



Facilitator Guide to the *En-ROADS Climate* *Workshop*

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Sustainability
Initiative

Welcome

This guide is intended to support your facilitation of the En-ROADS Climate Workshop, an interactive group learning experience that promotes greater understanding of the causes of climate change and the solutions essential to mitigating it. The workshop is framed by the En-ROADS computer simulation model, which allows participants to explore and rapidly assess the impacts of different solutions to climate change—like energy supply subsidies, energy efficiency, or land use changes.

Similar Climate Interactive activities to the workshop include:

- The Climate Action Simulation - a group roleplaying game that also uses En-ROADS to explore climate solutions. The simulation game is setup as a fictitious summit of global stakeholders gathered to address climate change, where participants play government, business, and civil society leaders. This alternate format is fun and good for groups who may have less familiarity with climate solutions.
- The World Climate Simulation is another group roleplaying game but uses the C-ROADS simulation model to explore the role of national pledges to reduce emissions. Participants take part in a fictitious UN climate negotiation as negotiators. Unlike En-ROADS which focuses on energy, land and other sectors impacting greenhouse gas emissions, C-ROADS focuses on when and how much nations must reduce their CO₂ emissions.

Materials for all of Climate Interactive's group activities are available for free and can be found at climateinteractive.org.



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Workshop Overview

The En-ROADS Climate Workshop is an interactive exercise guided by a facilitator where groups work together to test solutions for addressing climate change. Participants use the En-ROADS simulation model, which is built with the best available science, to test their ideas for which policies and solutions should be enacted. The goal of the workshop is to create a scenario that limits global warming to well below 2°C and aims for 1.5°C above pre-industrial levels, the international goals formally recognized in the Paris climate agreement. The resulting experience of this workshop is solutions-oriented, science-based, hopeful, and eye-opening.

In the first part of the workshop, participants discuss their own climate actions at any level—individual, business, community, country, or region—and then use the En-ROADS simulation model to learn about the global impact, if their actions were to spread widely. During the second part of the workshop, the group determines what else is needed to meet the climate goals. The workshop can be used in small to large group settings with people from all different backgrounds and levels of familiarity with climate action.

The workshop was developed through a collaboration of several partners led by Climate Interactive and the MIT Sloan Sustainability Initiative.

Purposes

The En-ROADS Climate Workshop was developed to address three important purposes:

- 1. Insights and Understanding** – Enables participants to gain insights into the factors that affect climate change and what the solutions and possible paths are for equitably and effectively addressing climate change and achieving the international climate goals.
- 2. Interactive Learning** – Create a participant-centered, interactive learning experience to explore the best available science on climate impacts and solutions. Participants drive their own learning, so they are more engaged and gain much more than they would through a lecture format. They also learn from each other as they work together to create a climate scenario for our global future.
- 3. Follow-up Action and Diffusion** – Participants gain a meaningful climate leadership perspective and lasting impression through the game experience that can translate into change in the real world. They learn which types of climate policies and solutions make a difference and can advocate for them. They think and explore for themselves about their own role in addressing climate change. They can share about their game experience, or become facilitators themselves.

Group Size

The workshop described in this guide works best for groups sized approximately 6-50 people. That said, the same guidance here applies for a one-on-one meeting around a laptop or a small meeting with 2-5 people. Similarly, the same plan works for groups from 50-500, with adjustments that are described elsewhere. We've tested the full range of group sizes and the process works well.

Time Availability

The workshop described in this guide works best for sessions of one to two hours. However, you can also dramatically cut down the features in the workshop and run it, interactively, in as little as ten minutes (see the En-ROAD videos page for examples:

<https://climateinteractive.org/tools/en-roads-videos/#Workshop-facilitation>) It can also be expanded to multiple hours when one includes significant hands-on experimentation in the simulator by participants and/or digging deeper into the possibilities for specific policies.

Preparation and Setup

Facilitation Team

Most workshops are facilitated by one person, but it is best if you can lead it with a second person—that way one person can be more focused on running the simulator and explaining its dynamics and the second person can be more focused on group dynamics and learning. It can be helpful to co-facilitate with someone who has knowledge and skills that complement your own. For example, a scientist or science educator may want to co-facilitate with someone who is more familiar with policy, economics, or business. Enlisting co-facilitators also gives them an opportunity to learn how to facilitate.

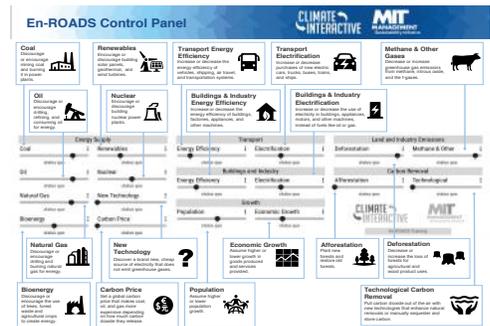


Figure 1: Control Panel Guide

Event Registration

An enormous amount of work has gone into developing En-ROADS and the materials for this workshop. We ask that you register your event, so we can evaluate the impact of our work, and continue to receive funding for it.

