**Testimony of Emily Figdor**
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**Before the Subcommittee on Energy and the Environment**
**House Energy and Commerce Committee**
**The Role of Offsets in Climate Legislation**
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## Introduction

Thank you for the opportunity to share my views regarding the role of carbon offsets in climate legislation. My name is Emily Figdor, and I am the director of the Federal Global Warming Program at Environment America. Environment America is a federation of state-based, citizen-funded environmental advocacy organizations, with 750,000 members and activists in all 50 states. My testimony today draws on our experience with offsets in the design of climate policies at the state, regional, and federal levels.

Last week, President Obama issued a historic call for Congress to send him legislation that "places a market-based cap on carbon pollution and drives the production of more renewable energy in America." The President explained that such legislation is needed to "truly transform our economy, protect our security, and save our planet from the ravages of climate change."[1]

I commend Chairmen Waxman and Markey for their years of leadership on global warming, renewable energy, energy efficiency, and energy security and for their expeditious work so far this year to craft and lay the groundwork to advance comprehensive global warming and energy legislation this spring. The job of responding to the President's call could not be in more able hands.

However, the challenges before us – global warming, energy security, the flagging economy – are of historic scale, and the response by Congress must be swift, bold, and well-designed to result in the transformational changes that the President envisions.

My testimony today will focus on the urgent need to achieve real and sustained cuts in emissions of the pollutants that are fueling global warming; the risks that carbon offsets, if included in a climate bill, would pose to achieving such cuts; and alternative policy mechanisms that could incentivize activities promoted by proponents of offsets, such as increasing carbon storage in trees and soils, without jeopardizing the environmental integrity of the overall program.

## Science Demands Deep Cuts in Pollution

The impacts of global warming on human and natural systems are now being observed nearly everywhere. In 2007, the Nobel Prize-winning U.N. Intergovernmental Panel on Climate Change (IPCC) predicted serious risks and damage to livelihoods, societies, infrastructure, species, and ecosystems unless future warming is reduced.[2] So far this decade, emissions, warming, and impacts, such as ice melt and sea level rise, have all been at the upper end of IPCC projections.[3]

Last year, for example, the U.S. National Snow and Ice Data Center announced that summer Arctic sea ice reached the second-lowest level ever recorded, following the record-breaking

2007 summer.[4] This observed rapid Arctic melting has already far outpaced IPCC worst-case scenario projections that summer Arctic sea ice could disappear almost entirely by the latter part of this century.[5] Now, scientists from NASA and other agencies warn that Arctic summers could be nearly ice-free within the next five years.[6]

Urgent action is needed to reduce the emissions that are causing global warming.

The United States has committed, as a signatory to the 1992 United Nations Framework Convention on Climate Change, to the goal of preventing "dangerous" global warming. [7] While what constitutes "dangerous" remains undefined in the law and a matter of subjective judgment, warming of more than 2 degrees Celsius over the pre-industrial level[i] is considered by many scientists and policymakers as a rough threshold between damaging and catastrophic global warming.[8] Other scientists warn that even this level of warming would be too much and could pose great risks to humans and natural systems.[9]

To have a reasonable chance (50-50) of keeping temperatures from increasing by more than 2 degrees Celsius, current science indicates that the world must stabilize the atmospheric concentration of global warming pollutants (in carbon dioxide equivalent) near 450 parts per million (ppm).[10] According to the IPCC, to stabilize global warming pollutants at this level (and allowing for a temporary 50 ppm overshoot), developed countries as a whole must cut their emissions by 25-40 percent below 1990 levels by 2020 and by 80-95 percent below 1990 levels by 2050,[ii] and major developing countries also must act within this timeframe.[11]

**Role of Offsets**

The central objective of climate legislation must be to reduce global warming emissions fast enough to avoid dangerous impacts. Of primary importance are the levels of the caps on global warming pollution. The caps should be based on the most recent science and force the development and deployment of clean technologies.

