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THE INECE INDICATORS PROJECT:

IMPROVING ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT THROUGH PERFORMANCE MEASUREMENT

by *Kenneth J. Markowitz** and *Krzysztof Michalak†*

INTRODUCTION

For many years, policy makers and analysts have used environmental indicators to assess and report on pressures and the state of the environment. However, indicators of policy responses to environmental problems, and in particular those related to enforcement and non-compliance actions, have not been well developed. Responding to this need, the International Network for Environmental Compliance and Enforcement ("INECE")¹ launched a project to develop Environmental Compliance and Enforcement ("ECE") Indicators at the World Summit on Sustainable Development ("WSSD") in 2002.

The ECE Indicators will be used to evaluate capabilities and effectiveness of environmental compliance and enforcement programs at national, regional, and international levels. They will also serve as a tool for communicating government actions to decision-makers and the general public and helping to identify training, technology, and funding resources. While the indicators will be scaled to accommodate needs of countries at varying levels of development, their ultimate aim is to achieve sustainable development goals through improved environmental governance on national, regional and global scales. This article provides background information on the project development process, describes progress to date, and concludes with potential future steps.

BACKGROUND

There is a significant body of knowledge and experience concerning environmental indicators, which may be defined as "parameters, or values derived from parameters, which point to, provide information about, or describe the state of a phenomenon/environment/area, with a significance extending beyond that directly associated with a parameter value."² Over the past decade, many countries have begun to adapt the concept of indicators for measuring the effectiveness and efficiency of environment enforcement programs.³ Environmental compliance and enforcement indicators aid enforcement agencies and practitioners by:

- Assisting in monitoring enforcement operations and non-compliance responses, to help ensure that personnel and resources are being used effectively.
- Enhancing program accountability by providing information to decision-makers and the public about the number, type, and impacts of enforcement operations.

- Helping to assess the performance of environmental compliance and enforcement programs.

These indicators help program managers learn what is working and what is not working and determine what needs to be done differently to achieve desired results.⁴ Such indicators have been in use in some countries but their methodological base has not been well developed and their application not widespread. Several countries have expressed an interest to carry comprehensive analysis and enlarge the scope of using ECE indicators.⁵

The INECE project responds to this need by creating a framework for identifying, designing, and using indicators that respond to the implementation, enforcement, and compliance with environmental laws in developed, transitional, and developing nations.⁶ The ECE Indicators Project builds on one of INECE's major publications, the internationally cited Principles of Environmental Enforcement,⁷ which emphasizes the importance of evaluating program success and establishing accountability.

METHODOLOGICAL APPROACH

The development of ECE Indicators will be guided by criteria selected based on best practices around the world. These criteria include transparency in development and in use, informative value for a range of users, comparability between developed and developing countries, relevance to current policies and country resource systems, credibility and flexibility measurements, compatibility with existing reporting requirements, technological sophistication, and measurability (cost-effectiveness).⁸ This will facilitate the use of the ECE Indicators in conjunction with other existing environmental and sustainability indexes.⁹

The ECE Indicators will be designed for a wide range of applications, such as measuring compliance promotion, compliance monitoring, and non-compliance response within regional, national, and international enforcement programs. A secondary application for the ECE Indicators will provide a more global view towards gauging steps taken to achieve specific sustainable development commitments, agreed to by the governments

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BOX 1: KEY PRINCIPLES RESULTING FROM THE INECE-OECD WORKSHOP

- Carefully consider and reflect on the needs of different user groups.
- Meet the challenges of decision-making and program management
- Link indicators to policy targets and ensure that indicators are responsive to evolving policy objectives
- Reflect and address factors that determine compliance
- Help track progress in solving priority problems
- Recognize that indicators must be interpreted correctly and meaningfully.
- Use different categories of indicators in conjunction to maximize their value

WHAT ARE ECE INDICATORS AND WHAT DO THEY MEASURE?

