

Our Coast, Our Future



Lesson 1: Presenting the Challenge Facilitator Guide

Grade Level: Grades 5-8

Timing: *Our Coast, Our Future* Lesson 1: Presenting the Challenge is divided into three classes each intended to be facilitated in 45-minute sessions or combined into a longer block.

Tips: In this guide each class description contains:

- **How to prepare** to facilitate lessons including tips on what materials to gather and what student supports should be prepared.
- **Essential questions** that focus the purpose of the class investigation.
- **Vocabulary and terms** divided into “tier two” words (academic words that are frequently used in many disciplines and may have different meanings depending on context) and “tier three” words (discipline specific academic words that are infrequently used outside of a specific context, in this case within the science and policy of climate change). Definitions for tier three words are provided in the *Student Glossary of Terms*.
- **Class procedure** that outlines student activities and provides guiding questions and discussion facilitations tips.
- **Assessment** tools to gauge student engagement, understanding, and skill acquisition. These are generally reflection questions to be answered by students at the end of each class.

Note: Before beginning the *Our Coast, Our Future* Unit with students, Facilitators should review the Read this First folder with information about unit priorities, structure and available resources to support instruction and student learning.

Lesson 1 – Presenting the Challenge

Presenting the Challenge provides an introduction to the unit and the three challenges students will choose from for investigation in future lessons. Students will:

- Define the climate change challenges that face coastal communities.
- Create an inventory of community assets and vulnerabilities related to climate change.



Priority Activities follow the ‘through line’ and will meet the priorities of the unit.

Secondary Activities were designed to be included in the unit but can be modified or eliminated if necessary

Priority Activities:	Class 1.1 sets the stage for the unit. Class 1.2 provides an age appropriate orientation to environmental justice. Elements from 1.3 that will provide familiarity with the terms and concepts of ‘societal’, ‘environmental’ and ‘infrastructure’.
Secondary Activities:	Class 1.3 can be modified if needed so that less time can be spent with research and exploration.

Class 1

Teacher Materials & Preparations: Before this lesson prepare a Student Guide for each student. Students will be using the reflection questions in the *Our Coast, Our Future: Getting Started* activity sheet to organize their ideas about the challenges and impacts of climate change on coastal communities based on watching the *Our Coast, Our Future Introduction Video*. Facilitators should review video before class and familiarize themselves with guiding questions.

	<p>Name _____ Class _____ Date _____</p> <p>Our Coast, Our Future: Getting Started</p> <p>As you watch the <i>Our Coast, Our Future</i> introduction video, think about these questions. Your responses can be in words or pictures.</p> <p>List one or two key points Dr. Perry made that seemed especially important to you.</p> <p>1. _____</p> <p>What in the video was new or surprising to you?</p>	
<p><i>Our Coast, Our Future Introduction Video</i></p>	<p><i>Our Coast, Our Future: Getting Started</i> activity sheet</p>	<p><i>Our Coast, Our Future Introduction Video</i> Adaptation & Mitigation</p>
<p>Before You Begin</p> <p>Before starting <i>Our Coast, Our Future</i> it is assumed students come in with basic knowledge of climate change and climate science. This includes:</p> <ul style="list-style-type: none"> • The difference between weather and climate • Greenhouse Gases: Understanding the greenhouse effect, the warming it causes, and human activity as the source of excess GHGs. • Carbon sources and sinks • Impacts of climate change and how they will influence both the natural and built environment, particularly those anticipated on the coast of Massachusetts including: <ul style="list-style-type: none"> ◦ Sea level rise ◦ Increased storm intensity ◦ Increased precipitation and flooding ◦ Increased frequency of heat waves and the creation of urban heat islands <p>For educators in need of resources for this content, the following may be of use:</p> <p>Videos:</p> <p>Climate Change: Earth's Great Game of Tetris (2:48)</p>		
<p><i>Our Coast, Our Future: Before You Begin (Facilitator Resources)</i></p>		

Essential Vocabulary:

- Tier 2: challenge, community, impacts, recreation
- Tier 3: climate change, erosion, tides, flooding, mitigation, adaptation, coastal, sea level rise, scenario, infrastructure, strategy

Essential Question: What challenges might communities face from climate change?

