

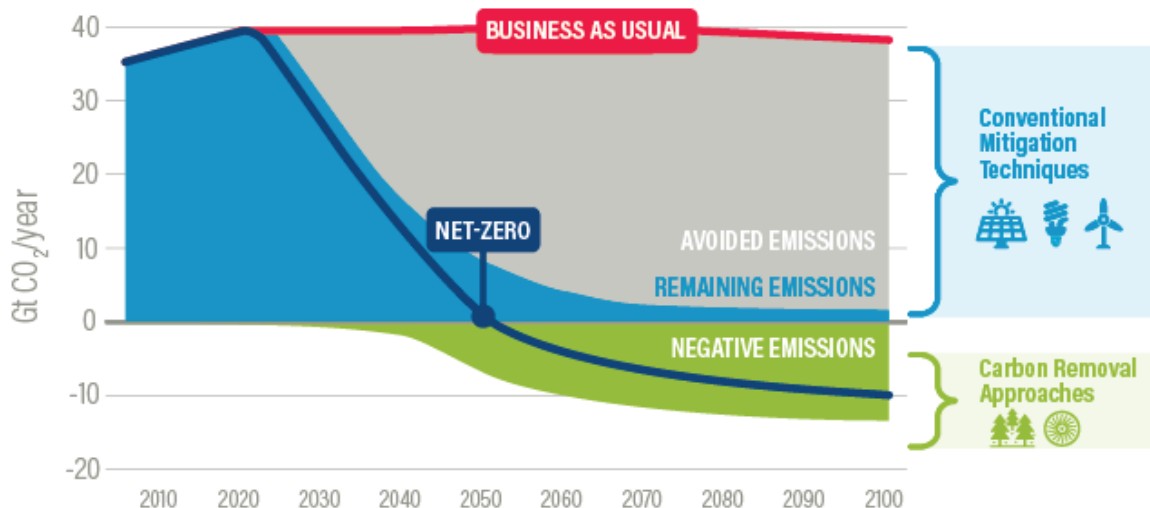
Carbon Dioxide Solutions: Plan Guide

Solving the Carbon Dioxide Problem Student Sheet

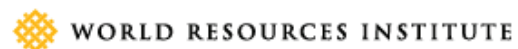
Create a plan that uses a combination of climate solutions to answer the question below. Use the prompts to help you construct your plan, which should center around a claim, evidence, and reasoning. You will present your plan to the class as a poster or slides, or in some other format that includes a visual aid. The diagram below is provided as a guide, however you are not required to follow it exactly (your plan could rely more heavily on carbon removal approaches than shown in the diagram, for example).

Question: How can we remove enough carbon dioxide from the atmosphere by 2100 to ensure that global warming stays below 1.5 °C?

Staying Below 1.5 Degrees of Global Warming



Source: Adapted from IPCC 2018.
20.05.28



Your plan should include:

1. A **claim** that is your answer to the question. It explains how you will use various climate solutions to remove 1000 Gigatons of atmospheric carbon dioxide by 2100.
 - Consider whether your plan involves reducing emissions, increasing sinks, or both. If both, how are efforts distributed between both areas (Equally, or relying more on one than the other, for example.)
 - Think about the solutions needed now versus in the future. Does your plan change once zero emissions is reached, or is it consistent throughout the remainder of the century? Does your plan involve one solution at a time or multiple simultaneous solutions?
 - Your claim could be written as a short paragraph or displayed in a diagram, or in some other format that conveys the required information.

2. **Evidence** that supports your claim and specifically calls out how your proposed solutions will remove enough carbon dioxide from the atmosphere to prevent climate warming above 1.5 °C. Name and briefly describe each solution that is part of the plan, including the mathematical explanation for the plan (E.g. show how your plan of solutions adds up to removing 1000 GtC from the atmosphere by 2100). Use the prompts below to help you figure out what you want to include in your evidence:
- How does each solution reduce the amount of carbon dioxide in the atmosphere?
 - What sectors are addressed by each solution?
 - How much carbon dioxide can each solution remove by 2050, according to Project Drawdown?
 - How much carbon dioxide do you estimate each solution can remove by 2100, and what are you basing this estimation on?
 - What assumptions are you making to determine the impact of the solution(s)?
 - Can you provide an estimate of the costs associated with each solution?
 - What, if any, limitations are there to each solution?
 - Are there places that the solution might work better than others, or will it likely work well any where on Earth? Why? (Consider how ecological, economic, political, or social conditions might affect how well the solution works in a particular area.)
 - Consider how you can display your evidence in an organized way (a list, table, or graphic organizer, perhaps).
3. **Reasoning** that explains why you choose the solution(s) that make up your plan. What are the benefits of particular solutions over others? The reasoning helps explain how your evidence supports your claim.
- You might draw upon your understanding of the carbon cycle, or the data presented by Project Drawdown to help with your reasoning.
 - Also mention here any questions that remain unanswered, or limitations to your plan. For example, does your plan rely on the creation of new technology that does not currently exist? Does the amount of carbon dioxide removed by a solution change over time? How might unpredictable human behaviors affect your plan?
 - Your reasoning could be written as a paragraph and/or bulleted list.