the future depends  
on our decisions now.”

—*IPCC Sixth Assessment Report (2021)*

“We cannot live through a single day without  
making an impact on the world around us, and  
we have a choice as to what sort of difference we  
make.”

—Jane Goodall, world-renowned anthropologist

## STEP 6. IMPLEMENTATION

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Each member of the crisis management team works on actions assigned to them, as well as working through their own checklists.

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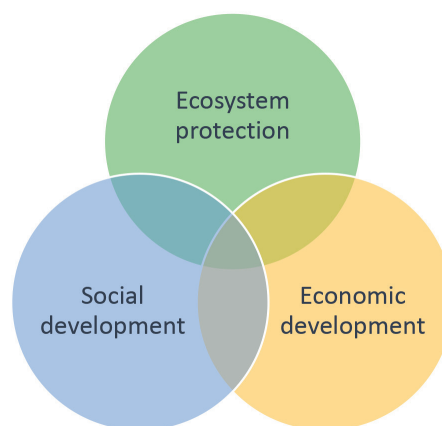
### Sustainable Development

Acknowledging that the climate crisis is part of a wider series of issues regarding the way people interact with the natural world is an important step. These issues include chemical and plastic pollution, biodiversity loss through deforestation, ecosystem destruction, and species extinction.<sup>81</sup> Humanity also faces people-related problems, which include poverty, hunger, access to clean water, education, health care, and energy, as well as gender and racial inequality.

One of the first international attempts to address these issues was to convene the World Commission on Environment and Development in 1987.<sup>82</sup>

The report that came from this meeting, entitled *Our Common Future*, described sustainable development as the processes of economic and social development within the planet's ecological means.<sup>83</sup>

#### Three Pillars of Sustainable Development



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Source: United Nations 2005 World Summit Outcome

They concluded, “Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future.”<sup>84</sup> The commission recommended the establishment of a United Nations Programme on Sustainable Development.<sup>85</sup> In 2015, 193 countries agreed to 17 Sustainable Development Goals (SDGs) with the aim of achieving significant progress by 2030.<sup>86</sup> According to the IPCC, the sustainable development goals provide a framework for climate action within the different aspects of sustainability.<sup>87</sup>

### Seventeen Sustainable Development Goals



Source: United Nations Department of Economic and Social Affairs Sustainable Development<sup>88</sup>







# Food

A photograph showing a landscape where deforestation has occurred. In the foreground, there is a large, chaotic pile of uprooted trees, branches, and yellowish-brown soil. The background is filled with a dense forest of tall, thin trees with green foliage, some of which appear to be standing amidst the cleared area. The sky is overcast and grey.

*Source: luoman via iStock*

## ACTIONS – FOOD

Food is a critical building block for life. However, our ability to feed people is now increasingly under threat from droughts, floods, fires, and desertification—climate change makes all of these worse.<sup>95</sup>



Sources: *Our World in Data*, *The Lancet*, and Intergovernmental Panel on Climate Change (IPCC)<sup>96</sup>

## Situation

Many advances in agriculture mean that it has never been easier for some people to get food. When some people are hungry, they simply go to a store and buy food items that are ready to cook. Alternatively, they can go to a restaurant and enjoy a meal not only prepared for them but brought to their table. If they don't want to go out, they can have cooked meals delivered to their doorstep.

For other people who rely on growing their own food, if the seasons are bad or they face droughts, floods, or fires, there could be little or no food at all.



Globally, a staggering one in three people (2.3 billion) are affected by moderate or severe food insecurity.<sup>97</sup> Of these, 870 million people face hunger, and 149 million children suffer from malnutrition.<sup>98</sup>

The United Nations says we can feed the world with the amount of food currently being produced.<sup>99</sup> How is that possible? Many factors come together in this complex issue but there are solutions we can all take part in. For example, more than one third of all food produced worldwide is lost or wasted each year, estimated at 1.3 billion metric tons and worth around US\$1 trillion.<sup>100</sup> Food loss happens because of issues with harvesting, storage, and transport, or food is wasted by retailers, food service, or consumers.<sup>101</sup> Individuals and industry make many choices about food each day that contribute to food loss and waste, as well as emissions.