<https://www.climateinteractive.org/tools/en-roads/register-event/>

Room Setup

- Projector and computer that has internet access to En-ROADS and the PowerPoint slides accompanying the workshop. The projected image should be large enough, and positioned, so that all participants can see it clearly. Note that the PowerPoint deck that support the workshop can be helpful, but we often run full workshops without showing it at all.
- A white board or flip chart.
- Consider dividing the participants into groups, so that they can exchange views with each other during the workshop.
- Helpful handouts for each participant:
 - En-ROADS Control Panel Guide, printed double-sided. (See Figure 1)

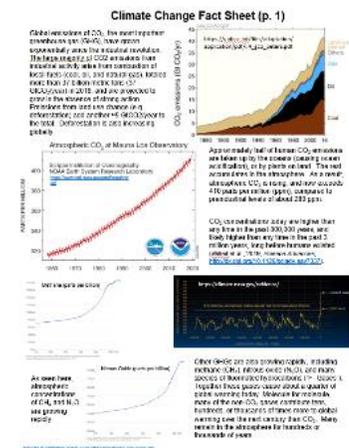


Figure 2: Climate change fact sheet

- (optional) Climate Change Fact Sheet. (See Figure 2)

Agenda and Schedule

About 1.5 hours is recommended for the entire session. However, variations are possible, from stretching the exercise into a longer event to holding an abbreviated version.

Here is the estimated schedule of events:

Table 1: Agenda of workshop

Introduction	5 - 10 min
Scenarios of Climate Success: Their Actions	15 - 20 min
Scenarios of Climate Success: What Will It Take?	20 - 30 min
Silence and Reactions	15 - 20 min
Hope	10 - 15 min
Call to Action	10 - 15 min
Total	80 - 100 min

Lead the group through these steps:

1. **Introduction** – The facilitator welcomes the group then introduces them to the En-ROADS simulation model and background information on climate change.
2. **Scenarios of Climate Success: Their Actions** – Participants reflect on the areas, policies, and behavior changes to fight climate change that they have worked on or witnessed in the past five years. They use En-ROADS to assess how global temperature would develop until 2100 if the entire world implemented their policies or behavior changes.
3. **Scenarios of Climate Success: What Will It Take?** – Participants explore “What else needs to be done to get under 2 degrees?” and “What actions are high vs. low leverage?”
4. **Silence and Reactions** – After the group has succeeded in lowering temperature increase to 2°C or below, they share a moment of silence, acknowledge how they feel and think about the implications for themselves and the world.
5. **Hope** – This is an important step in which the group cultivates hope for the possibility of achieving this future.
6. **Call to Action** – Participants discuss effective action, addressing the question “What shall we all do now?”

Workshop Facilitation

1. Introduction

Welcome the participants and briefly introduce the background and motivation for the event, the urgency of addressing climate change, the use of the En-ROADS simulator, and the event agenda. There are presentation slides available on the Climate Interactive website to support this introduction, however select what suits your audience and needs. Limit this segment to about 5-10 minutes; you want participants interacting with the model and each other as soon as possible to keep engagement levels high.

En-ROADS Overview

Show En-ROADS on the screen and give people an overview of the simulation model. Tell them:

“En-ROADS is a climate solutions simulation model from Climate Interactive and MIT Sloan Sustainability Initiative which is grounded in the best available science on climate impacts and solutions.”

First, show the temperature graph and “business as usual” future:

“If we take no additional action, we expect that <point at temperature graph> global temperature will increase dramatically from today out to the year 2100. This is a graph of global temperature change from the year 2000 to 2100. We have already heated up the planet by 1.1 °C <point>. If nothing changes, we are headed well beyond 2°C, to over 4°C by the end of the century <point>. Our goal is to limit warming well below 2 °C, and aim for 1.5 °C, which are the dotted lines <point> here.” (See figure 3)

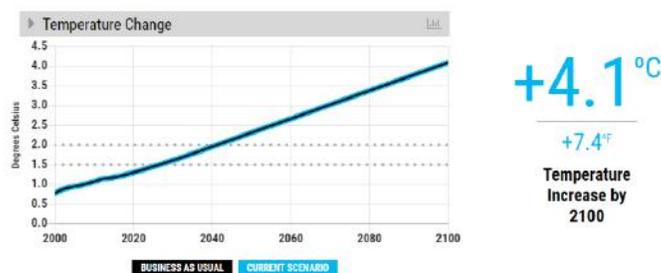


Figure 3: Temperature Change graph

In the US, some facilitators prefer to use the Fahrenheit temperature scale. You can switch the units in En-ROADS under the ‘view’ menu and change the goals in your presentation accordingly.

