

## OECD WORK ON ENVIRONMENTAL INDICATORS

by Myriam Linster<sup>23</sup>

### 1. Background

Over the past 30 years, environmental policies and related reporting activities adopted by OECD countries have steadily evolved. This evolution has been largely driven by increased public awareness of environmental issues, their international aspects and their linkages with economic and social issues. Initially the demand for environmental information was closely related to the definition and implementation of environmental policies and their effects on the state of the environment. Over the years, policy priorities evolved, as did demands for reliable, harmonised and easily understandable information, not only from the environmental community but also from other public authorities, businesses, the general public, environmental NGOs and other stakeholders. At the same time, international activities and co-operation on the environment continued to grow.

This has stimulated a number of countries to produce environmental information that is more responsive to policy needs and public information requirements. The aim is to further strengthen countries' *capacity to monitor and assess* environmental conditions and trends so as to increase their *accountability* and to evaluate how well they are satisfying their domestic *objectives* and international *commitments*. In this context, environmental indicators are cost-effective and valuable tools.

### 2. Purpose and scope

Indicators can be used at international and national levels in state of the environment reporting, measurement of environmental performance and reporting on progress towards sustainable development. They can further be used at national level in planning, clarifying policy objectives and setting priorities. The OECD work on environmental indicators is designed to:

- Contribute to the *harmonisation* of individual initiatives of OECD Member countries in the field of environmental indicators by developing a common approach and conceptual framework; assist in *further development* and use of environmental indicators in OECD Member countries; and promote the *exchange of related experience* with non members and other international organisations;
- Support the OECD's *policy analysis and evaluation* work by developing core sets of reliable, measurable and policy-relevant environmental indicators to:

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- measure environmental progress and performance,
- monitor policy integration, and
- allow effective international comparisons;

The OECD work focuses mainly on indicators to be used in *national, international and global* decision making, yet the approach may also be used to develop indicators at *sub-national* or ecosystem level. The actual measurement of indicators at these levels is encouraged and lies within the responsibility of individual countries.

### **3. Approach and results**

The development of harmonised international environmental indicators is done in close co-operation with OECD member countries. It uses a *pragmatic* approach, recognising that there is *no universal set* of indicators; rather, several sets exist, serving *several purposes and audiences*. OECD work led in particular to:

- Agreement on a common conceptual *framework*, based on a common understanding of concepts and definitions and on the *pressure-state-response (PSR) model*;
- Identification of *criteria* to help in selecting indicators and validating their choice: all indicators are reviewed according to their policy relevance, analytical soundness and measurability;
- *Identification* and definition of indicators;
- Provision of *guidance for the use* of indicators in connection with the evaluation of environmental performance, stressing that indicators are only one tool and have to be interpreted in context to acquire their full meaning;
- Agreement to use the OECD approach at national level by adapting it to *national circumstances*.

#### ***Publication and use***

Those indicators for which internationally comparable data exist are *regularly published and used* in OECD work, particularly in *environmental performance reviews*. They are a way to monitor the integration of economic and environmental decision making, to analyse environmental policies and to gauge the results.

Beyond this application, they also contribute to the broader objective of reporting on sustainable development and to the elaboration of *sustainable development indicators*.

### Box 1. Functions and definitions of environmental indicators

The OECD *terminology* points to two major *functions* of indicators:

- they reduce the number of measurements and parameters that normally would be required to give an exact presentation of a situation.  
*As a consequence, the size of an indicator set and the level of detail contained in the set need to be limited. A set with a large number of indicators will tend to clutter the overview it is meant to provide.*
- they simplify the communication process by which the results of measurement are provided to the user.  
*Due to this simplification and adaptation to user needs, indicators may not always meet strict scientific demands to demonstrate causal chains. Indicators should therefore be regarded as an expression of "the best knowledge available".*

#### Definitions

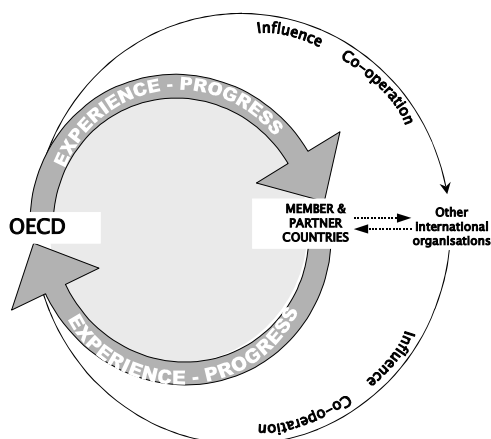
- *Indicator:* a parameter, or a value derived from parameters, which points to, provides information about, describes the state of a phenomenon/environment/area, with a significance extending beyond that directly associated with a parameter value.
- *Index:* a set of aggregated or weighted parameters or indicators.
- *Parameter:* a property that is measured or observed.

### A dynamic process

None of the OECD indicator sets is necessarily final or exhaustive in character; they are regularly refined and may change as scientific knowledge, policy concerns and data availability progress.

## 4. Links with national and other international initiatives

The indicator development has built on OECD experience in environmental information and reporting since the 1970s and on leadership of several OECD countries. It has benefited from strong support from all member countries and their representatives in the OECD Working Group on Environmental Information and Outlooks.



Results of OECD work, and in particular its conceptual framework, have in turn influenced similar activities by a number of countries and international organisations. Continued *co-operation* is taking place in particular with: the United Nations Statistics Division (UNSD), the UN Commission for Sustainable Development (UNCSD) and UN regional offices; the United Nations Environment programme (UNEP); the World Bank, the European Union (Commission of the European Communities, Eurostat, the European Environment Agency-EEA) and with a number of international institutes. Such co-operation is essential to achieve synergies, to help identifying commonalities and to clarify the specific purposes of the various

initiatives. Co-operation and *exchange of experience* is also taking place with non OECD countries, and in particular with Russia and China.