One way of feeding a growing population, for instance, has been to cut down more forests to expand the land used by agriculture. Humanity has already cleared an area about the size of South America for crops and an area the size of Africa for livestock.<sup>102</sup> This is the major cause of biodiversity loss and is one of the major drivers of climate change.<sup>103</sup>

Food production is responsible for more than 14 billion metric tons or 26% of global greenhouse gas emissions every year.<sup>104</sup> With a growing population, global food production is projected to increase 50% by 2050.<sup>105</sup> Without making vital changes now, this will have a significant impact on nature and emissions. Instead of going down, emissions from agriculture are expected to increase by 30% by 2050 (IPCC).<sup>106</sup>

But it's possible that this number could go down. Remember that the relationship that humanity has to food is about decisions made. Indeed, the single most powerful thing we can do to change how food affects the climate crisis is to make different choices. The IPCC reports that if more people switch to healthy food lifestyles, it will lead to significantly reduced emissions.<sup>107</sup> Healthy food decisions will lead to low emissions.

We the people have the power to create and influence positive change. When individuals make different food choices, the food industry will have to adjust the supply to meet the shift in demand. Industry professionals will then make different choices, and collectively, this will reduce emissions. The following section includes actions that will help support farmers and the food industry, reduce hunger, and achieve significantly lower emissions.

### **We Can Feed All People If We Choose To!**



*Source: Tinnakorn Jorruang on iStock*

## Objectives

These objectives are aimed at reducing emissions related to food as well as supporting the UN's Sustainable Development Goals (SDGs):

- Encourage and support farmers and all the food supply chain to reduce their emissions by at least 45% by 2030, then to net-zero as quickly as possible.<sup>108</sup>
- End hunger and malnutrition (SDG 2.1, 2.2).
- Halve per capita global food loss and food waste (SDG 12.3).
- Encourage sustainable food production systems and resilient agricultural practices that increase productivity and production (SDG 2.3, 2.4).
- Increase investment, enhance international cooperation, research, and development (SDG 2.a).
- Integrate climate change education and measures into national policies, and planning (SDG 13.2, 13.3).
- Indigenous lands should be protected from encroachment of agriculture and forestry in accordance with the United Nations Declaration on the Rights of Indigenous Peoples.<sup>109</sup>

These are some of the interconnected solutions we need to create a better future. You can find out more about the Sustainable Development Goals at <https://sdgs.un.org/>

## How to achieve the objectives

Based on research efforts, several connected solutions are required to improve food systems:<sup>110</sup>

1. Consumers switch to a lower-emissions food lifestyle.
2. Farmers, transportation, and food production reduce greenhouse gas emissions and food loss.
3. Retail, food service, and consumers reduce food waste.
4. Government creates policies which support farmers.
5. We protect forests and reduce the expansion of agricultural lands.
6. We share research and methods to support agriculture improvement in production while lowering emissions.

We will explore how we can reduce emissions and food waste, as well as communicate and encourage positive change and collaboration with consumers, farmers, researchers, producers, retailers, and government. The additional aim is to give you the information you need to make educated decisions on creating a healthy, sustainable, and low-emissions food lifestyle.

## Personal Actions

The decisions we make as consumers can significantly influence emissions from the food sector. If we can become more thoughtful about the food we put on our plates, the choices we make will help decide the future. The extent to which people will be able to adjust their food lifestyles will vary according to people's circumstances. The following suggested changes are intended to be applied while respecting regional contexts, including cultural and religious norms, as well as acknowledging different income levels and personal preferences.

