

PROJECT 1 : Designing a City of the Future

Student Planning Sheet: Lesson 2

Curb Climate Change and Adapt to Its Impacts

Name: _____

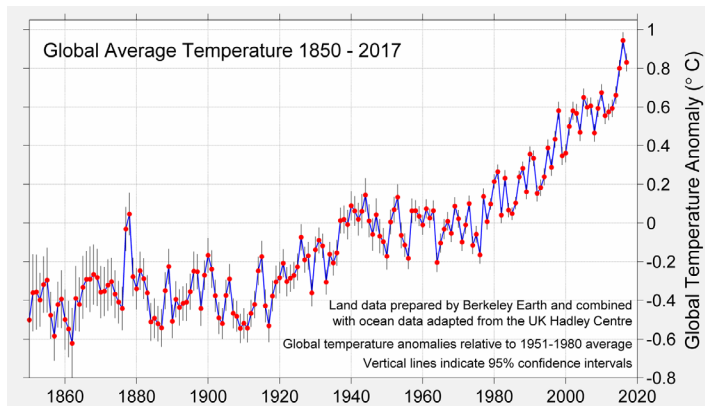
Date: _____

Directions: Alone or with a group, complete this worksheet using information found in Grand Challenge 2. Save the information gathered around the physical changes expected from climate change and impacts/consequences along with the mitigation and adaption strategies listed with this worksheet as you plan out your design for a city of the future.

OVERVIEW

With temperatures rising around the globe, extreme weather patterns, forest fires and floods, climate change is affecting our lives. How will cities change to adapt to climate change? What can be done now to mitigate the changes? How will these changes affect the design of cities in the future? In the Environmental Engineering for the 21st Century study, Grand Challenge 2 explores ways to “Curb Climate Change and Adapt to Its Impacts”.

1. What does the Global Average Temperature 1850-2017 graph [Fig. 2-1] tell you? Write your observations below.



[Fig. 2-1]



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2. Read pages 26-27 and pages 35-36 of the report and create a list of physical changes expected from climate change and impact/consequences of climate change.

Physical changes expected from climate change	Impact/Consequence
Sample: Increasing temperatures	Reduction of agricultural productivity for some existing crops in their current locations

Are these impacts evenly distributed across the world's populations or are some groups and locations more impacted than others?



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3. Environmental engineers tackle the issue of climate change through two process, mitigation and Adaptation.

Here are examples of mitigation and adaptation strategies to climate change:

MITIGATION:

Use of solar power vs. renewables

ADAPTATION:

Building up the shoreline vs. managed retreat

What is Mitigation and what is Adaptation? How do they differ?

Empty rectangular box for student response.

Take the list of strategies below and categorize them using Mitigation and Adaptation Strategies tables on the next page. HINT: Some will fit into multiple categories.

Can you think of others not on the list? If so, add them to the tables.

POSSIBLE STRATEGIES

- List of 15 possible strategies for climate change, including LED lighting, energy-efficient appliances, active management of invasive species, hybrid vehicles, etc.



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MITIGATION STRATEGIES

Efficient Energy Use	Alternative Energy Source	Reduction of Greenhouse Gases

ADAPTATION STRATEGIES

Disaster Resilience	Reducing Impacts on Ecosystems	Agricultural Practices	Infrastructure



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4. Name two MITIGATION STRATEGIES that are accomplished with technology and two that require behavioral change. Do any strategies require both?

Name two ADAPTATION STRATEGIES that are accomplished with technology and two that require behavioral change. Do any strategies require both?

Do any of the strategies seem easier to achieve and why?