

Essay and Discussion Questions

## Climate Change Higher Education Questions

Help students understand how climate change poses an extraordinary threat to the planet and its inhabitants through these essay and discussion questions.

### Causes of Climate Change

1. Analyze the role of greenhouse gases in climate change. What might the world look like if the current rise in greenhouse gas emissions goes unchecked?
2. What are climate tipping points, and why do they matter in conversations about climate change? Choose one specific climate tipping point and explain in your own words the global consequences of crossing it.
3. How has industrialization contributed to climate change? What is the evidence that human activity has contributed to climate change since the industrial revolution, and how have scientists measured these impacts?
4. Determining responsibility for climate change is a difficult and politically charged process: while some developed countries (like the United States) have high historical greenhouse gas emissions, other industrializing countries (like China) have high contemporary greenhouse gas emissions. Given this complicated context, how would you recommend determining responsibility for climate change? Explain your answer with attention to both sides of the argument.
5. Choose a country that emits significant greenhouse gases (such as China, the United States, India, or Russia) and write a policy memo to this country's leader outlining why their administration should or should not commit to reducing their country's greenhouse gas emissions.
  1. Should developed countries like the United States be expected to take a more active role in cutting their carbon emissions given their historical contributions of greenhouse gas emissions?
  2. Should developing countries like China and India continue industrializing, even though their carbon emissions are increasing as a result?
6. Why might combating climate change be interpreted as an equity issue between developed and developing countries?

### Mitigating Climate Change

1. Of the five sectors most responsible for emissions, which sectors do you think have the greatest opportunities for mitigation? Which sectors face the most obstacles for mitigation? How do you think policymakers should prioritize their efforts to mitigate climate change, and why?
2. Individuals, organizations, and governments can all take steps to mitigate greenhouse gas emissions. In your opinion, can one of these groups effectively mitigate greenhouse gas emissions independently of the others? For example, can individuals mitigate greenhouse gas emissions without support from organizations and governments? Can governments mitigate greenhouse gas emissions without support from companies and individuals?
3. Efforts to mitigate greenhouse gas emissions are generally held back by three things: the financial cost of adopting new technologies, the time required to transition to new technologies and policies, and a general concern over the possible consequences of making these changes. Given these realities, write a letter to the CEO of a sector-leading business explaining why they should pursue efforts to mitigate their company's greenhouse gas emissions, despite the costs.
4. From cars to lightbulbs, many of the everyday products we use have hidden environmental costs, with some generating huge quantities of greenhouse gas emissions. Thinking through your own daily routine, where do you see greenhouse gas emissions in your own life? What steps can you imagine taking to mitigate your individual greenhouse gas emissions?

## Climate Impacts and Adaptations

1. Climate-related weather events have wide-ranging consequences. Beyond their vast and visible costs to human life, what are some other, less obvious ways in which extreme weather impacts our world? Which side effect of extreme weather surprised you the most, and why?
2. It can be a difficult decision for policymakers in developing countries to sacrifice their economic priorities for costly preservation, restoration, or other adaptation efforts. At the same time, climate change carries severe impacts for populations in developing countries, like drought, famine, or water insecurity. Given this context, how would you recommend these countries balance their economic and social priorities when it comes to climate change?
3. Mitigation and adaptation projects carry immense costs. How might individual governments justify those expenses to taxpayers? How might international communities work together to share this financial burden?
4. In your own words, describe the feedback loop that exists between climate change and biodiversity loss. What strategies can individuals, governments, and international organizations implement to break this cycle?
5. How can individual actions, government policies, and international organizations complement each other in the effort to adapt to climate change? What are some successful examples of this collaboration?
6. Why might climate change be considered a social issue? In other words, how does climate change exacerbate populations' existing vulnerabilities and contribute to global inequality?

## Climate Policy: Opportunities and Obstacles

1. In your opinion, what is the best way for the international community to address climate change? What are the advantages and disadvantages of top-down versus bottom-up approaches to addressing climate change?
2. Describe an international climate agreement that successfully achieved its aims. What factors enabled that success? Describe an international climate agreement that has struggled to achieve its aims. What obstacles has that agreement faced, and how might the international community work to prevent those obstacles from emerging again in the future?
3. Describe and evaluate the policies that individual governments can enforce to encourage companies and individuals to lower their greenhouse gas emissions. Your answer should reference at least three of the following policy options: carbon taxes, cap-and-trade systems, subsidies, and carbon border adjustment mechanisms.
  1. What are the advantages and disadvantages of these policies? Which policies would you recommend your own government adopt, and which policies would you discourage? Why?
  2. How can these policies complement one another? Is it possible for one policy to undermine another? Why or why not?
4. How have certain countries used law and policy to combat climate change? Choose a country and describe its current climate change mitigation efforts. Possible countries to choose from include: the United States and the Inflation Reduction Act, Germany and the Energiewende initiative, or China and its subsidies programs.
5. Explain the Paris Agreement to someone who has never heard of it before. What does this agreement aim to do? To what extent has it led to actionable climate solutions? What challenges and opportunities exist for implementing the ideas set out in the Paris Agreement?

## Geoengineering and Artificial Intelligence

1. Geoengineering aims to manipulate the environment in order to manage or mitigate the effects of climate change; however, contemporary forms of geoengineering can be difficult to pursue due to limited technology and research. In your opinion, which forms of geoengineering are most practicable or realistic in our current moment? Why? Which forms of geoengineering would you be interested in pursuing as research and technology develops? Why?
2. In your own words, evaluate the arguments for and against geoengineering. Given these arguments, do you think geoengineering is worth pursuing? Why or why not?
  1. Alternatively, do you think geoengineering is sufficient to combat climate change on its own, or would you recommend the global community pursue geoengineering alongside other approaches to mitigating greenhouse gas emissions? Why?

3. Why is it important to make effective rules about geoengineering? What obstacles exist towards making and enforcing these rules?
4. Analyze the currently known advantages and limitations of the use of artificial intelligence for fighting global climate change. Where can AI best outperform existing technologies? How can this technology fight climate change without inadvertently accelerating carbon emissions in the process?

## Energy Challenges

1. What renewable and alternative energy sources offer the most potential for addressing climate change? Why? Looking at the five main renewable and alternative energy sources (wind, solar, hydro, nuclear, and biofuels), pick two to compare them. What are the benefits and drawbacks of each?
  1. Which form of energy would you recommend for wide-scale adoption in the United States? Why? Consider how geography might factor into your recommendation.
  2. Which form of energy would you recommend for wide-scale adoption internationally? Why? Consider how geography might factor into your recommendation.
2. Of the approaches discussed in the video for strengthening energy security, which do you think are most practical? Which would be most effective?
  1. What kinds of risks do countries face to their energy security? What can they do about those risks?
  2. What challenges do countries face in trying to increase their energy security?