### Our Choices Make a Difference



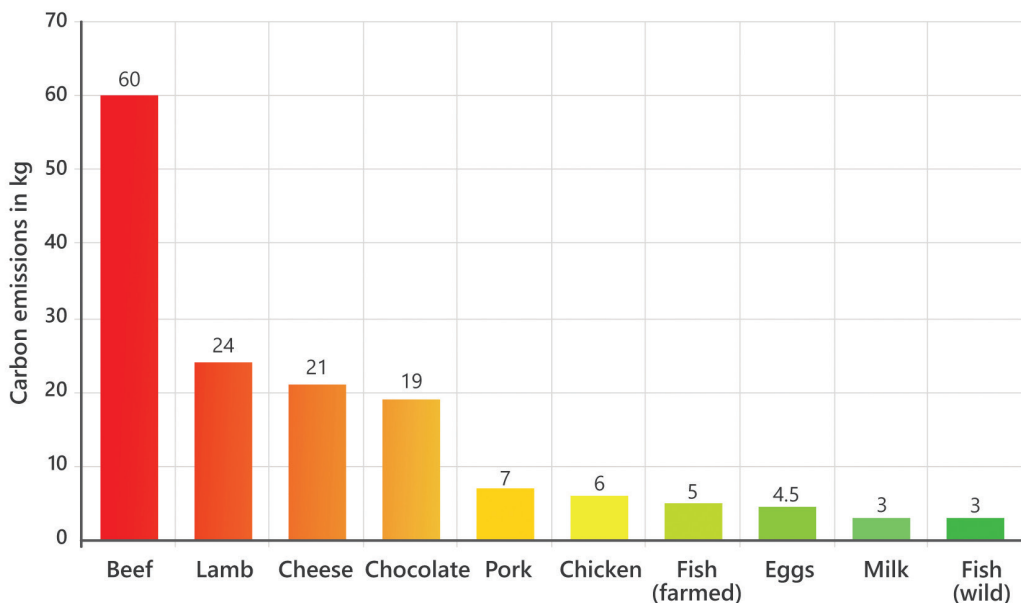
Source: Anastasia Gubinskaya on iStock

## Eating Food with a Lower Carbon Footprint

### Not all food creates the same emissions

Researchers investigated the emissions from producing and consuming foods in more than 100 countries.<sup>111</sup> They started at the farm and measured emissions through the supply chain to the consumer's plate. They found that some foods have a bigger impact than others. The graph below shows the greenhouse gas emissions created to produce 1 kilogram (2.2 pounds) of several animal-based foods.<sup>112</sup> The first thing to notice is that some foods have a lot more emissions than others. To produce 1 kg of beef, emissions equal to 60 kg of CO<sub>2</sub> are made. Emissions are higher for beef, lamb, and dairy because large amounts of methane are created by the animals' digestive process.<sup>113</sup>

Animal-based Food Emissions Impact of 1 kg (2.2 lb.) of Each Food Type

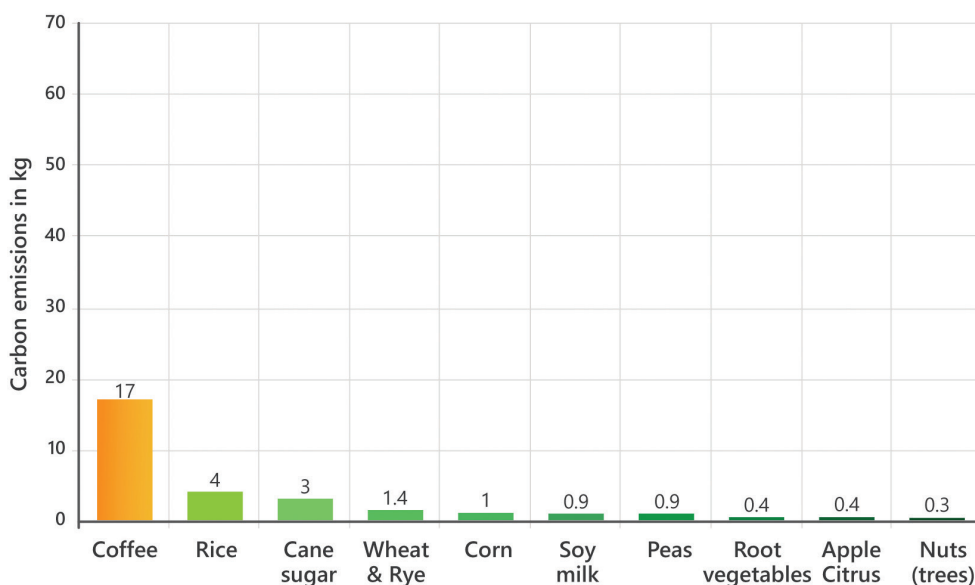


Source: Joseph Poore and Thomas Nemecek in *Science*, (AAAS), via *Our World in Data*



In 2021, the average annual beef consumption in the United States was 26 kg (58 pounds) per person.<sup>114</sup> If you multiply that by 60 kg of carbon, this equals approximately 1.5 metric tons of carbon emissions for each person in the United States for beef alone. While beef, lamb, and cheese have the highest emissions, plants mostly have the lowest impact.<sup>115</sup>

**Fruit and Vegetable Emissions Impact of 1 kg (2.2 lb.) of Each Food Type**



Source: Joseph Poore and Thomas Nemecek in *Science (AAAS)* via *Our World in Data*

### What are the different options to reduce emissions?

Depending on the people you ask, you'll get a wide variety of answers. Note that before you change your food lifestyle, you might consider discussing it with a doctor or dietician. (Speaking of which, I am not a doctor or a dietician, and this data is intended as information and not medical advice.)

