This Mastery Project explores civics, policies, and changing mindsets about a sustainable future.

For high school students

ReMobilizing the Future

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**ReMobilizing the Future** is the third project in the ReImagining the Future series launched by Greenbacker Capital and Global Citizenship Experience Lab School.

Quality education will fuel future generations to lead and succeed in our rapidly changing, global workforce. We need more public-private partnerships to ensure that ALL students have access to courses that inspire curiosity in growth industries and provide pathways for existing and emerging careers.

Projects in the **Imagining a Sustainable Future** series:

**ReFueling the Future**: a science course that introduces the state of our energy supply system

**ReDesigning the Future**: a design and engineering course focused on systems thinking

**ReMobilizing the Future**: a civics and policy course about changing mindsets

A very special thank you to Greenbacker Capital, who is passionately committed to sustainability, to increasing the collective capacity of renewable energy, and to increasing the awareness of the economic benefits of sustainable infrastructure. Greenbacker is also committed to playing our part in the business ecosystem as a socially responsible and transparently governed organization that is a great place to work.
This Mastery Project is structured with three core stages:

1. **Internal Investigation**
   Learning Foundational Skills & Concepts
   
   Lessons 1–4
   
   **Why?**
   The purpose of this project is to learn about the current state of our global climate, understand the options we have for action, and to come up with a plan to make change in your own community.
   
   **How?**
   By the end of this investigation, you will have:
   - Learned about environmental protection at the international, national, and local levels
   - Investigated the history of environmental protection negotiations and laws
   - Learned how cities can lead the transition to sustainability

2. **External Investigation**
   Exploring World Context & Testing Credibility
   
   Lesson 5–6
   
   **Why?**
   The purpose of this investigation is to conduct a needs assessment of your community that paints a picture of both what your community members need, and how those needs can be met sustainably.
   
   **How?**
   By the end of this investigation, you will have:
   - Designed a needs assessment survey
   - Conducted a needs assessment survey
   - Interpreted your results

3. **Action Project**
   Demonstrating Mastery of Concepts & Skills
   
   Lesson 7–8
   
   **Why?**
   The purpose of this action project is to design a climate action plan for your city, based on your needs assessment and research.
   
   **How?**
   By the end of this Action Project, you will have:
   - Researched what other cities are doing to take climate action
   - Researched what your own city is doing to adapt for climate change
   - Created an action plan for local climate adaptation and mitigation
How can we design a sustainable future?

Why?

The purpose of this project is to understand the systems and policies that facilitate and impede our transition to a sustainable future, then propose a solution for expediting the process.

How?

The unit sub-guiding questions you will pursue:

- What will the world of 2050 be like?
- How do policies help or hinder environmental protection?
- What is the government’s responsibility to protect the environment?
- What can cities do to become more sustainable?
Lesson 1: Predict

Guiding Question:
What will the world of 2050 be like?
Imagine for a moment the year is 2050. How old will you be? What do you imagine your life will be like at that age? Will you have your own family? Where will you be in your career? How will you get from place to place? What will your home be like? What will you eat?

Life in 2050

Please write a paragraph or draw a picture that reflects what you think your life and the world will be like in 2050.
While it seems far into the future, 2050 is only a few decades away. Scientists, engineers, artists, politicians, and others are already predicting what life will be like then, and laying the groundwork for that future to take shape. To see one vision for the world in 2050, watch the following video and answer the prompts that follow.

**Imagine 2050**

1. What percent of humans are living in cities in 2050?
2. What are three elements included in the home of this “future sustainable city”?
3. The video shows features of one individual’s home. What other elements might be included in this city of 2050? Think in terms of city transportation systems, technology, public services, and social networks.
4. The video ends by stating, “By imagining this today, we can prepare for tomorrow.” What are at least three things that would need to begin happening now for this sustainable city to be a reality by 2050?
The video you just watched imagined a future sustainable city in 2050 where everyone lives low-impact lifestyles and waste is reused in a “circular economy.” Why do you think this future city focused on sustainable and low-impact lifestyles?

The year 2050 is seen as a landmark year for humans—many scientists agree it is the year by which we as a global community must “decarbonize” our infrastructure. This means we must phase out carbon dioxide emissions produced from using fossil fuels to fuel transportation, infrastructure, manufacturing, and really, most of society. If we succeed by 2050, we may avoid the worst effects of climate change.

Decarbonizing societies and economies is no small task—so is it really necessary? What exactly is climate change, and how would decarbonizing make a difference? To learn more, watch the video and answer the following prompts.

