Climate Interactive

World Climate

A Climate Change Simulation Role-Playing Exercise

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Welcome

Congratulations on taking on the important work of engaging participants in working towards a stable climate through the World Climate Exercise. World Climate is a climate negotiation role-playing exercise that explores the science and geopolitics of international agreements on climate change, and is grounded by a computer simulation of the dynamics of the climate system that has influenced the actual global negotiations. World Climate has been played by thousands, from middle-school students to UN officials in dozens of countries worldwide. By facilitating World Climate for a group, you have an opportunity to help participants gain insights into the causes of climate change and to see the possibility of success in addressing the climate challenge.

As you read this guide, recognize that you can alter this exercise to fit many purposes and schedules, or use it exactly as prescribed below.

You also have other resources available, including:

- A facilitator's video,
- Videos of experts leading the exercise,
- A reference guide and FAQs for the computer simulation that frames the exercise.

These things and more can be found on the resources for World Climate facilitator's page: https://www.climateinteractive.org/tools/world-climate/instructor-resources/

CLIMATE INTERACTIVE
Tools for a thriving future

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This facilitator guide provides detailed suggestions about how to lead a World Climate event and deliver the key insights of the experience to participants.

A World Climate Exercise in Brief

Tell participants that you are Ban Ki Moon and they are delegates representing nations from around the world tasked with limiting global warming to no more than two degrees Celsius above pre-industrial global temperature. Split them into groups and describe their country groups briefly. Tell the least developed group to sit on the floor. Display the C-ROADS simulator. Show each group their emissions line and the resulting future temperature.

Tell them they need to pick a year to cap emissions growth, a year to start reducing emissions, and how fast they will reduce. Hear proposal speeches from each group. Ask them what temperature would result from their proposed actions. Run the scenario in the model. Discuss.

Back off and let the groups negotiate and propose new actions. Run the simulation several times more, with each new number.

When they create a scenario where carbon dioxide (CO_2) emissions are roughly flat, point to rising temperature in the atmosphere and accentuate how counterintuitive this is. Introduce the bathtub view of carbon dioxide in the atmosphere (see Appendix B).

Allow groups to have 2 or 3 rounds of negotiations.

After the negotiations, invite everyone out of their roles, and debrief. If they didn't keep temperature rise below ~2 degrees take time to show what it would take. Then hit the following topics: 1) their feelings, 2) the real world of UN negotiations, 3) insights about the Carbon Bathtub, speed and scale of action, the tragedy of the commons, and social justice, 4) hope and 5) their possible role in this challenge.

Purposes

As you facilitate World Climate, keep three purposes in mind:

1. Insights and Understanding. World Climate offers an opportunity for participants to gain insights into the carbon and climate system, as well as the social and international geo-political dynamics of the climate challenge. Specific insights are listed later in this guide.

2. Learning and Leadership. Provide a non-dogmatic experience for participants to think and explore, for themselves, about their possible role in addressing climate change and experiment in a role-playing environment how to advocate for positive action.

3. Diffusion. Give participants an opportunity to take what they have learned and translate it into real-world action, including leading World Climate with another audience.

Preparation and setup

Time Required

We recommend three hours for the entire session, two hours for the role-playing exercise and one hour for the debrief. For class settings with limited time, you can stretch the exercise over several days. A 30-60 minute abbreviated version with limited role-playing and no negotiating is also possible (even in an online webinar setting), though it is a less impactful learning experience.

We have also adapted the game into a less interactive presentation format that you could adopt when you have a much larger group (e.g., for 400 people in Sweden) or a much shorter amount of time (e.g., in 17 minutes for a TEDx talk).

Dividing Participants

There are two primary ways to divide up participants to play World Climate:

Six Regions – This version allows for larger groups (more than 18 people) and enables greater participation from all individuals. Participants are divided into negotiating teams representing China, United States, European Union, India, Other Developed countries, and Other Developing Countries (see Table 1). Using the World Climate mode in the C-ROADS Windows computer model, pledges from these 6 teams can be entered and analyzed throughout the exercise.

Three Regions – This version is good for small groups (6-18 people) or for exercises with less time. Participants are divided into Developed countries, Developing A countries (China, India, South Africa, Mexico, Brazil, Indonesia) and Developing B countries (Bangladesh, Pakistan, southeast Asia, the poorest nations of Central and South America, most African nations, the island nations of the Pacific, Indian Ocean, and Caribbean, and much of the Middle East) (see Table 2). This version uses the online C-Learn computer model to enter and analyze the decisions teams make.

Table 1 – Six-Region Groupings for World Climate

Six Regions	**MEF Categories**	**MEF Regions**	**Individual Nations**
United States (US)	Developed Nations in Major Economies Forum (MEF)	United States (US)	United States (US)
European Union (EU)		European Union (EU) 27 (EU27) (plus Iceland, Norway and Switzerland)	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom, Iceland, Norway and Switzerland. (includes former Czechoslovakia)
Other Developed Countries		Russia	Russia (includes fraction of former USSR)
		Canada	Canada (includes rest of other North America)
		Japan	Japan
		Australia	Australia
		South Korea	South Korea
	Developed Non MEF	New Zealand	New Zealand
		Other Eastern Europe	Albania, Bosnia & Herzegovinia, Croatia, Macedonia, Slovenia, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine, Uzbekistan (includes former Yugoslavia and fraction of former USSR)
China	Developing Nations in MEF	China	China
India		India	India
Other Developing Countries		Indonesia	Indonesia
		Brazil	Brazil
		South Africa	South Africa
		Mexico	Mexico
	Developing	Other Large	Philippines, Thailand, Taiwan, Hong Kong,

	Non MEF	Developing Asia	Malaysia, Pakistan, Singapore
		Middle East	Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, South Arabia, Syria, Turkey, United Arab Emirates, Yemen, West Bank and Gaza (Occupied Territory)
		Other Latin America	Argentina, Chile, Colombia, Peru, Uruguay, Venezuela, Bolivia, Costa Rica, Cuba, Dominican Rep., Ecuador, El Salvador, Guatemala, Haïti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Puerto Rico, Trinidad and Tobago. And Caribbean Islands
		Other Africa	Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoro Islands, Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea and Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, Sao Tome & Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zaire, Zambia, Zimbabwe, Mayotte, Saint Helena, West Sahara
		Other Small Asia	Bangladesh, Burma, Nepal, Sri Lanka, Afghanistan, Cambodia, Laos, Mongolia, N. Korea, Vietnam, 23 Small East Asia nations

Table 2 – Three-Region Grouping Options for C-Learn

Three Regions	**Individual Nations**
Developed Countries	United States (US)
	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania,