The guidelines note that more than 80% of people in the United States have a food lifestyle that is low in fruit and vegetables.<sup>119</sup> Also, many people are exceeding total protein recommendations for meats, poultry, and eggs.<sup>120</sup> The guidelines suggest that on balance, half of the food on our plates should be comprised of fruit and vegetables.<sup>121</sup> Because our choices can bring about change, healthy food decisions will lead to low emissions. The MyPlate symbol only suggests proportions of food groups, not absolute amounts, because each person has different calorie and nutritional needs.<sup>122</sup>

### What I did

I made small adjustments, changing one meal in a week. I gradually swapped red meat for alternatives such as chicken or fish. I also started having more vegetarian meals. Over six months I reduced my red meat intake by half. I put the money I saved on less meat towards buying more fruit and vegetables. I will continue to adjust my food lifestyle to reduce my emissions even more. To make changing habits easier, review the “Tips to Help You Be Successful” section. One way to make a change is to pick the most enjoyable option. One way I did this was to make sure new recipes were tasty and easy to make. Some farmers and farming associations are already making important progress toward low- or zero-emissions produce, and these growers should be supported by consumers and governments.





## PERSONAL ACTION

## EAT FOOD WITH A LOWER CARBON FOOTPRINT

**Talk with people**

If you share meals with other people, involve them in the meal choices, the changes to make, and when they will take place.

**Substitute from high- to low-carbon foods**

Little adjustments, such as eating less beef, can quickly and significantly reduce your food footprint. There are many alternatives made from vegetable protein and other products that look and taste like meat.

**Reducing portion size**

Reducing the amount of high-emissions food in a meal is also a step in the right direction.

**Half the plate**

When planning meals, aim to fill half your plate with fruit or vegetables. If those who eat more red meat than recommended by the guidelines reduce their intake, it will be healthier for them and will reduce emissions.

**Planning saves time and money**

With a meal plan agreed on, you can plan what you are going to eat for the week. Deciding what recipes to use will inform the ingredients you need. Making meals tasty can support change acceptance. The MyPlate website presents more meal planning resources: [www.myplate.gov/resources/print-materials](http://www.myplate.gov/resources/print-materials).

**No Meat Monday – No Meat May**

One way to create a new food habit is to pick one day a week and aim for low emissions. If Monday is the first day of the working week for you, then starting change might be better on a different day, like Wednesday, for example. There is also No Meat May, a challenge from a group in Australia. They have a website with lots of resources, such as recipes, meal plans, blogs, and more: [www.nomeatmay.net](http://www.nomeatmay.net).

## Transporting Our Food

It's not only the choice of food type that is important; how it is shipped can decrease or increase emissions as well. Food can be transported in many ways. It can be produced locally, driven by truck over long distances, canned and shipped by sea, or picked fresh and air freighted. Each of these modes of transportation has a different amount of carbon emissions. Fresh food transported by air freight will likely have the highest emissions, in some cases 50 times higher than sea freight.<sup>123</sup>



### PERSONAL ACTION

### REDUCE TRANSPORTATION EMISSIONS OF FOOD

#### **Buy in season**

One of the simplest choices around reducing our emissions is buying fresh fruit and vegetables in season.

#### **Buy local**

If there is a tag or label, find out where the fruit and vegetables are coming from. By buying local or regional produce, you support farmers and businesses in your community. You also help fight emissions and pollution by reducing delivery distances for trucks and other vehicles.

### **What I did**

I have been buying fruits and vegetables in season, which are more likely to be grown locally or from the nearby region. I have also been checking labels of fruits and vegetables to make sure they haven't been air freighted long distances.

## Reducing Our Individual Food Waste

When there is food loss or waste, all the resources used to make it are squandered and the emissions were created for nothing. But those emissions still contribute to climate change.

### The situation

The United Nations Environment Programme estimates that one-third of the food produced in the world for human consumption every year is lost or wasted. This amounts to 1.3 billion metric tons costing US\$1 trillion.<sup>124</sup> In addition, estimates suggest that 8% to 10% of annual global greenhouse gas emissions are associated with food that is not consumed.<sup>125</sup> If food loss and waste were represented by a country, that nation would be the third largest source of emissions.

### Food loss and waste

Let's consider two separate aspects to this problem:<sup>126</sup>

- *Food loss* occurs at the production level: at the farm, during post-harvest processing, or in the distribution stages.
- *Food waste* mainly takes place at retail and consumption stages.

