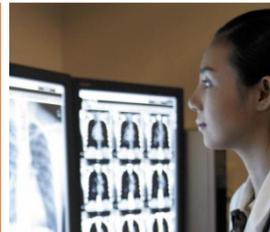


EPA's draft Report on the Environment 2014 (ROE)

Jeffrey Frithsen, Ph.D.

Patricia Murphy, Ph.D., M.P.H

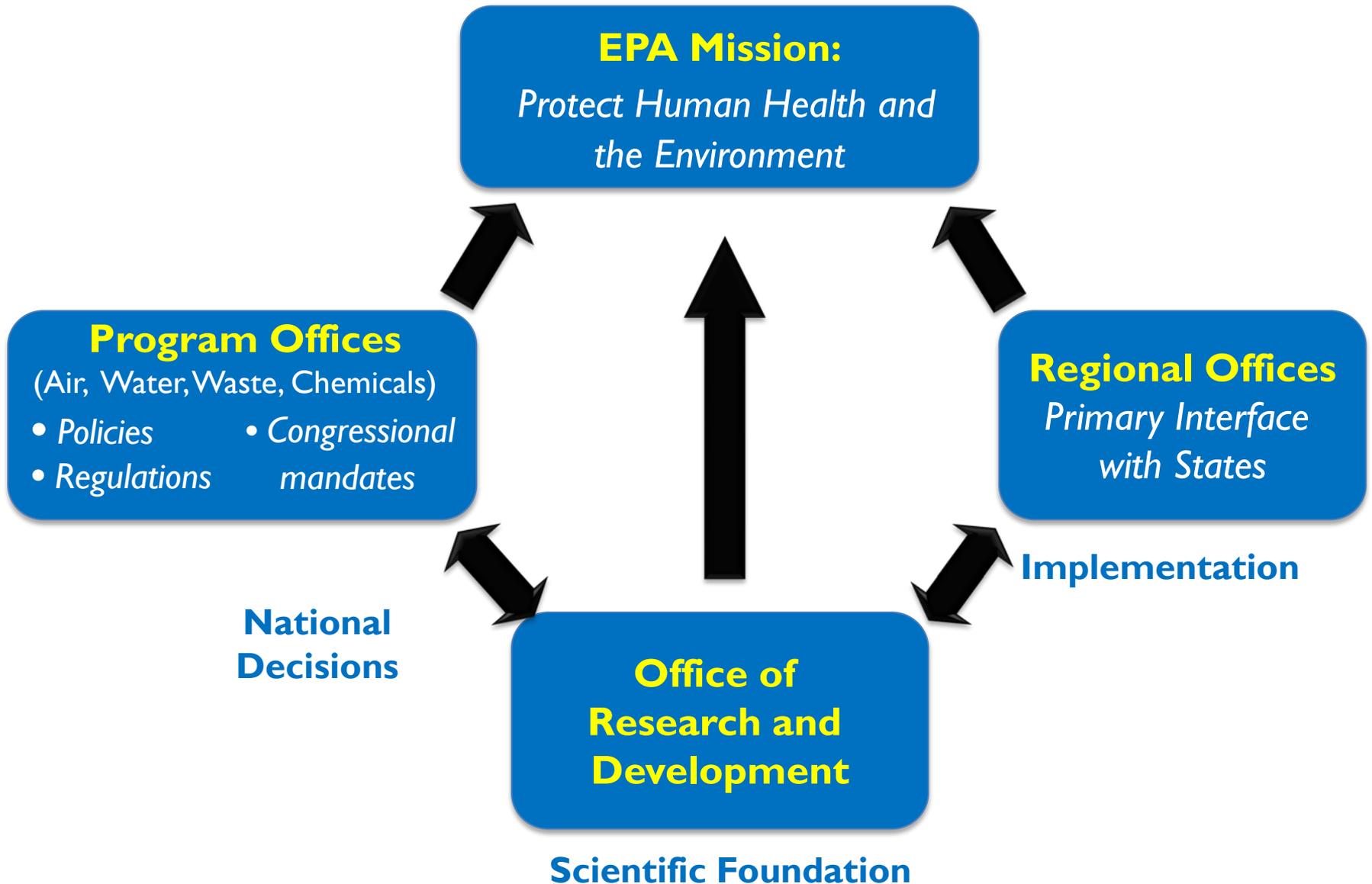
Science Advisory Board Review Meeting
July 30-31, 2014