Class Procedure:

- **Student Welcome (5 minutes):** Consider asking students, “What do you know about climate change? What do you think of first when you hear the phrase ‘climate change’? How do you think climate change might affect you or your town? What are some things that you care for or value that you think might be affected by climate change?”
 - Record some student responses on white board, Padlet, etc.
 - The themes of these questions will be discussed in more depth later in the class.
- **Activity (20 minutes):** Let students know they will be watching a short video.
 - Ask students to watch the short video critically, review some of the questions on the student activity sheet so that they can record their thoughts and questions and have a discussion after watching the video.
 - The welcome video will orient students to the challenges and impacts that coastal communities face with climate change, including associated social justice issues, and setting the stage for the three challenges in this unit:


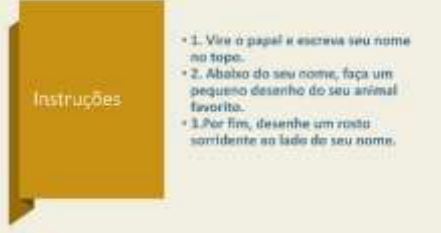
- Protecting property and infrastructure
 - Protecting recreation and public spaces
 - Preparing and protecting people
- The teacher facilitator may choose to hand out the *Our Coast, Our Future: Getting Started* activity sheet before students watch the video, or have students just focus on themes and then work to fill in the sheet after first viewing.
- After first video viewing ask students to fill in their reflection responses on their activity sheet and then work in pairs or in small groups to review their observations and questions that arose from watching the video.
- The facilitator may find it beneficial for students to re-watch sections of the video with the class while working on activity sheet or discussing challenges.
- **Discussion (15 minutes):** Teacher facilitator will debrief video and clarify concepts and also introduce materials that students will use to track their work throughout the unit.
 - Ask students pairs or groups to share out their initial thoughts recorded on their *Our Coast, Our Future: Getting Started* activity sheet.
 - List one or two key points Dr. Perry made that seemed especially important to you.
 - What in the video was new or surprising to you?
 - What items that Dr. Perry mentioned might be especially important in your city or town?
 - What things in the video do you want to know more about?
 - Use this share-out to compare responses to their initial responses at the beginning of the class, are they similar or dissimilar?
 - Take time to review any new terms or concepts, for example:
 - Ask students, “What is a community”?
 - Define “community” for the purpose of the challenge, in this case it is the people living within a city or town who can make and enforce decisions about policies and behaviors of all inhabitants.
 - Ask students, “What climate change issues could affect coastal communities”, “What climate challenges might face their community”?
 - Encourage students to share ideas from video and from previous knowledge.
 - Ask students, “What is a climate mitigation strategy compared to a climate adaptation strategy”?
 - Adaptation usually means changing as to better fit a changing or new situation. In the case of climate change we are looking for ways to withstand climate changes that are already occurring.
 - Mitigation usually means working to make a situation less serious or severe. In the case of climate change we are looking for ways to limit the emission of greenhouse gases that will continue to worsen climate change.
 - Ask students, “What individual strategies are there to solve climate change issues? What community strategies are there to solve climate change issues”?
 - Discuss their understanding of different strategies of climate adaptation and mitigation. Differentiate between individual strategies and community strategies.
 - Students may be more familiar with individual strategies like limiting personal fossil fuel or electricity consumption but be less familiar with community strategies of mitigation and adaptation, such as community infrastructure improvements, which will be researched in future lessons.
- **Wrap-up (5 minutes):** Let students know that in coming classes they will investigate some more issues that can complicate climate change challenges and will look closely at their own community to discover their climate strengths and weaknesses.
 - Remind students to complete their class assessment, either at the end of class or as homework.

Assessment of knowledge, understanding and skills:

- Question prompt: “Describe something new about climate change that you were unaware or before class.”

Class 2

Teacher Materials & Preparations: Before this lesson prepare the introduction activity slides in Portuguese and English, the next Student Guide worksheet *Our Coast, Our Future: Climate Justice Activity Sheet* to record their reactions and reflect on watching the “Climate Justice in the City of Boston” video (NEJRC). Facilitators should review both video and the *Focusing on the Frontlines: An Introduction to Climate Justice Activity Guide* to lead class through the discussion portion of the activity before class.