	Luxemburg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom, Norway and Switzerland. (includes former Czechoslovakia)
	Russia, Albania, Bosnia & Herzegovinia, Croatia, Macedonia, Slovenia, Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine, Uzbekistan (includes former Yugoslavia and USSR)
	Canada (includes rest of other North America)
	Australia
	New Zealand
	Japan
	South Korea
Developing A Countries	China
	India
	Indonesia, Philippines, Thailand, Taiwan, Hong Kong, Malaysia, Pakistan, Singapore
	Brazil
	South Africa
	Mexico
Developing B Countries	Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, South Arabia, Syria, Turkey, United Arab Emirates, Yemen, West Bank and Gaza (Occupied Territory)
	Argentina, Chile, Colombia, Peru, Uruguay, Venezuela, Bolivia, Costa Rica, Cuba, Dominican Rep., Ecuador, El Salvador, Guatemala, Haïti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Puerto Rico, Trinidad and Tobago. and Caribbean Islands
	Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoro Islands, Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea and Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, Sao Tome & Principe, Senegal, Seychelles, Sierra Leone,

	Somalia, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zaire, Zambia, Zimbabwe, Mayotte, Saint Helena, West Sahara
	Bangladesh, Burma, Nepal, Sri Lanka, Afghanistan, Cambodia, Laos, Mongolia, N. Korea, Vietnam, 23 Small East Asia nations

Facilitation Roles

World Climate is most engaging and impactful when facilitators and participants actively play a role. As the primary (or sole) facilitator, you will be playing the role of the UN Secretary General or UN Framework Convention on Climate Change (UNFCCC) Executive Secretary. If possible, enlist co-facilitators to assist you to lighten your load and give them an opportunity to learn how to facilitate. You may also find it helpful to co-facilitate with someone who has knowledge and skills that complement your own (e.g., a scientist or science educator may want to co-facilitate with someone who is more familiar with policy, economics, or business).

Examples of additional facilitation roles are:

1. UN Environment Programme (UNEP) technical lead – You could ask an assistant to run the computer and possibly explain model output and climate science.
2. Ombudsman – Invite a colleague to work with you to help broker a deal.
3. Technical advisors – Colleagues who have played the game before can help the teams figure out the rules and advise them on how to play well.
4. Reflectors – An assistant could write down interesting quotes that they overhear. These quotes can be useful in the debrief.

Facilitator Preparation

In addition to reviewing this guide, explore the guidance videos and videos from other World Climate exercises: https://www.climateinteractive.org/tools/world-climate/videos/

Write out the agenda for your event and practice what you are going to say.

For further background in the systems thinking concepts behind World Climate, take the online course "The Climate Leader."

Room Setup

The room should be set up with:

- Tables and chairs or areas on the floor for the teams. Each table or area should have:
    - A label with group's name (table tent),
    - Briefing Statements for the team (approximately one per team member),
    - 2-3 Proposal Forms.
- A computer with access to the climate simulator C-Learn (online) or C-ROADS[1] (downloaded to the local computer) and PowerPoint slides, a projector, and a screen in the center of the front area.
- A white board (or big pieces of paper) with a large grid for participants to write their commitments that everyone can read from their seats (figure 1).
- A flip chart with pre-drawn diagrams (figure 2 & 3).
- A blue tarp near the area where the least developed countries will sit, which will be used to symbolize sea level rise.
- Somewhere out of sight, such as outside the room or in the back, store your more formal clothes or accessories for acting as the UN Secretary General, *e.g.*, a man could store a tie and coat or a woman a jacket and scarf.

Though this is what we have found to work best for us after many events, you can always mix and match pieces to suit your needs.

Proposal Summary

	Emissions Growth Stop Year	Emissions Reduction Start Year	Annual Emissions Reduction (%/year)	REDD (1 = BAU; 0 = zero emissions)	New Afforestation Area (0-1 [max feasible])	Contribution to (or Draw on) Fund ($ Billion/yr)
United States	2100	2100	-	NA	0	0
European Union	2100	2100	-	NA	0	0
Other Developed	2100	2100	-	1	0	0
China	2100	2100	-	NA	0	0
India	2100	2100	-	1	0	0
Other Developing	2100	2100	-	1	0	0
Example	*2075*	*2085*	*1.0%/year*	*0.8*	*0.1*	*$10 B/yr*

FIGURE 1

[1] These simulators and resources for using them can be accessed through Climate Interactive's website https://www.climateinteractive.org/tools/

Signs of global wealth disparity. For the richer countries, set up their tables with a tablecloth, flowers, pens, notepads, and snacks. These details are to symbolize the relative wealth of the team who will sit here—the Developed World (or the US, EU, and other developed countries groups). For the moderately wealthy countries, set up chairs but no tables. Then, have the Other Developing negotiating group sit on the floor, perhaps with one chair for the group's wealthy leader. (Note – though it may seem untraditional in professional settings, we almost always ask this group to sit on the floor, even in business settings.) If you are including auxiliary groups, you might offer candy or fake money to the fossil fuel lobby and sign-making supplies to the climate activists. While they are optional, props make the roles feel more authentic and make the game more engaging.

Items to bring

To print:

- 1 Briefing Statement per person (or two-three people can share one if you want to save paper). Double-sided.
- 2 Proposal Forms per team. Single-sided.
- 1 Team name placard per team. Print the whole file, not double-sided, ideally in color.

Other items:

- Formal clothes for roles
- Pale blue sheet or tarp
- UN flag or flags of countries
- Flowers, water pitcher, glasses, note pads, pencils, fruits or snacks of some type, and table cloth
- Paper or blackboards with pre-drawn diagrams

To draw on paper or blackboards, post on a wall, or project:

A. Pledge input table (figure 1). Draw large enough that everyone can see from their seats.

B. Temperature futures graph (figure 2)

Graph of BAU to date for atmospheric CO_2 concentration and several possible trajectories that might result from the collective proposals. Use this to poll the audience about

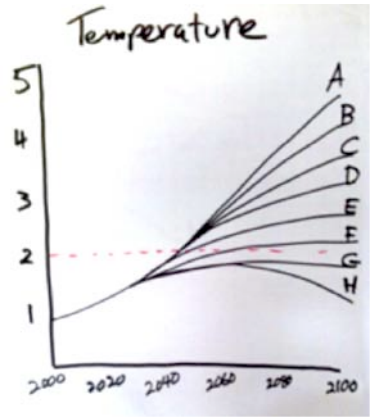

FIGURE 2

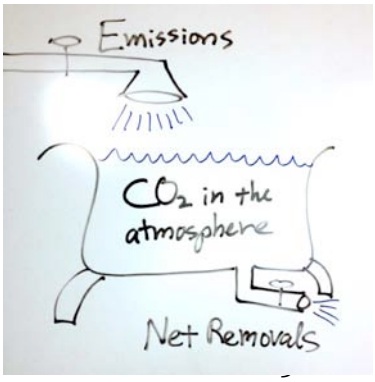

FIGURE 3

what effect their proposals will have before running the computer simulation to see the results.

C. Bathtub drawing (figure 3) to illustrate relationship between emissions, removals and the atmospheric CO_2 concentration. (see Appendix B)

Note several features of the bathtub drawing: The amount of water flowing into the tub should far exceed the flow out of the tub. And the inclusion of the word "Net" in "Net Removals" is important.

