

# Who Pays for Climate Change?

## U.S. Taxpayers Outspend Private Insurers Three-to-One to Cover Climate Disruption Costs

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The Natural Resources Defense Council (NRDC) is an international nonprofit environmental organization with more than 1.4 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, San Francisco, Chicago, Livingston, and Beijing. Visit us at [www.nrdc.org](http://www.nrdc.org).

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## EXECUTIVE SUMMARY

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Despite the lengthy debate on the federal budget in Congress, climate change rarely gets mentioned as a deficit driver. Yet paying for climate disruption was one of the largest non-defense discretionary budget items in 2012. Indeed, when all federal spending on last year's droughts, storms, floods, and forest fires are added up, the U.S. Climate Disruption Budget was nearly \$100 billion.

Here's a startling reality: America's taxpayers paid three times what private insurers paid out to cover losses from extreme weather.

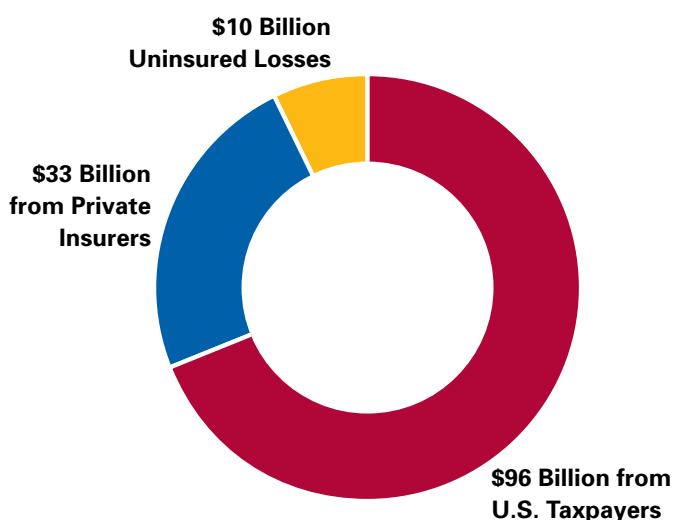
Here's another: The federal government spent more taxpayer money on the consequences of 2012 extreme weather than on education or transportation.

*Climate doesn't show up as a line item in the budget, but what NRDC calls the Climate Disruption Budget for 2012 is equal to one out of every six dollars spent on non-defense discretionary programs, making it the number-one item in that part of the federal budget.*

Overall, the insurance industry estimates that 2012 was the second-costliest year in U.S. history for climate-related disasters, with more than \$139 billion in damages.<sup>1</sup> But private insurers themselves covered only about 25 percent of these costs (\$33 billion<sup>2</sup>), leaving the federal government

and its public insurance enterprises to pay for the majority of the remaining claims. That reflects a major shift in liabilities with respect to climate change away from private insurers to public alternatives, a shift that began in earnest after the \$72 billion hit the industry took in 2005 from Hurricane Katrina.<sup>3</sup>

**Figure 1: Who Paid the Cost of Climate-Related Disasters in 2012?**



The insurance industry estimates that 2012 was the **second-costliest year in U.S. history** for climate-related disasters, with more than \$139 billion in damages. But **private insurers only covered about 25% of these costs**, leaving the federal government and its public insurance enterprises to pay for the majority of the remaining claims.

