Environmental Health Goals and Indicators for Sustainable Development

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IOM Roundtable on EHSRM
Rio+20 Webinar
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The National Institute of Environmental Health Sciences

• One of the National Institutes of Health, but located in Research Triangle Park, NC

• Wide variety of programs supporting our mission of environmental health:
  -- Intramural laboratories
  -- Extramural funding programs
  -- Worker Training Program
  -- Clinical research program
  -- National Toxicology Program
  -- Partnerships in Environmental Public Health
3 Questions for today

• Why are indicators and goals important for integrating environmental health concerns into sustainable development?

• What are some examples of environmental health indicators and what has been the role of health indicators in prior Sustainable Development Initiatives?

• How might environmental health indicators and goals be most effectively designed going forward?
Environmental Health in the discussions at the Rio+20 Summit on Sustainable Development

• Seven “critical issues” identified
  - Jobs
  - Cities
  - Oceans
  - Hazards
  - Energy
  - Water
  - Disasters

• Health is not explicitly recognized as a “critical issue” or as a critical prerequisite or outcome measure of sustainable development

• Goals are critical to concrete actions and accountability

• Indicators play a critical role in informing decision makers and the public about progress and linkages
Sustainable development themes related to Rio+20

- Health
- Economic
- Social
- Environment
- Disasters
- Education
- Gender equality
- Desertification, Land degradation
- Water
- Oceans
- Biodiversity
- Mountains
- Forests
- Jobs
- Food
- Cities
- Financial crisis
- Poverty alleviation
- Sustainable production & consumption
- Chemicals, Wastes
- 7 Critical Issues for Rio+20
- Sustainable Development Dialogues
- Draft Zero themes

Carlos Corvalan, 2012
Rationale for Use of Indicators (After UNESA, 2007)

• Simplify and clarify aggregated information
• Introduce scientific data into decision-making
• Define and measure progress toward goals
• Provide an early warning system, or signal, to prevent setbacks
• Foster communication on policies and values

• Applications from global to local level
Examples of current environmental health/sustainable development indicator projects

- EU Sustainable Development Indicators (SDIs)
- US Environmental Public Health Tracking Network
- United Nations Sustainable Development Indicators
- WHO Children’s EH Indicators
- Children’s Health and the Environment in North America - Commission for Environmental Cooperation US/Canada/Mexico
- United Nations Environment Programme – GEO Health
- PAHO - Environmental Public Health Indicators for the U.S.-Mexico border region
- Canadian Sustainability Indicators Network
- Healthy People 2020, US CDC
- New Zealand, Ministry of Health, 2007
EU Sustainable Development Indicators

- EU indicators (SDIs) are organized in a theme-oriented framework
- Ten themes follow a gradient from the economic, to the social, and then to the environmental and institutional dimensions.
- Themes are further divided into subthemes to reflect the operational objectives and actions of the Sustainable Development Strategy.
- New indicators can be added in response to changes in priorities
- Different levels of SDIs respond to different user needs
  - For example, Headline indicators monitor overall objectives. They are widely used with a high communicative and educational value. They are robust and available for most EU Member States, generally for a minimum period of five years.
## Headline indicators

Of more than 100 indicators, eleven have been identified as headline indicators. They are intended to give an overall picture of whether the European Union has achieved progress towards sustainable development in terms of the objectives and targets defined in the strategy. For a more complete picture it is necessary to look at the progress of all indicators within a theme.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Headline indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-economic development</td>
<td>Growth rate of real GDP per capita</td>
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<tr>
<td>Sustainable consumption and production</td>
<td>Resource productivity</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>People at-risk-of-poverty or social exclusion</td>
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<tr>
<td>Demographic changes</td>
<td>Employment rate of older workers</td>
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<tr>
<td>Public health</td>
<td>Healthy life years and life expectancy at birth, by gender</td>
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<tr>
<td>Climate change and energy</td>
<td>Greenhouse gas emissions</td>
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<tr>
<td></td>
<td>Share of renewable energy in gross final energy consumption</td>
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<tr>
<td>Sustainable transport</td>
<td>Energy consumption of transport relative to GDP</td>
</tr>
<tr>
<td>Natural resources</td>
<td>Common bird index</td>
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<td></td>
<td>Fish catches taken from stocks outside safe biological limits: Status of fish stocks managed by the EU in the North-East Atlantic</td>
</tr>
<tr>
<td>Global partnership</td>
<td>Official development assistance as share of gross national income</td>
</tr>
<tr>
<td>Good governance</td>
<td>No headline indicator</td>
</tr>
</tbody>
</table>

http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/indicators
Theme 5: Public health

The EU Sustainable Development Strategy (EU SDS) sets out the objective of promoting good public health on equal conditions and improve protection against health threats.