**Climate Change 101**

1. What is the difference between climate variations of the past and climate change as we know it today?
2. What are three pieces of evidence that suggest that human-caused climate change is happening?
3. What does ocean acidification mean, and what are its consequences?
4. What can be done on a personal level to combat climate change?
In the video you just watched, you learned that there are some actions that can be taken on a personal level to address climate change. However, mitigating the effects of climate change will also require large structural changes to the way our global society functions.

In 2019, journalist and environmentalist Bill McKibben wrote an essay for TIME magazine in which he imagined the year was 2050 and he was looking back at all that had happened to avoid the worst effects of climate change. Please keep in mind that the essay was published in September 2019, and many events have happened since that are not included in his essay. In addition, he makes many predictions that may or may not have come true at the time of your reading — yet you will still get a sense of the longer-term shifts he envisions happening to mitigate some of the possible effects of climate change.

As you read, take notes, write questions, and record any concepts or vocabulary that are unfamiliar to you. Alternatively, you may also wish to print the reading and annotate it with a highlighter or pen.

In addition, you may use this Reading Guide to record your notes.
After reading McKibben’s essay, *Hello From the Year 2050*, work through questions you had, vocabulary that was new, and other quotes that stood out in your reading. Please note that you will explore some of these concepts and terms more in-depth later in this project.

Once you have a clear understanding of the essay, its references, and its predictions, answer the following prompts.

**“Hello From the Year 2050” Prompts**

1. Explain how you felt while reading the essay. Were you surprised? Optimistic? Fearful? Inspired? Offended? Select three emotions or adjectives that describe your reaction to the text, and use evidence from the text to justify your reactions.

2. McKibben wrote the essay as if looking back from 2050. What are five major human-initiated events or shifts he describes, and how did they happen? What policies or actions were enacted that brought us to the world he imagines in 2050?

Lesson 1  Step 5: Reflect

Please reflect on what you have learned so far in this lesson. What information has been new or caused you to think in a different way, and what questions have been raised by your exploration thus far?
Lesson 2: Explore

Guiding Question:

How do policies help or hinder environmental protection?

If you listen to the news, you might feel like the call for us to respond to climate change has become particularly urgent in the last few years. The McKibben essay you read in Lesson 1 stated,

“By the end of the 2020s, it became clear we would have to pay the price of delaying action for decades. For one thing, the cuts in emissions that scientists prescribed were almost impossibly deep. ‘If you’d started in 1990 when we first warned you, the job was manageable: you could have cut carbon a percent or two a year,’ one eminent physicist explained. ‘But waiting 30 years turned a bunny slope into a black diamond.’”

For how long have we actually known about climate change, and why does it suddenly feel like the pressure is on to do something about it? The first World Climate Conference actually happened in 1979. What evidence or events led to that first gathering, and what has happened since?

Examine the LEFT column of the timeline here titled “A Brief History of International Climate Negotiations” and respond to the prompts that follow (you will examine the RIGHT column in a future Step).
1. In what year was the first UN Resolution to develop new scientific and technological opportunities for monitoring, predicting and controlling weather and climate?

2. When did environmental concerns begin to enter the consciousness of Americans, and why?

3. Based on the information provided on the timeline, select one event or development that you consider a success or having a positive impact, and explain why.

4. Based on the information provided on the timeline, select one event or development that you think failed or had a negative impact, and explain why you feel that way.

5. In his essay, McKibben stated,

   “When we look back to the start of the century we are, of course, angry that people did so little to slow the great heating: if we’d acknowledged climate change in earnest a decade or two earlier, we might have shaved a degree off the temperature, and a degree is measured in great pain and peril. But we also know it was hard for people to grasp what was happening: human history stretched back 10,000 years, and those millennia were physically stable, so it made emotional sense to assume that stability would stretch forward as well as past.”

   What is your reaction to this quote, after examining the Timeline of International Climate Negotiations? Would it have been possible for us to begin taking action a decade or two earlier? If so, why didn’t we, in your opinion?
The final dates listed on the timeline you just examined are 2015, when 195 countries agreed to the Paris Agreement; and 2017, when President Donald Trump announced the US withdrawal from the Paris Agreement. You may have heard about this Agreement referred to in the news and in Bill McKibben’s essay, but what exactly does it entail, and what does it mean for a country to withdraw from it?

To learn more, watch this video and answer the prompts that follow.