Food Loss: 369 million metric tons			Food Waste: 931 million metric tons		
					
Farm	Transport	Processing Packaging	Retail	Food Service	Consumers
Not enough data available			118 million	244 million	569 million

Source: United Nations Environment Programme Food Waste Index Report (2021)

As you can see from the previous table, most of the food that isn't eaten is wasted by consumers after they buy it and take it home.<sup>127</sup> In countries where data was available, food waste was high at the household level, estimated at 569 million metric tons per year.<sup>128</sup>

### Setting your own objective

One of the Sustainable Development Goals set by the United Nations Programme is to halve per capita global food waste at the consumer level.<sup>129</sup> Consider setting an objective of reducing your food waste by 50% within the next three to six months or another suitable time frame that matches your circumstances.

### Growing and composting

Think about planting some vegetables or herbs to eat. This could be in a small garden, or in pots if you are renting. Instead of throwing away your food scraps, see if you can put them in a home compost bin, or use a compost program at a community garden if there's one nearby.

### What I did

We started with creating the statement "We value food and don't let it go to waste." It took about six weeks of habit formation, and it didn't always go to plan, but we forgave our mistakes and kept going. My father and I used all the ideas on the next page to reduce our food waste by 80%. While reducing emissions, we also saved money. Then we planted a small vegetable garden (you can see in the following image). It was enjoyable to plant vegetables and then eat the fresh food we had grown. You could start with one plant in one pot and see how you go.



### **Planning saves money**

Taking a few minutes to plan what you are going to eat for the week can make the process easier. Deciding what recipes to use will help to work out the ingredients. Check what you have already, then make a shopping list. Also, avoiding impulse buys can help reduce waste.

### **Not typical is beautiful**

We can help retailers reduce food waste by buying oddly shaped fruit and vegetables. A straight banana tastes the same as a bendy one!

### **Make a date**

Food products often have a “sell-by” date used by the retailer which you can ignore. “Best-before” dates show when the food is at its best quality. The date you need to know is the “use-by” date, which is the last date recommended for the use of the product.<sup>130</sup>

### **Store wisely**

Put new food to the rear of the shelf and push older items to the front. This applies to the refrigerator, freezer, and cupboard. Use airtight containers to keep opened food fresh in the fridge and close packets tightly.

### **Check freshness**

A few times a week, go through the fridge and check meat, dairy, fruit, and vegetables for dates and freshness. Then prioritize eating food that could go bad soon. Use mature fruit and vegetables in smoothies or juices.

### **Love your leftovers**

Leftovers can be kept for about three days in the refrigerator.<sup>131</sup> If you don't think you'll be able to eat them soon, freeze them. Leftovers can be eaten for lunch or as ingredients to make pasta sauce, stew, burritos, frittata, or soup.

### **Odd ingredients?**

At some point you might have a few vegetables you are not sure what to do with. Ask family or friends for recipe suggestions, look online for “What can I cook with [ingredient 1] and [ingredient 2]?” or use a recipe app.

## Communicate



### COMMUNICATE

### SHARE INFORMATION ABOUT YOUR EXPERIENCES

#### **Conversations about food**

People often want to make a positive change and reducing emissions from food is an easy way to start. You can tell people how you have changed your eating lifestyle in person or on social media. If you find a tasty low-carbon recipe, or a new low-carbon food, you can tell your friends.

#### **Spread the word**

Share what you've learned about food waste with friends, family, and colleagues. Consider writing an opinion piece for your local newspaper. Share "I Value Food" graphics and articles on social media and invite people to learn more. If you start growing vegetables or herbs, you could post about your first crop. Some people might take a photo and post on social media (consider adding hashtags: #climatecrisisplan #climatechange or #lowcarbonfood).

#### **Community groups**

Do any of the organizations you are a part of serve food, such as your workplace, school, college, sporting association, or social clubs? If so, consider finding out how they manage food waste. Large organizations might have a sustainability manager. Find the person you think might be most receptive to discussing ways they could reduce waste. Using the tips in the previous section, they might be able to save food, emissions, and money.

## Connect



### CONNECT

### CONNECTING WITH FAMILY AND FRIENDS OR WITH GROUPS

#### Discussing food emissions and waste

Talk with your family and friends and find out what they do to reduce waste: how much are people throwing out, and how much money might they save if they throw out less?

