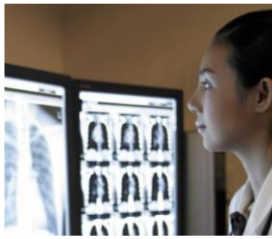
EPA's Examples of Innovative Public Sector Sustainability Indicators & Metrics

Report on the Environment (ROE)
Database of Sustainability Indicators & Indices (DOSII)
Environmental Quality Index (EQI)
Human Well-being Index (HWBI)



Report on the Environment (ROE)

Report Trends	• Report on the national and, in some cases, regional status and trends in the environment and human health
Develop Indicators	• Develop indicators on important issues to EPA
Inform EPA Priorities	• Inform development of Agency activities and priorities
Communicate with Public	• Communicate the state of the nation's environment in a meaningful and easily accessible way to the general public

The purpose of the ROE is *not* to analyze or diagnose the reasons for, and relationships between, trends in stressors and environmental and health outcomes

ROE History

2001
- Initiative of EPA Administrator

2003
- Released **draft ROE**

CEQ, OMB, Interagency & SAB reviews

2008
- **Final ROE** released as published report; electronic version (eROE) in late 2008

SAB consultation 2009; OMB, Interagency (2013) & SAB review 2014

2015
- **2015 version**—web-based; no printed report; greater data transparency; additional interactive capabilities; increased flexibility for future growth

EPA's Report on the Environment (ROE)

What is an ROE indicator?

ROE indicators are simple measures that track the state of the environment and human health over time.

Learn more »

ROE Quick Finder

What Is the ROE?

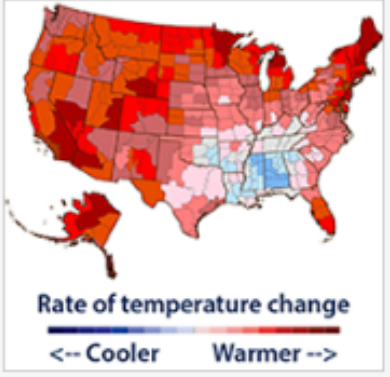
EPA's Report on the Environment (ROE) is an interactive resource that shows how the condition of the environment and human health in the United States is changing over time. Targeted for anyone interested in environmental trends, the ROE presents the best available indicators of national trends in five theme areas of interest to EPA: Air, Water, Land, Human Exposure and Health, and Ecological Condition. EPA selected the 85 ROE indicators to address 23 questions within these five theme areas that are critical to EPA's mission of protecting the environment and human health. The ROE is a dynamic resource. EPA updates the ROE indicators on a rolling basis to provide the latest available data and adds new indicators when relevant. Use the multi-colored navigation bar at the top of every ROE Web page to explore the ROE themes, the associated questions, and the indicators that help answer these questions.

What's New?

- Explore ROE indicators using interactive graphs and maps
- Find regional and state trends
- Learn about sustainability and the ROE
- Learn how ROE indicators relate to issues of concern to EPA