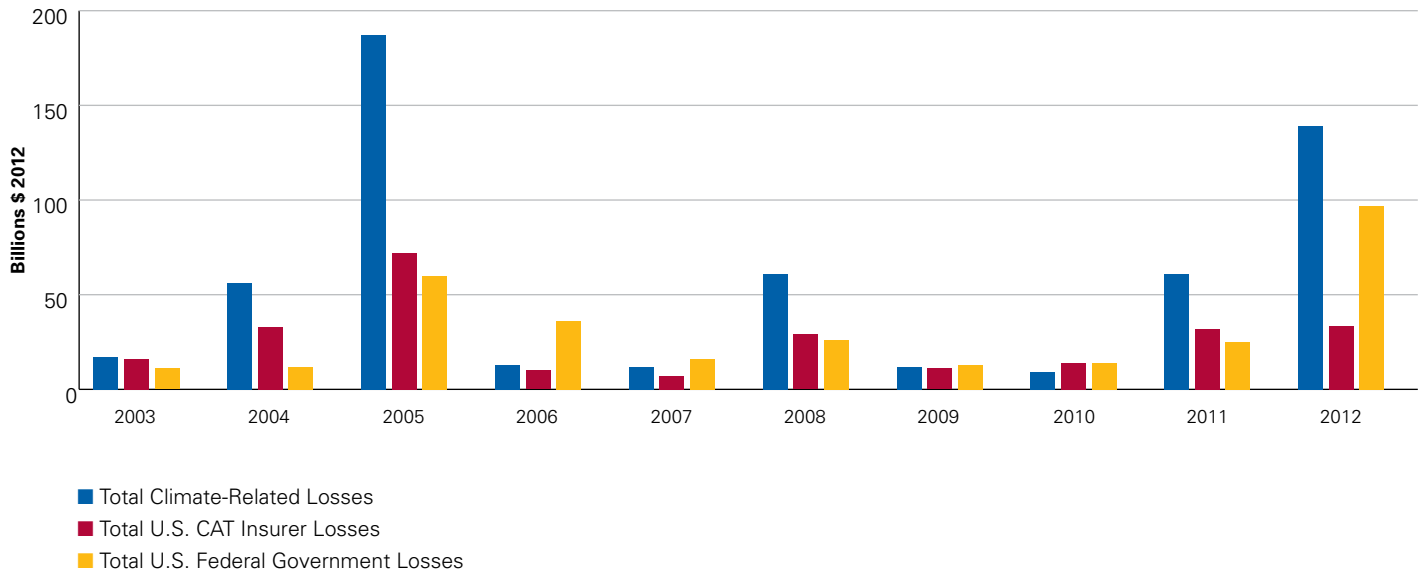
Source: AON Benfield, Artemis, NRDC estimates.

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IN 2012, THE FEDERAL GOVERNMENT SPENT **\$96 BILLION TO CLEAN UP THE DISASTROUS EFFECTS OF CLIMATE DISRUPTION**. THIS EXCEEDS FEDERAL SPENDING ON ALL OTHER NON-DEFENSE PROGRAMS LIKE EDUCATION AND TRANSPORTATION.

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**Figure 2: U.S. Climate Disruption Costs**



Source: CRS, AON Benfield, Towers Watson.

While it can be argued that some of these federal programs—such as forest fire prevention, crop insurance, flood coverage, and disaster preparedness and response—do offer wider benefits to the country, it should be noted that these liabilities have largely been assumed by the public sector due to a lack of private-sector alternatives.

In sum, the U.S. government paid more than three times as much as private insurers paid for climate-related disasters in 2012.

*As a result, federal spending on the consequences of extreme weather made worse by climate change far exceeded total spending aimed at solving the problem. In fact, it was eight times the Environmental Protection Agency's total budget and eight times total spending on energy.*<sup>4</sup>

At nearly \$100 billion, federal spending on the extreme weather events in 2012 exceeded even the largest non-defense discretionary “super category” used by the Office of Management and Budget to compile federal spending on general government functions across multiple departments and agencies, such as education, transportation, and housing (see Table 1).<sup>5</sup> The climate disruption budget for 2012 was equivalent to 16 percent of total federal non-defense discretionary spending.<sup>6</sup>

**Table 1: 2012 U.S. Federal Non-Defense Discretionary Budget (in Billions)**

Education, Training, Employment, and Social Services	\$95
Transportation	\$91
Housing Assistance and Other Income Security	\$65
Health	\$60
Veterans Benefits and Services	\$57
Administration of Justice	\$54
International Affairs	\$50
Natural Resources and Environment	\$40
Science, Space, and Technology	\$29
Energy	\$13
Other Non-Defense Discretionary	\$61
<b>Total FY2012 Non-Defense Discretionary Spending</b>	<b>\$616</b>
<b>Federal Climate Disruption Costs, CY2012 Impacts</b>	<b>\$96</b>

Source: CRS, OMB, NRDC estimates.