Conventionally, environmental authorities measure enforcement capacities or activity levels using "input" and "output" indicators. Input-related indicators (e.g., the number of inspectors and the enforcement agency budgets) identify the allocation of financial and human resources, while output-related indicators (e.g., the number of inspections and enforcement actions) show the extent of activities carried out.¹³ However, as Michael Stahl of the U.S. Environmental Protection Agency ("EPA") discusses, although "these [traditional] indicators give some sense of enforcement presence, they do not provide all the types of feedback needed to effectively manage program performance, and they have several limitations."¹⁴

Countries are now developing "intermediate outcome" indicators and "outcome" indicators. Changes in behavior, knowledge, or conditions that result from enforcement program activ-

in the Johannesburg Plan of Implementation.¹⁰ Achieving the sustainable development goals requires good governance, the rule of law, and effective, consistently applied, enforcement. Effective enforcement calls for measuring actions taken to achieve full compliance against a baseline and reporting them openly. ECE Indicators are one method to meet this need.

Since INECE launched the Indicators Project in 2002, INECE participants have researched and surveyed existing environmental indicators programs worldwide, set up an Expert Working Group to guide the project, and presented the concept at conferences and workshops to solicit feedback and identify partnerships.

In November 2003, INECE and the Organization for Economic Co-operation and Development ("OECD") co-hosted an international workshop on the subject. The workshop was attended by representatives from developed, transitional, and developing countries; international organizations; multilateral environmental agreement secretariats; and nongovernmental organizations. Participants outlined several guiding principles for the development of ECE Indicators (see Box 1) and developed three major recommendations¹¹ for next steps in the ECE Indicator development process:

- (1) Develop common definitions.
- (2) Reach agreement on a methodology model.
- (3) Articulate and apply guiding principles for using indicators to assess performance, through in-country projects.¹²

TABLE 1: BASIC TYPES OF ECE INDICATORS

Indicator	Measures	ECE Examples
Input Indicator	Resources (human, material, financial, etc.) used to carry out activities, produce outputs and/or accomplish results. ¹⁶	- # of staff assigned to a task - \$ spent per inspection - Ratio of # of staff to # of regulated facilities
Output Indicator	Government activities, work products, or actions. ¹⁷	- # of enforcement cases settled per year - # of fines issued per year
Intermediate Outcome Indicator	Measure progress towards achieving final outcomes, such as changes in behavior, knowledge, or conditions that result from program activities. ¹⁸	- pounds of pollutants reduced through enforcement actions
Outcome Indicator	The real impacts of compliance promotion and enforcement actions ¹⁹ and the ultimate change in the state of the environment	- improved water quality - improved air quality

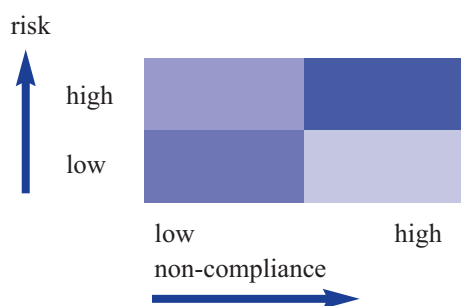
ities¹⁵ are examples of "intermediate outcome" indicators. They should help to measure progress towards achieving final outcomes - the ultimate changes in the state of the environment as a result of the environmental policies and actions (see Table 1).

ECE INDICATORS IN PRACTICE

At the INECE-OECD Workshop, country representatives described their efforts to develop more adequate performance

indicators. European country representatives discussed the applicability of outcome indicators to their European Union reporting requirements. The Netherlands, for example, has developed a risk-compliance indicator matrix (see Figure 1), which is used to assess enforcement goals and target inspections.²⁰ The matrix allows the Dutch Inspectorate to focus resources on priority activities that fall within the upper right hand corner of the matrix, indicating both a high level of risk to public health, safety, and the environment and a high potential for non-compliance.

FIGURE 1: THE NETHERLANDS ENVIRONMENTAL INSPECTORATE RISK-COMPLIANCE MATRIX²¹



Other country representatives, including those from Canada²² and Mexico,²³ described the development pilot projects in selected areas to measure outputs and outcomes of compliance promotion and enforcement activities. Representatives from transitional and emerging economies, including those from Czech Republic,²⁴ Russia,²⁵ Belarus,²⁶ and Thailand,²⁷ described the quantitative "input" and "output" indicators used in their countries.