### Climate Deal In Paris

1. How was COP21 different from other climate negotiations?
2. What does INDC stand for, and what is one example of an INDC?
3. According to the video, after negotiations, diplomats have to convince their governing bodies to follow their individual country pledges, and there is no punishment for not meeting goals. What do you think of this process? What are the pros and cons of using this approach enforcing international commitments? Can you think of alternatives?
4. The video concludes by stating that the Paris Agreement is the first step of a long, hard road. What are three additional steps you think need to be taken in order for the world to reduce carbon emissions? You may wish to refer back to the McKibben article for ideas.
In the video, you learned that before the Paris Agreement, the world was on track to warm by up to 3.8° C by 2100. If countries meet their INDCs, that number is closer to 2.7° C. Yet a global temperature rise of even 2° C has been identified as “the worst” and as McKibben wrote in his essay, “a degree is measured in great pain and peril.” Why is this? Is there a big difference between 2° and 2.5°C? What if the planet warms to 4° C above pre-industrial levels? Why are some bodies aiming to limit warming to 1.5°C?

McKibben’s essay spoke of sea-level rise, catastrophic natural disasters, and mass human migration due to climate change. What did he base these predictions on, and what might happen if we don’t take any of the actions to shift our way of life that he describes?

Climate scientists work to develop models that predict possible outcomes based on various global warming scenarios. To learn more about why global temperature rise is so impactful and compare some different predictions, explore the resources below.

- World Resources Institute
- New York Times
- NASA
- Vox
- Carbon Brief (advanced level data)

After getting familiar with the resources above and how they communicate data, select at least three different areas to research, and report on the difference between a global temperature rise of 1.5 vs 2° C.

### 1.5 vs 2° C

Select three areas to research, then report on how scientists predict these areas will be impacted by a global temperature rise of 1.5 vs 2° C.

- Sea ice
- Extreme weather events
- Coastal flooding
- Species loss
- Crops/food security
- Human health
- Economics
To limit global warming to just 1.5° C, there is a broad consensus among climate scientists that we must begin reducing carbon emissions immediately. If our goal is to fully decarbonize by 2050, then we must cut our carbon emissions in half by 2030. McKibben outlined one potential path in the essay you read — so how do we get started?

Review this excerpt from the Exponential Roadmap, which provides 36 solutions that must be accelerated by policy, finance, technology and leadership in order to cut global carbon emissions in half by the year 2030. This excerpt from the Roadmap includes the areas in which we need to accelerate action, and roadmaps to get us there in the following seven sectors:

1. Energy
2. Industry
3. Digital Industry
4. Buildings
5. Transport
6. Food Consumption
7. Nature-Based Solutions

Read through the excerpt, and annotate any terms or concepts you are unfamiliar with.

Exponential Roadmap (excerpt)


After reading, work with your teacher and classmates to define and clarify any unfamiliar terms.
Lesson 2  Step 5: Analyze

Once you have a clear understanding of the content and recommendations in the Exponential Roadmap, respond to the prompts here.

### Exponential Roadmap

Select one of the seven sectors to focus on, then respond to each of the following prompts:

1. **On the Roadmap, what are two actions you think can be realistically achieved by 2025?**

2. **On the Roadmap, what are two actions you think will be most challenging to achieve by 2025?**

3. **What policies do you think your city or state needs to reach the targets for 2025?**

4. **Based on the Roadmap, what opportunities do you see for inventions and innovation in the sector you researched?**

5. **At the beginning of Lesson 1, you imagined what the world might be like in 2050. Based on this Roadmap, what do you think the world will look like in 2030, if we carry out the solutions recommended on the Roadmap?**
Lesson 3: Compare

Guiding Question:

What is the government’s responsibility to protect the environment?
In Lesson 1, you read Bill McKibben’s piece imagining the transformations that took place looking back from the year 2050. Then, in Lesson 2, you learned about the difference between global warming of 1.5 and 2°C and explored the 36 solutions outlined in the Exponential Roadmap.

The solutions in the Roadmap identify 2025 as the year by which many transformations must be well underway if we are to cut carbon emissions in half by 2030. So, what changes do we need to start making today to put us on the path of zero carbon emissions by 2050? The solutions you read about in the Roadmap must be met on a global scale — so what does that mean for national governments, which are responsible for setting and achieving their own climate targets and goals?

Some of the solutions in the Roadmap include the following. Think of these as a menu or toolkit available to policy makers, business owners, and consumers for reaching emissions targets.

- Passing and enforcing carbon pricing and taxes
- Emissions and efficiency standards
- Restructuring subsidies
- Setting and enforcing regulations
- Passing policy incentives
- Publishing corporate carbon footprints and product life cycles
- Building a circular economy and developing usership-based business models
- Reshaping public opinion

Do you know what each of these entails? In this lesson, you will explore some of these options more in-depth.