#### Sharing is caring

If you have too much food that might go bad, consider sharing with family, friends, neighbors, or a charity. If you have processed or packaged food with a “use-by” label, then this is helpful when donating, so recipients know that the food is still safe to eat. If you are going away for more than a few days, check your fridge and cupboards and give away anything that might not last.

#### Community gardening

Are you part of a community or other social garden in your area? If you haven’t gardened before, consider trying it. Growing evidence indicates that exposure to plants and green space, and particularly to gardening, is beneficial to mental and physical health.<sup>132</sup> Is there a vegetable garden at your school, college, or university? If so, consider taking part. You can search online for community gardens in your city. For example, community gardens in New York are listed at [www.grownyc.org/gardens/our-community-gardens](http://www.grownyc.org/gardens/our-community-gardens).

#### Volunteer with local food rescue organizations

Hundreds of organizations across the globe are actively working to rescue and redistribute safe and clean food to those in need. In some areas they are called food banks or food pantries. If you can spare the time, volunteering is a great way to impact the specific food waste challenges in your area.





## Religious groups

If you belong to a specific faith community, you might see if there is a smaller group within the organization. Ask one of the organizers if they might be interested in bringing people together to promote the official position of your faith on climate change and reducing emissions.

When discussing actions that people can make, it could be easy to start with the many ways we can prevent food waste, which is aligned with the message of many faiths to end hunger and help people in need. After that, it might be helpful to identify other personal actions that people in the community would be able to easily implement. Many religions have explicitly stated their commitment for action on climate change:

- Anglican: [acen.anglicancommunion.org/media/148818/The-World-is-our-Host-FINAL-TEXT.pdf](http://acen.anglicancommunion.org/media/148818/The-World-is-our-Host-FINAL-TEXT.pdf)
- Buddhist: [fore.yale.edu/files/buddhist\\_climate\\_change\\_statement\\_5-14-15.pdf](http://fore.yale.edu/files/buddhist_climate_change_statement_5-14-15.pdf)
- Catholic: [www.catholicclimatecovenant.org/teachings](http://www.catholicclimatecovenant.org/teachings)
- Evangelical Christian: [www.nae.net/nae-issues-call-to-action-on-creation-care/](http://www.nae.net/nae-issues-call-to-action-on-creation-care/)
- Eastern Orthodox: [www.orthodoxcouncil.org/messages](http://www.orthodoxcouncil.org/messages)
- Hindu: [www.hinduclimatedeclaration2015.org/english](http://www.hinduclimatedeclaration2015.org/english)
- Islamic: [www.islamic-relief.org/muslim-leaders-deliver-islamic-climate-change-declaration/](http://www.islamic-relief.org/muslim-leaders-deliver-islamic-climate-change-declaration/)
- Jewish: [www.arcworld.org/downloads/JewishClimateCampaign%20Draft%201.pdf](http://www.arcworld.org/downloads/JewishClimateCampaign%20Draft%201.pdf)
- Jain: [www.jaina.org/page/ClimateDeclaration](http://www.jaina.org/page/ClimateDeclaration)
- Quaker: [www.quakersintheworld.org/quakers-in-action/394/Climate-Change](http://www.quakersintheworld.org/quakers-in-action/394/Climate-Change)
- Sikh: [www.ecosikh.org/sikh-statement-on-climate-change](http://www.ecosikh.org/sikh-statement-on-climate-change)

# Influence

## Opportunities in agriculture

Food is grown on more than 600 million farms in diverse climates and ecological and cultural circumstances, on varied property sizes, and using vastly different methods.<sup>133</sup> So how do we find a way of reducing emissions while feeding a growing population and being sustainable? A study of 38,000 farms, as well as 1,600 processing, packaging, and retail businesses across 119 countries, looked for answers.<sup>134</sup> One of the key findings was that the environmental impacts from one farm can be 50 times higher than another producing the same food.<sup>135</sup> This indicates substantial opportunities for improvement in some areas.



Source: Markus Winkler on Unsplash

Positive change can happen by identifying and measuring not only greenhouse gas emissions, but also other ecological impacts. These include polluting runoff from the use of fertilizer and herbicides, as well as water and land management. The findings of the research “support an approach where producers monitor their own impacts, flexibly meet environmental targets by choosing from multiple practices, and communicate their impacts to consumers.”<sup>136</sup>

### Government Leadership

In each of the four Implementation sections—food, energy, transport, production, and consumption—there is an influence section which outlines ideas for basic government policy on climate action. For each of the Government Leadership sections, a generic plan outline is presented in the Appendix. If your government doesn’t already have these in place, then you could try meeting with a political representative or candidate from the voting district or region you live in, as they are more likely to listen to someone who might vote for them. You could do this with family, friends, or through local political or climate action groups.