Guide to the ROE

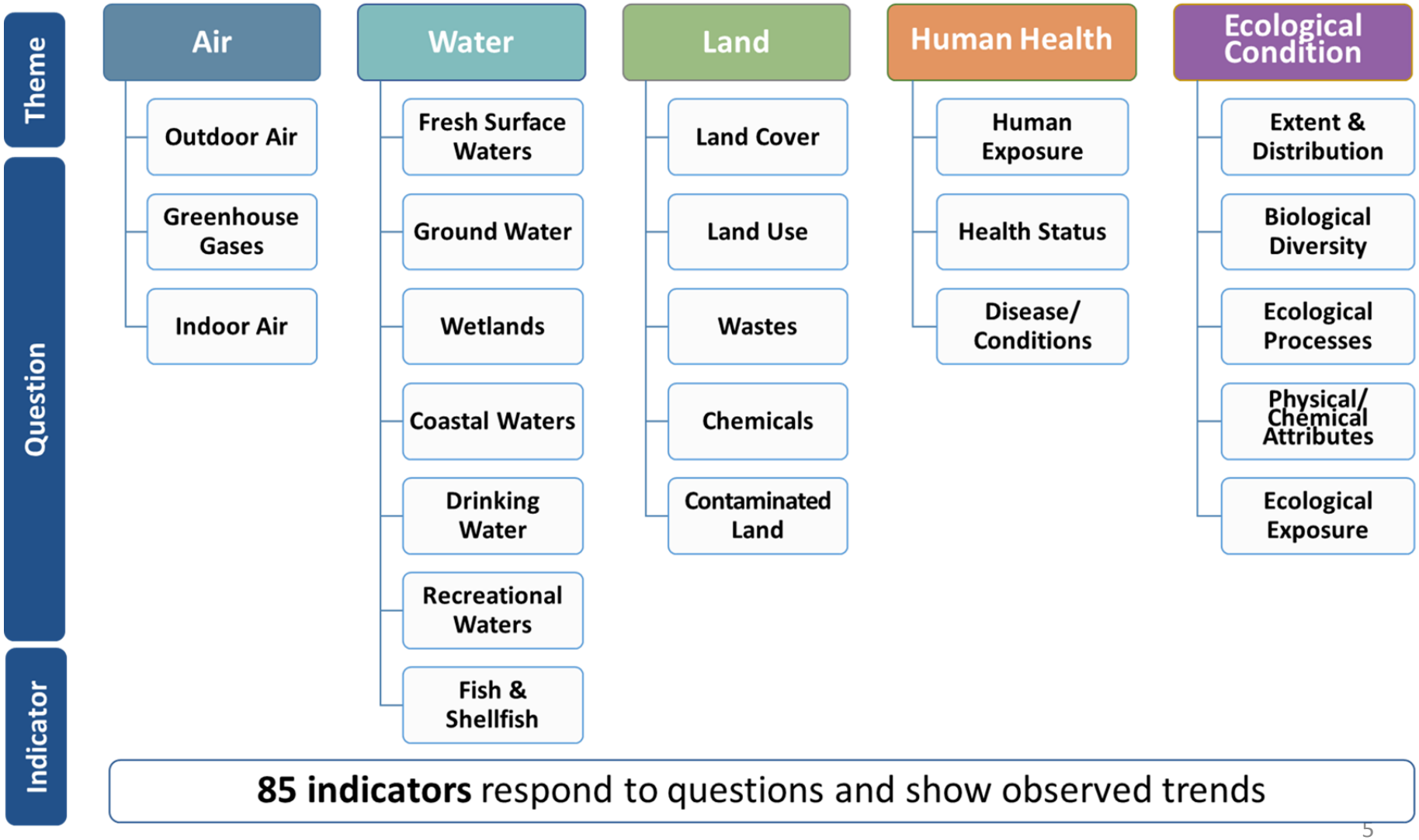
Featured Indicator: U.S. and Global Temperature and Precipitation