Offsets allow emitters covered by the caps to comply by paying for emission reductions at facilities or for activities not covered by the program. Offsets could be issued for actions taken to reduce emissions domestically in areas of the economy not covered under the cap or for projects undertaken overseas. For example, the owner of a U.S. power plant might receive an offset by paying a farmer to set aside croplands from agricultural production to rebuild carbon in the soil and vegetation, thereby enabling the power plant to emit more carbon dioxide pollution.

Proponents of offsets argue that including offsets in a cap-and-trade program could reduce the cost of the program by allowing some compliance to take place through lower cost means, such as through overseas programs. Proponents also argue that offsets are needed to drive emission reductions in areas of the economy where the implementation of a cap will be difficult, and that the availability of offsets will drive innovation in the development of new emission-reducing technologies.

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[i] This temperature increase is equivalent to 3.6 degrees Fahrenheit over the pre-industrial level or about 2 degrees Fahrenheit over the amount of warming that has already occurred.

[ii] The low-end of these ranges are equivalent to a 35 percent reduction from today's (2006) levels by 2020 and an 83 percent reduction from today's levels by 2050.

However, offsets are highly problematic when it comes to achieving what must be the number one imperative of U.S. climate policy: achieving the deep and verifiable reductions in domestic emissions that are necessary to prevent the worst impacts of global warming.

Offsets are problematic because they (1) provide less-certain reductions in emissions, thus eroding the environmental integrity of the program; (2) delay the transition to clean technologies in capped sectors; and (3) reduce the potential for the American people to receive the "co-benefits" of domestic emission reductions, such as cleaner air and improved energy security. Moreover, many of the worthwhile goals that proponents of offsets promote – such as increasing carbon storage in trees and soil – can be achieved without jeopardizing the environmental effectiveness of the cap, such as through allowance set-aside programs.

**Offsets Undermine Pollution Targets**

Exchanging offsets for emission allowances within a cap-and-trade program is akin to trading apples for oranges. An allowance represents a unit of emissions. If a facility decides to emit carbon dioxide, it must hold an allowance. An offset, on the other hand, represents a unit of pollution *not emitted*. It is of equal value to an allowance only if it can be judged with certainty that the pollution would have been emitted, but was not, and that the emission reduction resulted from the incentive provided through the offset program.

To illustrate the difference, consider two people trying to lose weight. One person decides to meticulously count the calories of the foods he eats, with the goal of reducing his intake each day. The second person, however, counts the calories of the foods he thinks he *would have* eaten that day but did not because he was on a diet. You can imagine which of the two will be more likely to actually shed a few pounds.

In practice, offset programs have a terrible track record in delivering real, verifiable reductions in global warming pollution. A recent report by Stanford University estimates that "between a third and two-thirds" of offsets under the Kyoto Protocol's Clean Development Mechanism (CDM) do not represent real emission cuts.[12] This analysis of the international experience with offsets concludes that "any [domestic or international] offset market of sufficient scale to provide substantial cost-control for a cap-and-trade program **will involve substantial issuance of credits that do not represent real emissions reductions**" (emphasis added).[13]

Similarly, a 2008 Government Accountability Office (GAO) report on offsets concludes that "the use of carbon offsets in a cap-and-trade system can undermine the system's integrity, given that it is not possible to ensure that every credit represents a real, measurable, and long-term reduction in emissions….[C]arbon offsets involve fundamental trade offs and may not be a reliable long-term approach to climate change mitigation."[14]

The bottom line is that ensuring offsets deliver emission reductions that are of the same quality as those achieved within the bounds of a cap-and-trade program is extremely difficult, if not impossible. Offsets that fail to meet key criteria – that they are real, additional, permanent, quantifiable, and enforceable – provide no environmental benefit, thus undermining the emissions cap. To fully understand the challenge posed by offsets, I will briefly review these criteria.