Inviting media

Where appropriate, we recommend inviting media, bloggers, or videographers to an event and/or releasing a press release about the event. You can also produce your own media by taking pictures, video, and writing about your experience (or have participants help out). For many, role-playing exercises like World Climate are a new approach to learning that offers an opportunity to connect people to a global issue that can seem abstract. Please share what media you get with Climate Interactive by emailing info@climateinteractive.org.

Past examples include:

- Local paper in Germany
- In *Science* from the American Geophysical Union

C-ROADS vs. C-Learn

There are two versions of the simulator: C-ROADS and C-Learn.

	C-ROADS	**C-Learn**
Number of regions possible?	Up to 6	Up to 3
Runs online?	No	Yes
Download to desktop?	Windows only	No
Customized pledge units	Yes	No
URL	https://www.climateinteractive.org/tools/c-roads/	https://www.climateinteractive.org/tools/c-learn/

See Appendix A for instructions on how to access and setup C-ROADS.

Primary Facilitation Hurdles

After running World Climate hundreds of times for groups that vary from twelve-year-old science students to European climate officials to Nobel-winning scientists, we have found the primary facilitation challenges to be:

1. Be open to emotional reactions, not just technical insights. At its best, World Climate engages participants deeply both in analytical and quantitative thinking (e.g., negotiating, calculating, strategizing), and in empathetic and aspirational feeling (e.g., seeing others' perspective, facing difficult facts, cultivating hope). Providing an opportunity for participants to explore both analytic and affective responses to the experience will deepen their understanding of climate change.

2. Retain hope and possibility. The physics of the carbon and climate system combined with the difficulty of international decision-making can make the global task feel overwhelming. So, during the game, play the role of the optimistic UN leadership, encouraging the parties to work hard to craft a better agreement. Then, during the debrief, follow the guidance listed in this document to cultivate a sense of possibility in the group and share your own reasons to be hopeful.

3. Facilitate, rather than lecture. Share enough about the climate system, carbon cycle, international dynamics, the UN process, and other matters (note: you don't need to teach all these topics), but not too much detail. Lecture as little as possible. Set up participants to learn through the process of the game, stretch themselves personally and engage themselves as much as possible. World Climate offers an opportunity to break out of conventional modes of learning and access deeper, active learning pathways. Try to step away from the role of 'lecturer' and, instead, take on the role of a facilitator or guide. Use the game to pique interest and generate questions. Throughout the game, intersperse short presentations with role-play. Make sure to include time for in-depth discussion during the final debriefing session to drive home key insights.

Steps

1. Welcome the Participants

For this section, dress more casually. For example, don't yet put on a jacket, tie or scarf that you might wear when you take on the role of UN Secretary General or UNFCCC Executive Secretary.

Ideally, you will welcome the group in a separate room from the main room, so when they enter the room, they will start playing their roles. If this is not possible, ask participants to sit in the chairs, but not to move them. People who do not have a chair can stand or sit on the floor.

Ask the participants to play their roles fully to the best of their understanding when the negotiations begin.

Tell the group that the simulation will contain elements that are both realistic and unrealistic.

Some realistic elements include: there will be binding deadlines, the behavior of the global biogeochemical system will be determined by our best scientific understanding, and there are differences between the regions of the world. The simulation is the same used by some negotiators at the actual climate talks (the French government, for example).

Unrealistic elements include: The game is very highly simplified and is much more dissimilar to an actual UN negotiation than it is similar to one.

As such, tell the group they can use this "virtual world" to experiment with international agreements and deals that would be impossible to explore in real negotiations. Often, depending on the group, at this time we ask the group to favor global considerations over national ones (*e.g.*, if typically national negotiators will favor national interests over global interests, ask them to play the game with global interests at the forefront to see what they can do).

2. Assign Participants to Teams

Teams can either be divided up ahead of the event or as they arrive. The advantage to assigning teams in advance is that you can give them their briefing materials to review beforehand rather than asking them to read over them when they arrive.

When the group of participants includes a high level of international and/or political background diversity, assign people to roles that are as close as possible to the opposite of their lived experience. Doing so provides an opportunity for players to see the world from a new perspective and can greatly expand their understanding of geopolitical and social drivers of decision-making. Make sure the strongest advocates for (or actual representatives of) the rapidly-developing countries of the world (e.g., China and India) play the role of the Developed world. Similarly, put the people who identify with wealthier countries into the roles of the Developing Nations, sitting on the floor.

Ask participants to sit in their areas and introduce themselves and read over their group's briefing materials for several minutes. While they chat, add your more formal dress features.

Above: One set-up for World Climate, in a business school. "Other Developing" (made up of primarily North American and European students, on the floor. "United States" (made up of primarily Indian and Chinese students, in the top row.

3. Introduce the Negotiation

As you reconvene the group, change your demeanor to reflect a serious, results-oriented, and no-nonsense attitude. Stand at the front of the room. Do not smile. Quickly stop any side talk by asking the delegates to focus on the task at hand.

As briefly as possible, introduce yourself as Secretary General or Executive Secretary, and set the context. Assert that climate change is a big challenge and

that the nations of the world must create a plan to address it. If necessary, include a short lecture on climate science to make the case. We have provided PowerPoint briefing slides to aid you in facilitating. Express your disappointment that despite over 20 global meetings since 1992, they have not achieved an agreement that would address climate change sufficiently. E.g.,

"Distinguished delegates, it is with great honor that I welcome you to the twenty-first Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris France. As you know, I am Ban Ki Moon [Christiana Figueres], Secretary General of the United Nations [Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC)]."

Set the tone by making the gravity of the situation and the goal of the negotiation clear. For example you could say:

"As I look around the room today, I see delegates who are younger than I am and who, within your lifetime and, certainly, within the lifetime of your children, will be faced with the consequences of our decisions here today. ***I ask you for nothing less today than to feel the full weight of your decisions on your future and the future of generations to come.*** *What is the planet that you will leave to the future?*

Your task is straightforward: in order to avoid dangerous climate change, you must achieve emissions reductions that will stabilize CO_2 levels at or below 450 ppm and temperature increases at or below 2 ˚C above pre-industrial levels."

Introduce each group and what part of the world they represent. You can give the basic statistics for the country groupings: population, GDP per capita, total emissions, per capita emissions, etc.

Typically, we will first show the population and GDP data while referring to the data overview table, then show the stacked graphs of historical emissions, and then explain the statistics about cumulative emissions and future emissions.

Summarize by saying:

"In summary, most of the money and the emissions to date have come from the Developed world <point there>, most of the future emissions will most likely come

from the Developing A Nations, and the effects of climate change will be felt most strongly in the Developing B Nations."

During this time, most likely someone will make a joke about sitting on the floor or something. Sternly rebuke them by saying, "please refrain from any side talk that does not contribute to achieving the goal of a breakthrough agreement." Do not smile.

During this time, most likely someone will ask a question about the simulation or the setup of the game e.g., "why is the Middle East in this group?" or "I want to have more information about costs." Answer questions as briefly as possible. To requests or expressions of concern, say, "The Secretary General recognizes that the delegate from the Developed World wishes she had more information about costs," and quickly move on. You are not here to accommodate. You are here to move towards an agreement given your rules.

At the end of this question period, say, "do any other delegates require additional clarification?" Use this sort of official, parliamentary language.