While the budget to pay for recovery from climate disruptions hit a record high in 2012 and is expected to continue to grow, the budget for programs to fight climate disruption—such as environmental enforcement, energy efficiency, clean energy vehicle research, and ARPA-E—suffered cuts of more than \$100 million in the “sequester” that went into effect in March and remain under continued pressure from the budget-cutting process.<sup>7</sup> And yet our nation’s climate plan is, in effect, to cut critical investments now for the sake of small, short-term deficit reductions and then send our children the tax bills to clean up the mess.

That’s colossally shortsighted.

## **CUTTING COSTS BY ADDRESSING CLIMATE CHANGE NOW**

Fortunately, there is much that the president can do to fight climate change without waiting for the current Congress to act. NRDC has developed a groundbreaking plan to use the Clean Air Act to make big reductions in carbon pollution from power plants, America’s largest source of global warming pollution. Our analysis shows that the EPA can set fair and flexible standards that cut power plant carbon pollution by 26 percent by 2020 and 34 percent by 2025 compared with 2005 levels.<sup>8</sup>

The approach includes an innovative provision that will drive investment in cost-effective energy efficiency, substantially reducing the cost of compliance, lowering electricity bills, and creating thousands of jobs across the country. Further, NRDC’s analysis shows that the benefits—in saved lives, reduced illnesses, and avoided climate change—far outweigh the costs, by as much as 15 times.

America can achieve its goal of reducing global warming pollution 17 percent by 2020 by curbing power plant pollution in combination with steps the administration has already taken, such as setting standards to cut carbon emissions from new cars in half by 2025,<sup>9</sup> and other steps the president has authority to pursue, such as curbing emissions of methane and hydrofluorocarbons (which trap heat even more effectively than carbon dioxide).<sup>10</sup> That means we don’t have to just accept an ever-increasing Climate Disruption Budget that our children will have to pay for. We can fight back with a more forward-looking approach, starting now.

# FEDERAL COSTS OF CLIMATE CHANGE

## GOVERNMENT COSTS RELATED TO STORMS AND FLOODS

### Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency (FEMA) provides relief to states following a major disaster declaration by the president. Congress provides two sources of FEMA funding: 1) Enacted Appropriations, which cover costs associated with “normal” disasters where outlays are less than \$500 million, and 2) Emergency Supplemental Appropriations, which cover costs from all federal agencies involved in disaster relief in excess of \$500 million.<sup>11</sup>

#### *FEMA: Enacted Appropriations*

Each year Congress provides funding to FEMA under the Disaster Relief Fund based on available funds, historical average disaster costs, outstanding recovery efforts, and possible fund reimbursements. On average, Congress

