Community component emphasizes human health, well-being, and the local environment

Background

Towns and cities rely on clean air, clean water, green space, and other natural amenities for economic sustainability and quality of life, yet their benefits are not always fully understood or considered in local decisions. EPA and its partners are producing EnviroAtlas to help communities better use environmental assets for public good.

EnviroAtlas combines maps, graphs and other analysis tools, fact sheets, and downloadable data into an easy-to-use, web-based educational and decision-support resource. Managers, planners, researchers, non-profit organizations, and citizens can use EnviroAtlas to assess the status and distribution of natural resources, and their current and potential benefits to human health and well-being. Many societal benefits flow from natural resources – clean air; clean and plentiful water for drinking, recreation, biodiversity; and protection from natural hazards. These and more are often referred to as "ecosystem services."

EnviroAtlas helps users understand the connections between ecosystem services and the natural resources that provide them. It also incorporates data about the built environment, demographics, and forces of environmental change such as pollution and land conversion.

Two primary spatial scales are featured in EnviroAtlas:

- The national component is based on 30-meter resolution land cover data and summarized by subwatersheds (in 12-digit hydrologic unit codes) for the contiguous United States.

- The community component is based on 1-meter resolution land cover data. Information derived from these data is summarized by census block groups.

While the national and the community components include maps of the societal benefits of ecosystems, the community component is especially suited to focus on the connections between the environment and human health and well-being. By using U.S. Census Bureau data and spatial boundaries, the community component can address the distribution of ecosystem services to specific populations within the community. This allows community users to see potential disparities, prioritize future projects, and address unmet needs.

Aerial photography of downtown Portland, ME, classified into vegetation (greens), impervious surfaces (pink), and water (blue)

EnviroAtlas data are organized by roughly 20 topics and then further linked to 7 ecosystem service benefit categories. Topics relevant to the community data layers include:

- Engagement with Outdoors
- Near-Road Environments
- Pollutant Reduction: Water
- Health and Economic Outcomes

Science

The community component supports data and methods development from the best available science to provide greater understanding and appreciation of the full societal value of natural resources. By creating land cover data for each featured community from aerial photography, as seen above, the community component provides foundational data that can be assessed with other environmental and social data and tools. Analyses can then illustrate the protective and health-promotional benefits of natural resources, and how their loss or degradation may be contributing to cumulative burdens on community health and well-being.

Through a partnership with the U.S. Department of

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Agriculture (USDA) Forest Service, EnviroAtlas leverages *i-Tree*, an ecosystem services calculation toolkit, to produce some of the community metrics. Maps developed using *i-Tree* help identify the extent to which natural infrastructure meets community needs and where the availability of these assets falls short.

Urban tree cover can create shade, filter air pollutants, store rainwater, and beautify pedestrian areas. The community component maps the extent of tree cover at the neighborhood scale, quantifies pollutant removal and other ecosystem services, estimates air-quality benefits in health and economic terms, and provides fact sheets explaining additional health benefits that have been linked to tree cover in research studies.

The community component integrates data and research to help users identify and understand a broad suite of environmental, social, economic, and health benefits associated with ecosystem services. The scale and focus of the community component is particularly suited to evaluate and promote environmental justice.