Environment Canada has been a leading contributor to the development of ECE Indicators, launching pilot projects on performance measures for compliance promotion activities in six program areas, including environmental emergency regulations, mining, agriculture activities, and volatile organic compounds. Recently, Environment Canada held a workshop to discuss results and lessons from these pilot projects. Workshop participants recognized the need to engage stakeholders, including risk managers and compliance promotion and enforcement officers, and to ensure that results are analyzed, interpreted, and used to make decisions and trigger changes along the compliance continuum.²⁸

Country representatives also described the ways in which indicators are being used to assess performance on a facility-by-facility basis. In Poland, a list of "worst polluters" has been used for monitoring compliance and assessing the performance of inspectors.²⁹ In the U.S., the EPA uses the Toxic Release Inventory as a resource to target inspections.³⁰ In the Netherlands, the Pollutant Release and Transfer Registry system is used for the same purpose.³¹

However, there are many impediments to the establishment of ECE Indicator projects in transitional and developing countries. Representatives from Argentina, for example, identified legal and institutional development processes that need to

occur in their country prior to the creation of an ECE Indicator program, including:

- * Clear differentiation of responsibilities between levels of government;
- * Development of environmental strategic plans and systematized environmental compliance and enforcement programs;
- * Prioritization of environmental issues in the public budget;
- * Full implementation of the right to access environmental information, public participation in the decision-making process, and access to justice regarding environmental issues; and
- * Creation of an environmental information system, which the authorities must organize and implement to provide information.³²

FUTURE STEPS

At the conclusion of the INECE-OECD Workshop, participants discussed future steps to support the development of ECE Indicators. Participants emphasized that the development of guiding principles, including a set of common definitions, methodology, models, and good practices for developing country-specific projects, for the implementation of ECE Indicators is an important and necessary task.³³ In order to assure further progress in supporting regional and country-specific work, proceedings from the workshop will be published by OECD, as well as disseminated via the INECE Web site and via email.³⁴ Furthermore, countries with experience in developing ECE Indicators will pursue in-country projects, while INECE and its partner organizations will work with other countries to form new demonstration and pilot projects.³⁵



ENDNOTES: The INECE Indicators Project

¹ INECE is a network among government and non-government compliance and enforcement practitioners from over 100 countries, bringing together developed, transitional, and developing economies. Founded in 1989, INECE is a worldwide leader in developing networks for enforcement cooperation, strengthening capacity, and raising awareness about the importance of compliance and enforcement.

² *INECE Expert Working Group on Env'tl. Compliance and Enforcement Indicators*, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (October 22, 2003), available at <http://inece.org/IndBackPaper.pdf> [hereinafter *Expert Working Group*].

³ See *id.*

⁴ *Id.*

⁵ *Summary Report of the INECE-OECD*, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (March 31, 2004), available at http://www.inece.org/indicators/workshop_pro.html [hereinafter *Summary Report*].

⁶ *Special Edition on Environmental Compliance and Enforcement Indicators*, INECE NEWSLETTER 6 (INECE), 2002, available at <http://inece.org/Newsletter6.pdf>.

⁷ Components of a successful compliance and enforcement program adapted from U.S. EPA, PUB. NO. 300F93001, PRINCIPLES OF ENVIRONMENTAL ENFORCEMENT (1992). The PRINCIPLES OF ENVIRONMENTAL ENFORCEMENT were developed by the U.S. EPA in consultation with the Netherlands' Ministry of Housing, Spatial Planning and the Environment; the Polish Ministry of Environmental Protection, National Resources, and Forestry; and the Katowice Ecology Department in Poland. The full text of the PRINCIPLES is available on the INECE Web site at <http://inece.org/enforcementprinciples.html>.

⁸ ZAEKE, DURWOOD ET AL., THE INECE ENFORCEMENT INDICATORS: EXECUTIVE SUMMARY AND ANNOTATED OUTLINE FOR A MULTIYEAR PROJECT (2002), available at http://www.inece.org/conf/indDZ08_30.htm.

⁹ One such index is the Pressure-State-Response ("PSR") framework developed by OECD. OECD's PSR model classifies environmental indicators into indicators of environmental pressures, both direct and indirect; indicators of the state of the environment; and indicators of societal responses. "Pressure" refers to human pressures on the environment. "State" refers to the state of environmental resources (air, water, soil, the biosphere). "Response" refers "to individual and collective actions and reactions, intended to i) mitigate, adapt to or prevent human-induced negative effects on the environment; ii) halt or reverse environmental damage already inflicted; iii) preserve and conserve nature and natural resources," including environmental enforcement actions. See OECD, OECD ENVIRONMENTAL INDICATORS: DEVELOPMENT, MEASUREMENT, AND USE (2003), available at <http://www.oecd.org/dataoecd/7/47/24993546.pdf>.