*Real*
A "real" emission reduction reduces emissions *in the aggregate* globally – that is, a program does not merely shift emissions from one facility, jurisdiction, or country to another. Consider a decision to reduce production at an industrial facility abroad or to protect a forest from development – both valid ways to reduce or sequester carbon dioxide. However, if the owner of the factory merely shifts production to another facility elsewhere, or if the developer merely levels a different forest, nothing has been gained. Such "leakage" of emissions benefits is a major problem because carbon dioxide is a global pollutant.

*Additional*
Additional emission reductions represent those that go beyond business as usual. They are reductions that would not have occurred but for the presence of offsets.

Determining additionality requires the development of accurate forecasts that predict what would have happened under business-as-usual conditions and then comparing them with the actual emission reductions achieved. The reality is that this process requires crystal ball-gazing. Consider a situation in which rising natural resource prices bring an industrial facility abroad to the verge of shutdown – a step that would reduce carbon dioxide emissions. A U.S. utility might agree to pay the factory owner if she shuts down the facility, thus generating credits that the utility can use to expand its own operations.

The key question in the above scenario becomes: Would the factory have shut down anyway in the absence of the compensation from the utility? If the answer is yes, no surplus emission reductions have been gained. Indeed, by allowing credits generated from an illusory emission reduction to be used to increase emissions from the power plant, the offsets program results in an *increase in overall emissions versus business as usual*.

Unfortunately, determining with certainty what emissions would have occurred in the absence of compensation is difficult, if not impossible. For this reason, additionality has been a major problem in the CDM, the world's largest carbon offset program. In its recent review of the program, the GAO commented, "This concept of additionality is fundamental to the credibility of the CDM because only projects that are additional will lower emissions beyond what would have occurred without the program. Accordingly, the parties to the protocol have implemented a rigorous project approval process with an extensive set of requirements to ensure that credits received through the CDM represent real and additional emission reductions. However, because additionality is based on projections of what would have occurred in the absence of the CDM, which are necessarily hypothetical, it is impossible to know with certainty whether any given project is additional."[15]

*Permanent*
Many efforts to reduce or sequester global warming emissions are, by their very nature, temporary. For instance, planting a forest absorbs carbon dioxide from the atmosphere, but it will eventually be released again when the trees die due to forest fire, pest infestation, or some other cause. Such temporary programs should only receive credit as offsets for the period in which they function to reduce net global warming emissions.

*Quantifiable*
The emission reductions delivered by an offset measure must be measurable using generally accepted and replicable techniques. Biological sequestration offset projects present particular challenges to quantify, since variations exist across tree species, ages, soil

conditions, geographic locations, and management practices.[16] Developing and implementing accounting standards would be time- and resource-intensive, with no foolproof guarantee of accuracy. In addition, quantification methods must identify and discount any emissions reductions that are shifted to other locations (leakage), that would have occurred anyway (non-additional), or that are temporary (non-permanent).

*Enforceable*
The Environmental Protection Agency (EPA) or another federal agency must be able to take enforcement action against entities that deliver fraudulent or illusory offsets, including actions affecting a project located in another nation. Third-party verification might play a role, but even then the government would need to create systems to watchdog the third parties, who are not elected or appointed officials and not directly accountable to the public.

Each of the above problems with offsets can be resolved or mitigated – but only at a price. The price is administrative complexity, bureaucracy, and high transaction costs that reduce the economic benefits of offsets.

**Offsets Delay America's Transition to Clean Energy**
Even if offsets were to deliver equivalent results in terms of reducing net global warming emissions, they would delay America's transition to a clean energy economy.

