

Assignment: Simulating Climate Futures in En-ROADS

Working with the *En-ROADS Climate Solutions Simulator*, create a scenario that can mitigate global warming to the internationally agreed target of **below 2°C or below 1.5°C by 2100**.

Your Steps

- 1. Access En-ROADS online at <https://www.climateinteractive.org/tools/en-roads/>.**
Review these materials to help you understand how to use this model:
 - [Tutorial](https://docs.climateinteractive.org/projects/en-roads/en/latest/guide/tutorial.html) on key features of En-Roads, how to use the graphical interface:
 - Watch this 20-minute [introductory video](https://www.youtube.com/watch?v=7Muh-eoPd3g) to En-Roads:
- 2. Develop a scenario to meet your goals.** Use En-Roads to develop your vision of success in limiting global warming to less than 2°C or 1.5°C as agreed in the Paris Climate Accord and ensure your scenario factors in the additional goals listed below.
- 3. Submit a writeup expressing your vision.** After developing your preferred scenario, write a concise response to the questions below. There is more than one set of policies that will achieve the goals and many answers to the questions about potential barriers to implementation. We are interested in your approach and your views on the issues, and how you feel about the prospects for action and success in the real world.
- 4. Make a presentation (7 mins) where you describe your scenario.** Be prepared to present your scenario as a group on the session 23.11. 14-17.

Deadline for the presentation slides submission: Wednesday 23.11. at 12.00 (noon).
Submitted via MyCourses, one submission per group.

Deadline for the writeup submission: Sunday 27.11. Submitted via MyCourses, one submission per group.

Assessment and grading: Peer graded with a scale 1-5. Group also makes a self-assessment of their work.

Your Goals

Your mission is to recommend a set of global policies, investments, and actions that meet these five goals as much as possible:

- **Limit global warming.** The 2015 Paris climate agreement, ratified by nearly all nations, called for “holding the increase in the global average temperature to well below 2 °C [3.6°F] above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C [2.7°F]....”
- **Preserve and create a healthy economy.** Global warming above 2°C [3.6°F] will cause impacts that will harm our prosperity, security, health and lives. Limiting warming to less than 2°C [3.6°F] is not safe either, we are already seeing impacts today, but it is a

benchmark by which scientists and world leaders believe we can lower the expected harms and risks of catastrophic damage to a manageable (albeit still challenging) level. Your policies should drive a global energy transition that would create and preserve a healthy global economy.

You must decide on the balance of the short-term costs of action to mitigate greenhouse gas emissions arising from your proposals and the long-term costs of the damage caused by climate change if we do not act. Financial costs are not explicitly predicted in the model as they are uncertain and controversial. While assessing this question, also consider the potential to offset short-term costs with additional co-benefits e.g., benefits to the economy, health, national security and others over and above the direct benefits of mitigating global warming.

- **Promote equity and just transition.** Consider the impacts of your policies for both developed and developing nations, and between the rich and poor within nations. Consider whether your policies will disproportionately harm certain groups and how to mitigate such harms (e.g., if you favor policies that would reduce coal use, how will your policies address the resulting unemployment of coal miners?).
- **Protect the environment.** Many environmental challenges besides climate change threaten human welfare—e.g., water shortage, air and water pollution (smog, particulates), soil loss, plastic pollution, anoxic zones (dead zones) in rivers and oceans, extinction of species, etc. Your proposals should minimize these harmful effects on the environment.
- **Be realistic but not cynical.** What would it take for your proposed policies to be implemented if human civilization operates at its best?

Writeup

Write a brief memo describing your scenario. Please respond to all the questions below. There is no minimum or maximum length for your report. Longer is not necessarily better. Compelling analysis with clear, tight and focused writing will be rewarded.

Plan

1. **Policies.** What are the top five most important parts of your strategy? (For example, the most important sliders that you moved). You may choose to share screenshots of specific graphs that caught your attention and are worth noting.

Meeting the Goals

2. **Climate.** How well do you think your proposal does regarding meeting the Paris climate goals? If not well, why is this acceptable to you?
3. **Economy.** If the world followed your recommendations, how would the economy be different in 2030? In what ways better? In what ways worse?
4. **Equity.** To what extent does your proposal seem fair and equitable, across and within nations and different peoples?
5. **Environment.** To what extent might your proposals address the climate problem and mitigate other environmental challenges? To what extent might your proposals cause or worsen other environmental problems?
6. **Realism without cynicism.** What would it take for your proposal to be realized? What barriers might arise in the implementation of your proposals, and how might they be addressed?

Reflections & Feedback.

 Answer the following questions:

- To implement your proposals, what actions and priorities are needed over the next two years for businesses, civil society, government, and the public?

- Who would be the biggest winners and losers globally in your proposed future?
- What surprised you about the behavior of the energy and climate system as captured in the simulation?
- What trends in the world give you hope that your proposals are possible?
- What can you personally do to help create those changes?