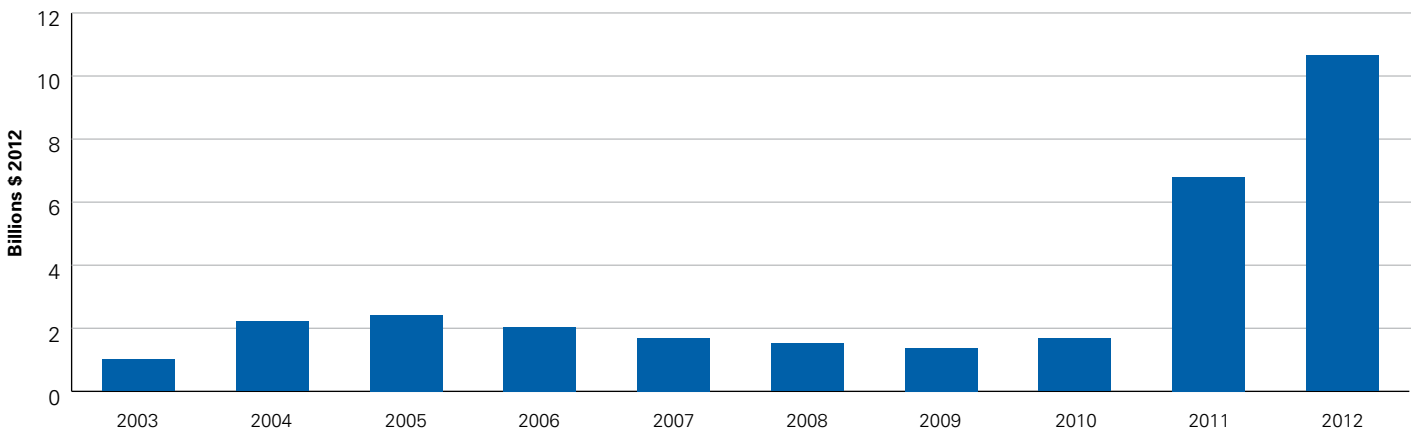
authorized about \$1.7 billion per year to pay for Enacted Appropriations through 2010, but this amount has risen substantially over the past two years to cover state-based programs and costs that exceeded the discretionary cap under the Budget Control Act.<sup>12</sup>

#### *Emergency Supplemental Appropriations*

Since 1989, Congress has passed emergency supplemental appropriations totaling in excess of \$410 billion 2012 dollars, with more than \$140 billion authorized over the past 10 years alone, largely due to the 2005 hurricane season (\$55.9 billion) and Hurricane Sandy (\$50.7 billion).<sup>13</sup>

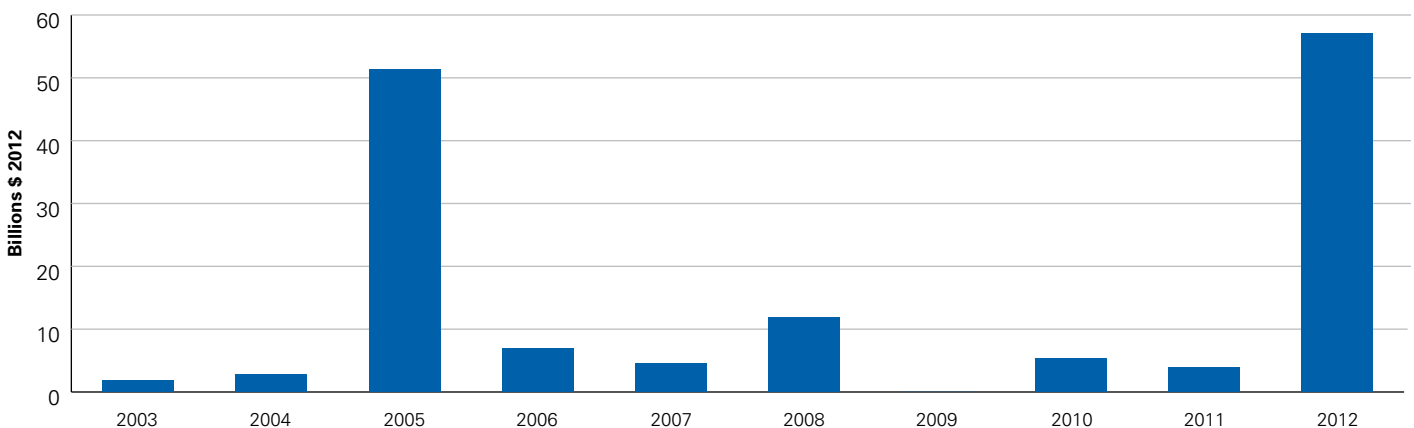
The funds from the Emergency Supplemental Appropriations are then allocated to the agencies involved in the recovery effort. In the case of Hurricanes Katrina, Rita, and Wilma, the Department of Homeland Security received 57 percent of emergency supplemental funds, followed by HUD (16 percent), DOD Army Corps of Engineers (13 percent), DOD (7 percent), and the Department of Transportation (3 percent).