	<p>Name _____ Class _____ Date _____</p> <p>Our Coast Our Future: Climate Justice</p> <p>Use this page to reflect on what you are learning about climate justice throughout this class. You can use words and/or pictures in your comments.</p> <p>1. What was your reaction to the introductory activity (instructions not in English), or articulating a subject? What was challenging about it? What did it make you think about / what additional questions do you have?</p> <p>2. What struck you as new, startling, or particularly interesting in the Climate Justice in Boston video?</p>	 <p>Instruções</p> <ul style="list-style-type: none"> * 1. Vire o papel e escreva seu nome no topo. * 2. Abaixo do seu nome, faça um pequeno desenho do seu animal favorito. * 3. Por fim, desenhe um rosto sorridente ao lado do seu nome.
<p><u>Climate Justice in the City of Boston Video</u></p> <p>From: The Northeastern Environmental Justice Research Collaborative (NEJRC) CLIMATE JUSTICE IN THE CITY OF BOSTON by NEJRC Research Associate and filmmaker John Syzonenko.</p>	<p><i>Our Coast, Our Future: Climate Justice Activity Sheet</i></p>	<p><i>Introduction Activity Slides in Portuguese and English: Try to Follow These Instructions</i></p>
<p>Focusing on the Frontlines An Introduction to Climate Justice</p> <p>Due to the systemic racism, oppression, and disenfranchisement that exists in the United States and policies implemented under these systems including (but not limited to) redlining and the forced migration of indigenous peoples from their ancestral lands, Frontline Communities are more often BIPOC (Black, Indigenous, People of Color) dominated. While we fully recognize this unit does not have the capacity to explore these systems in depth, it is important to emphasize that dismantling these systems are at the core of climate justice and explore this with your students in an authentic way. Additional resources are included to support you in this work.</p> <p>Let's explore the concept of climate justice through the lens of two barriers that members of our community are facing and think about how our community might be able to overcome or remove these barriers. We encourage you to try and cover both of the barriers below, but should you only have time for one please choose the one most relevant to your students (10).</p> <ul style="list-style-type: none"> • Language Barriers <ul style="list-style-type: none"> ◦ Planning meetings and public hearings where policy is made becomes inaccessible to people who don't speak English if interpretation is not provided. ◦ Language barriers can make it difficult for immigrant communities to get early information about emergency services or weather disasters. ◦ They may be unable to communicate effectively with first responders in the midst of an evacuation order. 		
<p><i>Focusing on the Frontlines: An Introduction to Climate Justice Activity Guide (For Instructor)</i></p>		

Essential Vocabulary:

- Tier 2: barrier, equality
- Tier 3: climate justice, frontline community, BIPOC, equity

Essential Question: What other barriers might exist in our communities we should be aware of as we continue on in this project?

Class Procedure:

Note: Due to the systemic racism, oppression, and disenfranchisement that exists in the United States and policies implemented under these systems including (but not limited to) redlining and the forced migration of indigenous peoples from their ancestral lands, Frontline Communities are more often BIPOC (Black, Indigenous, People of Color) dominated. While we fully recognize this unit does not have the capacity to explore these systems in depth, it is important to emphasize that dismantling these systems are at the core of climate justice and to explore this with your students in an authentic way. Additional resources are included to support you in this work.

- **Student Welcome (7 minutes):** Project a slide of instructions with the Portuguese text on the board. Let students know they have three minutes to follow the instructions and if they do so correctly, they automatically earn a top grade for this class. Tell them they **MUST** write something.
 - If students express concern about not being able to read it, tell them that is okay.
 - Ask students, “Are there any clues for them to figure out what language it is? Any words that look somewhat familiar? Can they work together to figure it out?”
 - After a few minutes, see what they came up with. Transition to the slide with the same instructions in English.
 - Consider asking the students, “Could you figure out exactly what the instructions were? If not, what was the barrier they faced that made it so they could not understand?”
 - In addition, ask students, “What did you do in order to try and figure out at least part of what the instructions were?”
 - How would you feel if you were in an emergency and needed to be able to read or hear instructions but they weren’t in a language you could understand?”
 - Let students know that in this lesson they are going to be introduced to the concept of justice and how it is connected to climate change.
- **Activity (20 minutes):** Let students know when we discuss the concept of “justice”, we are talking about equal access to opportunities and resources. This includes not only overcoming barriers to the resources, but removing them so no one has to overcome them in the first place.
 - So, what does that have to do with climate change?
 - Let students know that Climate Justice acknowledges climate change can have differing social, economic, public health, and other negative impacts on populations that have been systemically left out and seeks to have these inequities addressed head-on through long-term mitigation and adaptation strategies and eliminating barriers to essential resources. The people and places that will experience the “first and worst” of the consequences of climate change are known as “frontline communities”.
 - Due to historic inequities and policies such as redlining frontline communities are more often BIPOC (Black, Indigenous, People of Color) dominated.
 - Let students know that they’ll be taking a deeper look at the issues of climate justice by watching a short (12-minute) video, [Climate Justice in Boston](#) Video and then discuss.
 - While watching the video they should record their reactions and reflections on the *Our Coast, Our Future: Climate Justice Activity Sheet* so that they can discuss the questions after the video and prepare for the next activity.
- **Discussion (15 minutes):** Refer to the *Focusing on the Frontlines: An Introduction to Climate Justice Activity* to guide students through some more specific barriers faced by many Climate Justice communities.
- **Wrap-up (2 minutes):** Let students know that in the next class they will be investigating some of the climate strengths and weakness of their own community.
 - Remind students to complete their class assessment, either at the end of class or as homework

Assessment of knowledge, understanding and skills:

- **Question prompt:** “What challenges do climate justice communities face?”