Second, orient participants to the En-ROADS Control Panel:

“Using the En-ROADS climate simulator model, you have 18 types of solutions that can be proposed to affect future warming. <point at levers on screen and guide> Your Guide to the Control Panel <wave guide> is a handy reference to the solutions you can propose during the workshop.”

For a brief and simple setup, you could conclude your introduction here and move into the next section. For a longer and more advanced introduction, continue below:

Third, describe the drivers of greenhouse gases from energy consumption by switching to the Kaya Graphs view in En-ROADS [from dropdown menu on top got to ‘View’ > ‘Kaya Graphs’]:

“These five graphs show the drivers of carbon dioxide (CO₂) emissions through our global energy consumption, which reflects about two thirds of all greenhouse gas emissions. The other third of emissions are from land use changes and other gases such as methane (CH₄) and nitrous oxide (N₂O).”

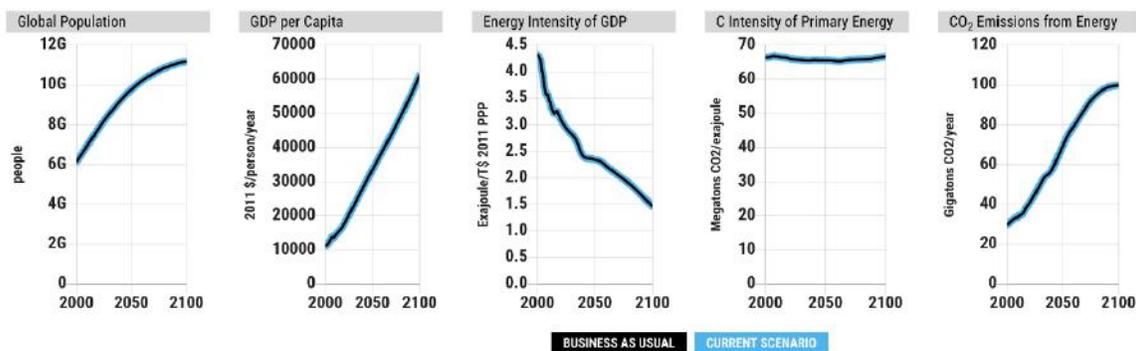


Figure 4: Kaya graphs

1. “**Global Population** is growing — we are at about 7.7 billion people right now—and anticipate growth to roughly 11 billion by the end of the century, according to UN projections. The rate of population growth is slowing over time as people have smaller families.”
2. “**GDP per Capita** is growing steadily per year, mostly as people in rapidly developing countries such as China, India, South Africa, Mexico, Brazil, and Indonesia attain higher standards of living.”
3. “Simultaneously, the world economy is becoming more energy efficient, or using less energy per unit of economic output — as shown by the **Energy Intensity of GDP** decreasing over time. Technologies are improving—more efficient cars, buildings, machines and so on—and economies are shifting from manufacturing to service.”
 - “The product of the first three — Global Population, GDP per Capita, and the Energy Intensity of GDP — is equal to the total amount of energy used by the global economy.”
4. “**Carbon Intensity of Primary Energy** — the amount of carbon dioxide emitted by energy use is expected to be stable as both low-carbon renewable and fossil fuel energy use grow at about the same rates. Carbon intensity would trend down if we shifted away from fossil fuels and towards low-carbon energy sources.”
5. “Multiply all four factors together, and you can see that overall **Carbon Dioxide Emissions from Energy** is growing each year, leading to the increase in temperature.”
 - “These factors explain in simple terms, why emissions are going up: the improvements in energy efficiency and decarbonization are not keeping up with the strong growth in population and energy consumption.”

One way to use these graphs: if someone asks what can be done to reduce carbon dioxide emissions from energy, there are four choices where interventions can occur: fewer people, less consumption, more energy efficiency, and less energy from fossil fuels.

Fourth, go back to the Main Graphs View and show the Sources of Primary Energy:

“What are the sources of energy? We can see on this graph: Burning coal in brown, oil in red, and natural gas in blue. You can see oil and to some extent gas leveling out here in the second half of the century as we reach supply limits and prices rise, but there is lots of abundant cheap coal, so it just grows.”