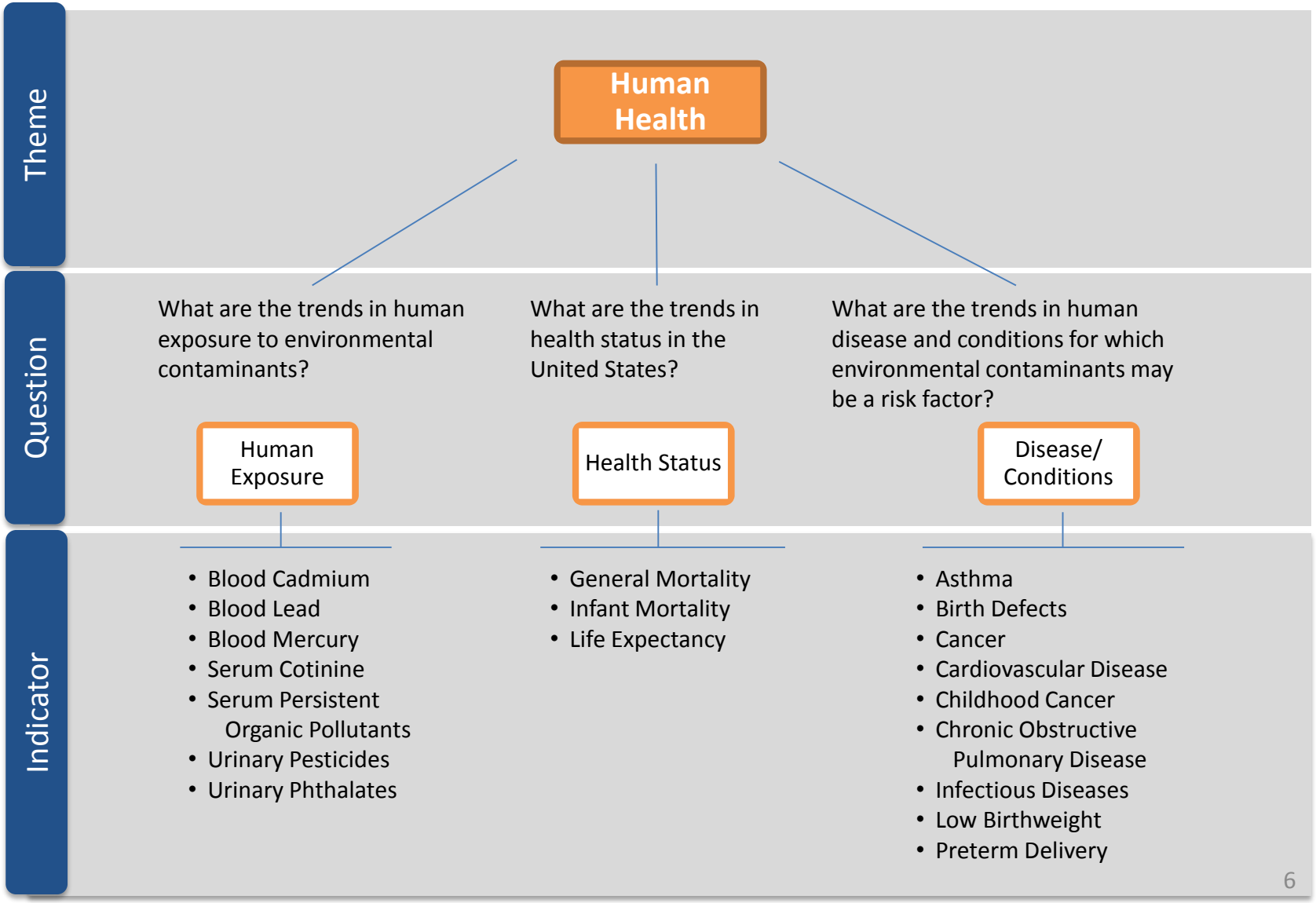
The eight exhibits in this indicator show trends in temperature and precipitation in the U.S. and worldwide. EPA cares about these trends because they are fundamental to understanding changes in climate and their wide-ranging effects (e.g., sea-level rise) on human life and ecosystems. The exhibit above, which focuses on changes in temperature in the U.S., shows that:

- Overall, average temperatures in the U.S. have risen since 1901.
- Warming has occurred