Application and Impact

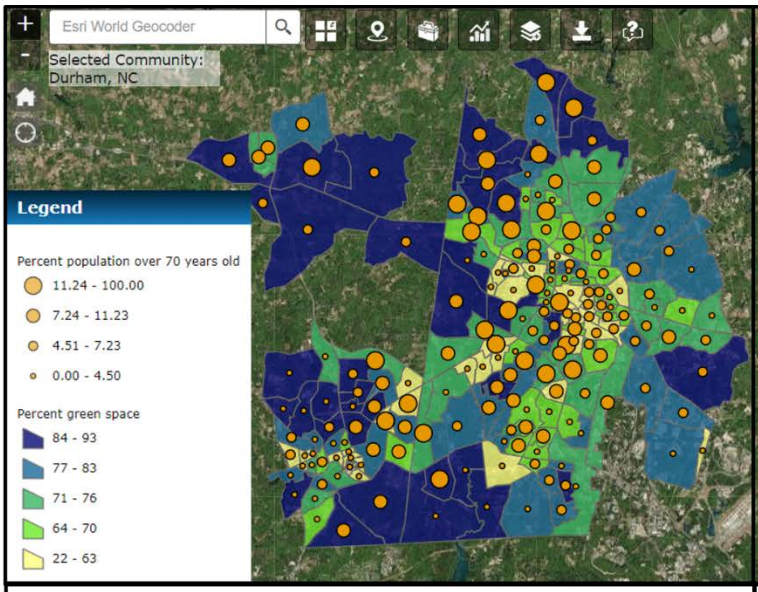
EPA defines environmental justice as "the fair treatment and meaningful involvement of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices." In the community component, users may address disparities by comparing the levels of ecosystem services available across different neighborhoods, socioeconomic groups, and populations with specific health vulnerabilities. For example, the community component includes maps that show the distribution of green space (below left), which can be used to evaluate equity in opportunities for exercise, social interaction, and engagement with nature. The map on the right illustrates the proportion of residents potentially exposed to traffic-related air pollution; it can be used to assess local priorities for near-roadway vegetated buffers.

These comparisons provide a screening mechanism for proposed projects and the potential impacts of policy decisions and planning efforts, such as how environmental equity might be enhanced through investments in parkland or community gardens.

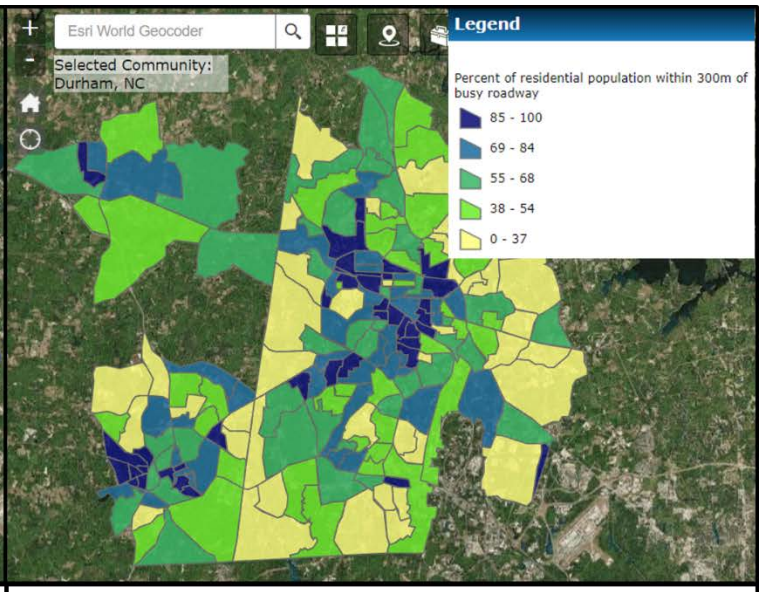
EnviroAtlas illustrates relationships between ecosystem services and human health through maps, fact sheets, and the Eco-Health Relationship Browser. This interactive tool allows users to explore connections among ecosystems, ecosystem services, and more than 30 health issues, as reported in published scientific research.

EnviroAtlas continues to grow through partnerships to meet community needs, address research gaps, and integrate existing data and resources. Partners include EPA, the USDA Forest Service and Natural Resources Conservation Service, the U.S. Geological Survey, and LandScope America. Local governments, universities, and not-for-profit organizations have also contributed. Additional partnerships will further increase the capacity to address the environmental, human health, economic, and well-being benefits associated with decisions affecting ecosystem services.

The EnviroAtlas community component features hundreds of U.S communities within a growing list of census urban areas. For more information, visit www.epa.gov/enviroatlas or e-mail the development team at EnviroAtlas@epa.gov.



A block group summary map showing percent green space overlaid with percent population over 70 years old (orange circles) within the Durham, NC community boundary.



A block group summary map showing percent of residential population living with 300m of busy roads in the Durham, NC area.