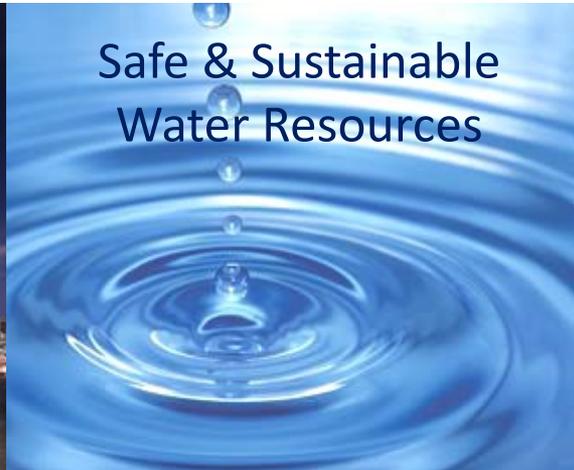
Overview

- ORD research programs and the ROE
- Background and history of the ROE
- Introduction to the draft ROE 2014
- Charge questions for the SAB

ORD Coordination within EPA



ORD Research Programs



Report on the Environment

EPA's ROE is the Agency's comprehensive source of national-level scientific **indicators** that describe the **condition of** and **trends** in the nation's **environment** and human **health**.

ROE indicators help answer questions of critical importance to EPA's mission of protecting human health and the environment.

ROE Purpose

Report Trends

- Report on the condition of and trends in the environment and human health

Develop Indicators

- Develop national-level 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

ROE does *not* 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 2003**

Reviews by CEQ, OMB, Interagency and SAB

2008

- **Final ROE 2008** (printed and website)

SAB Consultation 2009

2014

- **Draft ROE 2014** (web-based) ←

Reviews by CEQ, OMB, Interagency and **SAB**

2014

- **Final ROE 2014** (web-based)

ROE - a collaborative effort

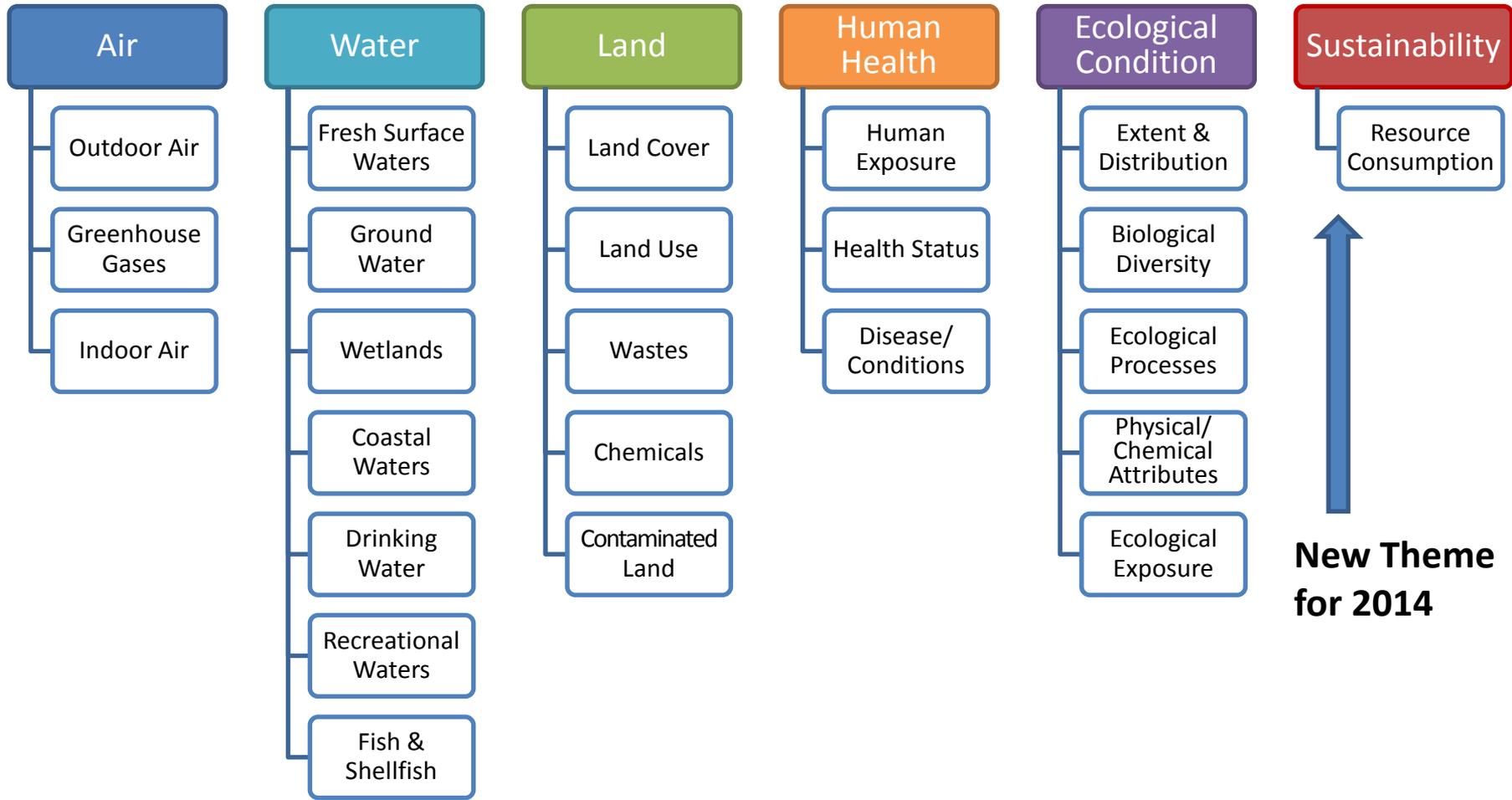
- Within EPA
 - Led and managed by ORD
 - Includes cross -Agency participation
 - Half of ROE indicators based on EPA data collection efforts
 - Indicators Workgroup members from Program and Regional offices
- Outside EPA
 - Collaborations expand the breadth and depth of ROE indicators
 - Half of the indicators come from other Federal and NGO sources
 - Technical expertise and reviews