### Box 2. Criteria for selecting environmental indicators

As indicators are used for various purposes, it is necessary to define general criteria for selecting indicators and validating their choice. Three basic criteria are used in OECD work: policy relevance and utility for users, analytical soundness, and measurability.\*

<b>POLICY RELEVANCE AND UTILITY FOR USERS</b>	<p>An environmental indicator should:</p> <ul style="list-style-type: none"> <li>◆ Provide a representative picture of environmental conditions, pressures on the environment or society's responses;</li> <li>◆ be simple, easy to interpret and able to show trends over time;</li> <li>◆ be responsive to changes in the environment and related human activities;</li> <li>◆ provide a basis for international comparisons;</li> <li>◆ be either national in scope or applicable to regional environmental issues of national significance;</li> <li>◆ have a threshold or reference value against which to compare it, so that users can assess the significance of the values associated with it.</li> </ul>
<b>ANALYTICAL SOUNDNESS</b>	<p>An environmental indicator should:</p> <ul style="list-style-type: none"> <li>◆ be theoretically well founded in technical and scientific terms;</li> <li>◆ be based on international standards and international consensus about its validity;</li> <li>◆ lend itself to being linked to economic models, forecasting and information systems.</li> </ul>
<b>MEASURABILITY</b>	<p>The data required to support the indicator should be:</p> <ul style="list-style-type: none"> <li>◆ readily available or made available at a reasonable cost/benefit ratio;</li> <li>◆ adequately documented and of known quality;</li> <li>◆ updated at regular intervals in accordance with reliable procedures.</li> </ul>

*Extract from "Environmental indicators for environmental performance reviews", OECD, 1993.*

*\*These criteria describe the "ideal" indicator; not all of them will be met in practice.*

## 5. Several types of indicators

OECD work on environmental indicators, initiated in 1989, includes several categories of indicators, each corresponding to a specific purpose and framework (see also Box 3):

### **TRACKING ENVIRONMENTAL PROGRESS AND PERFORMANCE:**

**CORE ENVIRONMENTAL INDICATORS (CEI)** are designed to help track environmental progress and the factors involved in it, and analyse environmental policies. The OECD Core Set is a set commonly agreed upon by OECD countries for OECD use. It is published regularly. The Core Set, of about 50 indicators, covers issues that reflect the main environmental concerns in OECD countries. It incorporates core indicators derived from sectoral sets and from environmental accounting. Indicators are classified following the PSR model: indicators of environmental pressures, both direct and indirect; indicators of environmental conditions; indicators of society's responses.

### **INFORMING THE PUBLIC:**

**KEY ENVIRONMENTAL INDICATORS (KEI)**, endorsed by OECD Environment Ministers, are a reduced set of core indicators, selected from the OECD Core Set, that serve wider communication purposes. they inform the general public and provide key signals to policy-makers.

### **PROMOTING INTEGRATION:**

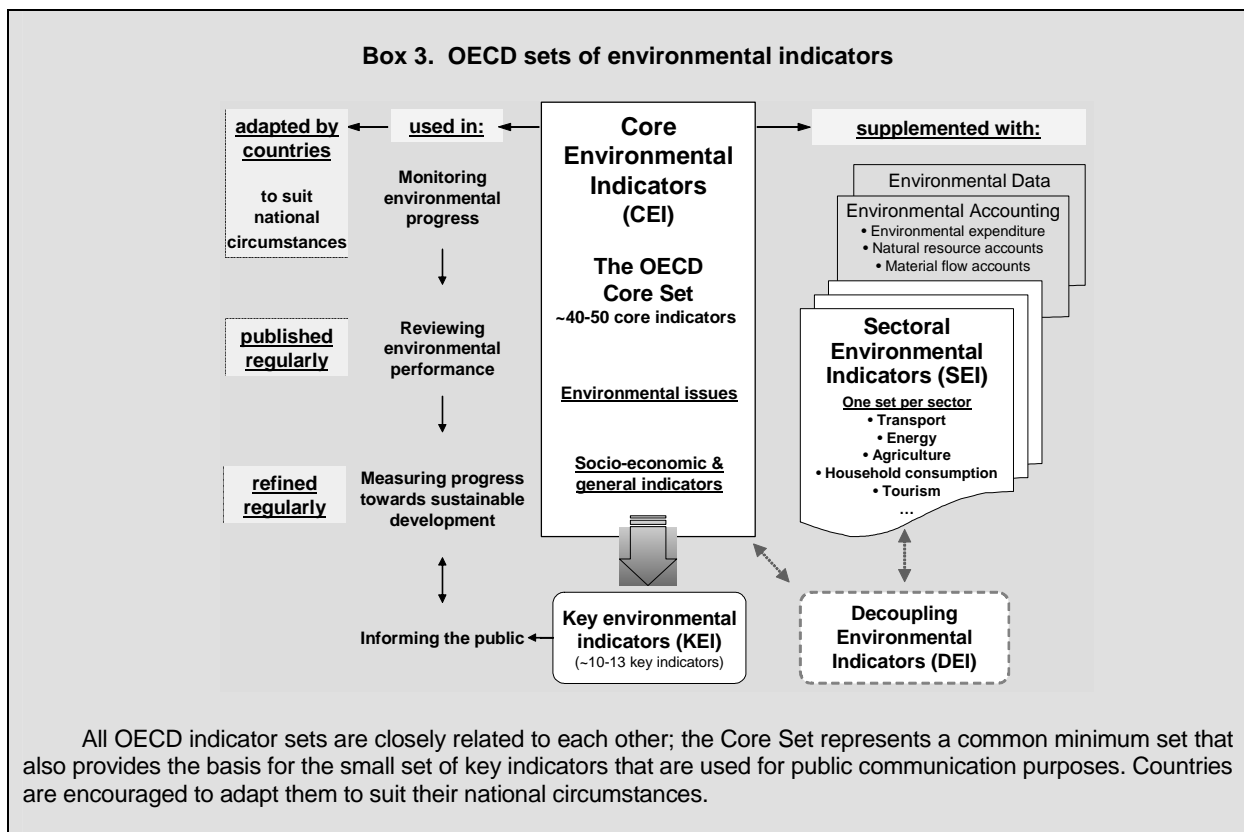
**SECTORAL ENVIRONMENTAL INDICATORS (SEI)** are designed to help integrate environmental concerns into sectoral policies. Each set focuses on a specific sector (transport, energy, household consumption, tourism,

agriculture). Indicators are classified following an adjusted PSR model reflecting: sectoral trends of environmental significance; their interactions with the environment (including positive and negative effects); and related economic and policy considerations.

**INDICATORS DERIVED FROM ENVIRONMENTAL ACCOUNTING** are designed to help integrate environmental concerns into economic and resource management policies. Focus is on: environmental expenditure accounts; physical natural resource accounts, related to sustainable management of natural resources; and physical material flow accounts, related to the efficiency and productivity of material resource use.

**MONITORING  
PROGRESS  
TOWARDS  
SUSTAINABLE  
DEVELOPMENT:**

**DECOUPLING ENVIRONMENTAL INDICATORS (DEI)** measure the decoupling of environmental pressure from economic growth. In conjunction with other indicators used in OECD country reviews, they are valuable tools for determining whether countries are on track towards sustainable development. Most DEIs are derived from other indicator sets and further broken down to reflect underlying drivers and structural changes.



**6. Using environmental indicators**

Over the years, the OECD has accumulated practical experience not only in developing, but also in using environmental indicators in its policy work. The indicators are used as a specific tool for

evaluating environmental performance, and for monitoring the implementation of the OECD Environmental Strategy for the first decade of the 21<sup>st</sup> century.