ROE Organization- Themes, Questions, Indicators



ROE Structure: Human Exposure & Health

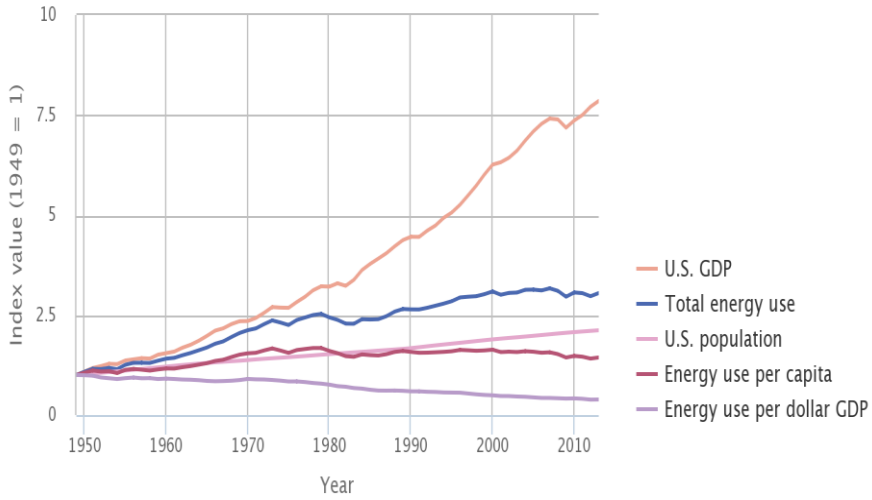


What's in the 2015 ROE?

- Fully **online**- No more hard copy reports
- Engaging **interactive graphics**
- Existing indicators **updated** (data)
- Have 85 indicators- 6 **added** and **4 retired**
- **Regional** data, graphics & resources
- **Search the ROE-** site-specific search function
- **Statistical** info added (e.g., error bars)
- **Sustainability-** introduces sustainability using a systems-based framework to illustrate how indicators can be integrated and further developed to support sustainability-based environmental protection

Energy Use

Exhibit 3. Intensity of U.S. energy consumption, 1949–2013



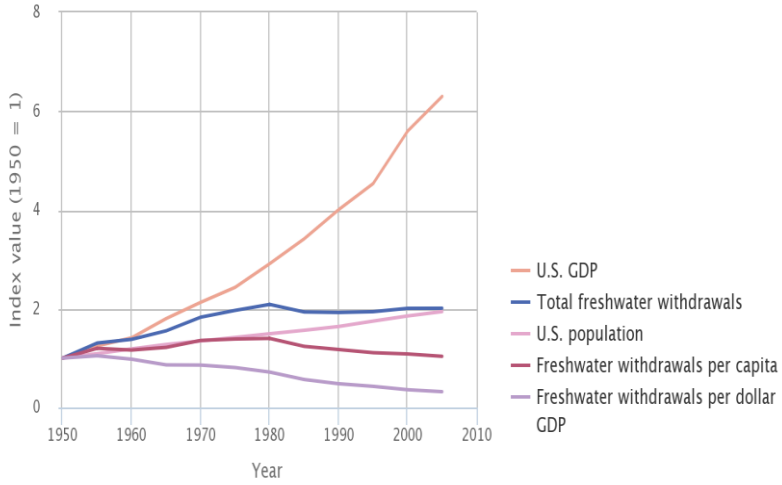
Based on real (inflation-adjusted) GDP.

Information on the statistical significance of the trends in this exhibit is not currently available. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: EIA, 2014; Census Bureau, 2000, 2001, 2011, 2014; BEA, 2014

Freshwater Withdrawals

Exhibit 3. Intensity of U.S. freshwater withdrawals, 1950–2005



Based on real (inflation-adjusted) GDP.

Data plotted at 5-year intervals.

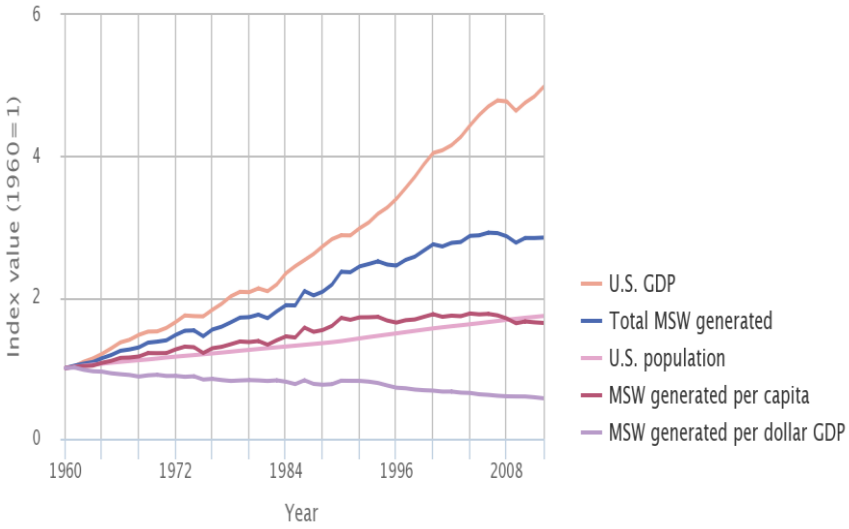
Information on the statistical significance of the trends in this exhibit is not currently available. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: USGS, 2011b; Census Bureau, 2000, 2001, 2011; BEA, 2011