ROE Organization

Theme

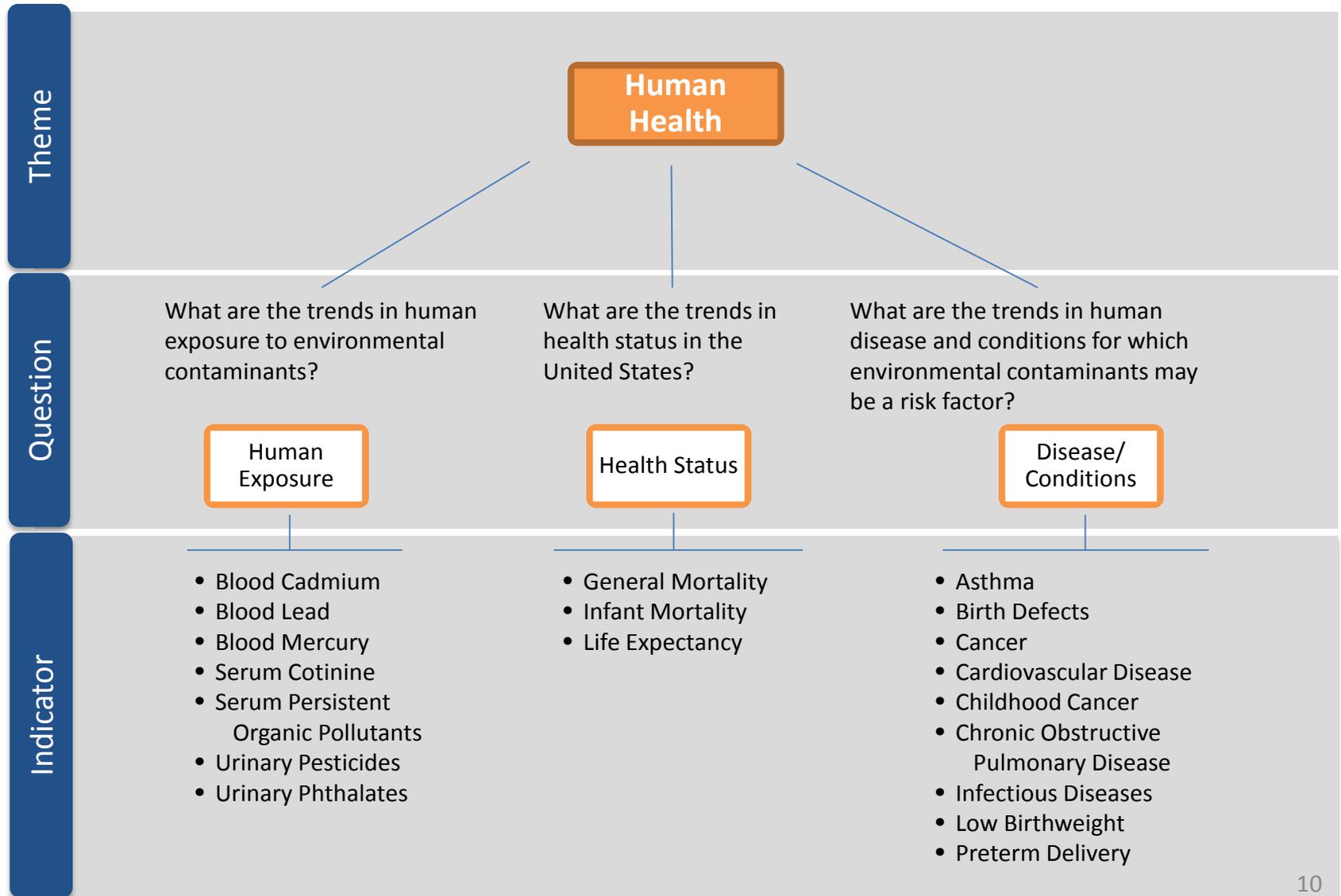
Question

Indicator



86 indicators respond to questions and show observed trends

ROE Organization: Human Health

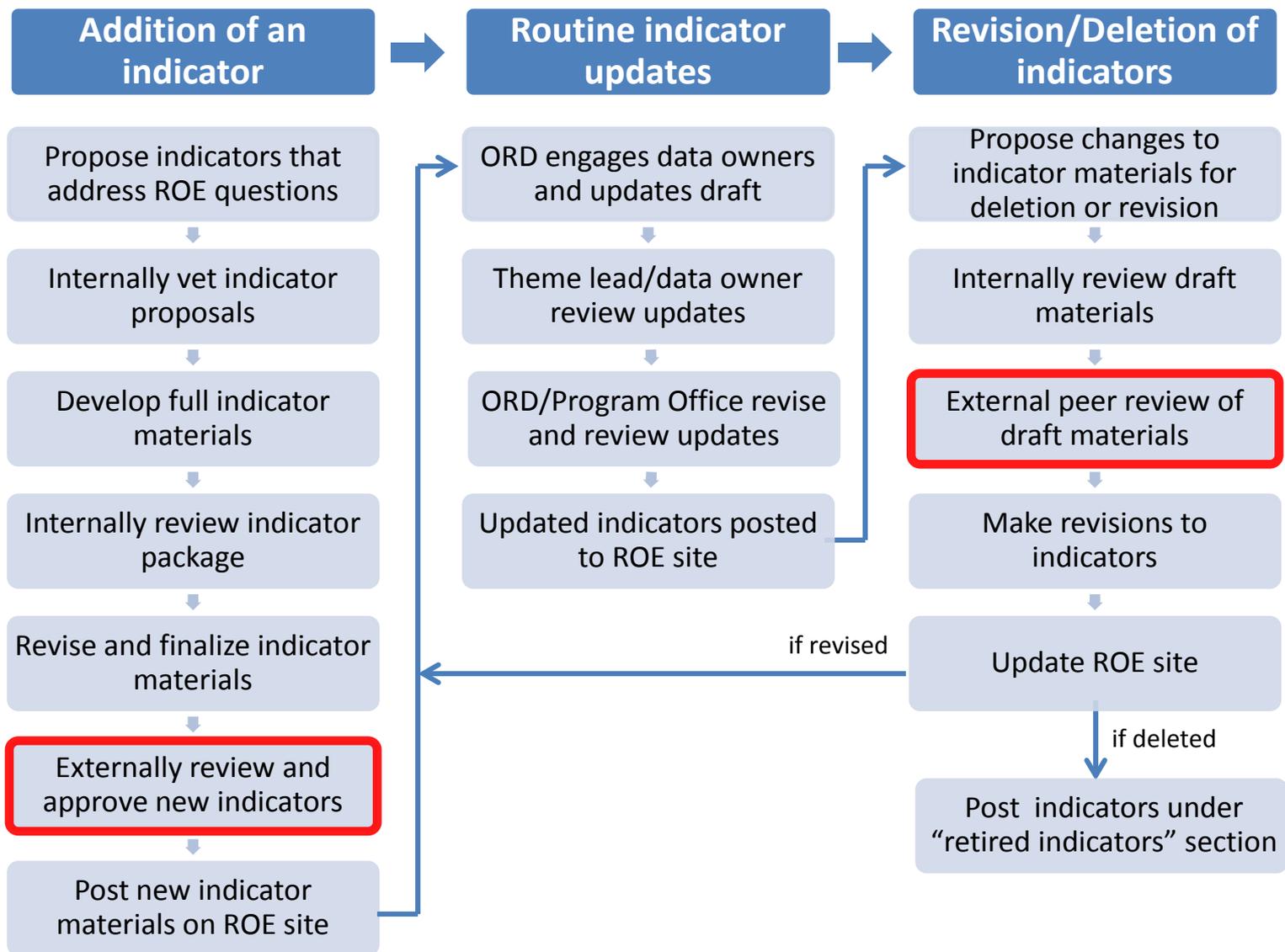


ROE Indicator Definition and Criteria

An indicator is a **numerical value derived from actual measurements of a pressure, state or ambient condition, exposure, or human health or ecological condition**, over a **specified geographic domain**, whose **trends over time** represent or draw attention to underlying trends in the condition of the environment or human health.

- The indicator is
 - **Useful**
 - **Objective**
 - **Transparent and reproducible**
- The underlying data are
 - **characterized by sound collection, management, and QA procedures**
 - **timely and describe changes or trends**
 - **comparable across time and space**
 - **representative of the target population**

ROE Indicator Review Process



EPA's Report on the Environment (ROE): External Review Draft

Contact Us Share

Air | Water | Land | **Human Exposure and Health** | Ecological Condition | Sustainability

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