### *Guiding principles*

When using environmental indicators in analysis and evaluation, the OECD and its Member countries apply the following commonly agreed upon principles:

<b>ONLY ONE TOOL</b>	<p>Indicators are not designed to provide a full picture of environmental issues, but rather to help reveal trends and draw attention to phenomena or changes that require further analyses and possible action.</p> <p>Indicators are thus <i>only one tool</i> for evaluation; scientific and policy-oriented interpretation is required for them to acquire their full meaning. They need to be supplemented by other qualitative and scientific information, particularly in explaining driving forces behind indicator changes which form the basis for an assessment. One should also note that some topics do not lend themselves to evaluation by quantitative measures or indicators.</p>
<b>THE APPROPRIATE CONTEXT</b>	<p>Indicators' relevance varies by country and by context. They must be reported and <i>interpreted in the appropriate context</i>, taking into account countries' different ecological, geographical, social, economic and institutional features.</p>
<b>INTER-COUNTRY COMPARISON AND STANDARDISATION</b>	<p>Most OECD indicators focus on the national level and are designed to be used in an international context. This implies not only nationally aggregated indicators, but also an appropriate level of <i>comparability among countries</i>.</p> <p>There is no single method of <i>standardisation</i> for the comparison of environmental indicators across countries. The outcome of the assessment depends on the chosen denominator (e.g. GDP, population, land area) as well as on national definitions and measurement methods. It is therefore appropriate for different denominators to be used in parallel to balance the message conveyed. In some cases absolute values may be the appropriate measure, for example when international commitments are linked to absolute values.</p> <p>Moreover, the choice of the <i>initial level</i> of an environmental pressure and of the <i>time period</i> considered can affect the interpretation of the results, because countries do proceed according to different timetables.</p>
<b>LEVEL OF AGGREGATION</b>	<p>Within a country a greater level of detail or breakdown may be needed, particularly when indicators are to support sub-national or sectoral decision making. This is important, for example, when dealing with river basin or ecosystem management, when using indicators describing drivers which are relevant at the local level, or when national indicators hide major regional differences.</p> <p>The actual measurement of indicators at these levels is encouraged and lies within the responsibility of individual countries. At these levels, however, comparability problems may be further exacerbated.</p>
<b>MEASURABILITY AND DATA QUALITY</b>	<p>Measurability issues such as the quality of underlying data are important in the use of environmental indicators, and must be taken into account to avoid misinterpretation. Measurability and data quality vary greatly among individual indicators. Some indicators are immediately measurable, others need additional efforts before they can be published and used. For example, most indicators of societal responses have a shorter history than indicators of environmental pressures and many indicators of environmental conditions, and some are still in development both conceptually and in terms of data availability.</p>

### *Environmental indicators and performance analysis*

Environmental indicators support and illustrate the analysis made in the OECD Country Environmental Performance Reviews (conducted since 1992) and provide all reviews with a common denominator. This creates a synergy in which regular *feedback* is provided on the indicators' policy relevance and analytical soundness. To date, the environmental performances of all OECD countries

and some non members have been reviewed, and environmental information and indicators have been assembled for all OECD Member countries.

It is important to recognise, however, that indicators are *not a mechanical measure* of environmental performance. They need to be complemented with background information, data, analysis and interpretation. One should also note that some issues or topics do not lend themselves to evaluation by quantitative measures or indicators.

In the OECD environmental performance reviews, international indicators from the OECD sets (CEI, KEI, SEI) are used in combination with specific national indicators and data, and complemented as appropriate by additional information (e.g. lists of laws and regulations, economic instruments, and conventions; organigrammes; maps). Whenever possible, both state and trend data are presented for the indicators. Trends are shown over a decade for most indicators, and over two decades for selected topics to keep track of early policy measures and monitor changes over long periods.

Using environmental indicators in environmental performance reviews implies linking these indicators to the measurement and analysis of achievements, as well as to underlying driving forces and to the country's specific conditions. Three broad categories of indicators can be distinguished:

- **Performance indicators linked to quantitative objectives (targets, commitments)**

Examples of such indicators include e.g. air emission trends relating to *national or international targets*, urban air quality relating to *national standards*.

- **Performance indicators linked to qualitative objectives (aims, goals)**

These indicators generally address the concept of performance in two ways:

- With respect to the *eco-efficiency* of human activities, linked to the notions of *de-coupling*, *elasticities*: e.g. emissions per unit of GDP, relative trends of waste generation and GDP growth; and
- With respect to the *sustainability of natural resource use*: e.g. intensity of the use of forest resources, intensity of the use of water resources;

- **Descriptive indicators**

These indicators are not linked to explicit national objectives; they describe major conditions and trends and are close to the concept of “state of the environment” reporting: e.g. population connected to waste water treatment plants, river quality, share of threatened species.

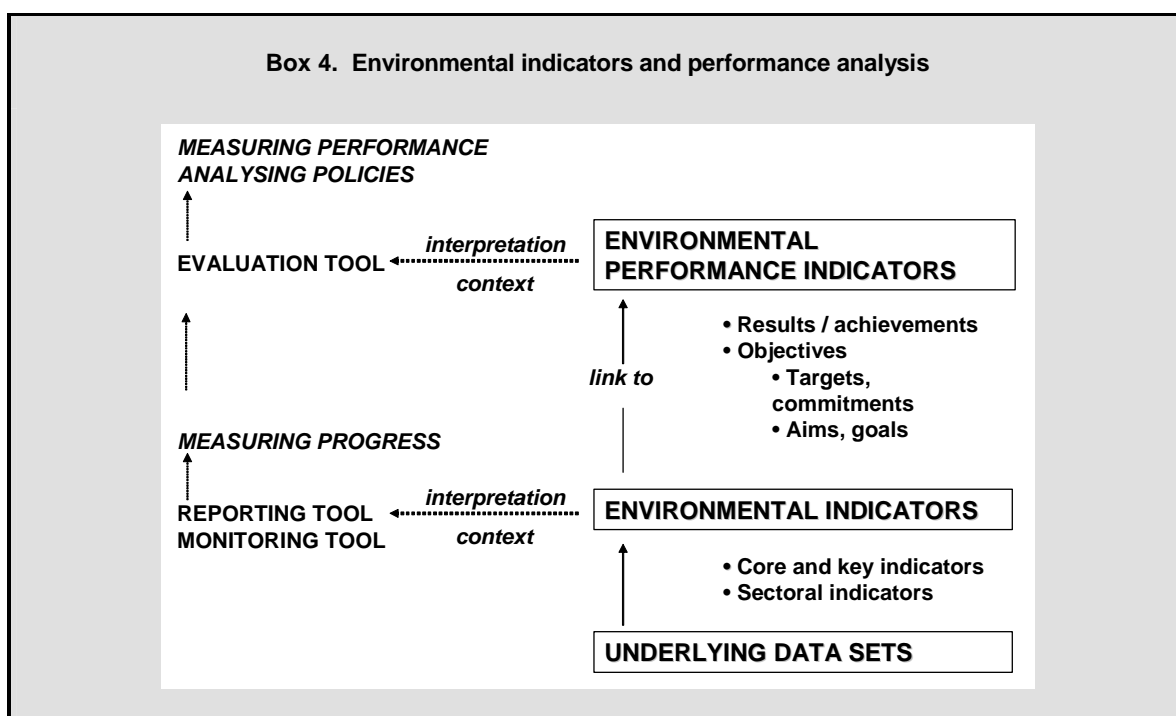
### ***Indicator presentation***

The presentation of most key and core indicators is standardised over the reviews, though a certain amount of flexibility is allowed to adjust to the individual situation of the reviewed country and also to special topics. One can distinguish the following typology:

- *International core indicators* harmonised at OECD level and presented for the reviewed country together with a few selected OECD countries and OECD and/or OECD Europe

averages to reflect the national and international picture. These indicators tend to be relevant for most OECD Member countries; they focus on key issues and often present state data;

- *Country specific core indicators* that show trends or changes over longer periods, often associated with related targets or economic trends; or that provide a more detailed picture of the country's situation through further sectoral and/or spatial breakdown (e.g. sub-national data).
- *Supplementary country specific information and data* that complement the core indicators by pointing at particular issues of concern for the reviewed country and that help in interpreting the indicators in a broader national context.



## ENFORCEMENT ECONOMICS AND ENVIRONMENTAL COMPLIANCE: LESSONS FOR THE DEVELOPMENT OF ECE OUTPUT INDICATORS

by Anita Sundari Akella<sup>24</sup>

### 1. Introduction

Effective enforcement of environmental laws and regulations is critical to maintaining the integrity and biodiversity value of protected areas worldwide. When an enforcement regime is weak or ineffective, the disincentive it presents is unlikely to offset the incentives driving illegal resource use, and protected areas remain threatened. In 1999, Conservation International adapted and began field-testing the “enforcement economics”<sup>25</sup> methodology as an analytical framework for identifying key weaknesses in an enforcement regime and developing cost-effective strategies for mitigating them. The results of the enforcement economics analyses,<sup>26</sup> and the solutions they suggest, shed light on the persistent weaknesses that undermine the efficiency and effectiveness of enforcement systems. But it is the enforcement economics model itself that provides valuable insights that can be used to inform the process of developing ECE output indicators.

The enforcement economics model shows enforcement as a holistic system whose overall effectiveness is dependent on the effectiveness of each of its component parts. To specifically assess the contributions of different agencies to systemic effectiveness, indicators relevant to each step of the enforcement chain must be developed and monitored. The model also reflects the fact that a simple increase in enforcement/compliance actions is not an appropriate indicator of improved performance. Rather, it is the *success rate* of each of the discrete actions comprising the enforcement “chain” that is the true indicator of improved effectiveness of each step of the system, and therefore of the system overall. Furthermore, the model demonstrates that time is an important indicator of the efficiency of enforcement actions, and has a significant effect on the overall effectiveness of an enforcement regime. Finally, the model provides an interesting perspective on the question of effectiveness. By calculating the additional disincentive value generated by increased effectiveness of each step in the enforcement chain, the enforcement economics model can serve as a *predictive* model of how effective a system will be in contributing to environmental goals.

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<sup>24</sup> Center for Conservation and Government, Enforcement Initiative Conservation International.

<sup>25</sup> Originally developed by John Sutinen for application in fisheries enforcement. See *Enforcement of the MFCMA: An Economist’s Perspective* by John G. Sutinen, 1987.

<sup>26</sup> To date, enforcement economics analyses have been successfully piloted in Bahia, Brasil; Selva Maya, Mexico; Papua, Indonesia; and Palawan, Philippines.

## 2. The enforcement economics model

Economists working on enforcement have found that the frequency and intensity of illegal activities are proportional to the net profits to be earned from those illegal activities. If a breaker of environmental laws believes that his profit will be greater than what he will have to pay for having broken the law, then the net profits of illegal activity are positive, and the crime will be committed. Society relies on an enforcement system to present a disincentive that offsets the incentives driving illegal activity. If the expected value of the enforcement disincentive is high enough to minimise net profits, the illegal act will not be committed.

Using this logic, economists have defined the enforcement disincentive (ED) as:

$$\text{Enforcement Disincentive} = P_d * P_a * P_p * P_c * \text{Penalty} * e^{-rt}$$

Where  $P_d$  is the probability of detection,  $P_a$  is the probability of arrest given detection,  $P_p$  is the probability of prosecution given arrest,  $P_c$  is the probability of conviction given prosecution,  $r$  is the discount rate (of the illegal actor) and  $t$  is the time between initial detection and payment of penalty<sup>27</sup>.

The value of the enforcement disincentive is the product of the probabilities of each step (or 'link') in the enforcement chain happening and the amount of the fine, discounted for the time between detection and paying the fine. The model reflects the fact that enforcement regimes are holistic systems and must be viewed as such. However, the model also indicates that breaking down and assessing the system in its component parts allows for the identification of specific weaknesses that affect the success rate of each step in the enforcement chain. This leads to a more precise understanding of the factors impacting the effectiveness of the system as a whole.

Describing the enforcement disincentive in this way provides a few critical insights. First, enforcement systems are only as strong as their weakest link. If the probabilities – or even the *perceived* probabilities – of *any one of these elements is zero, then the value of the entire chain is reduced to zero*, and the enforcement regime presents no disincentive to breaking environmental laws. Focusing investment on raising any single probability to 100% is inefficient, if other probabilities in the enforcement chain tend towards zero. This undermines the commonly held belief that poor enforcement is the result of too few enforcement agents and too few vehicles, and that investing in more agents and equipment alone will strengthen an enforcement system. While investing millions in agents and equipment may raise the probability of *detection* substantially, the impact of this improvement on the overall ED will be negligible if, for instance, prosecution rates continue to be very low. This leads to a second important insight – investing resources so that the success rates of the weakest links in the system are improved, or so that all probabilities are raised in some measure, is a more efficient investment, as it will yield a greater overall deterrent effect.

Finally, the longer the time between detection and imposition of a fine, the lower the value of the fine – at the high discount rates typical of illegal actors a delay of two or more years can effectively diminish the value of a fine as a deterrent to insignificant levels. To the extent that an enforcement process is time-consuming, the system is less effective in deterring illegal acts.