Renewables, such as wind and solar, are in green. They are growing very quickly but still most compete with fossil fuel energy sources if we don't make any changes from business as usual. Nuclear is in light blue, and bioenergy is in pink.” (See figure 5)

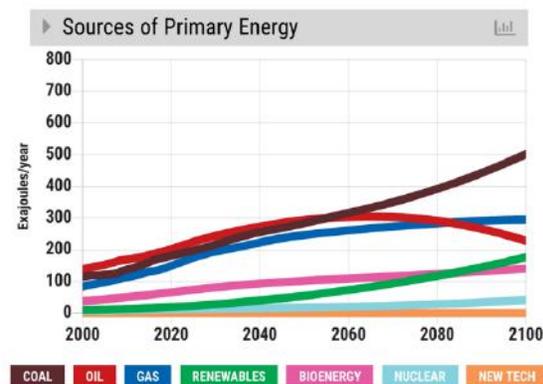


Figure 5: Sources of Primary Energy

Finally, pause for questions before moving into the next section:

“So this is the En-ROADS simulator and business as usual future at a glance. Any questions about the basic mechanics before we move into creating climate scenarios together?”

2. Scenarios of Climate Success: Their Actions

After you have introduced the En-ROADS model, participants now need to learn about the available levers to create a different scenario for our future. Say:

“We are here in this room today to discuss solutions and create scenarios for a better climate future, instead of the business as usual future we just reviewed.”

Then, ask participants:

“What have you (or your business/organization) been doing over the past five years that will help prevent future climate change in your community, business, city, state, or beyond?” Ask “What is [name of the company/ organization you're speaking to] doing today to support global climate commitments?”

If needed, expand the scope to name trends they have seen in the world as opposed to their actions. Perhaps ask them to write ideas on a piece of paper silently for a few minutes. Say:

“Turn to someone near you and tell them what you have seen.”

If you want, use the [En-ROADS Guide to the Control Panel](#) handout (see Figure 1) and say:

“Circle the general categories that your actions seem to fit within – for example, Renewables or Coal or Transport Energy Efficiency. If they don't fit, jot them on the side.”

Gather Responses

Ask participants to share their results with someone nearby and discuss. Allow some time for these discussions. When discussions slow down (maybe after 3-5 minutes), ask participants to share some of their responses to the whole group. You may want to note them on a whiteboard or flip chart. 4 - 5 responses provide a good list of options for further testing in En-ROADS.

Test Actions in En-ROADS

Out of this list, choose an action to be tested. For the first, choose an answer that you know actually helps - some good options to begin with include:

- Supporting renewable energy
- Taxing coal
- Encouraging energy efficiency in buildings and industry
- Promoting energy efficiency in transport

Note that some participant responses won't fit well so can't be tested in En-ROADS or you will need to guide them to where that impact would be seen. For example, participants might bring up an action like "talking to their friends about climate change" and you could note that this is an important way to raise awareness about all the various actions, and then move on.

Next, demonstrate to participants what would happen if the action was implemented globally. Say:

"What impact would that action have on the climate if this action spread across this sector worldwide?"

Assume for the following example that someone mentions that their community has a program that insulates housing for low-income residents. You can skip or breeze through some of these steps as the workshop advances, but for the first time, do a **comprehensive overview of the action**:

1. Restate what the participant said.

"There's an effort in your town that insulates housing – putting caulks around windows, blown-in attic insulation, fixing leaks, and so on. So let's imagine the whole world implements this solution."

2. Before moving the slider, ask participants to mentally simulate the impact –

"How much of a difference do you think this will make? Would temperature increase drop to 4°C? 3? 3.8? 2? Think of a number in your head."

Encourage participants to call out their predictions. This is the time when you are helping people surface their assumptions about how the system works.

3. Input the action into En-ROADS and explain where it fits –

"This type of action moves the lever called 'Energy Efficiency – Buildings and Industry' which you can see here <point> (See Figure 6). Let's assume the whole world takes this action starting next year and continuing through the century. This would also include improving the efficiency of commercial and industrial buildings and motors and..."

<Possibly open the “Advanced” pane of the slider to show what is being changed more specifically.>

“Efficiency was improving at 1.2% per year. Now we increase it from Status Quo to Increased, which is about 3% per year. That means all new capital for buildings & industry entering the economy will improve their energy efficiency by 3% every year into the future.” (See Figure 7)

Note: Each action can include either a single leap or a drop in the slider descriptor e.g. from “status quo” to “increased” OR “status quo” to “discouraged”. This moderates the amount of change for each proposed action.

Find detailed explanations of slider and model dynamics in the complete [En-ROADS User Guide](https://docs.climateinteractive.org/projects/en-roads) found at: <https://docs.climateinteractive.org/projects/en-roads>

4. Show the graph that shows the most direct impact in question and replay the action –

In the case of energy efficiency, pull up the ‘Energy Intensity of GDP’ graph under ‘Population & GDP’. Restate the base assumption.

“See the blue line showing our current scenario? We’ve assumed that energy efficiency is going to keep improving on its own. (See Figure 8) Watch the blue line as I replay the action, turning on and off the proposed action in the model. The blue line departs from the black line (business as usual) as the overall energy intensity of the economy improves even faster.”

Move it back and forth 2-3 times to highlight the effect <using the Undo and Redo buttons or the Replay Last Change button on the top toolbar of En-ROADS>.

