Educator Guide: Where to Purchase Land?

Grade Level: 9-12
Time: 3-4 hours
Subject: Earth Science
Standard: NGSS HS ESS3-5 - Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth's systems.

The debate regarding humanity's role in climate change is over.
The discussion of how to adapt has begun.

Many places around the world are already feeling the effects of anthropogenic climate change. It is probable that the grandchildren of those alive today will feel a much greater burden. What can we do to ensure our future family is comfortable and safe? In this resource, students will explore the impacts of climate change in the U.S. to identify places where their descendants may want to settle in the year 2063. Students will explore climate change impacts on resources needed for living and the predictions of the likely impacts on places across the country. Students will determine the most important features for them and their descendants and use that information to select a plot of land to purchase that would have a high likelihood of shielding their family from climate change effects. Finally, students will defend their choice using actual climate and real estate data.

Materials for Implementation

- Computer with internet access.
- *Climate Future Student Guide*
- *Regional Climate Model Resource*
- Microsoft Word or Google Docs
- Microsoft Excel or Google Sheets
- Microsoft PowerPoint or Google Slides

This resource can be implemented as a group or individual activity. The following are guidelines to help implement this as a group activity:

a. Groups of 3 to 4 are ideal, depending on class size.
b. Identify jobs/roles for group members in order to focus the group's progress:
    i. Recorder - Leads in the recording of data and facts throughout the research process and is the document organizer/keeper whether on a computer or paper.
    ii. Lead Researcher - Takes point on the research choices, directs which reports to look at, splits up work, and summarizes findings back to the group
    iii. Public Relations Officer - Responsible for communications with teachers or other groups and will take the lead on the development of final product/presentation.
    iv. General Manager – Hold others accountable for completing their jobs, time and material management

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Preparation

Each student needs:

a. Access to a computer and internet.
b. A downloaded copy of the full *Climate Future Student Guide*.
c. Link to the activity as it appears on ScienceFriday.com for easy access to activities and resource links.

Each group needs at least one copy of the *Regional Climate Models Resource* document downloaded.

Activity 1: Climate Change Background Knowledge

a. Review student readings.
b. Students will complete a few simulations on climate change to establish building blocks of knowledge to better understand their research findings.
c. Students will complete a brief set of prompts and questions.

Activity 2: Identify Property Needs

a. Students will read through off-grid resources and generate a list of property features desired using a graphic organizer with the group
b. Features could include: freshwater access, land make-up (i.e. field, forest, topography, etc.)

Activity 3: Regional Climate Information - Where Will You Buy?

a. Students will review the Fourth National Climate Assessment overview table to establish a direction in their research.
b. Students will review further, with the group, the Regional Climate Models Resource document. Within the document are links to region-specific climate forecasts from the Fourth National Climate Assessment along with a guide to interpreting and finding regional information in the Climate Resilience Screening Summary. A zip file of pdfs of all the primary sources linked in this document can be downloaded for offline use.
c. Students will complete the regional graphic organizer to organize their research

Activity 4: Property Search

a. Students will use the internet to search for available property listings that match their criteria, organizing the information into the property and climate information graphic organizer (in spreadsheet or table form).
b. Students will shorten their list of properties to 5-8 properties for deeper research and analysis
c. Students will use Property and Climate Information Graphic Organizer document to organize deeper research on these properties
d. Students will need to select four climate feature categories and enter them on the second tab of the spreadsheet for notes regarding these topics in the context of reviewed property
e. Students will analyze their notes from the Property and Climate Information Graphic Organizer and their knowledge of climate predictions in that region to make a final selection for "purchase". No additional research occurs here. The group comes to a consensus on the formal selection of property they will buy.

Activity 5 - Conclusion and Presentation

a. Students will develop a cohesive argument supported by evidence from their research (on impacts of climate change, sustainable land, and regional predictions) to justify why this property should be purchased.
b. Groups can decide on which method of presentation they wish to use to communicate their information. See the final product section of the Student Guide for options and expectations.
c. An evaluation rubric has been provided which outlines general expectations for the final product.

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