**Figure 3: FEMA: Enacted Appropriations**



Source: CRS, FEMA.

**Figure 4: Emergency Supplemental Appropriations**



Source: FEMA.

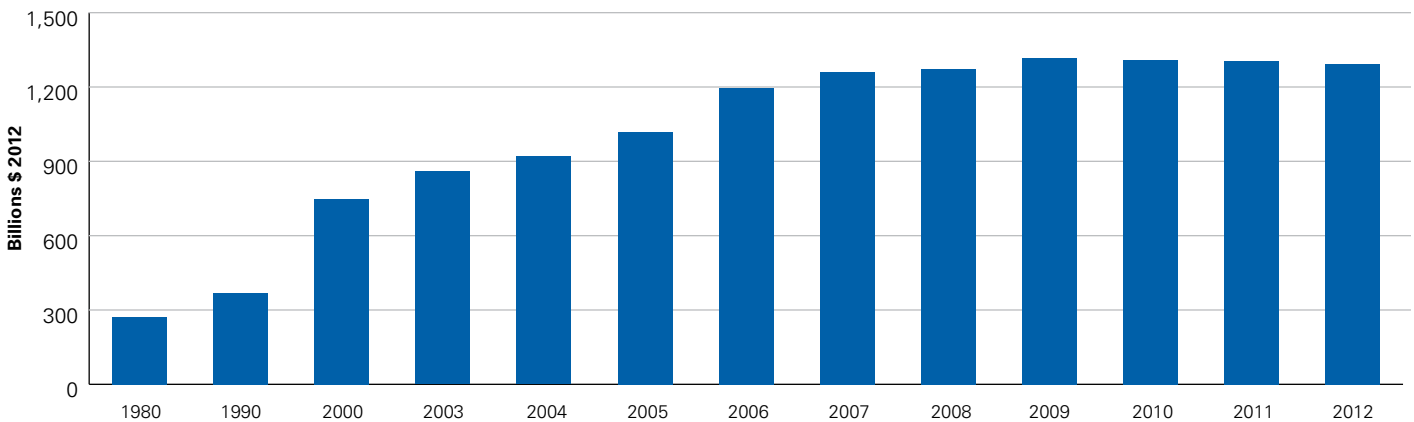
## National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) has nearly \$1.3 trillion in policies outstanding.<sup>14</sup>

The National Flood Insurance Program includes several state programs, such as the one for Florida (which has more than 2 million policyholders and a face value of \$475 billion), that had to be folded into the program as the rising cost of flooding was not being covered by private insurers.

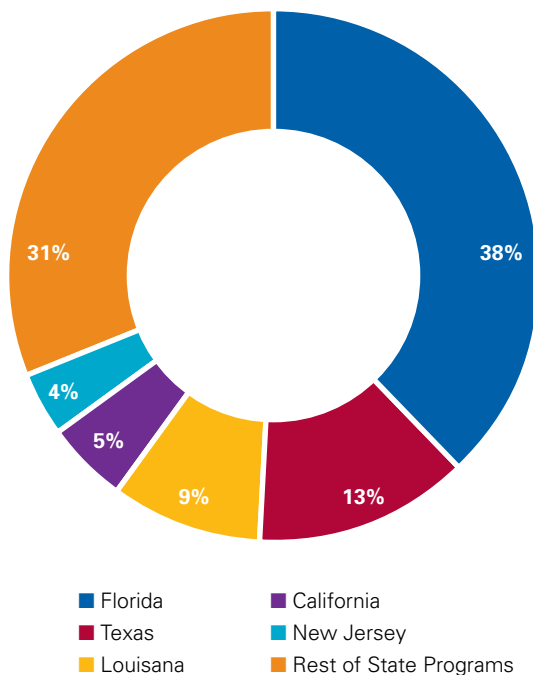
The National Flood Insurance Program has nearly doubled in size from \$692 billion to \$1,293 billion over the past decade as private insurers have continued to shy away from making bets against Mother Nature when it comes to floods. And while the federal government has picked up the slack in terms of coverage, it has had a tough time balancing the premiums that are paid in with the heavy losses it has sustained from recent climate-related events.