5. Direct participants’ eyes to the graphs that show more distant impacts –

In this case, you would go back to the default graphs <using the ‘rest graphs’ button that is a house icon on the top toolbar of En-ROADS> and show the lines for coal and natural gas shifting down (left graph) and then the temperature impact (right graph). (See Figure 9) Again, replay the action several times.

“The world is more and more efficient, so energy demand goes down relative to what it would have been otherwise, so we burn less fossil fuels and emissions go down, so temperatures go down.”

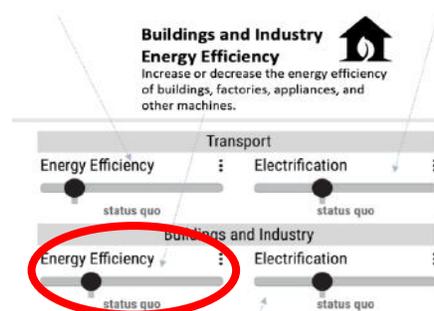


Figure 6: Energy efficiency B&I lever

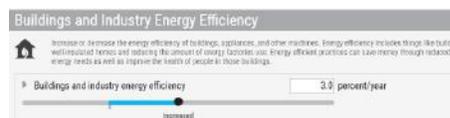


Figure 7: Advanced detail

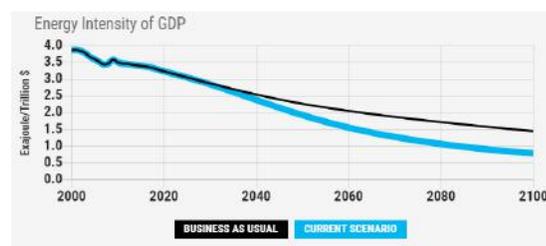


Figure 8: Energy Intensity of GDP graph

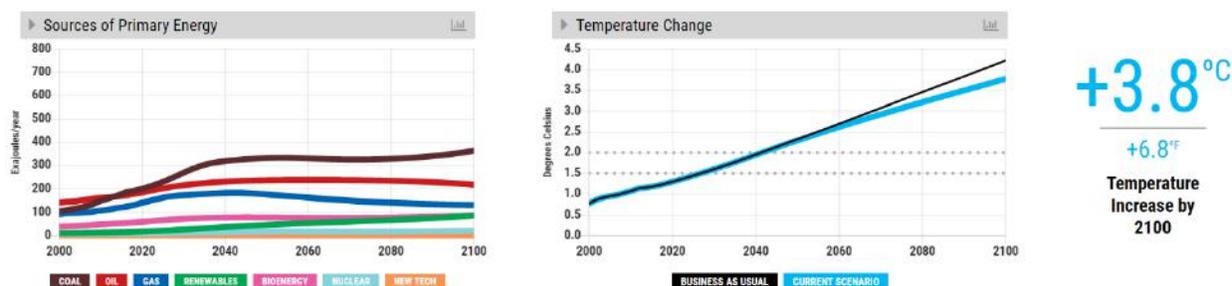


Figure 9: Default Graphs

6. Explain model behavior –

Explain briefly why the action has the result it does in the model. When possible, cite reasons involving the structure of the system; for example, the long delays in energy transition, the “rebound effect” via energy price and demand, the reinforcing “learning” feedback loop and so on, as described in the En-ROADS User Guide: <https://docs.climateinteractive.org/projects/en-roads>.

7. Summarize –

“If the whole buildings & industry sector improved its energy efficiency every year, then we’d burn less coal and gas, reducing emissions and temperature.” Then ask, “Did it solve the whole problem?” (No!) “Did it help?” (Yes!) “This action is not a silver bullet. It could be part of a suite of actions that, together, could help meet climate goals.”

8. Discuss implications –

After an action is implemented in the model, you can encourage participants to briefly reflect upon the implications of global adoption of this action. Particularly after the first 4-5 actions have been implemented, take some time for this brief discussion about implications. Consider co-benefits and how we can ensure that vulnerable populations aren’t disproportionately harmed by the action. Affirm that while the one action will not be sufficient, it is important. An important goal of this workshop is to create moments like this, in which you deliver insights that change actions.

Repeat the process above for another 2-5 actions, and then move on to part 3. Feel free to skip steps as needed. Note that extensive guidance is available in the En-ROADS User Guide to help you lead the group through the testing of different slider choices and model insights.

3. Scenarios of Climate Success: What Will It Take?

Next, ask the group to use their En-ROADS Guide to the Control Panel handout to think about and possibly discuss in small groups **what else it would take to limit warming to less than 2 °C or even 1.5 °C**.

Gather Responses

Give them some time, then ask them to share their answers as you write them on a flip chart or whiteboard. Collect 5-10 responses in order to start your next phase of experimentation with the levers that you want to show, not just the ones suggested by the first person to speak up.