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$P_d = \# \text{ detections} / \# \text{ illegal acts}; P_a = \# \text{ arrests} / \# \text{ detections}; P_p = \# \text{ prosecutions} / \# \text{ arrests}; \text{ etc.}$

### 3. Application to the development of ECE output indicators

The enforcement economics methodology essentially calculates performance indicators reflecting the success rate of each step of the enforcement chain, which together generate an overall indicator of the system's effectiveness. It focuses on the activities that an enforcement regime engages in, rather than on the resources that enter the system or the environmental changes that result from those activities. As such, the lessons from this model are relevant not to input or outcome indicators, but to output indicators.

The logic of the enforcement economics model generates four lessons that can contribute to the development of output indicators:

1. Output indicators that measure the effectiveness of each step of the enforcement chain should be developed and monitored.

The model formulaically represents a holistic view of enforcement that is actually common sense – the success of an enforcement system does not rely on detection alone, but rather, is a product of the performance of agencies charged with detection, arrest, prosecution and conviction.<sup>28</sup> Monitoring the overall effectiveness of the system without monitoring these component pieces makes it difficult to understand specifically where the weaknesses that contribute to the strength or weakness of the whole system spring from. Without a specific understanding of where (i.e. within which step or agency) weaknesses lie, it becomes impossible to develop precise adaptive management strategies to mitigate those weaknesses.

Therefore, output indicators relevant to each step of the enforcement chain must be developed. These indicators will allow for monitoring the performance of the many agencies whose individual effectiveness directly impacts how effective the system is as a whole.

2. Raw numbers that count enforcement actions are not the best indicator of success or improved performance.

According to the typology of indicators put forth in the Results-based Management and Accountability Framework system, output indicators “are quantitative or qualitative measures of government activities, work products, or actions. In environmental enforcement programs, an example of outputs would be the number of enforcement cases issued or settled in one year. Outputs generally count things produced by the resources of the agency or program.”<sup>29,</sup>

One potential shortcoming of this definition is its reliance on ‘counting’ actions like number of patrols or number of prosecutions; the interpretation that an increase in these numbers demonstrates strengthened enforcement. The enforcement economics logic implies that proportion of successful actions, and not number of actions, is the true indicator of performance. For example, the number of detections may double from one year to the next, but if the number of illegal acts committed has also doubled, the percentage of illegal acts detected has not increased – and there is no *de facto* improvement in the performance of the detection agency. While the number of detections has

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<sup>28</sup> Note that these steps are generalized; the specific steps/agencies that contribute to overall effectiveness of enforcement will vary from country to country as the structure of enforcement systems will vary.

<sup>29</sup> From “INECE-OECD Workshop on Environmental Compliance and Enforcement Indicators: Measuring What Matters,” Discussion Paper produced by INECE Expert Working Group on ECE Indicators, October 2003.

increased, this increase will have no positive effect on the overall enforcement disincentive, and therefore does not contribute to the effectiveness of the enforcement regime. To be meaningful, output indicators should measure the success rates of the agencies that perform each function (detection, arrest, prosecution, conviction), as the probabilities in the enforcement economics model do.

3. Time has a significant impact on efficiency and enforcement effectiveness, and must therefore be incorporated as an output indicator.

As described, time plays an important role in determining enforcement effectiveness. When an enforcement system is inefficient and processing times are lengthy, discounting erodes the value of the disincentive generated by the system. Even a system that enjoys high success rates in each step of the enforcement chain can present a very weak deterrent if the time between initial detection and collection of penalty is very long.

This suggests that output indicators that only reflect success rates of enforcement actions are not adequate measures of the efficiency or effectiveness of an enforcement system. To be thorough, a suite of output indicators must also incorporate an indicator of enforcement processing time.

4. Appropriately designed output indicators can also be used to predict the likely effectiveness of enforcement-strengthening investments.

Because of the lag times required to observe tangible changes in environmental quality, measuring the effectiveness of ‘output’ (enforcement actions) in contributing to environmental goals can be difficult. According to the INECE Expert Working Group on ECE Indicators, “practitioners have little reliable information by which to gauge the effectiveness of policies and regulatory activities in terms of delivering real and measurable environmental outcomes....developing meaningful indicators that link compliance and enforcement efforts with environmental improvements remains a challenge.”<sup>30</sup>

While the enforcement economics model does not establish the causal relationships directly linking enforcement actions to environmental outcomes, it can serve as a predictor of whether a given set of investments is likely to result in fewer environmental crimes (directly), and improved environmental quality (indirectly). According to the enforcement economics model, the ‘effectiveness’ of an enforcement system is determined by the extent to which it generates an ED that offsets the incentives driving illegal activity. If the system presents a disincentive that is equal to or larger than profit, the net profit of the illegal act is zero or negative, and there is no incentive for the crime.

Once the success rates resulting from given investments are known or modelled, the enforcement economics function can be used to predict the resultant change in ED. One can predict whether or not the system will be successful in deterring environmental crime by comparing this ED to the incentives driving illegal resource use. If so, it is reasonable to assume that positive environmental outcomes will result. In this way, it is possible to ‘know’ what the direction of environmental change resulting from investments in enforcement will be, even if the magnitude of those changes cannot be known in advance.

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<sup>30</sup> From “INECE-OECD Workshop on Environmental Compliance and Enforcement Indicators: Measuring What Matters,” Discussion Paper produced by INECE Expert Working Group on ECE Indicators, October 2003.

An interesting corollary of this logic is that investments can be optimally allocated to generate the efficiency gains that will maximise the effectiveness of the system. The EE model can be used to identify this optimal allocation of enforcement-strengthening investment.

#### **4. Conclusion**

Output indicators should ideally serve two objectives. First, they should provide an indication of quality and effectiveness of performance. Indicators should also, however, be designed in a way that makes them useful in precisely identifying sources of weakness while simultaneously suggesting the reasons underlying those weaknesses. If output indicators meet both of these objectives, the process of developing adaptive management strategies to mitigate these weaknesses is greatly facilitated.

The enforcement economics model is a very simple yet logical and elegant representation of the factors that determine how effective an enforcement system is in deterring environmental crime. While the model itself may be too simple to serve as a direct source of ECE output indicators, the insights into appropriate indicators that the model yields are critical. Given the holistic nature of the enforcement system, proper monitoring depends on monitoring output indicators that measure the effectiveness of each element of the system, not just some elements of the system or the system overall. The importance of success rates and time to enforcement performance and effective deterrence must be reflected in output indicators. Output indicators should also be designed in such a way that they provide an insight into what the likely environmental outcomes of enforcement actions will be.

Monitoring indicators is just the first step in a process that should ultimately lead to development of strategies for making an enforcement system stronger. Incorporating the lessons of the enforcement economics model into the design of output indicators will make them more informative, precise, and instructive. The better the design of these indicators is, the more useful they will be in not only identifying systemic weaknesses, but in suggesting targeted strategies for strengthening enforcement performance and effectiveness.