President Obama has explained that clean energy technologies are the wave of the future and that if we want America to be a leader in this emerging global market, we need to take action now. Last week, in his Address to the Joint Session of Congress, he stated, "We know the country that harnesses the power of clean, renewable energy will lead the 21st century. And yet, it is China that has launched the largest effort in history to make their economy energy efficient. We invented solar technology, but we've fallen behind countries like Germany and Japan in producing it. New plug-in hybrids roll off our assembly lines, but they will run on batteries made in Korea. Well I do not accept a future where the jobs and industries of tomorrow take root beyond our borders – and I know you don't either. It is time for America to lead again."[17]

A strong cap on global warming pollution provides an enormous opportunity for American businesses and industries to adjust to the true costs of goods and services, making our economy more efficient and spurring innovation and new technology. But to the extent that offsets are used to make reductions elsewhere instead, the opportunity to transform our industries at home is diminished.

*Job Creation*
A variety of studies have pointed to the job creation benefits of renewable energy, which could play a significant role in reducing global warming emissions. A study by the Renewable Energy Policy Project estimated that wind and solar power offer 40 percent more jobs per dollar spent than coal.[18] A 2008 study by the American Solar Energy Society estimated that America could create 21 million additional jobs in renewable energy and energy efficiency by 2030 through aggressive public policies to promote clean energy.[19] Investing in the technologies needed to reduce emissions domestically will create jobs here at home.

*Technology Development*
In addition to shifting job creation benefits elsewhere, the technological advancement that would result from the drive to reduce global warming emissions and move to a clean energy economy here at home also would be diminished with an offset program.

America has lost its role leading the development and deployment of clean energy technologies. For instance, solar electricity generation and water heating were invented in the United States but have been used to a much greater extent in Germany and China, respectively.

America should take full advantage of the opportunity to renew America's technological leadership and keep our energy industries at the forefront of global competitiveness.

*Innovation*
In addition to jobs and technology advancement, general innovation in the United States will be aided by avoiding the use of an offset program. Innovation is the discovery of new processes that increase the efficiency of economic production and has a similar effect to invention. A classic example of innovation is Henry Ford's mass production line, which enabled low-cost production at large scales. Innovation will help the American economy recover and remain at the forefront of global efficiency, but the effort could be stymied by an offset program that pushes innovation opportunities elsewhere.

**Offsets Reduce Co-Benefits of Cutting Fossil Fuel Use**
Offset programs can redirect the ancillary benefits that go along with reducing global warming pollution to other countries. These benefits include improved air quality, reduced health-damaging pollution, and improved energy security.

For example, a strategy to meet a carbon cap could involve improving the efficiency or decommissioning some carbon-intensive coal-fired power plants. Since coal combustion is a major source of other harmful pollutants, including mercury and particulate matter ("soot"), improving the efficiency or decommissioning the plant would yield important public health benefits.

A study by Resources for the Future estimated that a $25 per ton price on carbon dioxide from electricity generation (not allowing for offsets) would generate approximately $12-14 per ton of ancillary economic benefits through reduced public health expenditures and reduced need for utilities to invest in emission control equipment. The ancillary benefits were estimated to be about equal to the anticipated marginal cost of reducing carbon dioxide emissions. [20]

**Other Policies to Sequester Carbon in Forests and Soils**
At the same time, the worthwhile goals promoted by offset proponents can be achieved through other policy avenues without jeopardizing the ability to achieve the caps on pollution. First and foremost is the need to halt tropical deforestation, which contributes about 20 percent of worldwide global warming emissions.[21] Reducing emissions from deforestation and forest degradation in developing countries (REDD) must be a major component of the global effort to prevent warming from exceeding 2 degrees Celsius and thereby reducing the risks of dangerous global warming. Incentivizing farmers and land managers in the United States to sequester carbon dioxide in soils and forests also will be a critical part of the solution.

A set-aside of auction revenue is the best way to support these goals. The reductions would be *in addition* to the reductions required by capped sectors under the cap-and-trade program. Therefore, problems such as leakage and additionality would not risk jeopardizing our pollution-reduction goals and increasing net global emissions. These problems will be especially significant in the next 10 years, before many countries establish national programs with national emission baselines and before we have more experience with international carbon markets.