<table>
<thead>
<tr>
<th>Headline indicator</th>
<th>Operational objectives and targets</th>
<th>Actions/explanatory variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health and health inequalities</strong></td>
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<tr>
<td>Healthy life years and life expectancy at birth, by gender</td>
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<tr>
<td>Death rate due to chronic diseases, by gender</td>
<td>Healthy life years and life expectancy at age 65, by gender</td>
<td>Suicide death rate, total by age group</td>
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<td></td>
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<td>Suicide death rate, males by age group</td>
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<tr>
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<td>Suicide death rate, females by age group</td>
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<td>Self reported unmet need for medical examination or treatment, by income quintile</td>
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<td><strong>Determinants of health</strong></td>
<td></td>
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<tr>
<td>Index of production of toxic chemicals, by toxicity class</td>
<td>Urban population exposure to air pollution by particulate matter</td>
<td>Urban population exposure to air pollution by ozone</td>
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<tr>
<td></td>
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<td>Proportion of population living in households considering that they suffer from noise</td>
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<td>Serious accidents at work</td>
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</table>
Environmental Public Health Tracking

Hazard → Data → Exposure → Health Effect

Collection → Integration → Dissemination → Stakeholders

Assessment → Research → Interventions → Prevention → Improved Public Health

Ongoing Evaluation

*Stakeholders Include*
- Federal Agencies
- State and Local Agencies
- Academia
- Health Care System
- Non-Governmental Organizations

US National Environmental Public Health Tracking Network

- Listing of 14 areas of health with 2-4 indicators for each
  - Air quality
  - Asthma
  - Biomonitoring: Population exposures
  - Birth Defects
  - Cancer
  - Carbon Monoxide poisoning
  - Childhood Cancer
  - Childhood lead poisoning
  - Climate Change
  - Community Design
  - Community Water
  - Developmental Disabilities
  - Heart Attack
  - Homes
  - Population Characteristics
  - Reproduction and Birth Outcomes

- No framework linking any of these outcomes
US National Environmental Public Health Tracking Network -
Example of Climate Change

**Indicator: Heat Vulnerability**

1. Age-adjusted estimates of the percentage of adults ≥ 20 years with diagnosed diabetes, 2008
2. All heart disease hospitalization rates among Medicare beneficiaries ≥ 65 years, 2000-2006
3. Percent of population below the poverty line
4. Percent of population of a race other than white
5. Percent of population aged 65 years and over living alone in a non-family household
6. Percent of population ≥ 5 years with a disability
7. Population density
8. Percent of forest canopy
9. Percent of developed land use
10. Percent of cultivated crop land use

**Indicator: Heat Related Mortality**

1. Number of heat-related deaths (ICD-10 X30, T67)

**Indicator: Temperature Distribution**

1. Daily estimates of maximum temperature for summer months (May-September)
2. Daily estimates of maximum heat index for summer months (May–September)

http://ephtracking.cdc.gov/showQuickReportsContd.action
US National Environmental Public Health Tracking Network - Example of Climate Change

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Carlos Corvalan, 2012
Some suggested criteria for effective indicators

- Easily comprehended
- Readily available
- Credible and accurate – based on widely accepted accurate data with known linkage between environment and health
- Determinants are robustly linked to the outcome
- Linkages can be clearly communicated through a robust framework
- Actionable – related to conditions amenable to adaptive actions
Summary

- Carefully crafted indicators and goals are essential to measuring and assuring progress towards sustainable development and clear communication.

- Many different indicator projects; health sometimes a stand-alone sector, sometimes linked to determinants.

- Clarity is key: EH indicators for sustainable development should be easily comprehended, demonstrate linkages, and fit into robust framework.
Thank you!