## THE ACCESS INITIATIVE TOOL-KIT FOR ASSESSING THE STATUS OF IMPLEMENTATION OF PRINCIPLE 10

by Karin Krchnak<sup>31</sup>

### 1. Introduction

How well is your government upholding the commitment it made at the 1992 Rio Earth Summit to strengthen public participation in decision-making that affects the environment? The Access Initiative (TAI) national teams answer this question by conducting assessments of national-level laws and practices regarding public access to information, participation, and justice in decision-making that affects the environment. These three "access principles" empower individuals to have a meaningful voice in decisions that affect the health of their family, the prosperity of their community, and the development and security of their country.

Preliminary pilot research indicates that over the last ten years many countries have taken steps to improve policies or build institutional and organisational capacity for access to information, participation and justice in decisions affecting the environment. Most of these steps, however, address individual aspects of Principle 10 rather than building a comprehensive "access system" that includes all three principles, advancing them equally, so that no critical gaps remain.

### 2. The access initiative toolkit

To stimulate national progress on the access principles, TAI has developed an interactive toolkit of over 100 indicators that civil society organisations can use to monitor government performance in implementation of Principle 10. Twenty-five civil society organisations from nine countries pilot-tested the original methodology and helped TAI identify global standards for public participation and information. These universally applicable benchmarks help civil society coalitions identify ways that their countries can move toward compliance with global norms for access to information, participation and justice in environmental decision-making. The national-level assessments identify the gaps in the access system. TAI coalitions, through dialogues with their respective national governments, then work to close those gaps, helping to build comprehensive systems of access.

The indicator toolkit, produced on a CD-ROM called *Assessing Access to Information, Participation, and Justice for the Environment: A Guide*, measures both law and practice. Practice is assessed through case studies selected by national civil society coalitions. The methodology specifically measures the following:

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<sup>31</sup> Director, The Access Initiative & Partnership for Principle 10, World Resources Institute.

- Comprehensiveness and quality of the general legal framework for access to information, participation, and justice.
- Degree of available access to selected types of information about the environment.
- Degree of public participation in decision-making processes in selected sectors by actors in the development process at various levels.
- The accessibility of justice, both redress and remedy.
- Comprehensiveness and quality of capacity building efforts to encourage informed and meaningful public participation.

The CD-ROM includes an interactive database for recording research and a detailed "How-to" Guide that provides user-friendly instructions for all phases of the assessment, including assembling a coalition, launching a study, selecting cases and research methods, finalizing data, and using the findings to stimulate tangible results.

### **3. Conclusions**

TAI is currently launching assessments in approximately 20 countries across Europe, Africa, and Latin America. In addition, TAI is in the early stages of adapting the indicator methodology to the energy and water sectors. Through the development of unique indicators for these sectors, civil society coalitions will be better able to work toward inclusion of the interests and concerns of the general public and particularly the poor, whose access to both the decision-making process and the resources of these sectors is most limited. These sectors are also particularly relevant to Principle 10 assessment because they are currently undergoing reform in many countries, thus creating a window of opportunity to influence the reform process, making it more transparent and inclusive.

The Access Initiative (TAI) is a global coalition of public interest groups collaborating to promote national-level implementation of commitments to access to information, public participation, and access to justice in environmental decision-making. TAI is led by five organisations: Corporacion Participa (Chile), Thailand Environmental Institute (Thailand), Environmental Management Law Association (Hungary), Advocates for Environment and Development (Uganda), and World Resources Institute (United States). For more information, please visit <http://www.accessinitiative.org/>.

To further implement Principle 10, The Access Initiative partners helped establish the Partnership for Principle 10 (PP10). PP10 is committed to translating access principles into action and to supporting transparent, inclusive, and accountable decision-making for sustainable development. PP10 is a new initiative developed as a "Type-II" outcome of the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg. The Partnership provides a venue for governments, international organisations, and civil society groups to work together to promote better environmental governance at the national level. For more information, please visit <http://www.pp10.org/>.

## COMPLIANCE AND ENFORCEMENT INDICATORS IN CITES

by Marceil Yeater<sup>32</sup>

### 1. Introduction

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement between States. Its aim is to ensure that international trade in listed species of wild animals and plants does not threaten their survival.

CITES has been in operation for 29 years and is now used by 164 Parties to regulate and monitor international trade in wild resources.

The Convention's longstanding emphasis on and measures to ensure compliance and enforcement have evolved over a number of years and continue to evolve. They have proven to be effective in improving compliance with and enforcement of the Convention and have probably contributed to the absence of disputes between and among CITES Parties.

The objectives of CITES compliance and enforcement measures are to: aid conservation, regulate legal trade, detect and deter illegal trade and gather revenue. The ultimate goal is to improve the implementation, and thereby the effectiveness, of the Convention – and the national wildlife management policies and programs that underlie it.

### 2. Current compliance and enforcement indicators

CITES compliance and enforcement 'indicators' are focused on five key programmes: the National Legislation Project; permit confirmation; annual and biennial reports; the review of significant trade; and reports on enforcement matters. A programme to ensure the timely and full payment of CITES contributions also plays an important role. These programmes have their basis in the text of the Convention, interpretive Resolutions and Decisions by the Conference of the Parties, decisions of the permanent committees and historical practice.

Additional compliance/enforcement measures emphasised under the Convention include: the setting of export quotas; record keeping, monitoring, inspection and controls (traders, breeders, nurseries); internal trade control; intelligence and targeting; investigations; legal actions; specialised units, personnel and funds; assessment and verification missions (by the Secretariat and designated government officials or expert consultants); implementation of agreed compliance plans; meeting of deadlines under the Convention; positive responses to offers of assistance; communication, meetings

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Chief, Legislation and Compliance Unit, CITES Secretariat.

and training; integration of CITES in standard curricula for Customs, police, etc.; participation in cooperative mechanisms (e.g. the Interpol working group on wildlife crime); economic and social incentives; and strategic use of the media.

To strengthen the Secretariat's capacity to address compliance and enforcement issues within the Convention and provide relevant advice or assistance, a Legislation and Compliance Unit was created in 2000. It comprises a Chief, Senior Enforcement Officer, Legal and Trade Policy Officer and Unit Secretary. Such a unit is unique among multilateral environmental agreements.

## **2. Recommendations to suspend trade**

As CITES uses trade measures for its implementation, one recommendation for improving the effectiveness of the Convention is a temporary suspension of trade. In practical terms, this provides a period of time during which the relevant Party can move from non-compliance to compliance by *inter alia* enacting adequate legislation, combating and reducing illegal trade or responding to specific recommendations of the Standing Committee concerning the implementation of Article IV of the Convention in the context of the Review of Significant Trade. Having identified a problem of serious non-compliance, it would be inappropriate for Parties not to respond. Recommendations for a suspension of trade may be regarded as a precautionary measure to prevent a continuing violation of the Convention that is detrimental to the survival of one or more CITES-listed species.

