



Highlights of [GAO-09-151](#), a report to congressional requesters

## Why GAO Did This Study

International policies to address climate change have largely relied on market-based programs; for example, under the European Union's Emissions Trading Scheme (ETS) phase I (2005 to 2007) carbon dioxide emissions reductions were sought by setting a cap on each member state's allowable emissions and distributing tradable allowances to covered entities, such as power plants. Beginning operation in 2002, the Kyoto Protocol's Clean Development Mechanism (CDM) has relied on offsets, allowing certain industrialized nations to pay for emission reduction projects in developing countries—where the cost of abatement may be less expensive—in addition to reducing emissions within their borders.

Legislative proposals to limit greenhouse gas emissions are under consideration in the United States. In this context, GAO was asked to examine the effects of and lessons learned from (1) the ETS phase I and (2) the CDM. GAO worked with the National Academy of Sciences to identify experts in market-based programs and gathered their opinions through a questionnaire, interviewed stakeholders, and reviewed available information.

## What GAO Recommends

GAO is not recommending executive action. However, in deliberating legislation for emissions trading, Congress may wish to consider the lessons learned from the ETS and the CDM.

To view the full product, including the scope and methodology, click on [GAO-09-151](#). For more information, contact John B. Stephenson at (202) 512-3841 or [stephensonj@gao.gov](mailto:stephensonj@gao.gov).

# INTERNATIONAL CLIMATE CHANGE PROGRAMS

## Lessons Learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism

### What GAO Found

According to available information and experts, the ETS phase I established a functioning market for carbon dioxide allowances, but its effects on emissions, the European economy, and technology investment are less certain. Nonetheless, experts suggest that it offers lessons that may prove useful in informing congressional decision making. By limiting the total number of emission allowances provided to covered entities under the program and enabling these entities to sell or buy allowances, the ETS set a price on carbon emissions. However, in 2006, a release of emissions data revealed that the supply of allowances—the cap—exceeded the demand, and the allowance price collapsed. Overall, the cumulative effect of phase I on emissions is uncertain because of a lack of baseline emissions data. The long-term effects on the economy also are uncertain. One concern about design and implementation was that the economic activities associated with emissions from covered entities would shift from the European Union to countries that do not have binding emission limits—a concept known as leakage. However, leakage does not appear to have occurred, in part because covered entities did not purchase allowances but received them for free. The effect of the ETS on technology investment also is uncertain but was likely minimal, in part because phase I was not long enough to affect such investments. Phase I of the ETS offers three key lessons: (1) accurate emissions data are essential to setting an effective emissions cap; (2) a trading program should provide enough certainty to influence technology investment; and (3) the method for allocating allowances may have important economic effects, namely, free allocation may distribute wealth to covered entities whereas auctioning could generate revenue for governments.

According to available information and experts, the CDM has provided flexibility to industrialized countries with emission targets and has involved developing countries in efforts to limit greenhouse gas emissions, but the program's effects on emissions are uncertain, and its effects on sustainable development have been limited. Nonetheless, the CDM's effects reveal key lessons that can help inform congressional decision making. Specifically, the CDM has provided a way for industrialized countries to meet their targets that may cost less than reducing emissions at home; however, available evidence suggests that some offset credits were awarded for projects that would have occurred even in the absence of the CDM, despite a rigorous screening process. Such projects do not represent net emission reductions and can compromise the integrity of programs—including the ETS—that allow the use of CDM credits for compliance. We also found that the cost-effectiveness and overall scale of emission reductions are limited by the current project approval process, although proposed changes may improve its effectiveness. Key lessons from the CDM include: (1) the resources necessary to obtain project approval may reduce the cost-effectiveness and quality of projects; (2) the need to ensure the credibility of emission reductions presents a significant regulatory challenge; and (3) due to the tradeoffs with offsets, the use of such programs may be, at best, a temporary solution.