Basic Information	Frequent Questions	Where You Live
Detailed Guide	Conceptual Framework	What You Can Do
Indicators A-Z	History of the ROE	Glossary

This draft ROE 2014 website will be reviewed by EPA's Science Advisory Board in a public meeting on July 30-31, 2014. For details, see the [Federal Register Notice \(PDF\)](#) (3 pp, 210K) and the [SAB meeting website](#). Sign up to get email alerts about the final ROE 2014 website, expected in a few months.

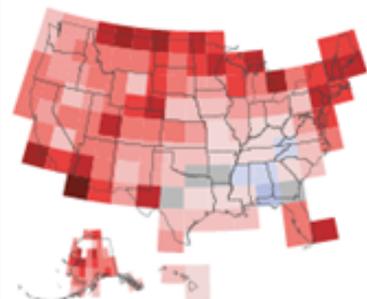
About the ROE

EPA's Report on the Environment (ROE) presents the best available indicators of national trends in the environment and human health. EPA selected these indicators to address 24 questions that are critical to EPA's mission of protecting the

What's new in the ROE?

- Sustainability
- Conceptual framework
- Interactive graphing
- Statistical information
- Where you live

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



Rate of temperature change
 <-- Cooler Warmer -->

Drivers behind ROE 2014

- 2008 SAB Review, 2009 Consultation
- Additional reviews and suggestions from internal and external users
- EPA priorities
 - Emerging Agency focus on sustainability, e.g., NAS “Green Book”
 - Desire to incorporate sustainability indicators into the ROE

What's new in the Draft ROE 2014?

- Fully **online**- No more hard copy reports
- Engaging **interactive graphics**
- Existing indicators **updated** (data)
- 86 indicators: 6 new **indicators added**
(3 indicators **retired**)
- **Regional** data, graphics & resources
- **Statistical** information added (e.g., error bars)
- **Sustainability-based systems Conceptual Framework**
- **Sustainability theme, question and 4 indicators added** (intensity-based)
Freshwater withdrawal, energy use, hazardous waste, solid waste

Sustainability in the ROE

- Conceptual Framework
 - “Develop an overarching and unifying framework to link and integrate the scientific elements of the ROE”
 - EPA adapted a sustainability-based conceptual framework, depicting “3 Pillars” (Economy/Society/Environment) as inter-dependent systems
 - Illustrated inter-relationship and role of multiple indicators through a series of three successive diagrams on six specific problems of importance to EPA
 - acid deposition, coastal hypoxia, fish mercury contamination, nutrient Impacts, tropospheric ozone, wetland loss