In the case of tropical deforestation, auction revenue would enable tropical countries to immediately reduce their carbon emissions from forest clearing. A fund to reduce tropical deforestation could be a very effective way to make large reductions in global warming emissions with relatively modest funding. According to the Union of Concerned Scientists, a few percent of total allowance value would generate an estimated $5 billion annually in 2020, and that amount would pay for reductions equivalent to 10 percent of U.S. 1990 emissions. If other countries contributed similar proportions of their allowance value (e.g., the European Commissions is recommending 5 percent), we could raise $20 billion annually in 2020, which could cut deforestation in half.[22]

**Parameters for Offset Programs if Included**

Because of their inherent risks and trade-offs, offsets should not be included in a federal climate program – at least not until the program has matured and proven effective.

*Strict Quantity Limits*

Nonetheless, if offsets are considered, the levels of the caps on pollution must be stringent enough – and the offsets limited enough – to minimize the impact that lower certainty emissions reductions have on our ability to achieve science-based pollution-reduction targets. Offsets should be strictly limited to no more than 5 percent of the allowances, as proposed by Representatives Dingell and Boucher in the early years of the offset program in their draft climate bill. Unlike in their bill, however, this percentage should not increase over time unless and until offsets can be proven to deliver equivalent results to actions taken within the bounds of a cap-and-trade program at least in terms of reducing net global warming emissions.

Even with rigorous safeguards to help ensure the quality of offsets, allowing large amounts of offsets in the program will create pressure on regulators over time to approve low integrity offset measures if higher quality offsets prove inadequate to meet demand.

*Strict Quality Limits*

An independent Federal Advisory Committee Act-charted Science Advisory Board should advise EPA in establishing and periodically reviewing the offset program, including both domestic and international offsets, to provide the highest quality offsets possible. This model has worked well in ensuring that EPA is using the best scientific and technical information to develop and review other Clean Air Act programs, such as the National Ambient Air Quality Standards, and should be a model for developing and maintaining a high quality offset program.

Congress must ensure that EPA requires any domestic and international offsets to meet conservative and rigorous criteria, including *financial additionally* – an independent audit to ensure that an offset program is breaking down a genuine market barrier preventing a

pollution reduction from occurring and giving credit only for the contribution of offset funding to the overall pollution reduction.

In addition, due to the inherent problems in determining additionality, Congress should discount offset credits. For example, with a discount rate of 30 percent, a project that is expected to reduce carbon dioxide by 100 metric tons would only receive 70 credits. While discounting cannot help screen out non-additional projects, it can help mitigate the environmental consequences of non-additional offsets.

Finally, if international offsets are permitted, there should be some conditionality on their use – such as gradually requiring more stringent baselines for project host countries or requiring countries to take "comparable action" by a date certain – that would enable the program to serve as a lever to encourage developing countries to substantially reduce their global warming emissions below business as usual.

**Conclusion**

The science is clear that deep cuts in global warming pollution are urgently needed if we hope to stave off dangerous global warming.

Offsets provide less-certain reductions in emissions, thus eroding the environmental integrity of the program and potentially jeopardizing our ability to achieve science-based reductions in emissions.

Offsets also delay the transition to clean technologies in capped sectors – at a time when President Obama is calling for transformational changes in our energy future.

Finally, offsets reduce the co-benefits of a carbon cap, including improved air quality, better energy efficiency, and increased economic output.

Because of their inherent risks and these trade-offs, offsets should not be included in a federal climate program – at least not until the program has matured and proven effective. If, however, offsets are included, the levels of the caps on pollution must be stringent enough – and the offsets limited enough – to minimize the impact that lower certainty emissions reductions have on our ability to achieve needed pollution cuts. The program also must be designed with great care, including establishing an independent Science Advisory Board to assist EPA in developing and periodically reviewing both domestic and international offsets and discounting offset credits to help mitigate the environmental consequences of non-additional offsets.

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