¹⁰ UNITED NATIONS, JOHANNESBURG PLAN OF IMPLEMENTATION (2002), available at http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm.

¹¹ *Summary Report*, *supra* note 57.

¹² The outcomes of the Workshop are available through the INECE Web site at <http://www.inece.org/indicators/workshop.html>. The common definitions were developed in March 2004 and released on the INECE Web site at <http://inece.org/forumsindicators.html>. In the coming months, INECE will work with its partners at OECD, the World Bank Institute, Environment Canada, the U.S. EPA, and many other national governments to further implement this process of identifying, designing, and using indicators to assess the impact of compliance and enforcement activities at the national, regional, and international levels.

¹³ *Expert Working Group*, *supra* note 24.

¹⁴ Michael Stahl, *Performance Indicators for Environmental Compliance and Enforcement Programs: the U.S. EPA Experience*, 6TH INT'L. ENVTL.

CONF. ON COMPLIANCE AND ENFORCEMENT, (2002), available at <http://inece.org/conf/proceedings2/27-Performan%20Indicators.pdf>.

¹⁵ EXPERT WORKING GROUP, *supra* note 42.

¹⁶ Treasury Board of Canada, Results-Based Management Lexicon, available at <http://www.tbs-sct.gc.ca/rma/dpr/00-01/guidance/lexicon-e.asp> (last modified Apr. 9, 2004).

¹⁷ EXPERT WORKING GROUP, *supra* note 42.

¹⁸ *Id.*

¹⁹ Frank Barrett & Dave Pascoe, Environmental Compliance And Enforcement Indicators: Environment Canada Pilot Projects – Addressing Challenges, INECE-OECD Workshop on Env'tl. Compliance and Enforcement Indicators: Measuring What Matters (2004), available at http://www.inece.org/indicators/workshop_pro.html.

²⁰ Angelique A.A. van der Schraaf, & Jan van der Plas, *Environmental Compliance and Enforcement Indicators in The Netherlands*, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (2004), available at http://www.inece.org/indicators/workshop_pro.html.

²¹ *Id.*

²² Barrett & Pascoe, *supra* note 2119.

²³ Alejandra Goyenechea, *PROFEPA's Strategic Information System*, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (2004), available at http://www.inece.org/indicators/workshop_pro.html.

²⁴ Jiri Fencel et al., *Used and Proposed Indicators at Czech Environmental Inspectorate*, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (2004), available at http://www.inece.org/indicators/workshop_pro.html.

²⁵ Vladimir Schwartz, *Analysis of System of Environmental Enforcement and Compliance Indicators in the Russian Federation*, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (2004), available at http://www.inece.org/indicators/workshop_pro.html.

²⁶ A.A. Kovaltchiuk, *Analysis of System of Indicators for Inspection Activities in the Republic of Belarus*, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (2004), available at http://www.inece.org/indicators/workshop_pro.html.

²⁷ Thasanee Chantadisai, *Country Report on Environmental Indicators in Thailand*. Published in INECE, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (2004), available at http://www.inece.org/indicators/workshop_pro.html.

²⁸ Press Release, Drolet, Rene, Environment Canada's Workshop on Performance Measures for Compliance and Enforcement (2004) available at <http://inece.org/news/canadaindicators.pdf>.

²⁹ *Summary Report*, *supra* note 75.

³⁰ *Id.*

³¹ *Id.*

³² María Eugenia di Paola, *Environmental Compliance and Enforcement Indicators in Argentina: Primary Concerns*, INECE-OECD WORKSHOP ON ENVTL. COMPLIANCE AND ENFORCEMENT INDICATORS: MEASURING WHAT MATTERS (2004), available at http://www.inece.org/indicators/workshop_pro.html.

³³ *Id.*

³⁴ The Workshop Proceedings are available at http://www.inece.org/indicators/workshop_proc.html.

³⁵ *Summary Report*, *supra* note 75.