Recommendations to suspend trade are ordinarily used as a last resort and CITES puts significant emphasis on inducing Parties into compliance through consultations and advice or assistance. Furthermore, such measures generally are used in cases involving significant levels of trade and where no domestic measures exist to enforce the Convention. Finally, CITES trade measures are withdrawn immediately upon a Party's return to compliance.

## **3. On-going programmes to improve compliance/enforcement indicators**

Revised draft guidelines for compliance with the Convention will be discussed at the 50th meeting of the Standing Committee (Geneva, March 2004). Parties with inadequate legislation to implement the Convention have been required by the Standing Committee and the Conference of the Parties to submit a CITES Legislation Plan outlining the steps and timeframe for enacting adequate legislation. A working group established under the Standing Committee has reviewed the reporting requirements under the Convention with a view to identifying and analysing the causes of non-compliance with those requirements and proposing ways to turn reporting requirements into useful management tools for Parties. A meeting of enforcement experts was convened in February 2004 to identify measures to improve the flow of enforcement-related data to and from relevant international, regional and national law enforcement organisations, CITES Management Authorities and the CITES Secretariat. The meeting also identified measures to assist the coordination of investigations regarding violations of the Convention and to help maintain appropriate levels of confidentiality regarding law enforcement information. Work has begun on the development of a CITES reference kit for the judiciary which includes abstracts of relevant court cases. A technical workshop on wildlife trade policies and economic incentives applicable to the management of and trade in CITES-listed species was organised in Geneva during 1-3 December 2003.

#### **4. How indicators are used in decision-making**

As mentioned above, CITES compliance and enforcement indicators are used by the Animals Committee, Plants Committee, Standing Committee and Conference of the Parties to take decisions on appropriate measures for ensuring that the Convention is effectively implemented.

#### **5. Stakeholders**

CITES compliance and enforcement measures can involve, among others: Management Authorities; Scientific Authorities; Customs; police; wildlife law enforcement officers; the judiciary; traders; non-governmental organisations and the public.

#### **6. Challenges**

Overall, illegal trade in wildlife resources has the potential for high profits while carrying with it a low risk of detection and low level of punishment. Effective deterrence therefore requires increases in the risk of detection and level of punishment.

Expertise, equipment and facilities (e.g. for the identification, storage and care of specimens) must be further identified or developed to support compliance and enforcement efforts.

More emphasis needs to be placed on intelligence and targeted compliance/enforcement efforts so as to deal with the large and growing volumes of air traffic, sea traffic, express carriers and mail which make it impossible to monitor every trans-boundary movement.

Additional attention should be paid to the use of awareness-raising, education and social and economic incentives to complement traditional command and control approaches to compliance and enforcement. Such measures can help to prevent non-compliance in the first instance, to facilitate compliance and to restore compliance as soon as possible. If well-designed, they can also reduce the administrative burden and costs arising from a purely regulatory approach.

The involvement of organised crime poses a special set of problems for compliance and enforcement officials as it involves the use of sophisticated and determined techniques. These require a sophisticated and determined response that is often is not present and needs to be developed.

Compliance and enforcement efforts frequently stop with seizure. Countries are being urged to consider seizure as only the beginning of a more serious process which should include a thorough investigation and appropriate administrative or judicial proceedings as well as subsequent reporting and incorporation into intelligence for and targeting of other potential violations.

#### **7. Conclusion**

CITES has extensive experience in developing and using compliance and enforcement measures that work. Nevertheless, it remains interested in identifying innovative and effective practices which might have useful implications for further improving application of the Convention and related national legislation.



# **THE USE OF INDICATORS IN REPORTING BY THE EUROPEAN ENVIRONMENT AGENCY AND THE POTENTIAL USEFULNESS OF POLICY IMPLEMENTATION AND POLICY EFFECTIVENESS INDICATORS**

by Lars Mortensen<sup>33</sup>

## **1. The role of the European Environment Agency**

The European Environment Agency (EEA) began work ten years ago with the purpose of providing the European Community and the Member States with information on the state of the environment in Europe, so that they would have a sound basis for policy action. Having been the first European Union (EU) body to take in all the acceding and candidate states, today the EEA has 31 member countries.

Increasingly, the Agency has been asked by the European Parliament, the European Commission and our member countries to report and advise not only on the state of the environment, but also on the effectiveness of environmental policies and their implementation.

The EEA has responded to these requests by including policy implementation and policy effectiveness as an important new area of work in the new EEA Strategy 2004-2008. This includes the undertaking of policy effectiveness analysis for selected areas. The EEA does not have a role in monitoring compliance and enforcement of EU or national legislation.

## **2. Use of indicators in reporting by the EEA**

Since its establishment, the EEA has used environmental indicators as a basis for reporting to policy makers in Europe. This is the case for indicator reports (e.g. Environmental Signals reports), thematic and sector reports (e.g. the Transport and Environment Reporting Mechanism reports); and state of the environment and outlook reports (including European Environment at the Turn of the Century, 1999; and Europe's Environment – the Third Assessment, 2003).

The Agency has also developed a typology of indicators, which include type A (descriptive indicators - what is happening to the environment and to humans?); type B (performance indicators - does it matter?); type C (efficiency indicators - are we improving?); and type D (total welfare indicators - are we on the whole better off?).

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The EEA core set of environmental indicators was developed during a two-year consultation process with countries and is proposed for endorsement by March 2004. The proposed core set contains 37 indicators. The indicators have been selected on the basis of sound criteria widely used elsewhere in the EU and in OECD. All criteria are important but for the purposes of the EEA set, the most important are policy relevance, policy targets, readily available and routinely collected data, good geographical coverage and sufficient temporal coverage.

The EEA core set has three main purposes: (i) to provide a manageable and stable basis for indicator reporting by the EEA on the web and in its annual Environmental Signals report; (ii) to prioritise improvements in the quality and geographical coverage of data flows; and (iii) to streamline EEA contributions to other European and global indicator initiatives, e.g. structural indicators, sustainable development indicators, etc.

The core set will be stable but not static. There are many activities underway to improve data flows and indicator methodologies in support of policy needs and targets. Examples include the implementation of the Waste Statistics Regulation for the data across the waste hierarchy, ongoing work on biodiversity indicators to support the 2010 target, and the common implementation strategy of the water Framework Directive that will in time deliver data on ecological aspects.

Indicators on the policy responses to environmental changes are still under development. This includes indicators of policy implementation and also indicators about the effectiveness of policies.

The EEA proposes to revisit the core set on an annual basis to consider whether indicators should be added, modified or deleted from the list.