4. Show participants the "Business as Usual" future

Open the computer model (either C-Learn or C-ROADS) and orient participants to the inputs and outputs of the model, including emissions of heat-trapping gases (expressed as CO_2 equivalents) by bloc, resulting CO_2 concentrations, and temperature outcomes. Show them how, under a 'business as usual' plan, with no additional climate policy, global surface temperature rises far above the +2°C goal.

Show the temperature future and connect it to information about the impacts of climate change. For example, you could show future sea level rise impacts with a meter stick next to the group(s) sitting on the floor.

Remind the group of their purpose:

"Your goal is, by the end of the session, is to achieve an international agreement that will keep global temperature rise at or below 2 degrees C."

5. Explain how they will make their decisions

Each bloc must make decisions to address three tasks. Guide participants by explaining these tasks:

1. *Each delegation will set its own fossil fuel emissions targets. You will set:*

   a. In what year will emissions of heat-trapping gases in your bloc stop growing (if any)?
   b. In what year, will your emissions begin to decline, if any?
   c. If emissions will decline, at what rate (% per year)?

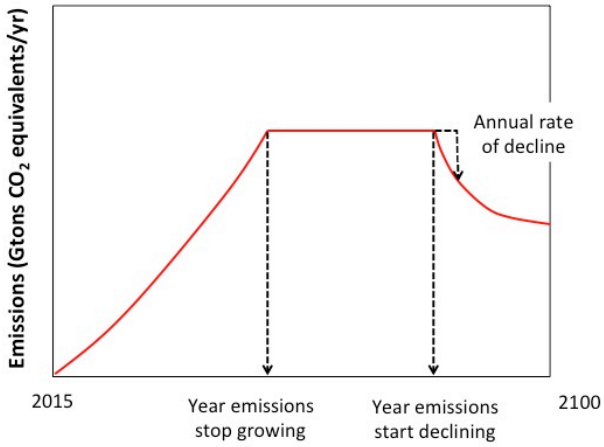

FIGURE 4

2. *Deforestation and land use (REDD) policies. Decide:*
   a. *Deforestation*: 0 – 1 scale. 1 continues 'business-as-usual' (BAU, or no policy) deforestation path, while 0 gradually eliminates deforestation over coming decades.
   b. *Afforestation*: 0 – 1 scale. 0 = no new area set aside for afforestation; 1 = maximum feasible afforestation area.
3. We are creating the "UN Green Climate Fund" for disaster relief, food and water, immigration and refugees, mitigation (investing in any necessary non-cost-saving emissions reductions to achieve Task 1 goals). We are aiming for a total of $100 Billion per year in financing.
   a. How much will you contribute?
   b. How much should others contribute?
   c. What do you need?
   d. Terms?

If time is short, you can eliminate the task around the Fund. Decisions about the fund are not directly entered into the computer model, but often lead to heated discussions and agreements that are used as conditions for emissions decisions.

Proposal Summary

	Emissions Growth Stop Year	Emissions Reduction Start Year	Annual Emissions Reduction (%/year)	REDD (1 = BAU; 0 = zero emissions)	New Afforestation Area (0-1 [max feasible])	Contribution to (or Draw on) Fund ($ Billion/yr)
United States	2100	2100	-	NA	0	0
European Union	2100	2100	-	NA	0	0
Other Developed	2100	2100	-	1	0	0
China	2100	2100	-	NA	0	0
India	2100	2100	-	1	0	0
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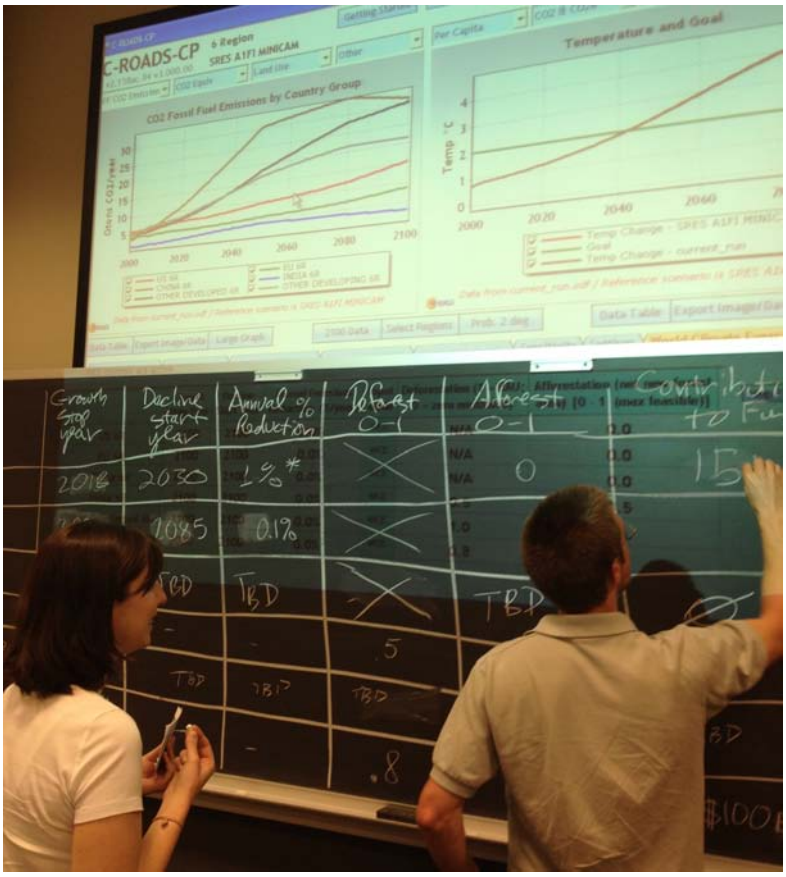


Above: Participants input their pledges into the table on a blackboard, with the C-ROADS simulation projected overhead.

If you think it would help, you could show an example of the decision a group will make for its emissions path. On a flip chart, or using the slide (image below) from the slide deck, sketch the Business as Usual (BAU) curve for one of the regions. Explain the decisions they will make (Emissions Stop Growth Year, Emissions Reduction Start Year, and Annual Rate of Reduction) and sketch an example on the flip chart.

Explain that certain regions will make decisions about global deforestation since the bulk of tropical rainforests are in those parts of the world, but others will not.

Explain also (with the supporting slide) that each country group will propose how the country groupings should contribute to or draw from the UN Green Climate Fund, which has a goal of $100 billion dollars.

6. Ask for first round emissions targets

Pass out copies of the proposal record sheet, if teams do not have them already, and give the parties a clear deadline (e.g. 20 minutes) for making a decision on whether to change their default or business as usual actions. Write the time on the whiteboard and explain that, at that time, we will:

1. Confirm submitted new emissions commitments or confirm "business as usual."
2. Allow for a 2-minute presentation by each group about their emissions reduction commitment and why.
3. Run the computer simulation to analyze their climate actions and learn if we are on track to meet the goal.
4. If necessary, prepare for the next negotiation round.