There might be organizations that support candidates whose policies include taking action on climate change in your region. An example of this is the Brand New Congress in the United States. You can get involved by signing petitions, writing letters, sending emails, protesting, and in other ways.

### Your vote counts

Find out which politicians and political parties have declared that they will not take money from the fossil fuel industry. Consider voting for politicians and political parties who will act now to reduce emissions by 2030.



### **Whom do I approach?**

If your government doesn't have a food emissions reduction plan already in place, then you could approach a national or state government representative. Alternatively, you could approach an official in agriculture. You could do this on your own, with friends, or through a local political or climate action group by searching online.

### **Make it your own**

The plan to lobby government is in Appendix C: Government Plan for Food. You can edit this and make it your own if you like and then discuss it or send it to your local political representative. Sections are included to discuss supporting farmers to implement existing solutions, research into emissions reductions, reducing food loss, uptake of new technology, and many others.

### **Single issue**

You could start with one issue that applies to your region or one that particularly interests you.

### **Look and listen**

Consider doing a quick search online to find out if these ideas already exist in your state or country. Always ask questions first and actively listen. Then start a conversation about potential areas for action.

# PART 3

## Reviewing and Updating the Plan

“Every bit of warming matters,  
every year matters,  
every choice matters.”

—*IPCC Special Report on Global Warming of 1.5°C*



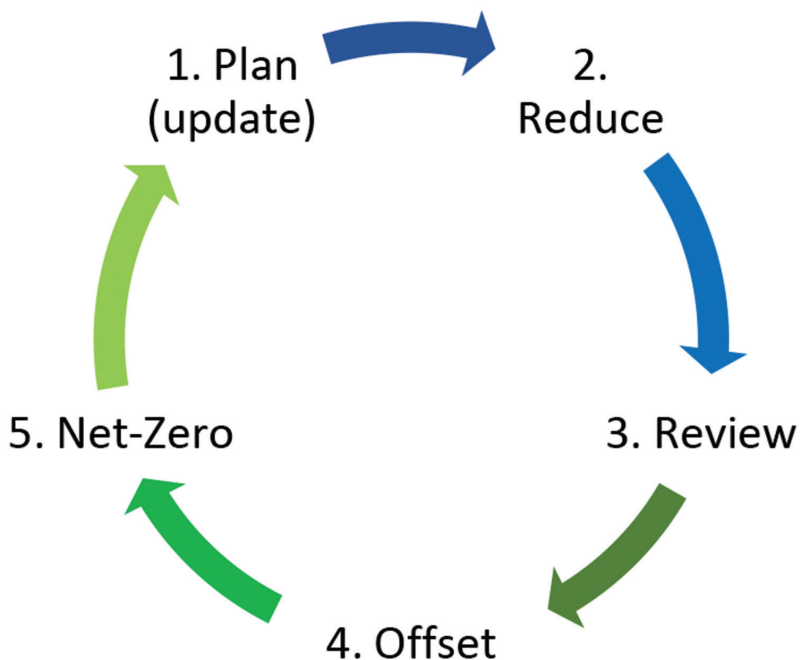
## STEP 7. REVIEW PROGRESS

### Refresh the process

Now that we have gone through the process of reducing emissions, we will consider reviewing progress, offsetting, and achieving net-zero. The following is a quick refresh of the process:

- 1. Plan:** Find out the amount of your emissions and create objectives.
- 2. Reduce:** Make personal emissions reductions.
- 3. Review:** Measure the emissions you have left.
- 4. Offset:** When emissions are unavoidable, offsets are activities that balance out your emissions by reducing or removing greenhouse gases from the atmosphere.<sup>263</sup>
- 5. Net-zero:** Achieve a state of net-zero emissions when human-caused greenhouse gas emissions are balanced by removals over a specified time.<sup>264</sup>

## The Process of Reducing Emissions



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Source: Based on Climate Neutral by United Nations Framework Convention (UNFCCC)<sup>265</sup>

It is important to recommit to the objective of stopping greenhouse gas emissions as quickly as possible. Offsetting should only be used as a temporary measure for unavoidable emissions. It should not be used as an excuse to delay action in reducing emissions for individuals, businesses, or governments.

