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Considering Environmental Justice in Building a Greenway: A Case Study

Office of Research and Development
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Additional EnviroAtlas lesson plans are available that address a variety of topics for all grade-levels kindergarten through undergraduate. All educational materials can be found here: https://www.epa.gov/enviroatlas/enviroatlas-educational-materials

Disclaimer

This case study makes students the decision-makers in a hypothetical planning scenario using real-world data from the Tampa area within Hillsborough County, Florida. It should be noted that although Tampa is a real city and the data in this case study are accurate, this greenway planning activity is hypothetical. This case study is intended to represent situations that could occur and the challenges and opportunities that may accompany said circumstances. This document has been reviewed in accordance with U.S. Environmental Protection Agency policy and approved for publication.

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Acknowledgements

This case study is an adaptation of the lesson plan *Building a Greenway: A Case Study* and was developed through the joint efforts of multiple contributors. Primary authors of this adapted version from US EPA's Office of Research and Development (ORD) are Jessica Daniel, Jenna Hartley (ORISE Participant), and Molly Jenkins (ORISE Participant) and from US EPA's Office of Environmental Justice (OEJ), Tai Lung and Stacey Lobatos. Pamela Barclay and Kathleen Bush, former EPA research participants, contributed to the original published case study. The authors would like to recognize the valuable support contributions made by Daniel Rosenbaum and Madeline Grupper (ORISE Participants, US EPA ORD). This lesson plan may not have taken place were it not for the impetus from Alexis Dickerson, Chesapeake Bay Foundation; her input, enthusiasm, and pilot-testing efforts were essential.

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Introduction

This lesson plan is a part of a larger curriculum of activities for educational use to introduce students to EnviroAtlas (www.epa.gov/enviroatlas) and concepts such as watersheds, pollution, connections between the environment and human health, greenways, and using maps in decision-making. This lesson plan also introduces students to EJSCREEN (www.epa.gov/EJSCREEN) and addresses decision-making, policy, mapping, and environmental justice.

Lesson Plan Components

This lesson plan has multiple components, either included in this document or available from EnviroAtlas.

Items included in this document:

- Student Background Reading
- Understanding Maps Worksheet
- Student Map Set
- Student Stakeholder Roles
- Glossary
- Additional Reading Resources

Documents available from the EnviroAtlas webpage https://www.epa.gov/enviroatlas/building-greenway-case-study:

- Teacher Instructions and Link List (a.k.a. “hyperdoc”)
- Student Instruction Sheet
- Educator Introductory Slides
- Guidance for Using the EnviroAtlas Interactive Map for this Lesson
- Additional Activities and Adaptations
- Associated Science Standards

For questions regarding this case study and supplemental materials, please contact the EnviroAtlas Team at EnviroAtlas@epa.gov.

Glossary of Terms

Active Transportation: Any form of human-powered transportation – such as walking, cycling, using a wheelchair, in-line skating or skateboarding.

Alternative Transportation: Alternative Transportation promotes and encourages the use of alternative modes of transportation (e.g., bicycling, walking, vanpooling, carpooling, riding transit) to get to, from, and around destinations instead of a single occupancy vehicle.

Biodiversity: The variability among living organisms (plants, animals, genetics, habitats) from terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part.

Board of County Commissioners (BOCC): Also known as a county commission, a BOCC is a group of elected officials collectively charged with administering the county government in some U.S. states.

Buffering: Occurs when streamside vegetation filters stormwater and protects stream banks.

Case Study: An in-depth examination of a situation. It is a method used to focus a very broad field of research on one easily researchable topic.

Community Cohesion: Community cohesion (also called social capital and neighboring) refers to the quantity and quality of interactions among people in a community, as indicated by the degree residents know and care about their neighbors and participate in community activities (Cochrun 1994; LGA 2004; CASE).

Conservation: preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife. Conservation activities include examination, documentation, treatment, and preventive care, supported by research and education.

Connectivity: Connectivity represents the pattern of core areas of potential habitat or cover that allow the movement of organisms across an intact or fragmented landscape. Landscapes with high connectivity allow species to move freely among core areas, while landscapes with low connectivity tend to isolate species within scattered patches of habitat.

Demographic: a term describing the structure or statistical characteristics of human populations or a sector of a population.

Disproportionate Impact: a term used by the environmental justice movement to describe situations of concern where there exists significantly higher and more adverse health and environmental effects on minority populations, low-income populations or Indigenous peoples.

Ecosystem Services: Outputs of natural ecological functions or processes that directly or indirectly contribute to human welfare or have the potential to do so in the future (Boyd and Banzhaf, 2007).