Source: EPA's Report on the Environment (2015)

Municipal Solid Waste

Exhibit 2. Intensity of U.S. municipal solid waste generation, 1960–2012



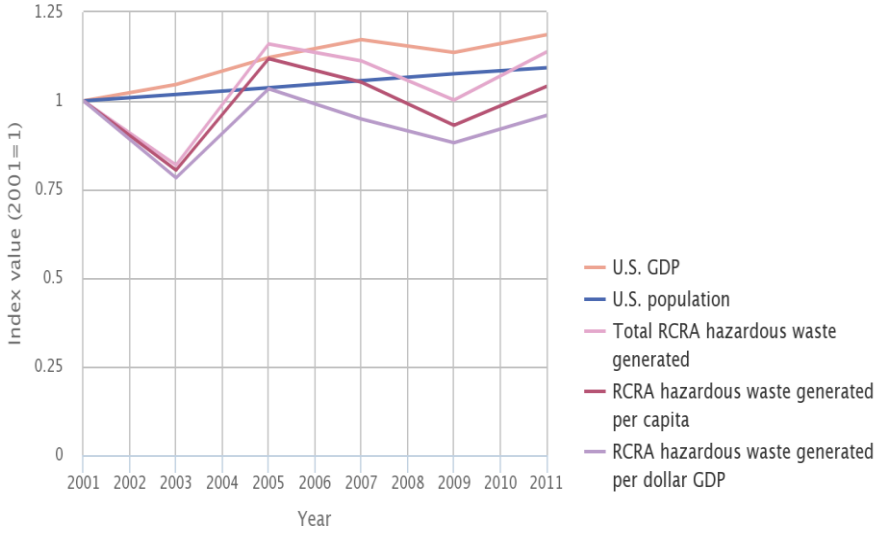
Based on real (inflation-adjusted) GDP.

Information on the statistical significance of the trends in this exhibit is not presented here. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: U.S. EPA, 2014; Census Bureau, 2000, 2001, 2011, 2014; BEA, 2014

RCRA Hazardous Waste

Exhibit 3. Intensity of U.S. RCRA hazardous waste generation, 2001–2011



Based on real (inflation-adjusted) GDP.

Data plotted at 2-year intervals.

Information on the statistical significance of the trends in this exhibit is not presented here. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: U.S. EPA, 2013; Census Bureau, 2011, 2013; BEA, 2014

Source: EPA's Report on the Environment (2015)

ROE -- The Future

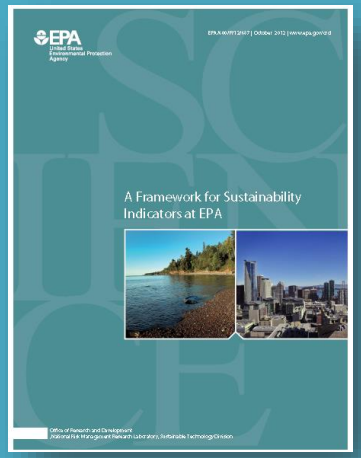
- Rolling Indicator Updates- updates as data becomes available
- Expand number and scope of indicators
- Expand the scope of ROE to include interpretive products
  - Explain reasons for trends for major groups of indicators (air, water, etc.) or on specific topic
- Exploring future ROE program linkages with indicator work from the EU and UNEP