To begin with, do you know the difference between standards, subsidies, regulations and incentives? The Roadmap states that by 2025, we must adopt emissions and efficiency standards, have rewards in place for low-emissions strategies, eliminate fossil-fuel subsidies, and accelerate innovation through investment and policy packages. What does all this mean?

Using the links above, conduct some initial research on each option and define each here.
Climate Change Mitigation Options

1. What is a carbon price?
2. What are emissions and efficiency standards?
3. What are energy subsidies?
4. What does it mean to regulate energy?
5. What are energy incentives?
6. What does it mean to publish a product carbon footprint or life cycle?
7. What is a circular economy?
Now that you are aware of some of the policy options available after exploring them in Step 1, let’s dig into some of these policy options a little deeper. Had you ever heard of a carbon tax or carbon pricing before this project? What about cap and trade? According to the Exponential Roadmap, we must establish carbon pricing in “most markets” by 2025, and make it universal by 2030. To understand what this means, watch this video about carbon taxing.

Carbon Tax Video

1. What are the pros and cons of a carbon tax?
2. What is the difference between carbon taxes and “cap and trade” policies?
3. What is your position on carbon taxes? Would you vote to support a carbon tax in your state? State your position and explain why.
Another tool recommended in the Exponential Roadmap is requiring companies to publish information about the carbon footprint and life cycle of their products and services by 2025.

You may have heard of a carbon footprint before — essentially, it entails calculating the amount of carbon emissions emitted from a process, action, or product. According to the Department for Business, Innovation and Skills in the UK,

Every product (a good or service) has an impact on the environment. In a world facing multiple crises of resource depletion, the pollution of air, water and soils, and climate change, there is a need to work towards reducing these impacts to make our products fit for a more sustainable future. It is important to be able to measure the carbon intensity specifically in order to understand and reduce the impact on climate change. A product carbon footprint communicates the quantity of greenhouse gas emissions that are produced or consumed during the life cycle of a product.

Requiring companies to report their carbon footprint would mean they would need to publish this information on the product packaging or make it available to consumers.

Another option is Life Cycle Assessment (LCA), which measures potential environmental impacts from raw material extraction to disposal. Requiring companies to publish their LCA product information would allow consumers to better understand the resources required to produce a given product, as well as the waste produced once the product reaches the end of its life cycle. Observe the diagram here to make sense of what is included in an LCA.

![FIGURE 1: Illustration of the LCA processes for an apparel product.](image)


[Source: EPA Carbon Footprint Calculator](https://www.epa.gov/energy/carbon-footprint-calculator)
Similar to Life Cycle Assessment, the circular economy and usership-based business models seek to transform the way goods and services are produced and consumed.

Watch this video and respond to the prompts that follow.

Designing Out Waste

1. Explain circular economy in your own words.

2. What are some challenges of switching to a circular economy? What common materials, products, and practices would need to be rethought?

3. What are some opportunities presented by switching to a circular economy? What exciting innovations are being created or could be created?
The government body responsible for implementing environmental law in the US is the Environmental Protection Agency (EPA). The EPA enforces laws such as the Clean Air Act, which McKibben referred to in his essay as “a template for laws across the globe.” The EPA works to ensure federal laws protecting human health and the environment are administered and enforced fairly, effectively and as Congress intended.

One way the EPA accomplishes its mission is by enforcing regulations. According to the EPA, “When Congress writes an environmental law, we implement it by writing regulations. Often, we set national standards that states and tribes enforce through their own regulations. If they fail to meet the national standards, we can help them. We also enforce our regulations, and help companies understand the requirements.”

In Lesson 2, you studied the history of international climate talks, and learned that it is up to national governments to implement policy based on commitments made at those talks. What are some of the major environmental regulations in the US, and what are some of the accomplishments of the EPA? Explore the RIGHT column of the attached timeline and respond to the prompts that follow.

A Brief History of the United States and the UN Climate Change Negotiations Timeline

Timeline of EPA

1. What events stand out to you on the timeline?

2. How do the two sides of the timeline interact? How has the US kept pace with international negotiations? How do the two sides of the timeline influence each other?

3. In 1982, the "environmental justice movement" started. Is the movement still active today? Conduct some research and write a summary of an issue that the environmental justice movement has addressed since the year 2000.