**Figure 5: Total Face Value of Coverage by the National Flood Insurance Program**



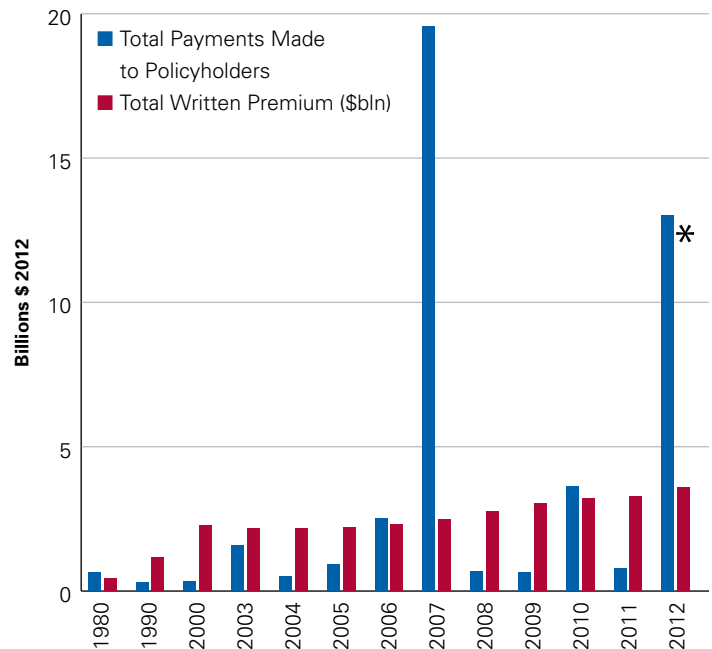
Source: CRS, FEMA.

**Figure 6: Percentage of National Flood Insurance Program Policies by State**



Source: NFIP.

**Figure 7: National Flood Insurance Program Payouts**



\*2012 estimated based on part-year data.

Source: CRS (as of Feb 6, 2013).

In fact, following an estimated \$13 billion in payouts to 140,000 policyholders from Hurricane Sandy, the program is more than \$30 billion in debt and has Congress scratching its head about what to do about it, since the private insurers have made it very clear this is not a business that they wish to be in. While Congress enacted reforms to the NFIP in 2012 intended to bring premiums up to actuarially accurate levels, the law continues to cap the annual increase in premiums, and it isn't clear when or if premiums will catch up to actual risk as it continues to rise due to climate change.

## GOVERNMENT COSTS RELATED TO DROUGHT

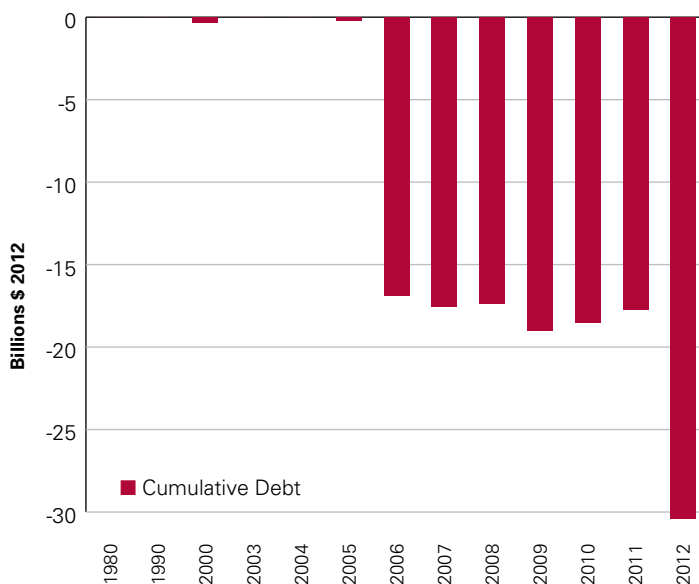
### Federal Crop Insurance Corporation (FCIC)