Now you will lead the group through an overview of each action in En-ROADS as laid out in the steps above. As you proceed with each action, the overviews can become briefer. Keep testing actions until you reach your goal of limiting warming to under 2 °C or run out of time.

Note: When someone suggests an action for you to test, always restate their idea and acknowledge something positive (and true) about it, even if the idea will do little to mitigate global warming. This allows participants to feel encouraged to share their ideas and try out the next action.

Along the way, you will notice that some interventions are more helpful or higher leverage than expected, while others are less. Common examples of interventions that are lower leverage than expected include:

- **New Technology** – Limited impact due to long delays for implementing the new technology before it starts to effectively displace much coal and gas, and a rebound effect in which lower energy prices boost energy demand.
- **Deforestation** – While protecting forests is very important for biodiversity and other reasons, moving this lever avoids little future warming because greenhouse gas emissions from energy sources are growing so rapidly in contrast.
- **Bioenergy** – Burning or processing trees and other plants for energy can produce a large amount of CO₂.
- **Electrification in transport** – While the overall lifecycle efficiency of an electrified transportation system is higher, the benefits can be countered if the sources of electricity are still primarily from carbon-intensive coal and gas.
- **Subsidizing natural gas** – Extensive advertising has claimed that promoting natural gas is a climate solution, since it emits less CO₂ than coal. However, natural gas in addition to still emitting CO₂ also releases another kind of greenhouse gas, methane, through emissions leakage across the lifecycle of gas energy generation. Promoting it does little to decrease temperature, as it isn't much better than coal from an emissions standpoint and displaces some renewable energy.

As you continue through the rounds of play, remind everyone of the game's top insights about climate strategy:

- **There is no “silver bullet” to address climate change.** There is not one single solution that fixes climate change.
- **There is “silver buckshot.”** Many actions in many sectors are required. Some actions may be much lower leverage than people think, while others like carbon pricing and energy efficiency might be higher leverage than people expect.
- **We can do it.** Avoiding the worst-case future is still possible. If participants express frustration that the game is hard to “win”, remind them that En-ROADS is grounded in the best available science, so this is representative of how enormous the challenge is that we really face. You can discuss this more in the debrief.

En-ROADS Model Insights & Dynamics:

Along the way, you will likely mention several or many of the top insights about the dynamics of the energy-land-agricultural-economic-climate system in order to answer questions about why

the model is behaving as it does. It is important that you have reviewed the training webinars on the Climate Interactive website and the [En-ROADS User Guide](#) (<https://docs.climateinteractive.org/projects/en-roads>) in order to understand the En-ROADS model dynamics before running a game.

As the game advances, the dynamics of the multiple levers interacting in the model may become more difficult to predict or explain. You may run into unexpected twists and combinations of policies that you aren't familiar with because of the ability to propose actions and take them away. Since En-ROADS is a nonlinear model that incorporates the interactions between many levers, policies will have less impact if other policies impacting the same part of the system have already been put in place. It's okay if you can't predict what the result of an action will be, and don't feel like you need to have an explanation for everything. In fact, it is better to be honest and say that you don't know an answer and will look into it. The [En-ROADS User Guide](#) will be your best resource for finding answers about model dynamics, or you may email our team if you cannot find an answer.

Closing the Workshop

Eventually the group will either create a scenario in En-ROADS that could limit warming to 2°C or 1.5°C, or the group will run out of time. When the participants are successful, congratulate and lead them in a huge applause for their accomplishment, acknowledging the possibility of this future. If they are not successful, state the progress they made and that “we still have crucial work to do”. Recap the major inputs and outputs of the group's scenario. For example:

“Our proposals today successfully limit warming to 1.7°C. We will get there by investing in energy efficiency, reducing deforestation, etc. <Summarize the elements of the plan>.

According to the En-ROADS simulator, this future is technically possible. Now we must figure out how to make it a reality. We have taken a huge step forward today by creating a vision for a future that avoids the worst of climate change. Yes, the journey will be tough, but now we are equipped with a plan. We can and we must do it!”

4. Silence and Reactions

Invite your participants to take a moment of silence to reflect on future possibilities. You could say:

*“When we talk about future scenarios for our climate, we spend most of the time focused on how bad the worst-case future looks or how difficult change will be. Instead, I'd like for us to spend just one minute **silently** considering the possibility that we could create this better future.”*

Start a timer, stop talking, and don't speak for a full 60 seconds.

This is a very important moment of the workshop and initiates a period of increasing hope and possibility. Participants may be silently prepping themselves to find resolve, a vision of a better future, and commitment to do something about it. Treat the moment with respect.

If you want, you can follow up with a second question:

“Think of something you would love about being part of this sort of future.”

Ask participants to turn to the person next to them and tell them to briefly share their answer.