4. Based on what you have learned so far in this project, do you think the EPA does too much or too little to protect the environment and address climate change? Explain your answer.
In Step 5, you reflected on whether you think the EPA is doing enough to protect the environment and address climate change. According to the Exponential Roadmap, we need to begin making significant shifts in our energy supply system and economy by 2025. So what are the options that our government has to kickstart this shift?

Recall the following excerpt from the McKibben essay:

“If the economy was the lens through which we’d viewed the world for a century, now survival was the only sensible basis on which to make decisions. Those decisions targeted not just carbon dioxide; these societies went after the world inequality that also marked the age. The Green New Deal turned out to be everything the Koch brothers had most feared when it was introduced: a tool to make America a fairer, healthier, better-educated place. It was emulated around the world, just as America’s Clean Air Act had long served as a template for laws across the globe. Slowly both the Keeling Curve, measuring carbon in the atmosphere, and the Gini coefficient, measuring the distribution of wealth, began to flatten.”

You may have heard of the Green New Deal resolution - but do you know what it entails? Does it intend to ban cows? What would happen to jobs in the fossil fuel industry? For a brief introduction to the Green New Deal simple resolution, watch this video.
The Green New Deal, Explained

1. What does it mean that the Green New Deal is a resolution and not a bill?

2. What are the main sections of the Green New Deal?

3. Why does the Green New Deal address both climate change mitigation and economic equality?

4. Browse the Green New Deal. Based on what you see, does the resolution appear to sufficiently address climate change? Based on what you have learned so far, would it provide the solutions identified in the Exponential Roadmap?

5. What do you think are the chances of the Green New Deal being implemented, and why?
In Step 1 of this lesson, you read about and defined most of the climate change solutions on this list:

- Passing and enforcing **carbon pricing** and taxes
- Emissions and **efficiency standards**
- Restructuring **subsidies**
- Setting and enforcing **regulations**
- Passing policy **incentives**
- Publishing corporate **carbon footprints** and **product life cycles**
- Building a **circular economy** and developing **usership-based** business models
- Reshaping **public opinion**

The one item not discussed in this lesson is reshaping public opinion. What do you think this means, and what would it take to reshape public opinion around climate change and transitioning to a zero carbon society?

**Reshaping Public Opinion**

In order to achieve net zero carbon emissions by 2050, we all need to participate in a radical shift away from fossil fuels. This doesn’t just mean how we fuel our cars and homes, but also how we produce and package goods, how we grow and transport foods, how we build cities, and more.

Write one paragraph that summarizes what it would mean to reshape public opinion regarding climate change and sustainable living. Where are we now, where do we need to get, how do we get there, and what will be the challenges?
Lesson 4: Transition

Guiding Question:

What can cities do to become more sustainable?
While national governments can set minimum standards for things such as emissions, waste, and efficiency, state and local governments have the power to set their own environmental standards and encourage residents to invest in energy-efficient products and systems. In fact, your city mayor really has more direct impact over your life than the president of the US.

Local governments have led many historic movements that now are part of our cultural norm. Participating in government at the local level can have a huge impact. Here’s why local elections matter:

Did you know that many landmark federal policies first originated at the local level? It’s true — local politics have a long history of shaping change in our country from the ground up. Policies such as women’s suffrage, minimum wage, environmental protection, and marriage equality all began at the local and state level.

By voting in local elections and holding your officials accountable, you can help create the change you want to see in our country. If nothing is moving forward at the federal level (or your federal representatives aren’t making progress in areas that you care about), it’s the responsibility of local governments to take action (Medium).

If you feel the EPA and Congress could do more, what about your city council? Local governments are responsible for developing building codes, organizing public transportation, and allocating property tax funds. Here are a few things cities have the power to do that can help accelerate progress to meet the solutions in the Exponential Roadmap:

- Install electric vehicle charging stations
- Develop and enforce building energy codes
- Improve public transportation efficiency
- Improve walking and biking networks
- Electrify public transportation fleets
- Promote incentives for commuters to use carbon-free options

Now take a look at why cities are so important:

 Ending Climate Change Begins in the City
Ending Climate Change Begins in the City

1. Why should cities care about climate change?
2. What opportunities do cities have to address climate change?
3. What are some weaknesses you see in your own city, and how could those be turned into opportunities?
The United Nations recognizes the transformative power of cities - and also recognizes the huge carbon footprint they have. The UN identified the need for sustainable cities and communities in their Sustainable Development Goals (SDGs), adopted in 2015. Of these 17 goals, SDG 11 focuses specifically on urban developments, and sets targets for reducing the environmental impact of cities.