Note that you will not need to pressure the parties to hurry up and meet the deadline—if they do not change their commitment, you will simply use a

business as usual commitment. Remember to play your role as Secretary General or the climate negotiations Executive Secretary.

If you need to apply some pressure, you can also do so via an ombudsman (an intermediary) whom you could appoint at the start.

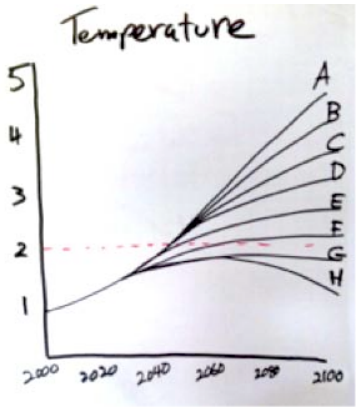
7. Hear pledges, view simulation results, and explain dynamics

a. Hearing pledges.

Invite a representative from each team to speak to the group for two minutes about their party's commitment, why they are making it, and what they want the other groups to do.

Tell them they have two minutes. Pull out a timer that all can see to show that they will be cut off if they run over time (just like in the UN).

Allow for only minimal additional rhetoric about the difficulty of their situation. Do allow for explanations of what it would take for them to reduce more.



b. Mental simulation

Before showing simulation results, ask participants to mentally simulate (i.e., guess) the outcome of the scenario. We often say:

"C-ROADS is not a crystal ball or answer machine. Its purpose is to help its users better understand the dynamics of the climate system. To do so, you need first to 'run the model' mentally. So, if I input these changes (e.g., Developed Countries cap their emissions in 2040), what temperature outcomes do you think we will see? 5 degrees? 4.5? 4? 3.5? 3? 2.5? 2? 1.5? <Point to the temperature graph on the flip chart>. Write it down right now on a piece of paper. <Pause and wait> Now call out some answers to me."

Write the answers informally on a chalkboard. Give an observation, e.g., "Okay, there is a good bit of diversity in views." Then run the model.

c. Contextualizing the results

Enter the first pledges from a team slowly so that all can see the changes as they show up in the model little by little.

Ask, "Do your actions solve the whole problem?" ("No!")

Ask, “Do your actions help?” (“Yes!”)

Such an approach will help participants learn that no region’s actions are sufficient to address the problem, but each is needed. Continue entering the pledges from the teams until all are entered.

After running the model with the pledges from all regions, identify the progress made and also the necessary results that are needed. E.g., “The good news is that if all countries deliver on their pledges, the 2100 temperature would be 3.7 degrees instead of 4.9. That is a much better world. And yet you can see the gap that remains between 3.7 degrees and the goal of 2 degrees.”

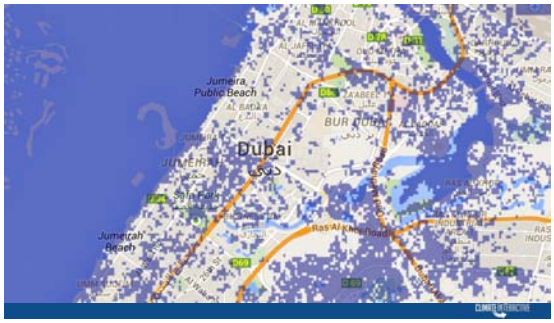
d. Sea level rise demo

Next, open the “sea level rise” graph in the computer simulation and show the trend for sea level rise. Say, “Many of your citizens would be flooded by sea level rise.” Take the blue tarp (if you have one) and dramatically drape it over the participants sitting on the floor. Take it off quickly. Note – this action is optional but can be quite powerful.

Another powerful demonstration is to use a website to show a picture of a region that participants care about if there was sea level rise. The website http://flood.firetree.net/ helps you create such maps. Some examples are below.

Holland with +0 meter of sea level rise and +1 meter of sea level rise

Dubai with 2 Meters Sea Level Rise



e. Bathtub insight

One of the best opportunities for teaching the dynamics of the carbon and climate system may occur when the groups level emissions, or if their emissions reductions come too late and are insufficient to meet the 2 degree goal. This would be when total CO_2 emissions cap, likely between 2020 and 2030, and

stay roughly level for the rest of the century. This is a good moment to teach the "Bathtub" analogy, or why CO_2 continues to accumulate in the atmosphere even when emissions stabilize. For extensive tips and scripts about how to teach this insight, see Appendix B.

8. Subsequent rounds

Continue additional rounds of negotiations until groups meet the goal or start running out of time. Usually in a 3-hour session there are 2 or 3 negotiating rounds.

Ideally, the teams will dispatch negotiators to work out a deal with other teams. This happens either in small group conversations or by someone speaking to the entire group (e.g., "We need to all work together. What if we ….?") If the latter happens, give the person space and time to facilitate a conversation, but intervene if it drags on too long with little progress.

Often the team playing "Developing B" (in the three region version) or "Other Developing" and India (in the six region version), sitting on the floor, will struggle to get clear about what they can do, given their minimal power. One possibility is to ask them, "Do you seem to have any power here?" Once confirming "No", you could say, "In the real UN negotiations, delegates from nations such as some in Africa or small island nations will make the case that wealthier nations need to help them for moral and ethical reason, but also because it is in their own interest." A powerful illustration of this last point is evident from the computer simulation: ask participants from these delegations to look carefully at projected emissions if no policy actions are taken ('business-as-usual') and ask if they think wealthier nations can successfully meet climate goals if they do not also reduce emissions. As future emissions are dominated by the developing world, it quickly becomes evident that their decisions are critical to global success.

In later rounds, if time is short, the facilitator can bring the group together to negotiate in plenary. This could mean that after two rounds or so, you call out to the groups from the computer to collect their latest positions and enter them as they are announced.

Decide at some point that the groups are not going to make any more progress negotiating. This could be after achieving a two degree scenario or not (sometimes groups don't even get below 3.5 degrees C). Announce,

"Congratulations, you have achieved X degrees. As [Secretary General] I declare this session closed."

If the group did not achieve the 2 degree goal, once you are out of role, we encourage you to ask them to continue to offer model inputs until the goal is achieved – an approximate 80% drop in emissions by 2050.

In discussion, the group may explore other approaches to stabilizing CO_2 concentrations and temperature rise. Use the simulator to see the contribution from reducing land use emissions and increasing sequestration through growing more trees.

One variation: if you have time, internet access, and the capacity in your participants, you can give them access to the simulator themselves and have them work in teams to create their own favorite scenario. This could be done during the workshop, between workshops or as a follow-up or homework exercise. Climate Interactive offers some resources for this, including a two-page worksheet, the "C-Learn Vision Exercise.pdf."

9. Debrief

Ideally, there is time for the group to take a break at this point.

During the break, if possible, change the setup of the room to a large bowed theatre, a circle, or similar setup to maximize participants' ability to see and hear each other. Mix up the groups. Change your clothing and demeanor to be more informal, thoughtful, and responsive.

Welcome them back and explain that it is time now to reflect on the experience.

Note that most of what they experienced was very little like the actual negotiations at the UNFCCC, but that we want to learn as much as possible about the real world from the simulated experience.

