October 2006

Implementation of Environmental Programs
ENVIRONMENTAL INDICATORS AND OUTCOME METRICS: INTERNATIONAL ORGANIZATIONS

INTRODUCTION

The occasional series of international fact sheets on this web page provides summary information on selected topics relevant to the functions and activities of the EPA programs that manage waste, clean up contaminated sites, promote the productive use of land, and address emergencies. An important purpose of the papers is to promote a fuller understanding of actions around the world to protect the environment in relation to these subject areas. The international fact sheets do not establish policy or represent the views of EPA. Each fact sheet provides information and electronic links to other sources of information that can provide the reader with a fuller understanding of the material. For organizational purposes, the fact sheets have been placed in four broad categories:

- Treaties, Directives, and Policies
- New Directions in Program Management
- Innovative Approaches to Environmental Protection
- Emerging Issues

TOPIC SUMMARY

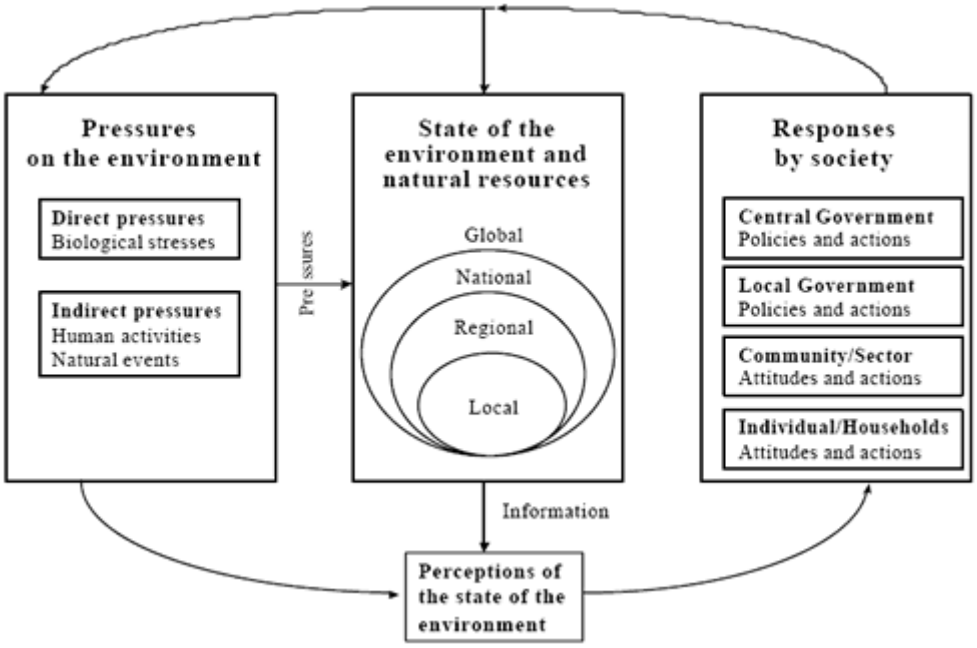
The fact sheet identifies some key international organizations and their roles in developing waste-related environmental indicators and other metrics to further sustainability goals. Numerous countries, including the U.S., have benefited from the work of the Organization for Economic Cooperation and Development (OECD), United Nations Commission on Sustainable Development (UN CSD), European Union (EU), and World Bank. The international organizations addressed in this summary emphasize the functions of social and economic factors when assessing environmental programs and needs, in order to understand underlying forces that shape environmental progress. This fact sheet is not comprehensive; rather is provides a starting point for readers interested in investigating the topic.

INTERNATIONAL ROLES IN METRICS DEVELOPMENT

This section highlights some innovative approaches taken to the development of environmental indicators (EIs) and other performance metrics by the OECD, UN CSD, EU, and World Bank.

Organization for Economic Cooperation and Development (OECD). See http://www.oecd.org/department/0,2688,en_2649_34283_1_1_1_1_1,00.html. OECD has pioneered the Pressure-State-Response (PSR) model to structure its work on environmental policy and reporting. The PSR Framework, or modified versions of it, is being used worldwide as a reporting tool. The graphic below helps to describe the PSR model.

The OECD Pressure-State-Response Framework



OECD has developed:

- Core Environmental Indicators: A set of 50 indicators designed to track environmental progress and analyze performance of environmental policies in OECD member countries.
- Key Environmental Indicators: A subset of Core EIs that inform the public and provide key signals to policy makers on important environmental issues and trends.
- Sectoral Environmental Indicators: A set intended to help integrate environmental concerns into sectoral policies, such as transportation, energy, and agriculture. The indicators are classified using an adjusted PSR model that reflects sectoral environmental trends and related economic and policy considerations.
- Indicators Derived from Environmental Accounting: Indicators designed to integrate environmental concerns into economic and resource management policies, such as efficiency of material use.