So how do we reduce the environmental impact of cities? In Lesson 3, you learned about some of the options available to encourage individuals and businesses to embrace more sustainable practices, such as taxes, incentives, and transparency requirements like life cycle assessments. Many cities are taking the lead in green policy. Explore these links, then respond to the prompts that follow:

- Austin: Zero Waste Initiative
- London: Sharing Technical Equipment
- Nairobi: Supplementing Food
- Milan: Food Policy

Circular Cities

1. What is one initiative that stands out to you? Explain where it is happening, what the goals of the initiative are, and why it stands out to you.

2. What might this project look like in your own city? Evaluate how realistic it would be to adapt the initiative for where you live. What existing culture, practices, or policies would facilitate the adoption of an initiative like this? What existing culture, practices, or policies would hinder the adoption of an initiative like this?
In Lesson 3, you learned about the Green New Deal resolution. While many politicians are skeptical it will move forward, the mayor of Los Angeles has already signed a Green New Deal for the city of LA. Learn more about the plan by watching the video and reading this summary.

LA's Green New Deal

1. The article lists a series of measures included in Mayor Garcetti’s Directive. Which measures align with the solutions outlined in the Exponential Roadmap?

2. Which measures do you think could be possible where you live?

3. Mayor Garcetti’s Green New Deal was an Executive Directive, which is “a direct order issued from the Mayor to one or more City Departments. It does not create or change the law, but requires department heads to take immediate and specific action(s) to achieve a designated goal” (SFPlanning). What do you think about the mayor using a Directive to implement the plan? Why might Garcetti have used that as a method?
Los Angeles is an example of how local governments can take more aggressive action at the city level than at the federal level. While Garcetti’s signing of LA's Green New Deal initiates a series of transformative policies and actions in the city, it is not being embraced by all residents. Read this article and respond to the prompts that follow.

Labor Anger Over Green New Deal

1. Why do some LA residents see “Green New Deal LA” as a betrayal?

2. Why does the Green New Deal divide the Democratic Party along a “fault line”?

3. Why might union members be resistant to getting retrained for work in green industries?

4. With whom do you side in the debate over Green New Deal LA, and why?

5. In the final paragraph, Sierra Club California director Kathryn Phillips states that everyone knows “we have got to get off of oil” but “it’s the pain of getting there.” What are three challenges you see in effort to “get off of oil”?
As you have learned throughout this investigation, there is not just one path to mitigating climate change. All industries and individuals must rethink and redesign both WHAT they do and produce, and HOW they do it. One lesson from the Green New Deal in Los Angeles is that we need to get diverse voices involved in the planning and implementation of our transition to a more sustainable world.

One industry that also needs to be on board with this transition is the financial advice industry. Greenbacker Capital, which invests in “projects that generate clean electricity, promote efficiency, sustainability, and energy independence,” has called for a **Green New Deal for the financial advice industry** and has identified the coronavirus pandemic of 2020 as an opportunity to hasten the transition to renewable energy. Read their article from May 2020 and answer the prompts that follow. It’s ok if you don’t know much about financial investments; just focus on the overall message of the article as you read.

1. What are ESG goals?
2. How have investments in renewable energy fared during the financial turmoil of 2020?
3. Greenbacker has stated, “People aren’t traveling, and those businesses have been decimated as a result. But the sun is still shining, the wind is still blowing, and even during a pandemic the community needs electricity to power their new normal.” Do you think the pandemic of 2020 will have any lasting impacts, or will industries try to return to normal as quickly as possible? Explain your answer.
4. Now that you have completed the Internal Investigation, what have been the most valuable lessons from you have learned so far?

**Backing Our Green Future**
Lesson 5: Plan

Guiding Question:
How do you conduct a needs assessment?
In Lesson 4, you reflected on what it might take to shift public opinion on the subjects of climate change and transitioning to a sustainable society and economy. Do you think you have an accurate read on your community and how residents feel about these issues? For this External Investigation, you will get out into your community to conduct a small needs assessment of its residents.

Let's get started by taking a look at how your region might be affected by climate change.

Climate Change Impact By Region

1. How might human health be impacted by climate change in your region?
2. How might ecosystems be impacted by climate change in your region?
3. What other sectors might be impacted by climate change in your region, and how?
In planning to combat climate change, there are two major considerations: mitigation and adaptation. **Mitigation strategies** include plans to reduce greenhouse gas emissions and increase carbon capture so the total amount of accumulation is limited. **Adaptation strategies** include adjustments to society that reduce the impact of and prepare for climate change. Many cities have already developed or are in the process of developing climate change mitigation and adaptation strategies.