If time allows, ask participants to jot down their reflections about their experience for 5-10 minutes. Two effective prompt questions are to elicit insights and affective responses are:

- Were there any surprises?
- How did this experience make you feel?

Address as many of the following topics as possible, preferably in this order:

Note – your goals are to facilitate discussion, elicit the insights from the group, and help clarify and summarize. Avoid lecturing.

1. Emotion and experience

   Ask people to turn to the person next to them and complete the sentence, "When I played my role in the policy exercise, I felt…" (encourage them to talk about actual feelings, not thoughts about climate change or analysis about the exercise. For example, "I feel…", mad, sad, glad, confused, etc.). Ask them to switch after a couple of minutes. This could be done in 3s or 4s if need be.

   If you have time, ask the group to return their attention to the whole group and ask for a few people to share their experiences. If they need prompting, remind them that you asked them to play a role that was quite different from their actual life and you are curious how that felt. This may be particularly acute for some people. Acknowledge any emotions that come up, but remain non-judgmental. People will react in different ways.

   For a more kinesthetic learning approach, ask participants to move to the part of the room to represent their feeling. Name different areas as "anger," "fear," "sadness," "joy." Some people may stand between several spots to represent they have mixed feelings.

2. Real world

   Use the slides in the slide deck to explain, briefly, the actual proposals to the UN in the actual negotiations. Explain that:

   Most of the 193 countries have their own position, although many of the countries work together, such as in the game).

   The pledges currently make a good bit of progress over the reference scenario but would have much further to go to limit warming to two degrees.

   If you have time, use the information in the slides to reconstruct the current state of the global climate deal in C-ROADS.

3. Insights

   Recap the primary dynamic insights from the simulator. If you have time, ask participants "What do you think were the most important insights from this experience? About the climate system, the international issues,

politics, sustainability, economics?" Have them write their answers on paper and then have several share with the group. Look for and summarize as many of the following as possible:

i. Carbon Bathtub
Point to the sketch of the bathtub. Make the point that capping emissions near current levels fails to stabilize CO_2 in the atmosphere because the system behaves just like a bathtub (see Appendix B for details). "If we cap emissions above net removals, concentrations must rise." To reach climate goals, emissions must peak within the next few years and then decline to near zero by the middle to later part of this century. In other words, this is an urgent problem that requires action on a massive scale.

ii. Required speed and scale

Required speed. The longer the world waits to reduce emissions, the harder it is to meet goals. You could recreate a test to show that if the "Start Reduction Time" is delayed five years, then the "Percent Reduction" required is increase by several tenths of percent. To limit temperature increase to two degrees, global peaking of emissions within then next 5-10 years is necessary.

Required scale. Because of the dynamics of the carbon 'bathtub,' reduction of CO_2 emissions by over 80% is necessary to stabilize CO_2 in the atmosphere.

These insights are also easily demonstrated using a glass to represent our finite atmosphere and water to represent atmospheric CO_2. As CO_2 is emitted, or water is poured into a glass, it accumulates. Thus, in order to stabilize the level of either CO_2 in the atmosphere or water in a glass, net inflows must be zero (see Appendix B).

iii. Tragedy of the commons
Elicit from the group that this game is an example of a classic system archetype or system trap, "the tragedy of the commons," in which individuals acting independently and rationally according to each individual's self-interest behave contrary to the best interests of the whole group by depleting some common resource. Garrett

Hardin best described this trap in his essay "The Tragedy of the Commons." You could share the article by Hardin. Point to the solution—***mutual coercion mutually agreed upon*** — and thus the need for international cooperation. Perhaps make the connection to other "commons" that require such mutual coercion—traffic lights, fisheries, rangeland, parks, taxi fares. Note that we traditionally think of a commons as something we draw from, i.e., a source. In the climate challenge, the commons is something we dispose into, i.e., a sink.

iv. Social justice

The game illuminates many of the tensions between the most developed and less developed countries, particularly related to fairness, historical responsibility for climate emissions, and future economic development. Thus, many believe that social equity and justice must be addressed. Otherwise, the developing world will be unable to act.

Further, the simulator shows that, to limit warming to two degrees C, regions of the world would need to be 'all in' – the developed, developing A, and developing B nations all need to engage in ambitious action.

v. Hope

Cultivate the possibility that global society could address climate change. Ask the group, "You can see that huge shifts in global society would be necessary to address climate change. What gives you hope that the shifts could happen?" Perhaps have people talk in small groups and share with the plenary. Summarize and support their answers.

And, to the extent that you believe it to be true, share your own answer. Some possibilities include:

1. Many trends are in our favor. Show slides from the Facilitator deck related to the growth in renewable energy, energy efficiency, and support for climate action.
2. Human society has made large shifts before. Ending the slave trade in England, stopping Apartheid in South Africa,

achieving peace in Northern Ireland, gaining civil rights for African-Americans in the US, and tearing down the Berlin wall are all examples of powerful shifts people have made.

3. Remind people that hope is a choice, not an assessment. We can choose hope to motivate our actions.

vi. Possible role in action

This exercise could be done individually, in pairs, or in small groups.

Ask, "There are many possible roles that are needed in this work. What role interests you?"

Ask, "To be successful, who do you need to be?" (Here you would be asking more about what sort of leader or citizen. That is, what qualities would they need to bring out of themselves – bravery, diligence, clarity, resolve, strategic thinking, perseverance). Bring the group back to together. Ask for people to share what they said or heard.

For those interested in raising awareness of and engagement with the climate challenge, facilitating it themselves may be of interest. If you feel it is appropriate, please share our open approach and encourage participants to use all of the free online materials and to facilitate their own World Climate session with others.

10. Closing

Close the session by offering your thanks to the participants and any sponsors, hosts, or facilitators. Afterwards we recommend participants to fill out a written evaluation to comment on their experience and offer feedback. We are conducting research on learning outcomes from World Climate and have surveys in for participants and facilitators: https://www.climateinteractive.org/tools/world-climate/instructor-resources/evaluation/. Please send any evaluations to info@climateinteractive.org.

Advanced Facilitation Tips

1. Minimize your advocacy. Let the game do its work – in most settings, someone will step forward to advocate for improvements. The purpose of the

game is to create the conditions for someone to find that voice inside themselves. Often it requires you as facilitator (even playing an UN official) remaining silent.

2. Stir the pot and bring the drama. Accentuate the inequity between the groups in creative ways in order to prompt an experience of the global power gap between different parts of the world. For example, in your introduction you could thank the rich countries for funding the UN and providing your pleasant accommodations last night. Make sure you have one team sit on the floor. And, when you visit the team sitting on the floor, ask them what power they think they have in the game (i.e, not much).

3. Engage minds, hearts, and bodies. We believe that the exercise works best when participants engage all three. Minds – thinking about strategy, analyzing the numbers, negotiating well. Hearts – giving speeches, negotiating with other parties, or experiencing the impacts of climate change. Bodies – participants typically walk around the room to visit other parties and use their posture and gestures to convince others.

4. Ask participants to mentally simulate model runs. As described above, take the time to have participants guess the result of a simulation run before seeing the result. This practice increases learning.