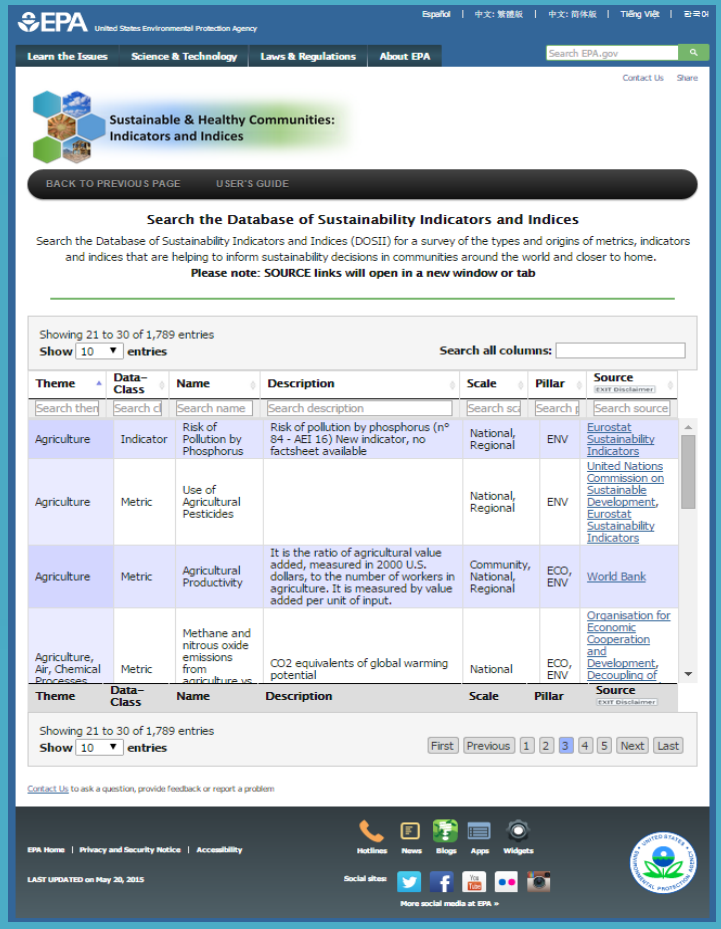
Database of Sustainability Indicators and Indices

"Lay of the land" on what indicators exist, from which sources and over what topics

Goals

- Engage stakeholder communities, both internal and external to EPA, in developing a better understanding about sustainability
- Presentation of a framework for the selection and use of indicators
- Access to nearly 1800 indicators (and metadata) gathered from international, national, and local sources on various topics and scales
- Web-enabled search interface to develop a customized list of indicators and indices to support community-based decision making



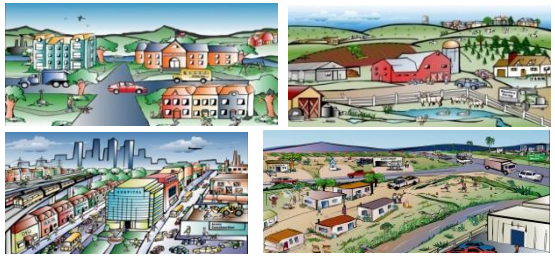


Public access to DOSII will be available soon!

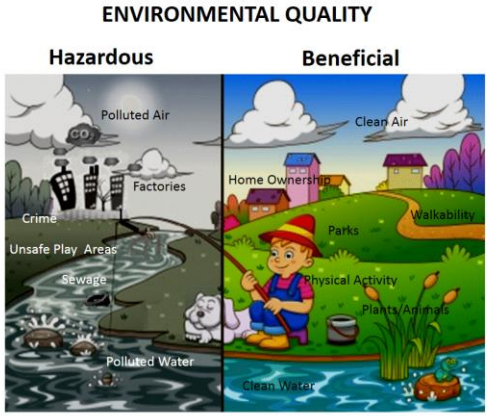
Contact: Tarsha Eason (eason.tarsha@epa.gov)