### **3. Potential usefulness for the EEA from further development of policy implementation and effectiveness indicators**

The identification of and development of methodologies for indicators of policy implementation and effectiveness are potentially useful for reporting by the EEA.

First of all, such indicators could potentially provide a useful starting point for undertaking analysis related to and reporting on the implementation and effectiveness of policies in EEA member countries. Second, appropriate implementation and effectiveness indicators are useful for the EEA core set of indicators in order to better address and measure the policy responses.

**SECTION 4**  
**WORKSHOP AGENDA**



**INECE – OECD  
EXPERT WORKSHOP  
ON ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT INDICATORS**

3<sup>rd</sup> - 4<sup>th</sup> November 2003, OECD Headquarters, Paris, France

**AGENDA**

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**Monday, 3<sup>rd</sup> November**

**9:30 – 10:35**

**OPENING SESSION**

*Chair: Kenneth Ruffing, OECD*

- 9:30 – 10:00** Welcome Remarks by OECD and INECE Secretariats  
**Kenneth Ruffing**, Deputy Director, Environment Directorate, OECD  
**Durwood Zaelke**, Director, INECE Secretariat
- 10:00 – 10:15** Presentation of the Draft Agenda and Logistics  
**Krzysztof Michalak**, Environment Directorate, OECD
- 10:15 – 10:35** Presentation of the Participants and their Expectations from the Meeting

**10:35 – 11:45**

**SESSION 1: ENFORCEMENT AND COMPLIANCE INDICATORS – AN OVERVIEW**

- 10:35 – 10:55** Methodological, design and implementation aspects of Enforcement and Compliance Indicators (ECE) – presentation of the Discussion Paper for the Workshop: “Measuring What Matters”  
*Lead Presentation:*  
**Frank Barrett**, Environment Canada
- 10:55 – 11:30** Open Discussion

**11:30 – 11:45** *Coffee/Tea Break*

**11:45 – 13:00      SESSION 2: DESIGN AND APPLICATION OF ENFORCEMENT AND COMPLIANCE INDICATORS**

**11:45-12:30**      Question 1: What compliance and enforcement indicators are presently being used in measuring your compliance and enforcement program?

*Lead Presentations:*

**Michael Stahl**, Environmental Protection Agency, United States

**Vladimir Shwarz**, Ministry of Natural Resources, Russian Federation

**Paul Bernaert**, Flemish Environment Inspection Section, Belgium

**12:30 – 13:00**      Open Discussion

**13:00-15:00**      *Lunch Break*

**15:00 – 16:30      SESSION 3: USE OF INDICATORS FOR PERFORMANCE ASSESSMENT**

***Chair: Sladjana Miocic, Croatia***

**15:00 – 15:30**      Question 2: Are there any on-going programmes that aim to develop more sophisticated performance indicators? What are the key elements of such programmes? What data and information systems do you have available for developing ECE indications?

*Lead Presentations:*

**Pavel Sremer**, State Environmental Inspectorate, Czech Republic

**Karin Krchnak**, World Resources Institute

**15:30 – 16:15**      Open Discussion on Experience and Lessons Learned

**16:15 – 16:30**      *Coffee/Tea Break*

**16:30 – 18:00      SESSION 4: USE OF INDICATORS FOR DECISION MAKING**

**16:30 – 17:00**      Question 3: How are performance indicators being used for management decision-making?

*Lead Presentations:*

**Angelique van der Schraaf and Jan van der Paas**, Inspectorate for Housing, Spatial Planning and Environment, the Netherlands

**Marek Mroczkowski**, State Environmental Inspectorate, Poland

**17:00 – 18:00**      Open Discussion on Experience and Lessons Learned

**18:00 – 20:00**      *Cocktail: Marshall Room*

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**Tuesday, 4<sup>th</sup> November**

**9:30 – 11:00**

**SESSION 5: USE OF INDICATORS FOR COMMUNICATION WITH STAKEHOLDERS**

***Chair: Adriana Bianchi, World Bank Institute***

**9:30 – 10:15** Question 4: What stakeholders in your country are most interested in developing ECE indicators?

*Lead Presentations:*

**Tom Stafford**, Environmental Protection Agency, Ireland

**Alejandra Goyenechea Orellana**, Federal Department of Environmental Protection, Mexico

**10:15 – 11:00** Open Discussion on Experience and Lessons Learned

**11:00 – 11:15** *Coffee/Tea Break*

**11:15 – 13:00**

**SESSION 6: KEY ISSUES IN DEVELOPING ENFORCEMENT AND COMPLIANCE INDICATORS:  
DEVELOPMENT OF COUNTRY PILOT PROJECTS**

**11:15 – 12:00** Question 5: What are the main challenges to overcome to begin implementing ECE indicator pilot projects in your country? What pilot projects would you like to develop with international partners?

*Lead Presentations:*

**Nilvo Luiz Alves da Silva**, Brazilian Institute for Environment and Renewable Resources, Brazil and **Adriana Bianchi**, World Bank Institute

**Thasanee Chantadisai**, Ministry of Natural Resources and Environment, Thailand

**Wilson Tamakloe**, Environmental Protection Agency, Ghana

**Markku Hietimäki**, Ministry of the Environment, Finland

**12:00 - 13:00** Open Discussion

**13:00 – 15:00** *Lunch Break*

**15:00 -17:00**

**SESSION 6 (CONT.): KEY ISSUES IN DEVELOPING ENFORCEMENT AND COMPLIANCE INDICATORS: 6DEVELOPMENT OF COUNTRY PILOT PROJECTS**

***Chair: John Seager, United Kingdom***

**15:00 – 15:45** Question 5: What are the main challenges to overcome to begin implementing ECE indicator pilot projects in your country? What pilot projects would you like to develop with international partners?

*Lead Presentations:*

**Sladjana Miocic**, Ministry of Environmental Protection and Physical Planning, Croatia

**Maria Eugenia di Paola**, Environment and Natural Resources Foundation, Argentina

**Dave Pascoe**, Environment Canada

**Nerina Holden**, Environment Protection Agency, Scotland

**15:45 – 17:00** Open Discussion

**17:00 – 18:00**

**SESSION 7: FURTHER STEPS IN THE INECE-OECD PROJECT ON ENFORCEMENT AND COMPLIANCE INDICATORS**

**17:00 – 17:15** Summary of the discussions and the presentation of the proposed elements of the future work programme, including pilot projects.

*Lead Presentation:*

**Kenneth Markowitz**, INECE Secretariat

**17:15 – 18:00** Open discussion and Evaluation of the Meeting

**18:00**

**CLOSURE OF THE MEETING**

**Myriam Linster**, Environment Directorate, OECD

**Durwood Zaelke**, INECE Secretariat

**SECTION 5**  
**WORKSHOP PARTICIPANT LIST**



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