



Enforcement is Key to the Technology Innovation Needed to Protect Climate and the Ozone Layer

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Washington, DC – Enforcing strict environmental standards can lead to technology innovation and increased competition through “innovation offsets” that equal or exceed the cost of compliance; the offsets arise when firms are forced to re-examine their production process. This was the message of INECE Secretariat Director Durwood Zaelke in his discussion of “Technology Innovation, Competition, and Regulatory Design” presented as part of a side-event at the 10th Conference of the Parties (CoP) of the climate convention.

Zaelke referred to the growing body of empirical data available to help explain which regulatory designs work and which don't. There are two key regulatory design principles that promote the technology innovation needed to reduce pollution efficiently and effectively. The first is to ensure that regulations are strict enough to force firms to reexamine their production processes. The second is to focus on outcomes, while remaining flexible about process, so firms can find the most efficient and effective solutions. He noted that the empirical data was from both OECD and non-OECD countries, and that the “innovation offsets” were found in both sets of countries.

The analysis of design principles and “innovation offsets” has been led by Harvard Business Professor Michael Porter, who earlier formulated the “Porter Hypothesis”—that properly designed environmental laws produce “innovation offsets” that equal or exceed the cost of compliance.

The Porter design principles, however, must be balanced with design principles for effective and efficient enforcement, because unless the environmental standards are strictly enforced, firms will not undertake the fundamental re-examination of their production process that leads to the “innovation offsets” and cost savings.

The empirical data from the US sulfur dioxide program presents a classic example. The program shifted from an inflexible technology-based requirement for end-of-pipe scrubbers to a flexible market-based emissions trading scheme, with a dramatic increase in innovation and decrease in cost. A quarter of the firms achieved the strict emission reductions at a profit. The program achieves its impressive results as a result of 100% compliance, which in turn is the result of continuous real-time emissions monitoring. (The head of the program, Brian McLean, discussed these results at an INECE workshop on “Compliance and Enforcement of Trading Schemes in Environmental Protection” at Oxford University in March 2004 organized with the Environmental Agency for England and Wales. See <http://www.inece.org/emissions/>. Zaelke repeated the key outcome of the Oxford Emissions Workshop: emissions trading schemes don't work without strict enforcement.

Zaelke noted that the strict yet flexible regulatory design of the Montreal Protocol fits the Porter principles well, and that the growing web of climate regulations at the international, regional, and local level would be strict as well. He asserted that it was inevitable that there would be liability for climate harm that would dwarf the tobacco litigation, referring to Allen & Lord's recent article

in the 1 December 2004 issue of *Nature*, “The Blame Game: Who Will Pay for Damaging Consequences of Climate Change?”

Zaelke then applied the Porter framework to the goals of the air conditioning industry’s Responsible Use Program and the Mobil Air Conditioning 30/50 Partnership, designed to address life-cycle climate and ozone emissions and recently endorsed by the US EPA.

Zaelke concluded that the design of the program met the Porter standards. The program builds in comprehensive environmental protection by addressing both climate and ozone; is flexible and performance-based; recognizes that strict standards are here or coming soon; encourages firms to re-examine their processes and innovate, and as such should be endorsed by industry and regulators alike, as EPA has done. The program also promotes competition among firms to find the best solution, and relies on empirical data as measured and documented in the lab to identify the winners.

Zaelke discussed other factors contributing to successful environmental innovation, especially individual leadership, both by management and by a firm’s engineers. He referred to ten case studies in his recent book with Dr. Stephen O. Anderson, *Industry Genius: People and Inventions Protecting Climate & the Fragile Ozone Layer*. The Climate Secretariat distributed copies of *Industry Genius* to all the parties at CoP 10. The Ozone Secretariat distributed copies of the book to the parties to the Montreal Protocol as well.

To identify “genius companies,” Zaelke and Anderson looked for visionary management and innovative engineering producing new and inspiring technologies that were good for the environment and good for the company’s bottom line. They found what they were looking for at Aviation Partners, Alcoa, Daimler-Chrysler, Seiko Epson, Honda, and Trane, among others.

Zaelke added that he and Anderson were working on *Industry Genius II* and that they were confident that tomorrow’s industry geniuses would be found among companies who reduce both ozone depleting substances and greenhouse emissions, improve efficiency in manufacturing and product performance, and find profit in “being green.”

In conclusion, Zaelke noted that, to solve our pressing global environmental problems, we need to improve innovation in governance as well as in technology. We’ve been successful with ozone on both counts, but face enormous challenges with climate, and have much work to do to design an effective regulatory system, with little time left to get it right.

Zaelke mentioned two key innovations in governance beyond Porter. The first is to strengthen and expand transnational networks such as INECE to help meet the demand for more and better global governance. INECE and other transnational networks are fast and efficient, and operate below the level of the more formal and cumbersome state-to-state processes that are traditionally used to address transnational and global issues such as climate change.

The second is to design laws and regulations as empirical experiments with built-in feedback loops to help monitor performance on a real-time basis, so adjustments can be made immediately and continuously to ensure that our environmental goals are met. The good news is that we’re already moving forward on both fronts.

Comments and questions should be addressed to dzaelke@inece.org.

ABOUT INECE

The International Network for Environmental Compliance and Enforcement (INECE) is a partnership of government and non-government enforcement and compliance practitioners from over 100 countries. INECE contributes to a healthy and clean environment, sustainable use of

natural resources and the protection of ecosystem integrity through effective compliance with and enforcement of environmental laws. INECE's goals are: raising awareness to compliance and enforcement, developing networks for enforcement cooperation, strengthening capacity to implement and enforce environmental requirements. (www.inece.org)

CONTACT

Durwood Zaelke
Director, Office of the INECE Secretariat
2141 Wisconsin Avenue NW, Suite D2
Washington, DC 20007
telephone: +1 (202) 338-1300 (v)
facsimile: +1 (202) 338-1810 (f)
electronic mail: inece@inece.org
Web site: www.inece.org