Overall, last year's drought cost the United States an estimated \$60 billion to \$100 billion, likely rivaling Hurricane Sandy recovery, which cost taxpayers \$60 billion. About \$16 billion of the drought-related costs were directly borne by U.S. taxpayers in the form of large federal crop insurance losses and higher government food purchase costs.<sup>15</sup>

Scientists will continue to debate the roles that climate change and natural variability played in last year's drought. Both undoubtedly contributed, but with the concentration of carbon dioxide in our atmosphere rapidly approaching 400 parts per million—more than 40 percent above natural levels—it's clear that the risks of severe droughts will continue to rise. That's because the extra heat trapped by carbon dioxide, methane, and similar pollutants evaporates water faster during dry weather and also leads to more intense storms when it's wet.<sup>16</sup>

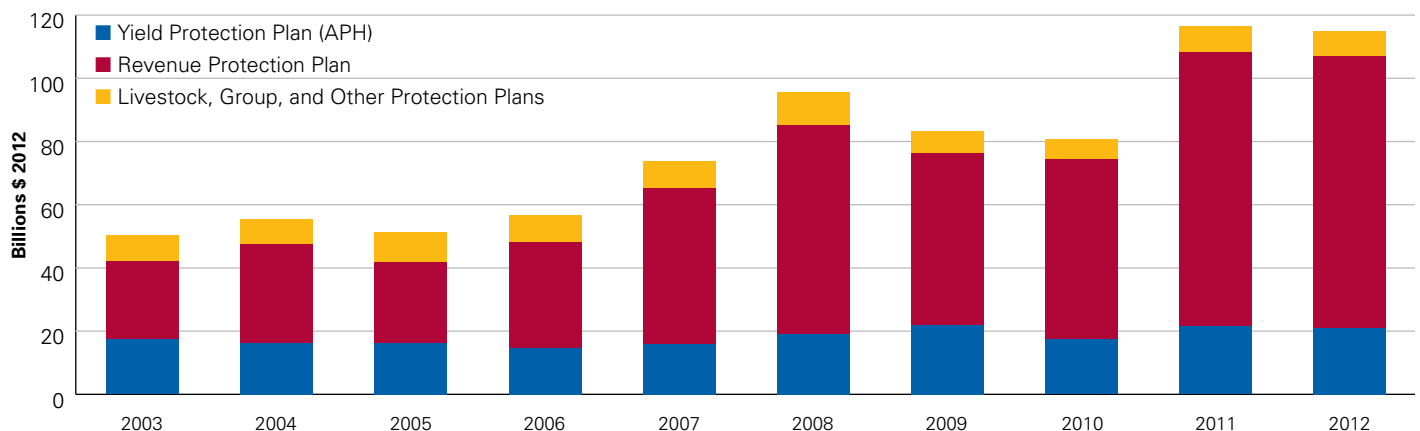
When it comes to drought, the Federal Crop Insurance Corporation (FCIC), administered by the U.S. Department of Agriculture's Risk Management Agency (RMA), ends up footing a big part of the bill. The FCIC allows farmers growing corn, cotton, soybeans, and wheat to purchase two main kinds of insurance that have been affected by the drought: yield-based insurance, which pays out relative to the farmer's "normal" historical output, and revenue-based insurance, which pays out relative to a projected price and yield.

**Figure 8: U.S. Treasury Borrowing Under National Flood Insurance Program**



Source: CRS (as of Feb. 6, 2013).