5. Give space for reflection and feeling. Oftentimes, once you have created a scenario with temperature with a good chance (given uncertainty) of creating a temperature increase of no more than two degrees (e.g., 2.0-2.5 degrees C), you can say, "Consider, for a minute, the possibility that we could make this future happen." Go on to show what the various parts of the world are doing – peaking and dropping emissions. "How long do we usually allow ourselves to consider a scenario of success? Could everyone, for one minute, be silent while we consider this possibility." Wait 60 seconds (which will likely feel like a very long time) and then return to the discussion.

6. Land the "bathtub" insight. Take the time to ensure that participants understand the counterintuitive dynamics of the carbon and climate system and how the bathtub (or "stock and flow") metaphor is a powerful way to think. See appendix B.

7. Get grounded in Systems Thinking. To build on the last point, it could help to enroll in the entire free Climate Leader online training series that teaches

Systems Thinking for climate leaders. Sign up for it: https://www.climateinteractive.org/the-climate-leader/

8. Develop your own closing speech. In final 5-10 minutes, share your own personal view on why you remain committed to the work of creating a sustainable world, what you think your role is, and/or why the world should remain committed. We provide possibilities – for example, John Sterman's materials on how the world needs a social movement similar to the civil rights movement in the US. Or the final two minutes of this presentation to the Smithsonian Institution. We also have many PowerPoint slides with encouraging trends. But you may find your own approach.

Sequence of play

1. Welcome and introductions
2. Participants assigned to roles, take seats and read briefing memos
3. Secretary General calls the Conference of the Parties to order and addresses the delegates
4. Negotiation Round 1
    a. Negotiations among parties
    b. Two-minute plenary address by representative of each delegation outlining their proposal
    c. Proposals entered into C-ROADS/C-Learn model
    d. Results shown and discussed
5. Negotiation Round 2 (steps a-d)
6. Negotiation Round 3 (steps a-d)
7. Secretary general brings negotiation to close
8. Debriefing
    a. Participant reactions, comments, feelings; shifts (if any) in negotiating positions across rounds noted and discussed.
    b. Implementation: can emissions be cut? Costs and barriers to implementation of participant proposals
    c. How can we catalyze change (participants' theories of change)
    d. Wrap-up: Personal aspirations and commitments to action
9. Thank you's; participant evaluations and feedback

Variations

There are many variations people have developed for World Climate. Here are a couple. If you develop a new approach we would love to hear about it—send us an email at info@climateinteractive.org.

Added lobbyist and activist roles

At the actual climate change negotiations there are many other parties besides the official negotiating teams that provide input and represent groups of interests. We have briefing materials available on our website for fossil fuel lobbyists, who support continued fossil fuel use, and environmental activists, who advocate bolder policies to slow climate change, if you would like to add these dynamics to your exercise. You might also add a role for someone to represent indigenous peoples, non-human species, or another group of your choice.

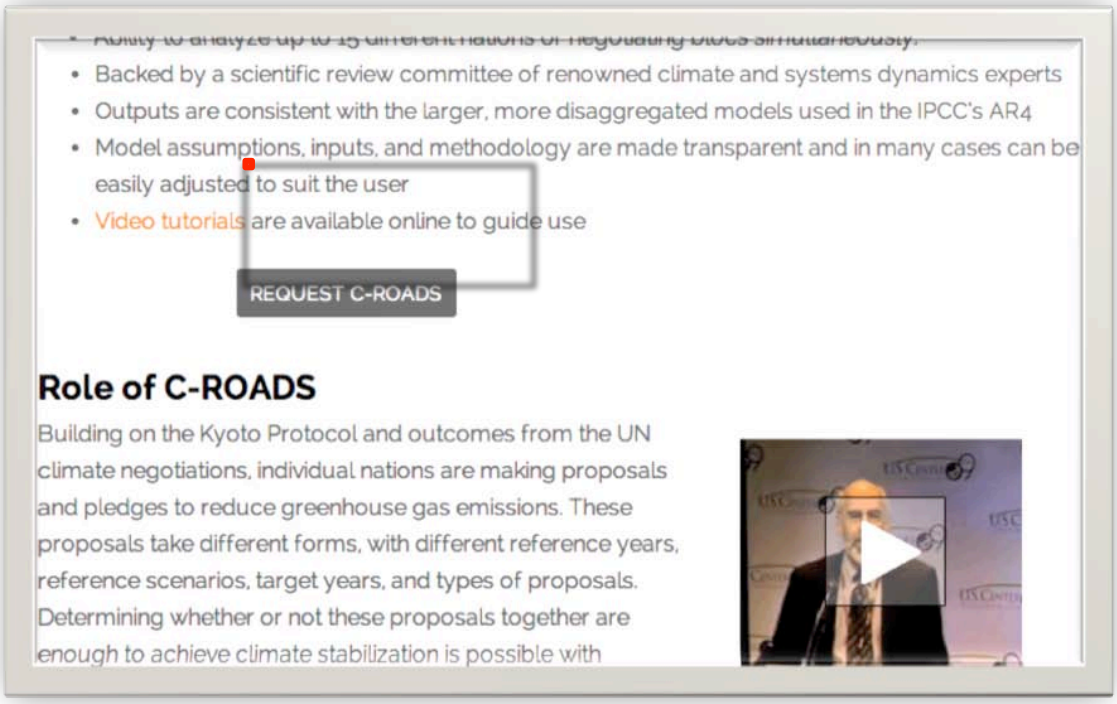
Briefing materials and other facilitator resources are available at http://climateinteractive.org/simulations/world-climate/instructor-resources

Microcosm of global population

One variation for setting up the group can be to base the group size on the relative sizes of the actual populations. In the three region version, ~20% would be Developed, ~50% Developing A, and ~30% Developing B.

Appendix A: Using the C-ROADS Software

1. Link to download: http://www.climateinteractive.org/tools/c-roads/.
2. Click on REQUEST C-ROADS.



3. Fill the survey and click « **Submit** »

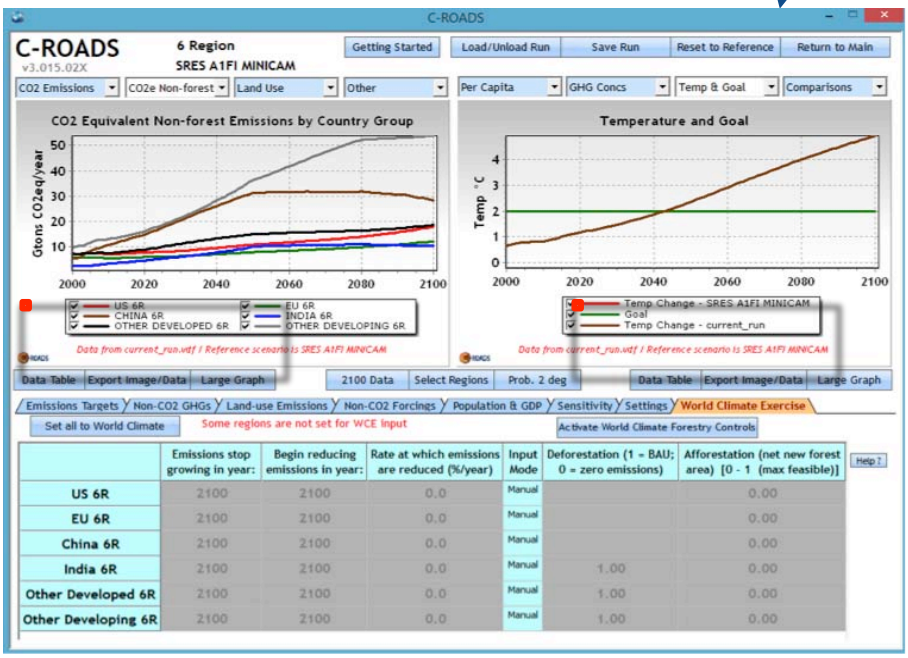
4. A link will appear to download C-ROADS to your computer.

