

Environment and Society



Welcome to the Anthropocene is an atlas of society's influence on the physical environment. The environment and society topic looks at the human footprint on the environment as well as the environment's influence on society.

Introduction

The Environment and Society module examines the way humans interact with the environment and vice versa. People adapt to and modify the environment for a variety of reasons, including transportation and recreation. Over time, technology has changed the relationship between people and the environment, resulting in higher crop yields, alternative energy sources, dams, and even earthquake detection. Natural disasters, however, often threaten much of the built environment. Worse, some of the harshest disasters people have faced are the products of our own construction. For example, the Dust Bowl was largely the result of human activities and a lack of knowledge of environmental systems.



Figure 5 Construction of Toll Loop 49 Segment 5 at Paluxy Drive (TylerTexasOnline Staff photo) (September 2011)

A second component of the environment and society interaction is how physical systems affect human systems. Historically, settlement was located near resources like fertile soil, water, and building materials. Then, waterway settlement provided ease of access to import and export goods, though flooding remains a constant issue in many of these locations, from New Orleans, Louisiana, to Bangkok, Thailand. Today, however, even sparsely populated deserts have access to water via dams, such as the Glen Canyon Dam.



Figure 6 A village near the coast of Sumatra lays in ruin after the Tsunami that struck South East Asia.

Students must understand that there are consequences when we modify the natural environment. Dams can both create a city and flood a city, and an entire canyon. Decisions as simple as putting sidewalks over vegetation to provide safer routes to school or the creation of the interstate highway system can both ease transportation and change the environmental situation, but on very different scales.

Case Study: Urbanization and the Environment

Where do people settle? Which resources are necessary to provide basic needs - food, water, housing? How do you balance the human needs with the environmental needs? What is the best way to balance environmental protection and economic growth? Geographers consider these questions throughout the urban and regional planning process.

Historically, settlement occurred near essential natural resources, including waterways. Today, economic interconnections allow for less reliance on local resource needs. Urban planners must mitigate environmental issues due to a city's proximity to natural resources with growing population and urbanization needs.

This case study presents the key ideas of human-environment interactions in an urban setting. Below are three videos. One is a brief look at the job of an urban planner. The second video looks at the environmental impacts of urbanization on streams. The last video is an overview of water sensitive urban design.

Video 6.1: So You Want to be an Urban Planner, <https://www.youtube.com/watch?v=ZPJSAe0PM0U>

This video discusses the day to day activities of an urban planner. It discusses what areas and topics are utilized in urban planning.

Video 6.2: Connecting People to Urban Streams, <https://www.youtube.com/watch?v=anHBb5BCj6Q>

This video was made by the USGS to discuss the impacts of urbanization on stream environments and habitats.

Video 6.3: Water Sensitive Urban Design,

https://www.youtube.com/watch?v=b_DTnOzYTR4&list=PLD5cwITc2o41Cs7lkie2bBY8HhUZBJiwP%3Fwmode%3Dopaque

What is the priority of water in urban design? How can you manage water in an urban setting? This video discusses water management techniques in an urban environment. You can pause the video along the way to provide discussion and teaching moments.

Teacher's Note: When showing the videos in class, pause at various places for teachable moments.

CLASSROOM APPLICATION

Texas

Although most of the land in Texas is rural, over 80% of the population lives in urban areas. The strain on natural resources in the burgeoning urban areas continues to intensify and challenge urban planners. Growth is likely to expand outward into surrounding countryside, extending the reach of the city and resulting in urban sprawl. To protect existing natural resources, such as urban streams, planners must consider mitigation for these environmental issues.

Exploration

- Explore the [USGS Historical Topo Maps](#) to view historic maps of your city.
- Explore satellite imagery [Urban Growth over time in San Antonio](#), [Las Vegas, Nevada](#), [Binhai New Area China](#)

Questions

Describe how landforms such as flood plain, mountains, and deltas limit human activity.

- Identify characteristics that would attract settlers to San Antonio, Las Vegas, and the Binhai New Area of China based on the aerial images? Why are these cities located where they are?
- What are some environmental threats to human settlement?

Use [Google maps](#) or [ArcGIS Explorer online](#) to explore your school grounds, city, and all around the world.

- What natural features are around your school? What did the area look like before the school was there?
- How have people changed the environment in your city?
- What are the most important natural resources to protect in your city?
- What are some of the positive and negative consequences of this modification of the environment in your city?

Instructional Strategy: OPTIC Visual Evaluation

OPTIC is an organized approach for teaching students how to read visual or graphic text, including photographs, diagrams, and charts. It allows the student to practice techniques of collecting and acquiring data as well as prepare them for higher level critical thinking skills. One of the lessons in this module, Photo Analysis, uses the OPTIC strategy to help students analyze satellite images showing change over time. The strategy has students explore the photos as a whole, as well as in smaller parts, and then determine how the parts relate to the whole. The strategy also encourages students to be able to summarize what they have seen in the photos.

O	Overview	<ul style="list-style-type: none">• Conduct a brief overview of the main subject of the visual. [Write a short, descriptive summary about the visual.]
P	Parts	<ul style="list-style-type: none">• Scrutinize the parts of the visual.• Note any elements or details that seem important. [Focus on the parts of the visual. Read all labels and any written words (if you can). What details seem important?]
T	Title	<ul style="list-style-type: none">• Read the title or caption of the visual (if present) for added information. [What is the title of the visual? What does it say about the visual?]
I	Interrelationships	<ul style="list-style-type: none">• Use the words in the title or caption and the individual parts of the visual to determine connections and relationships within the graphic. [Using the title: What big umbrella connects the whole visual? What's the theme?]
C	Conclusion	<ul style="list-style-type: none">• Draw a conclusion about the meaning of the visual as a whole.• Summarize the message in one or two sentences. [Why is this visual important to what is being studied?]

OPTIC, How to Study in College (2001) by Walter Pauk

Teacher's Note: If you hold a white 8.5 x 11" sheet of paper in front of a projector lens, it will magnify and focus on a single part of a photo so that all eyes are drawn to the same section of the picture.

The strategies identified here come from the Texas Education Agency Lighthouse Initiative Social Studies Content and can be downloaded at the following link:

http://www.tealighthouse.org/socialstudies/skills_and_strategies.pdf

Instructional Materials

Lesson plans developed specifically for this module include a photo analysis of two satellite images taken 20 years apart to show the changes which have occurred in the Panhandle of Texas. This lesson, written primarily for 7th grade, is easily modified for use with 4th grade students or other world regions. The 6th grade lesson has students exploring how people live in extreme environments. The 8th grade lesson has students analyzing maps depicting the early growth of the United States.

[Download Instructional Materials and Resources](#)