United Nations Commission on Sustainable Development (UN CSD). See http://www.un.org/esa/sustdev/natlinfo/indicators/isd.htm and http://www.icsu-scope.org/downloadpubs/scope58/box1d.html. The UN CSD framework for indicators adapts the OECD PSR model. UN CSD uses a Driving Force, State, and Response (DSR) framework; driving forces (rather than pressures) include the economic, social, and institutional aspects of sustainable development and may reflect either positive or negative impacts. UN CSD's use of the DSR framework has prompted other international organizations, such as the World Bank and some countries, to use this conceptual model. UN CSD developed a "theme based" set of 58 social, environmental, economic, and institutional indicators to focus attention on sustainable development. Each of these four themes is broken down into sub-themes and associated indicators. For example, in the economic category, there is a sub-theme of waste generation and management. This sub-theme has four associated indicators: generation of industrial and municipal solid waste; generation of hazardous waste; management of radioactive waste; and waste recycling and reuse.

European Union (EU) – European Environment Agency (EEA) and Eurostat. See http://themes.eea.europa.eu/IMS/CSI and http://epp.eurostat.cec.eu.int/portal/page?_pageid=1073,46587259&_dad=portal&_schema=PORTAL&p_product_code=KS-68-05-551. EEA and Eurostat, the statistical office of the EU, have worked cooperatively on indicators to support the EU's Sustainable Development Strategy. EEA and Eurostat define these indicators according to the Driving Force-Pressure-State-Impact-Response (DPSIR) model. In contrast with some other models for indicator development, the DPSIR model emphasizes causal links and relationships between various aspects of human activities and the environment. EEA focuses on development of the pressure (e.g., pollution), state (e.g., air, water) and impact (e.g., ill health, biodiversity loss) indicators, and Eurostat on indicators for driving force (e.g., industry) and response (e.g., regulation). They inform decision-makers and the general public, using sustainable development indicators (SDI), and a core set of indicators (CSI) oriented toward environmental media. The following table identifies the ten EU sustainable development themes addressed by SDIs:

EU Themes Addressed by Sustainable Development Indicators

- Economic Development
- Poverty
- Aging Society
- Public Health
- Climate Change and Energy
- Production and Consumption Patterns
- Management of Natural Resources
- Transportation
- Good Governance
- Global Partnership

The ten themes further are broken down into sub-themes and "areas to be addressed" that merit additional analysis.

World Bank. See http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTEEI/0,,contentMDK:20502290~menuPK:1187728~pagePK:148956~piPK:216618~theSitePK:408050,00.html. 2006 World Bank Development Indicators (WDI) include more than 900 indicators in over 80 tables organized in 6 sections: World View, People, Environment, Economy, States and Markets, and Global Links. Environmental indicator initiatives within the World Bank include the Little Green Book and a sustainability indicator building on concepts of green national accounts.

SOME U.S. ACTIVITIES AND ADDITIONAL RESOURCES

EPA and other government agencies in the United States at the federal, state, and local levels have undertaken a number of efforts to develop environmental indicators and measure government performance. Below are selected brief descriptions and links for this work.

- EPA Report on the Environment. http://www.epa.gov/indicators/. As the first step in EPA's multi-year Environmental Indicators Initiative, the Agency in 2003 published its draft Report on the Environment (ROE) and supporting materials. EPA is developing a 2007 ROE.
- Government Performance and Responsibility Act (GPRA) http://www.epa.gov/ocfo/planning/gpra.htm. GPRA requires U.S., federal agencies to: develop five-year strategic plans, including a mission statement, that set out long-term goals

and objectives; annual performance plans, which provide annual performance commitments toward achieving the goals and objectives presented in the strategic plan; and annual performance reports, which evaluate an agency's progress toward achieving performance commitments

- EPA – 2003-2008 Strategic Plan. http://intranet.epa.gov/ocfo/plan/plan.htm. EPA's 2003 Strategic Plan is the Agency's road map and guide in establishing annual goals. It helps EPA measure progress in achieving strategic goals
- Program Assessment Rating Tool (PART). http://www.epa.gov/evaluate/part.htm. The PART was developed by the U.S. Office of Management and Budget (OMB) to assess the performance of federal programs
- EPA – Superfund Environmental Indicators. http://www.epa.gov/superfund/accomp/ei/ei.htm. Superfund Environmental Indicators are measures of program performance used to communicate tangible progress made in protecting human health and the environment through site clean up activities
- EPA – Corrective Action Environmental Indicators. http://www.epa.gov/bioindicators/. EPA uses Environmental Indicators (EIs) for human exposure and groundwater to measure progress in the RCRA Corrective Action Program
- AIRNOW. http://airnow.gov/. The Air Quality Index (AQI), a joint undertaking coordinated among a number of agencies, reports daily air quality. EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide
- EPA – Biological Indicators of Watershed Health. http://www.epa.gov/bioindicators/. Biological indicators are numerical values derived from actual measurements, have known statistical properties
- EPA – *America's Children and the Environment* (ACE): Summary List of Measures. http://www.epa.gov/envirohealth/children/measures/index.htm. ACE brings together, in one place, quantitative information from a variety of sources to show trends in levels of environmental contaminants in air, water, food, and soil; concentrations of contaminants measured in the bodies of children and women; and childhood illnesses that may be influenced by exposure to environmental contaminants
- Global Reporting Initiative (GRI). http://www.globalreporting.org/Home. Through multi-stakeholder involvement, GRI promotes the use of a sustainability reporting framework worldwide. Over 1000 organizations in over 60 countries use the GRI framework.