Class 3

Teacher Materials & Preparations: Before this lesson prepare the new materials for the Student Guide, students will be using *How Do We Measure Up? Exploring Climate Resilience in your Community* Activity sheets and will require computer access to the internet to complete the class activities.

<p>The <i>How Do We Measure Up? Exploring Climate Resilience in your Community Infrastructure</i></p>	<p>The <i>How Do We Measure Up? Exploring Climate Resilience in your Community Societal</i></p>	<p>The <i>How Do We Measure Up? Exploring Climate Resilience in your Community Environmental</i></p>

Essential Vocabulary:

- Tier 2: community, resilience, evaluate, categories, infrastructure, societal, environmental, characteristics, inventory, buffer, transportation, energy, communications, emergency services, evacuation routes, vulnerable, asthma
- Tier 3: mitigation, adaptation, strategy, resilience, sea level rise, heat island, wetland, impervious cover

Essential Question: How do community members prepare and make plans to solve the communities’ climate change impact issues?

Class Procedure:

- **Student Welcome (5 minutes):** Consider asking students, “What characteristics of a community or its residents would help us decide what type of climate strategies should be chosen”, “What are the parts of a community that residents depend on for safety and to have their needs met”?
 - Record some student responses; Let students know that communities have systems, departments, organizations, laws, and policies that are meant to support residents and that will also affect the physical and natural environment the community is located in.
 - Get ready to hand out student activity sheets *How Do We Measure Up?*
- **Activity (25 minutes):** Let students know that the they will be investigating their community by conducting a type of “community climate resilience inventory”, that is they’ll be investigating different parts of their community divided into categories to determine if they “measure up” to climate change threats. The goal of this activity is to lay the groundwork in assessing the strengths and weakness of their community so as to best match their community to one of the three coastal community scenarios that will inform all their future research.
 - Let students know that in this activity they will evaluate the strengths and vulnerabilities of their community to see how it will measure up to climate challenges. To help them students will be using the *How Do We Measure Up?* activity sheet and resources that will help students determine how well and how quickly their community could cope and recover from climate change caused community impacts.
 - The *How Do We Measure Up? Exploring Climate Resilience in your Community* activity worksheet is broken into three parts or categories: societal, environmental, and infrastructure.
 - Students in the classroom should initially be given one of the categories to investigate.

- Students may work in groups or individually so students can share out the results of their assigned category.
- Students will require access to the internet to complete the inventory.
- Let students know that they will use web resources that will allow them to rank their community criteria on a scale of low risk, medium risk, and high risk of being vulnerable to the effects of impacts caused from climate change. Suggested web resources are linked and embedded within the document. Once each student/group has completed their inventory the class can judge how vulnerable the town is and which project challenge and strategies they will investigate and learn about in future classes.
- When organizing students individually or into working groups teacher facilitator should move around the room and assist students on troubleshooting any issues and assessing the data in the sources to fill out their checklists.
- **Discussion (10 minutes):** Once students have completed their inventory students will share out all their research to build a completed inventory so that the entire class of students has a clear picture of where all the criteria fall on the vulnerability scale. Students will be using this inventory in the next lesson.
 - Teacher facilitator should have students present their work to their classmates so that each student has a complete picture of the community.
 - Ask students, "What patterns of strengths and vulnerabilities do we see in the inventory checklist of our community", "Was there anything that was surprising", What there anything that made you proud"?
 - Make sure that by the end of the class all students have all three *How Do We Measure Up?* sheets completed.
 - Let students know that they'll be using this inventory in the next Lesson to choose what coastal community challenge they'll be investigating further.
- **Wrap-up (5 minutes):** Let students know that in the next Lesson they will be discussing their inventory further and choosing their climate challenge to focus on for the *Our Coast, Our Future* project.
 - Remind students to complete their class assessment, either at the end of class or as homework.

Assessment of knowledge, understanding and skills:

- **Question prompt:** "What was the most surprising climate strength and climate vulnerability you discovered in your community? Describe why you think so."