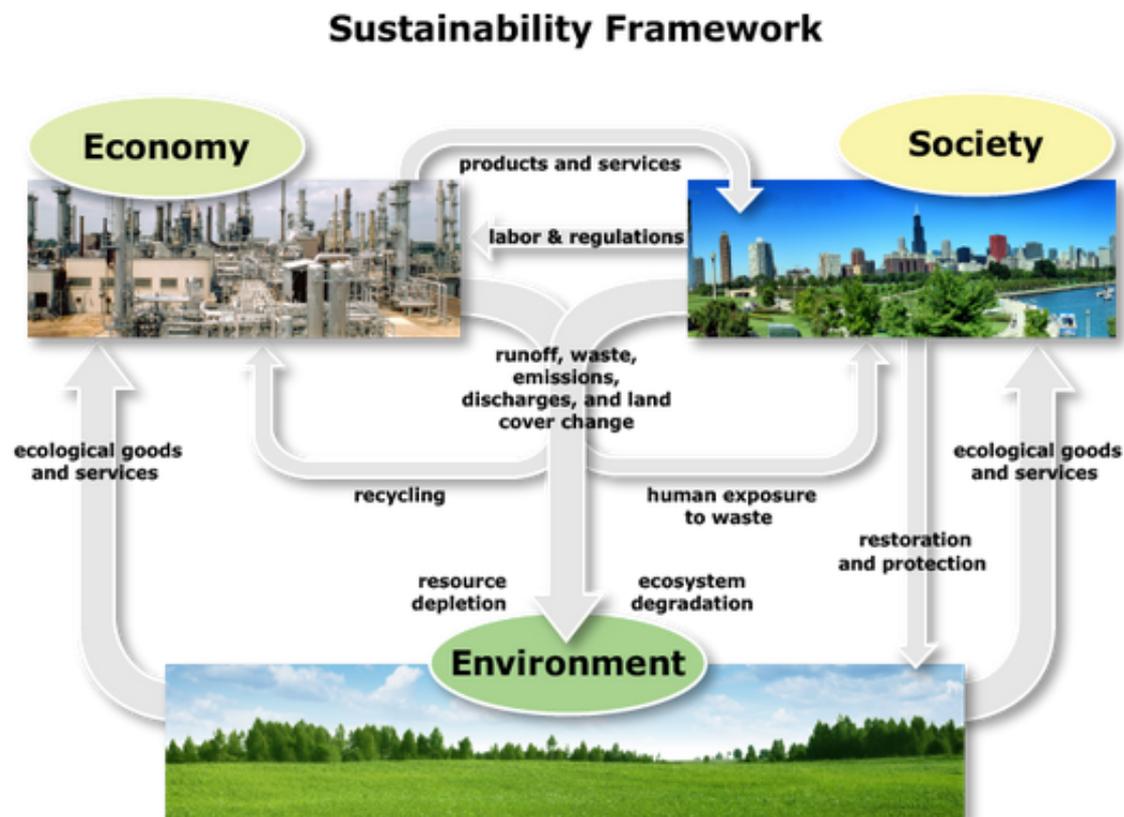
You are here: [EPA Home](#) » [ROE Home](#) » [Conceptual Framework](#)[Air](#) ▶[Water](#) ▶[Land](#) ▶[Human Exposure and Health](#) ▶[Ecological Condition](#) ▶[Sustainability](#) ▶[ROE Home](#)[Basic Information](#)[Detailed Guide](#)[Indicators A-Z](#)[Frequent Questions](#)[Conceptual Framework](#)[History of the ROE](#)[Where You Live](#)[What You Can Do](#)[Glossary](#)

Conceptual Framework

- [What is the sustainability framework?](#)
- [How do ROE indicators relate to issues of concern to EPA?](#)

What is the sustainability framework?