As you learned about the Green New Deal, climate change offers an opportunity for us to transform society not just on a technological level, but on an economic and social level as well. Whatever mitigation and adaptation strategies we implement also offer opportunities to increase social justice and equity in our communities.

For this External Investigation, you will explore this question, developed by C40 Cities: **How might we take climate action based on the needs of our city and citizens?** You will interview a sample of at least 10 individuals in your community to get a sense of how you can both take climate action and address the needs identified by your fellow citizens.

To begin, answer the question from your own perspective: How can your community take climate action based on the needs of your city and citizens?
Now make some plans for conducting your interviews. How will you reach at least 10 members of your community, with the aim of capturing a diversity of voices? Do you have an existing network of individuals you can tap into, which encompasses a diversity in age, race, socio-economic status, neighborhood, and views? Is there a central gathering space that many members of your community pass through? What about a central hub for transportation or shopping? Is there a major festival or event coming up that would attract a wide array of local citizens?

When you have a plan for where to collect your data, record it on this External Investigation worksheet.

ReMobilizing the Future External Investigation Worksheet
Lesson 6: Analyze

Guiding Question:
What are your community’s needs?
Now that you have an idea of where you will conduct your interviews, prepare the information and materials you will need. First, prepare for approaching your interviewees by reading the following tips. As you read, take note of helpful tips that will aid in your own preparation and conduction of interviews.

How to do Interviews

Scott Neuffer, Pen & the Pad.
Now get ready to conduct your own interviews. Prepare a short introduction you can use to introduce yourself and the purpose of this interview. You may wish to review the contents of this project thus far, so you may respond to questions or provide context as appropriate while you interact with your interviewees. Be sure to be equipped with information about how your region will be affected by climate change and why your city should consider plans for adaptation and mitigation.

Write out a script that will serve as your introduction when you speak to each interviewee, and record it on the External Investigation worksheet.

ReMobilizing the Future External Investigation Worksheet
Step 3: Interview

Now you are ready for your interviews. Print the External Investigation Worksheet so you can take notes as you conduct your interviews. Bring something to write with and something to write on, so you may record notes.

At the beginning of each interview, be sure to introduce yourself and ask each interviewee if you can write down their name and age.

🔗 ReMobilizing the Future External Investigation Worksheet
Lesson 5  Step 4: Compile

Once you have completed your interviews, compile your notes and write a summary of your findings. What needs were identified? What actions were suggested? What patterns or themes emerged?

Summary of Interviews

Submit your completed worksheet with a summary of responses.
Now write a 200-400 word reflection on your experience conducting a Needs Assessment. Were there any needs identified that you had not thought of before? Were there any interesting actions suggested that would both meet the needs of the community and address climate change? Return to Step 1 and reread your own response to the prompt. Would you revise your response after conducting the interviews and hearing from other members of your community?
Lesson 7: Research

Guiding Question:

How do you turn research into action?

Please review the Action Project worksheet, rubric, and example of excellence below:

ReMobilizing the Future Action Project Worksheet
ReMobilizing the Future Action Project Rubric
ReMobilizing the Future Sample Project
Take a moment to reflect on what you have learned so far in this project. You began by envisioning the world of 2050, and read Bill McKibben’s essay on what it will take to avoid the worst of climate change. You learned about the Paris Accord, and the difference between global warming of 1.5 vs 2 degrees Celsius. The Exponential Roadmap provided specific actions that need to be taken, with deadlines every 5-10 to fully decarbonize our world and end our reliance on fossil fuels. You explored different policy options and learned what the EPA has done to protect our air, water, and health; you watched an overview of the Green New Deal and learned why and how cities are taking the lead on transitioning to a carbon-free future. Finally, you conducted a Needs Assessment, and discovered the priorities of a small sample of your community.

Now, you will synthesize everything you have learned and create an action plan for your community. As an example, choose a city and explore what it is doing to prepare for climate change.

**C40 Cities**

- What city did you choose?
- What are at least three actions that city has taken to solve these challenges?
- What are two projected outcomes of taking these actions?
Many cities are developing plans to mitigate and adapt to climate change. Is your city one of these? Review this list, and find your city or the city closest to you, and peruse its plan. If your city is not on the list, you may conduct a search to find out if your city already has a climate action plan.

Each city’s plan is different, and you are not expected to read yours in its entirety, but skim through it and record information that stands out to you.