Environmental Justice (EJ): EPA defines environmental justice **(EJ)** as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Equitable development: an approach for meeting the needs of underserved communities through policies and programs that reduce disparities while fostering places that are healthy and vibrant.

Executive Order 12898: an Executive Order ("Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations") issued by President Clinton in 1994 which directed the federal government to make environmental justice a part of the federal decision-making process.

Fair treatment: an environmental justice (EJ) term that means no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies.

Greenspaces: EnviroAtlas defines green space as all vegetated land, including agriculture, lawns, forests, wetlands, and gardens. Barren land, water, and **impervious** surfaces such as concrete and asphalt are excluded.

Greenway: A greenway is a long, narrow piece of land, where vegetation is encouraged, and is managed for public recreation and active transportation.

Habitat: The home or environment of a plant, animal, or other organism.

Health Outcomes: A health outcome is a change in health, or lack of, following some factor or treatment. In the study of ecosystem services, this typically refers to environment-related changes in human health.

Impervious: Impervious surfaces are that which do not allow fluid (water) to pass through them; examples include concrete and asphalt.

Meaningful involvement: an environmental justice (EJ) term that means:

- People have an opportunity to participate in decisions about activities that may affect their environment and/or health;
- The public's contribution can influence the regulatory agency's decision;
- Community concerns will be considered in the decision-making process; and
- Decision makers will seek out and facilitate the involvement of those potentially affected.

Mitigation: A human intervention to reduce negative impacts on the climate system; examples include strategies to reduce greenhouse gas sources and emissions restoring coastal wetlands to dampen storm surge.

Neighborhood Connectivity: Neighborhood connectivity refers to the relative ease and directness of getting from one place to another (e.g. from home to school) by road, path, or trail. One way to measure urban connectivity is with the density of street intersections.

Patch (habitat): Refers to an area of distinct habitat type that has a definite shape and is used by species for breeding or survival. The size of a given patch is typically an important consideration when determining habitat quality.

Preservation: The protection of cultural property and natural lands through activities that minimize chemical and physical deterioration and damage and that prevent loss of informational content. The primary goal of preservation is to prolong existence.

Public Hearing: A meeting for receiving testimony from the public at-large on a local issue, or proposed government action. Testimony from both sides of an issue is usually recorded for public record and a report summarizing the key points is generated. All levels of government hold public hearings - from city on up to the national level. Hearings may also be less formal - they may or may not be sponsored by a government body - and may not require that individuals from multiple sides of an issue get time to speak.

Redlining: The Home Owners' Loan Corporation (HOLC) assigned grades to geographic areas based on their perceived security and associated investment risk; these grades were predominantly informed by the racial, ethnic and income makeup of the associated area. Areas that were graded red were labeled 'hazardous', effectively denying residents access to home loans, business loans, and other forms of capital investment. The practice of redlining was most common in the 1930's but was not formally abandoned until the 1960's; the legacy of redlining still impacts communities to date.

Resolution (map-making term): The detail with which a map depicts the location and shape of geographic features. High resolution images may appear sharp, while lower resolution images appear more blurry or blocky.

Restoration: Return of an ecosystem to a close approximation of its presumed condition prior to disturbance.

Siting: Determining where to position or locate a structure.

Social Capital: The sum of social interactions with other humans and connections within a social network; the idea that social networks have value.

Stakeholder: One who is involved in or affected by a course of action; a person with an interest or concern in something particular.

Additional Reading Resources

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Appendix A - Data Quality

All data cited in this report were sourced from either EnviroAtlas or EJSCREEN, two EPA tools. All data provided in these two tools has been subjected to a rigorous quality assurance review including multiple levels of data review.

Data sources and dates of the data are presented alongside datasets; any data anomalies are noted in the report when data are presented. Each of the tools contains resources to help users understand the quality of the data and their limitations. For example, EnviroAtlas includes Fact Sheets for every data set (https://www.epa.gov/enviroatlas/enviroatlas-fact-sheets) with each fact sheet containing a section about the limitations of the data. EJSCREEN includes a section on their website about the limitations of the data (https://www.epa.gov/ejscreen/limitations-and-caveats-using-ejscreen). Users are encouraged to understand the limitations of the data. All data from both tools includes metadata which describes the processes used to develop the data; metadata is an important element of data quality for geospatial data.

This educational lesson report was created by EnviroAtlas and EJSCREEN team members with extensive geospatial knowledge and reviewed by EPA environmental justice experts. The lesson was piloted by EPA staff with multiple educators and was also tested and reviewed individually by three classroom educators. Based on reviewer feedback, adjustments were made to the report before final release. This report has also been reviewed and approved by a Quality Assurance Manager.