The sustainability framework, depicted below, is a conceptual framework—in other words, it uses words, symbols, and/or pictures to show how scientists think things are related to each other. This framework represents the world as three interrelated and interacting systems: economy, society, and environment. The arrows in the figure show the flows among the three systems. [Learn more](#) »



Sustainability in the ROE

- New Sustainability theme added
- New ROE question
 - What are the trends in consumption of natural resources?
- Four peer reviewed intensity-based indicators responding to the new question
 - Energy Use
 - Fresh Water Withdrawals
 - Municipal Solid Waste Intensity
 - Hazardous Waste Intensity
- Additional background information provided in FAQ

Statistical Information in the ROE

- Internal EPA workshop in 2009
- SAB consultation
 - “Include formal statistical analyses and/or additional information, such as error bars around mean values.”
 - “Report statistical limitations when insufficient data are available for robust quantitative analyses.”
- Sought out and incorporated extant peer-reviewed analyses and information

Statistical Information in the ROE

- General information on variability, uncertainty and trend analysis provided throughout the ROE
 - FAQ, Detailed Guide, Indicator page “Help” 
- Indicator-specific information provided
 - Footnotes describing available trend analyses, distinguishing apparent vs. real trends added to every ROE exhibit
 - “Display statistical information” button  on graphics
 - Technical Documentation file- uncertainty and variability information described for every indicator
- Confidence intervals/bands displayed for 10 indicators
- Pair-wise comparisons or trend testing incorporated for 12 indicators
- Qualitative descriptions in Technical Documentation

Web-based ROE 2014

- “Develop a powerful and interactive web-based platform for the ROE with links to pertinent websites for additional information” (from 2009 SAB review)
- ROE 2014 fully online- No more hard copy reports
- Engaging interactive graphics
- Multiple end-users in mind

Web-based ROE 2014

- Links provided to supplemental information on all indicator pages (“For More Information” box)
- Additional links provided throughout the main ROE thematic pages (“Related Links” boxes, “Learn More”)
- “What You Can Do” links --how you can protect the environment, contribute to a sustainable future, and protect your health from environmental hazards

ROE 2014—Expanded Opportunities for Information Access and Display

86 ROE Indicators

- 21 broken down by EPA Region
e.g., Air Toxic Emissions, Drinking Water, Forest Fragmentation
- 10 have interactive mapping tools to explore/zoom to regional, county or state level
e.g., Acid Deposition, Land Cover
- 10 broken down by other sub-national boundaries (ecoregions)
e.g., Acidity in Lakes and Streams, Coastal Benthic Communities
- 7 area-specific indicators
e.g., Chesapeake Bay, Gulf of Mexico Hypoxia, Manganese Concentrations in R5

“Where You Live” feature

- Includes links to additional sub-national , region-specific data and information

EPA's Report on the Environment: External Review Draft

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You are here: [EPA Home](#) » [ROE Home](#) » Sustainability

[Air](#) ▶ [Water](#) ▶ [Land](#) ▶ [Human Exposure and Health](#) ▶ [Ecological Condition](#) ▶ [Sustainability](#) ▶

Sustainability



Related Links

- [Sustainability](#)
- [Learn the Issues: Green Living](#)
- [Science and Technology: Sustainable Practices](#)

There are significant concerns in the United States and worldwide about the potential social, environmental, and economic consequences of rapid population growth, economic growth, and consumption of natural resources. The concept of sustainability, or sustainable development, is based on the fundamental interdependence between humans and nature. Current patterns of economic and social development are placing pressures on natural resources, and may threaten the continued health and prosperity of human societies. It has become increasingly clear that significant transformation of human production and consumption patterns will be needed to enable continued economic growth while protecting critical environmental resources.

The idea of sustainability—commonly defined as the ability to maintain or improve standards of living without damaging or depleting natural resources for present and future generations—was ingrained as a foundation of environmental law with the signing of the 1969 National Environmental Policy Act. NEPA established as a continuing policy of the federal government the creation and maintenance of “*conditions under which [humans] and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans.*”¹ Sustainability is commonly characterized in terms of the interdependence among **three broad systems**: *economy, society, and the environment*. As EPA identifies and pursues solutions to increasingly complex problems, continued protection of the environment and public health will necessarily focus not just on reducing risks, but also on optimizing the benefits of those solutions across all three of these systems. Sustainability offers a useful framework for addressing such challenges.

ROE Team – Looking Forward

- Revise Draft ROE 2014
- Replace existing ROE web site with revised final ROE
- Add new indicators to address existing ROE questions
- Expand indicators focused on sustainability
- Explore development of community based environmental indicators

Focus of SAB Review

- Sustainability as the ROE Conceptual Framework
- Sustainability Indicators
- Statistical Information
- ROE 2014 Web-based Product
- Communication
- Additional Indicator Recommendations