Environmental Quality Index

Multiple Environments

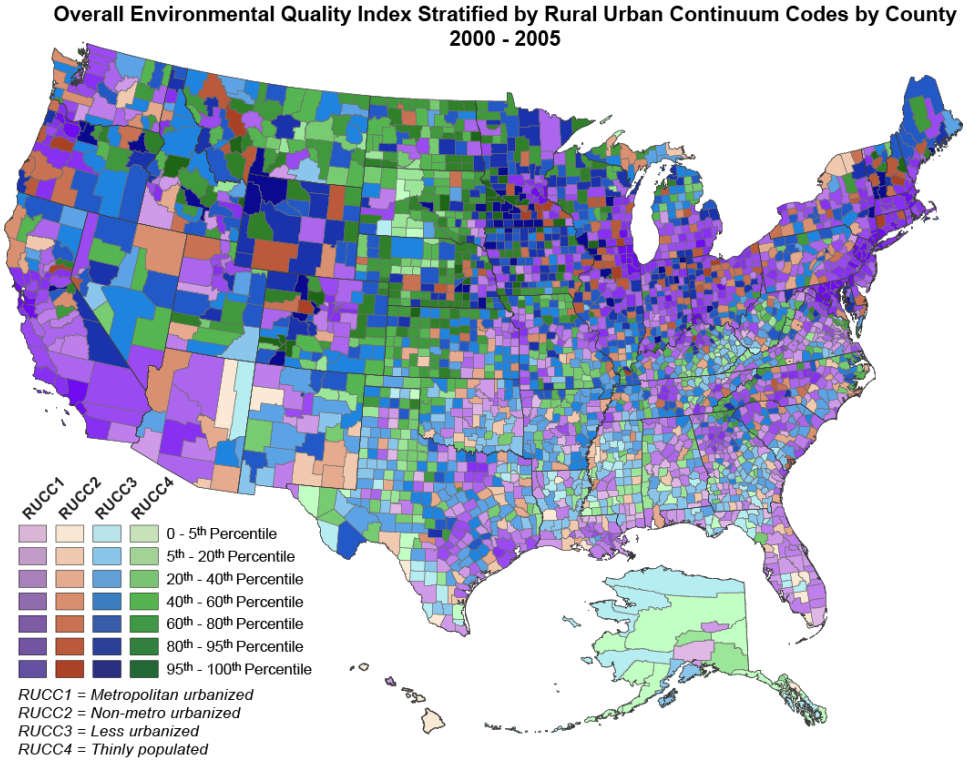


Multiple Environmental Benefits and Hazards



Goals:

- To construct an environmental quality index (EQI) for all counties in the U.S. taking into account:
  - multiple domains that influence exposure and health
    - five domains: air, water, land, built environment, and socio-demographic
  - incorporates data representing the chemical, natural and built environment
- Developed to explore associations with adverse health effects