Climate Action Plans in the 50 Largest Cities

Your City’s Climate Plan

What did you notice about the climate action plan you viewed? Write a paragraph about its organization, major sections, and priorities.
For this project, you will write your own action plan for your community, based on the information you collected during your Needs Assessment and additional research. To begin outlining your plan, open this Action Project Prep Worksheet and begin working through the prompts.

ReMobilizing the Future Action Project Prep Worksheet
Use the Prep Worksheet to begin outlining your introduction. Your goal for the introduction is to help your readers understand why an action plan is necessary in the first place.

Complete Prompt #1 by summarizing climate change and the difference between 1.5 vs 2° C of warming. Recall the sources you referred to during the Internal Investigation. You may use these or others to make the case for action.

- World Resources Institute
- New York Times
- NASA
- Vox
- Carbon Brief

Complete Prompt #2 by informing your readers of the potential impacts of climate change in your region. Refer back to this NASA resource, or conduct your own research.

To complete Prompt #3, refer back to the Exponential Roadmap and review some of the solutions and timelines offered in that document.
Now that you have introduced some context and data supporting the need for an action plan, focus on your immediate community and what can be done at a local level.

For Prompt #4, summarize the Needs Assessment you conducted, and what feedback you collected from your survey pool. Report on any trends or suggestions collected during your interviews. What does your data say about your community?

Next, to answer Prompts #5 and #6, respond to your Needs Assessment by offering an action plan with at least five solutions. Review some of the options you learned about, such as carbon pricing or other taxes, setting efficiency standards for vehicles or buildings, setting regulations, offering incentives, and requiring more transparency from businesses, such as publishing product life cycles or participating in a usership-based business model. Be sure to consider as many voices as possible in your plan — who does your plan serve, who does it benefit, and who might suffer as a consequence of your plan?

For additional areas where you might offer solutions, refer to this resource:

Climate Actions for Cities
Lesson 7  Step 6: Plan

Once you have designed your solutions, complete Prompt #7 by creating what you think is a realistic timeline for action.

For Prompt #8, explain the opportunities and challenges presented by your solutions. Recall the Green New Deal LA as an example of the pushback your plan might receive from members of your community.

Finally, make some notes on closing thoughts. What is the message you want to leave readers with?
Lesson 8: Create

Guiding Question:

How do you craft an action plan?
Now that you have outlined all your research and ideas, it is time to draft and design your Community Action Plan. Begin by taking the notes on your Prep Worksheet and turning them into a narrative. Be sure to refer to the project rubric as you work.

When your draft is finished, share it with a peer or teacher to get their feedback.
Once your text is complete, it’s time to design your Community Action Plan. You may read your plan out loud as your final presentation of your work, but you also may wish to share it with a wider audience, such as your school administration or your city council. If your plan will be shared in this way, you should make it visually engaging and presentable. Using an online design tool such as Flipsnack will help you add images, background colors, and videos, plus you will get a link you can share on social media or email to your targeted audience.
Once your Community Action Plan is complete, share it with your classmates and community members. If you want to start a campaign in support of your plan, think of how you may use social media to your benefit.
Reflect on your process and what you have learned since the beginning of this project. Write a 200-300 word reflection that summarizes your experience.

**Your City's Climate Plan**

Write a 200-300 word reflection that responds to the following:

- What were your major takeaways from completing this project? What will you remember one year from now?
- Has this project made you reflect upon or change any of your own lifestyle choices or behaviors? If yes, how? If no, why not?
- What unanswered questions do you have, and how will you seek answers to those questions?
- Any other reflections or feedback on the project.
Sustainable Development Goals

SDG 11: Sustainable Cities and Communities

11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management

11.6 By 2030, reduce the adverse per capita environmental impact of cities

11.B By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters

NextGen Science Standards

HS-ETS1-1: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

C3 Framework for Social Studies

D2.Civ.1.9-12. Distinguish the powers and responsibilities of local, state, tribal, national, and international civic and political institutions.

D2.Civ.5.9-12. Evaluate citizens’ and institutions’ effectiveness in addressing social and political problems at the local, state, tribal, national, and/or international level.

D2.Civ.12.9-12. Analyze how people use and challenge local, state, national, and international laws to address a variety of public issues.

D2.Civ.13.9-12. Evaluate public policies in terms of intended and unintended outcomes, and related consequences.

D2.Geo.4.9-12. Analyze relationships and interactions within and between human and physical systems to explain reciprocal influences that occur among them.

D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.
ReMobilizing the Future
Mastery Project

* We thank Brent Mix for reviewing this course.