Perhaps ask if a few want to share what they said with the whole group.

Next, ask the group for their feelings. Again, ask people to think for a few minutes, talk to someone near them, and possibly share with the group.

“How are you feeling? For example, mad, sad, glad, scared, or confused. Note that I’m not asking what you think about the model or the scenario. I’m asking for feelings.”

5. Building or Rebuilding Hope

Now help participants recognize that although the challenge is big, there is much that can be done, and we are in it together. Three approaches you could take to build hope:

Your Own Hopefulness – Explain why you are personally hopeful. Some approaches include:

- **Use a personal story** – maybe you have a story about overcoming great odds that you or someone you know was a part of. Perhaps a time when you thought the path ahead looked very hard and you were able to overcome great odds to succeed.
- **Humans have addressed “impossibility” before** – We can look to human history for evidence of success and adopt the approach of addressing climate change. (Read [this New York Times Op-Ed by Climate Interactive’s Co-Director Drew Jones for more on this](#)).
- **Hope is a choice, not an assessment** – You could say:
“Hope is a choice, not hinged upon an assessment of the likelihood of future success. Being hopeful is about choosing to prevent this huge problem every day because it is the right thing to do, not because you know that we are going to win.”

Highlight good news trends – You can cite evidence or tell stories of significant recent progress. Examples include:

- Falling cost of wind and solar coupled with peaking emissions of carbon dioxide from coal.
- Increasing public awareness of climate change and support for climate action from polling.
- More companies, cities and states pledging to go 100% renewable or take other climate actions.
- The increasing number of young people demonstrating for more ambitious action against climate change.

Emphasize co-benefits to climate action (Multisolving) – Emphasize the many co-benefits beyond the direct impacts to the climate, which may make successful adoption of climate solutions all the more possible. Common examples include:

- Shutting down a coal power plant also improves local air quality which reduces health impacts like asthma that come from local air pollution.
- Improving energy efficiency in buildings can reduce energy use, save money, and improve people’s health and quality of life.
- More examples of co-benefits can be found throughout the En-ROADS user guide:

<https://docs.climateinteractive.org/projects/en-roads/>

Their Hope – Often participants will have their own stories that inspire hope and possibility. Give people space to share their experience.

1. Give them a few minutes to write down why they are hopeful.
2. Have them reflect in pairs.
3. Ask them to share with the group.

6. The Call to Action (Don't Skip This!)

The purpose of this workshop is to motivate effective action in the real world, so now is the time to make it happen. Helping people see what they can do to channel their emotions (both positive and negative) into constructive ends. Approaches vary from very simple to quite elaborate. At the simplest level, just say:

“Turn to the person next to you and tell them one thing that you feel called to do after this experience.”

Give people time to talk and process. There is a broad range of possible actions, from changing one's personal impact on climate change, to participating in collective action with others, to learning more and talking with others. Sometimes this might just mean going home and talking about the event with those they live with. Then have a few people share their plans with the group.

If you notice any participants who seem particularly adept at understanding the simulator and appreciative of the workshop, suggest that their “action” could be leading this workshop for others someday. Encourage them to join the trainings.

From here you can wrap up the workshop and thank everyone for their participation and engagement—or include some of the additional activities below.

Additional Discussion (optional)

Depending on the time available and your goals for the game, you could facilitate a discussion by asking some of these questions:

- What surprised you about the results you achieved and the difficulty (or ease/possibility) of achieving them?
- To what extent did your proposals taken together produce the result you expected, or hoped for? Why or why not?
- How was energy consumption, greenhouse gas emissions or other key parameters, affected by your proposals? Can you imagine humans living in that kind of world?
- (If <2°C goal was not ultimately reached) What might you have proposed that could have helped us to achieve our goal. You may use the model for a couple of rounds of speculation.
- If time allows, run sensitivity tests in En-ROADS, in which all levers are reset, and individual levers are adjusted one by one to see their individual impact. This exercise is helpful for learning about the leverage of different individual actions, which can be

difficult to see amongst the many other levers that are changed during the game.