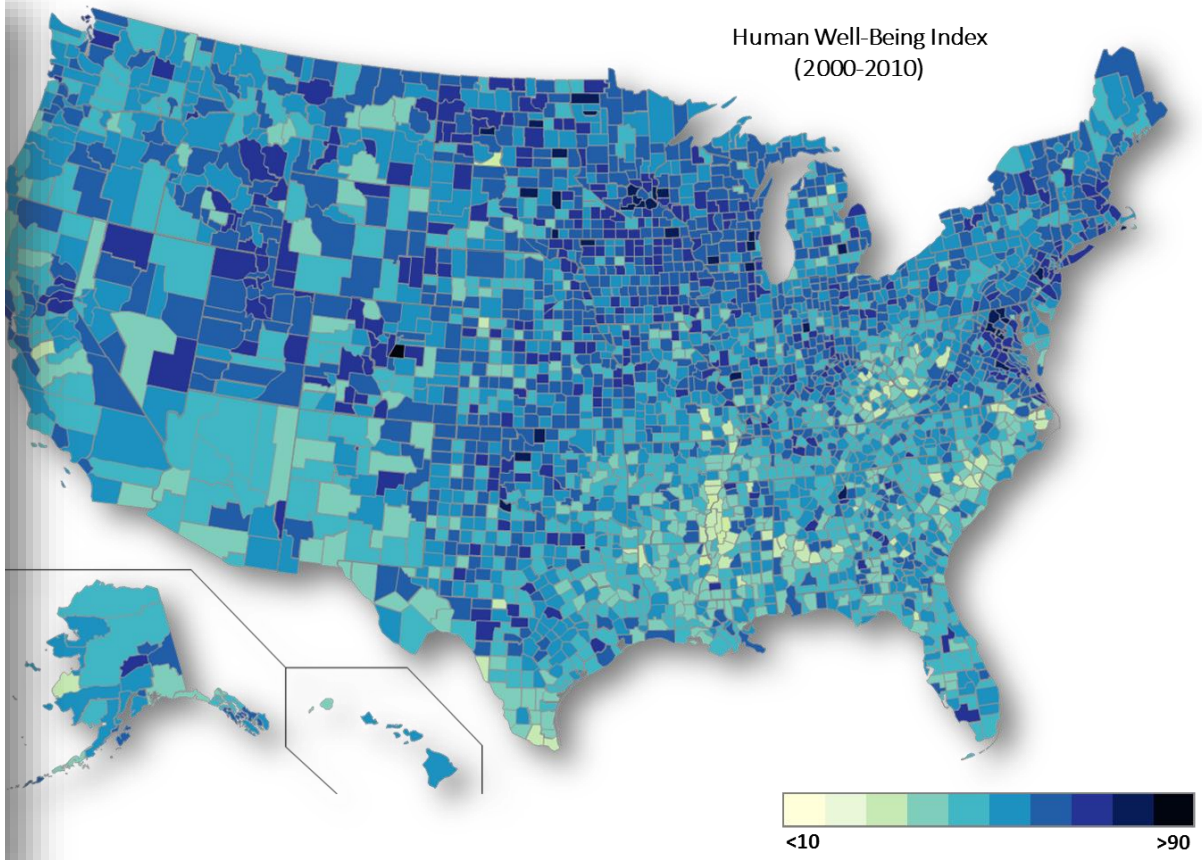
Public Access To EQI

http://epa.maps.arcgis.com/home/item.html?id=90ab3f8d668c4a4e88144d586ea34141

https://edg.epa.gov/data/Public/ORD/NHEERL/EQI

Human Well-Being Index (HWBI)

Domain	Indicator	Metric Count
Connection to Nature	Biophilia	2
Cultural Fulfillment	Activity Participation	2
Education	Basic Educational Knowledge and Skills of Youth Participation and Attainment Social, Emotional and Developmental Aspects	3 4 4
Health	Healthcare Personal Well-being Physical and Mental Health Conditions Life Expectancy and Mortality Lifestyle and Behavior	2 3 9 7 4
Leisure Time	Activity Participation Time Spent [Amount of Time] Working Age Adults	2 1 3
Living Standards	Basic Necessities Income Wealth Work	2 3 2 2
Safety and Security	Actual Safety Perceived Safety Risk	4 1 1
Social Cohesion	Attitude Towards Others and the Community Democratic Engagement Family Bonding Social Engagement Social support	5 6 3 3 2



- A holistic approach to characterize the current state of well-being
- Relevant to any community at any spatial scale and over time
- Highlights the link between the flow of ecological, economic and social services, and human well-being
- Intended to inform and empower communities to equitably weigh and integrate human health, socio-economic and environmental factors to foster sustainability in their built and natural environments

Climate Resilience Screening Index

- Composite measure assessing resilience to climate change and severe climate events at multiple spatial scales (national, regional, state and county)
- Desktop application to EPA regions
- Index will be adaptable to individual communities

$$CRSI = \frac{RPI}{VI}$$

where,
CRSI= Climate Resilience Screening Index;
RPI= Recovery Potential Index,
VI= Vulnerability Index