5. Once downloaded, open CROADS from the desktop.

6. On the home page, choose option “World Climate Setup.” Do not change the baseline scenario.

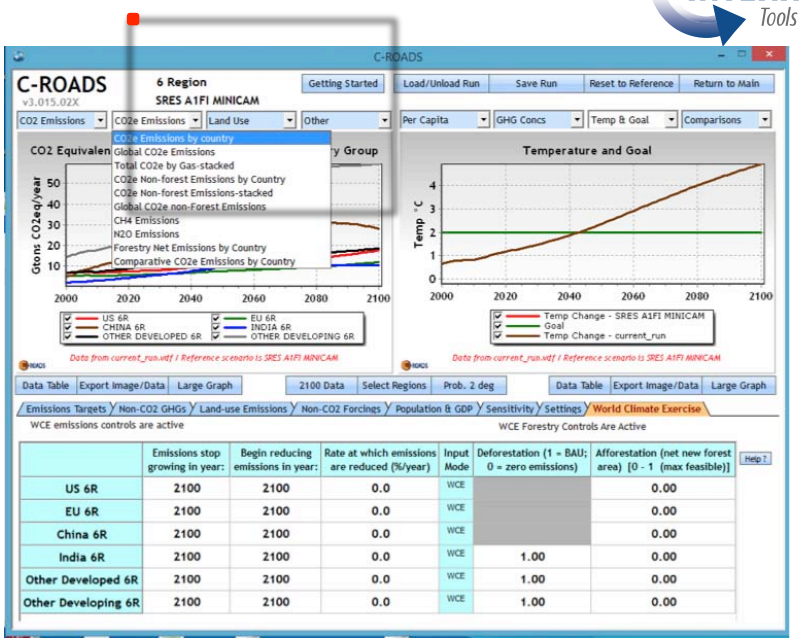
Or once “6 Region,” click on « **Create New Run** ». Then the interface for the "World Climate Exercise" is on the last tab to the right. Just click on it.

If you need to, click on "**Set All to World climate**" (left middle) and "**Activate climate World Forestry Controls**" (middle right) to activate the game.



If you don't need to click it will look like this:

Top left are modelled greenhouse gas emission trajectories of the six delegations (China, USA, EU, India, Other developed countries Other developing countries). Click on "CO2e Emissions by country" in order to take account of emissions from efforts against deforestation and promoting reforestation.



On top right corner are modelled the consequences of these trajectories on the climate in terms of global warming, rising sea levels and ocean acidification. You can view these consequences by clicking the tab displaying "Temp & Goal" to bring up the options.

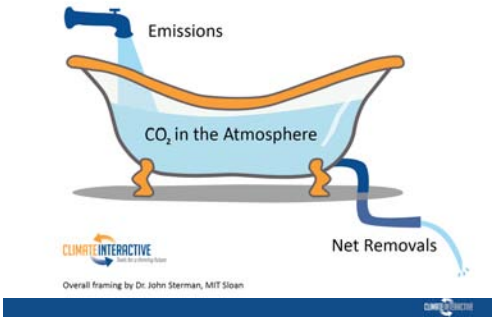
Appendix B: Explaining the Carbon Bathtub Insight

One of the best opportunities for teaching carbon dynamics may occur when the groups achieve a leveling of emissions or fall short of their goal by doing too little too late, i.e., when total CO_2 emissions stop growing, likely between 2020 and 2030, and stay roughly level for the rest of the century. This is a good moment to teach the "Bathtub" analogy.

There are several resources for you as you prepare to make this point.

- Climate Interactive's bathtub simulation and resources
- Dr. Juliette Rooney-Varga's video on systems thinking to understand climate.
- Drew Jones' video as part of the "Climate Leader" MOOC, which teaches about "stocks and flows" and uses the Carbon Bathtub as a main example.

Note – during this time you are acting less like the UN chair and more like a technical advisor. Open a graph of Total CO_2 emissions (it should be somewhat flat).



First, make sure the participants understand the basics of the biogeochemistry of the carbon cycle. Say something like:

"This graph shows the behavior of total global emissions of CO_2, which is <point at the spigot> analogous to the inflow—marked "Emissions"—to a bathtub. These emissions come from where?" (elicit from the group – burning coal, oil, and gas, and deforestation).

"The emissions are measured in tons per year, a rate over time. Emissions build up the concentration of "CO_2 in the atmosphere," which is analogous to the amount of water in the bathtub. What is the current concentration of CO_2?" (elicit from the group: over 400 ppm.)

"*Does anyone know the goal that most scientists have proposed for the concentration below which we avoid the most damaging effects of climate change?*" (elicit from the group – less than 450 ppm).

"*CO_2 also leaves the atmosphere through "Net Removals," analogous to this drain in the bathtub. Where does the carbon in CO_2 end up when it leaves the atmosphere?*" (elicit from the group – trees, plants, and soils, and oceans). "*It says 'net' because a large amount of carbon is constantly moving between the biomass, oceans, and atmosphere.*"

Second, elicit participants' mental models about how the system behaves – i.e., given a graph of flattening emissions (and removals), ask them to draw the resulting graph of atmospheric CO_2 concentrations and temperature trends. Most people use a correlation heuristic and draw a line with the same shape as the emissions trend.

Third, illustrate the actual system behavior using the bathtub analogy. With inputs to C-Learn or C-ROADS that result in flattening emissions, navigate to the "Bathtub" view and draw attention first to the emissions trend, then to the concentration trend (which continues to rise). Using the bathtub analogy, point out that emissions are an inflow, while removals make up the outflow. As we know, in a bathtub, as long water is coming into the tub faster than it is draining from it, water accumulates. Similarly, as long as emissions of CO_2 into our finite atmosphere are higher than net removals, CO_2 accumulates. Therefore, reductions in emissions are needed to stabilize concentrations. In addition, CO_2 accumulates at an even higher rate as long as action is delayed, requiring steeper rates of decline to meet the same concentration or temperature targets.

Fourth, encourage participants to use this insight to improve the outcome of their negotiation, i.e.,"*Okay, now you see that we need significant reductions in emissions. Meet with your teams and determine the next round of pledges.*"