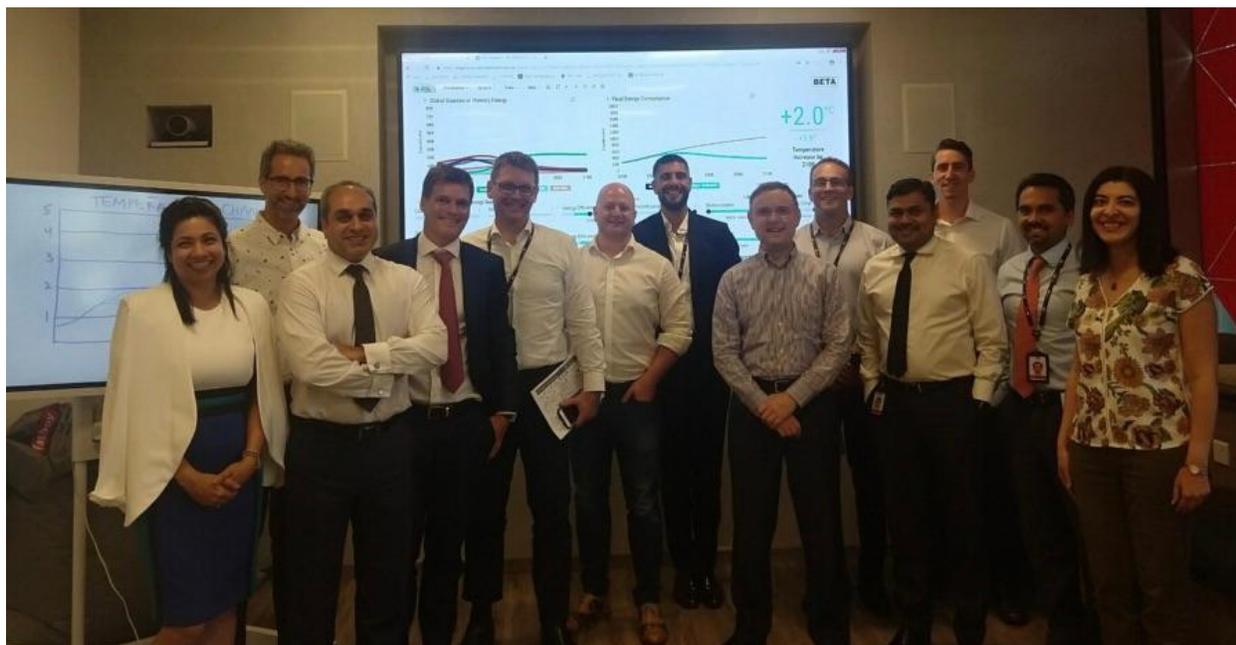
- What impact do you envision the result you achieved will have on the interests you were representing in the roleplay?
- To what extent is the result you achieved feasible? From an economic standpoint? A political standpoint? A social, technical or cultural standpoint?

Group Photo

Gather everyone around the projector screen with the final scenario in En-ROADS to take a group photo to share. We also encourage you to take photos throughout the event.

If possible, quickly distribute the group photo (or photos) to participants for them to share on social media, tag us on Twitter @climateinteract, or send us an email: info@climateinteractive.org.

You can also save the URL to the scenario that you created in En-ROADS and share that as well.



Please [register your event](#) on Climate Interactive's website and do not hesitate to reach out to us and share your experience and feedback:

info@climateinteractive.org

Appendix: Variations

En-ROADS Climate Workshop can be delivered in a range of settings e.g., when used for a debrief after a World Climate Summit or when delivered to a corporation or other specific audience. Some key examples include:

Debrief after World Climate Summit

Facilitators of the [World Climate Simulation](#) could use the En-ROADS Climate Workshop right after. In this case, after participants World Climate step out of their roles as delegates at a UN climate summit, the facilitator does not (yet) proceed into the Debriefing Discussion to cover hope and feelings but transitions into En-ROADS with the question:

“After you have learned that we all need to act together with urgency in order to reach the Paris goals, let’s assess together how we will accomplish this – which actions, policies, etc. are necessary to reach 2 °C, or better 1.5 °C?”

Climate Solutions Workshops for Companies

When facilitating the En-ROADS Climate Workshop with or for a company, it might need to focus more towards company specific actions. Since En-ROADS is a global model it can be useful in helping people see the larger picture and then introduce them to variety of interventions necessary to address climate change. The challenge here is to transfer insights from the global model, provided by En-ROADS, to corporate action and personal involvement. Encourage discussion about the ways in which the company plays a role in contributing to climate change.

Dinner parties with En-ROADS

Gather some friends or family together and use En-ROADS as part of a social event to talk about climate change. Many people curious about climate change find En-ROADS fascinating and it can be a great way to explore climate change solutions with people you are close to. Each person can take turns proposing an action to take while you highlight what the impact of that action is as you test it in En-ROADS. Make sure to offer people food and drinks or ask them to bring some to share.

Participants directly using En-ROADS simulator during the workshop

You could encourage participants during “Part 3 – Scenarios of Climate Success - What it Will Take?” to use En-ROADS in their groups to answer this question. Participants can gather in groups of up to 6 people with one laptop with En-ROADS. Allow them 10-15 minutes to explore some scenarios. Participants then circle their solutions on their [En-ROADS Control Panel Guide](#). Collect their solutions on a flip chart, test, and discuss them with the group. If they have email access, the groups could send their scenario link to the facilitator. The facilitator could choose to open the team’s specific scenario, so the whole group can follow their scenario on the large screen.