## Review: Carbon Footprinting

Now that you have gone through the process of reducing emissions in the different areas, it's time to review your progress. This means conducting another carbon footprint assessment for your household to see what emissions you have left. Some of the reasons there might be emissions left over:

- In many cases, no zero-emissions product or service options exist.
- No labeling or information is offered on the level of emissions created by products or services.
- Some changes take time, such as installing solar panels.
- It might be difficult to afford low- or zero-emissions alternatives.

After you've found out what emissions you have, we will look at carbon offsets and how they work. I've included the instructions for carbon footprinting from the Planning section below.

One calculator is designed for residents in the United States, provided by The Nature Conservancy. The other calculator has an international approach and is provided by an Australian organization called Trace, which provides carbon offsets for individuals and business. On the following page, select the option below which suits you. More detailed instructions on how to use the calculators are presented in the *Climate Crisis Plan Workbook*.



## PERSONAL ACTION

## MEASURE YOUR OWN EMISSIONS

**United States – The Nature Conservancy**

[www.nature.org/en-us/get-involved/how-to-help/carbon-footprint-calculator/](http://www.nature.org/en-us/get-involved/how-to-help/carbon-footprint-calculator/)

Select a city or zip code in the United States and use the advanced options to add more information to get a more accurate estimate.

**International – Trace**

[www.our-trace.com/tools/carbon-footprint-calculator](http://www.our-trace.com/tools/carbon-footprint-calculator)

Select country and currency (USD = United States, GBP = Great Britain, EUR = Euro, NZD = New Zealand, AUD = Australia). If your country is not on the list, pick the closest one or select “other” and use USD. Then click “2.” At the end, you must enter a name and email, but regardless of what you enter, the results are shown on the next screen. This calculator is made in Australia and has a themed result relating to a local animal which is not relevant and can be ignored.

Feel free to use another carbon footprint calculator if you prefer. Other options are provided by 8 Billion Trees at [www.8billiontrees.com/carbon-calculator/](http://www.8billiontrees.com/carbon-calculator/) or the Global Footprint Network at [www.footprintcalculator.org](http://www.footprintcalculator.org).

**Record your emissions**

If you didn't quite reach your objective, don't feel bad. This is part of an ongoing learning process, and you only fail if you give up. Once you have calculated your carbon footprint, make a note of the total in the *Climate Crisis Plan Workbook* as well as specific amounts in the different areas.

## Offsetting and Achieving Net-Zero

The IPCC defines net-zero as a point when human-caused greenhouse gas emissions are balanced by human-caused removals over a specified time.<sup>266</sup> One way to balance out emissions is to financially support projects which reduce or remove greenhouse gases from the atmosphere. This can be done by buying carbon credits. One carbon credit represents the certified removal of one metric ton of carbon dioxide from the atmosphere.<sup>267</sup> If you have ten metric tons of remaining emissions, this could be balanced with ten credits.

### Carbon Offsets: A Temporary Process



Source: British Standards Institution (BSI)<sup>268</sup>

Opportunities are available to support projects that reduce emissions and to help communities in developing countries on the front lines of climate change. Some examples include:

- Replanting forests with a biodiverse range of trees and native vegetation while supporting local and indigenous communities.
- Supporting developing countries to create renewable energy, which often means reducing the demand for fossil fuels or providing electricity to people for the first time.

- Many people in developing countries don't have access to energy for cooking and rely on burning wood in fireplaces. Some projects provide stoves that are 50% more efficient. This means fewer emissions, less stress on nearby forests, and less pollution in the home.

You can choose from many other types of projects.

### What I did

I saved money by reducing my car usage and we have also saved on our food, energy, and consumption. We put enough of the savings to pay for carbon credits to offset our remaining emissions. I found many types of organizations offering carbon offsets online. Some projects have been criticized for not achieving what they promised, so I looked for projects that are certified by an internationally recognized organization. This certification confirms that each carbon credit represents one metric ton of carbon dioxide removal.

Two of the main certification organizations are Gold Standard and the Verified Carbon Standard (VCS) by Verra. It was also important to us that the projects aligned with our values by supporting developing countries and the United Nations Sustainable Development Goals. After reviewing several projects, we found the credits can cost from US\$11 per metric ton up to US\$45. Therefore, if you have ten metric tons to offset, this could cost between US\$110 to US\$450, depending on the projects you choose. We bought several credits from a few different projects that helped renewable energy development, reforestation, and efficient cookstoves in developing countries. These were certified by either Gold Standard or Verra.