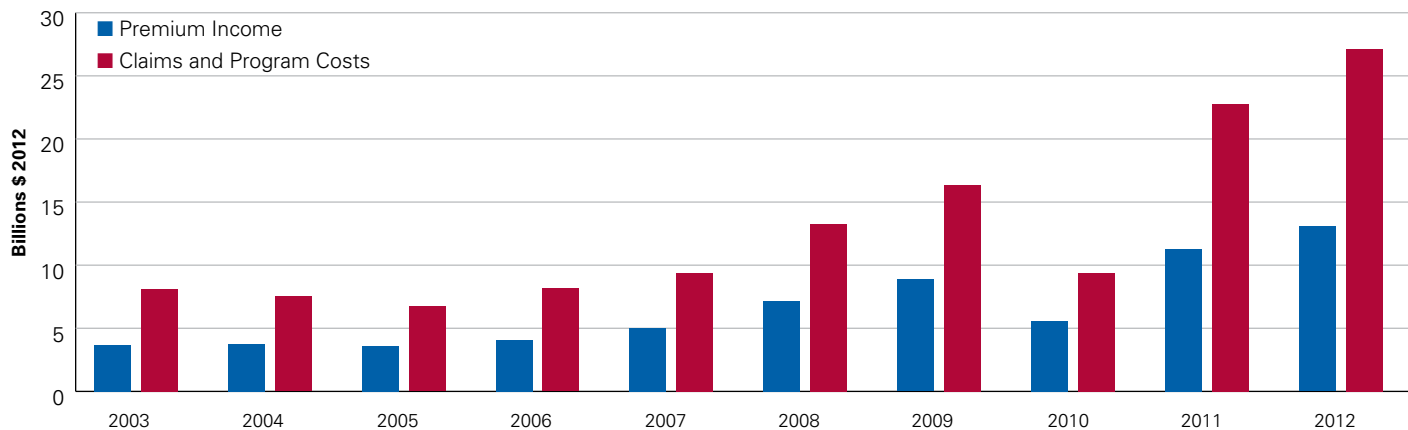
**Figure 9: Liability of Crop Insurance Plans Sold by the USDA**



Source: USDA Risk Management Agency.



**Figure 10: Federal Crop Insurance Financial Statement of Costs and Revenue**



Source: USDA Risk Management Agency.

While both protection plans have increased in recent years, the face value of revenue protection insurance policies has risen by more than a factor of four over the past decade, accounting for \$86 billion, or 75 percent, of the FCIC’s total liabilities of \$115 billion.<sup>17</sup>

As the severity and duration of droughts have intensified over the past decade, the FCIC program has suffered from the same problems plaguing the National Flood Insurance Program—increases in premiums being paid in have not kept pace with increases in claims being paid out. In 2011 alone, smaller crop yields related to drought, rising incidents of insects and disease, and bad weather resulted in the Federal Crop Insurance Corporation losing \$11 billion, with losses this past year rising to \$14 billion.<sup>18</sup>

### Food Costs

In addition to the lost output and earnings associated with the drought, U.S. consumers are also expected to pay climate costs in the form of higher grocery bills in 2013 due to the nine- to ten-month lag between prices on the farm and prices at the grocery store.

Using Economic Research Service (ERS) estimates for a 3.5 percent rise in “food at home” prices and a 3 percent rise in “food away from home” prices, Americans’ grocery bills are expected to rise by an inflation-adjusted \$24 billion in 2013, due largely to the impacts of this past year’s drought.<sup>19</sup> While most of these costs are being paid directly by consumers, the U.S. government is expected to cover about \$2.3 billion of these costs directly as the country’s single-largest purchaser of food.

**Table 2: Estimated Increase in Food Costs Attributable to the 2012 Drought**

Total U.S. Food Expenditure Estimate 2013	\$1,381 billion
Food Price Index Forecast 2013 (source: ERS)	3.3%
Consumer Price Index Forecast 2013 (source: U.S. Federal Reserve)	1.5%
Inflation-Adjusted Increase in Food Prices Attributable to 2012 Drought	1.8%
Estimated \$ Value of Inflation-Adjusted Increase in Food Prices Attributable to 2012	\$24 billion
Estimated \$ Value of Cost Increase Paid by Government Under Various Programs	\$2.3 billion

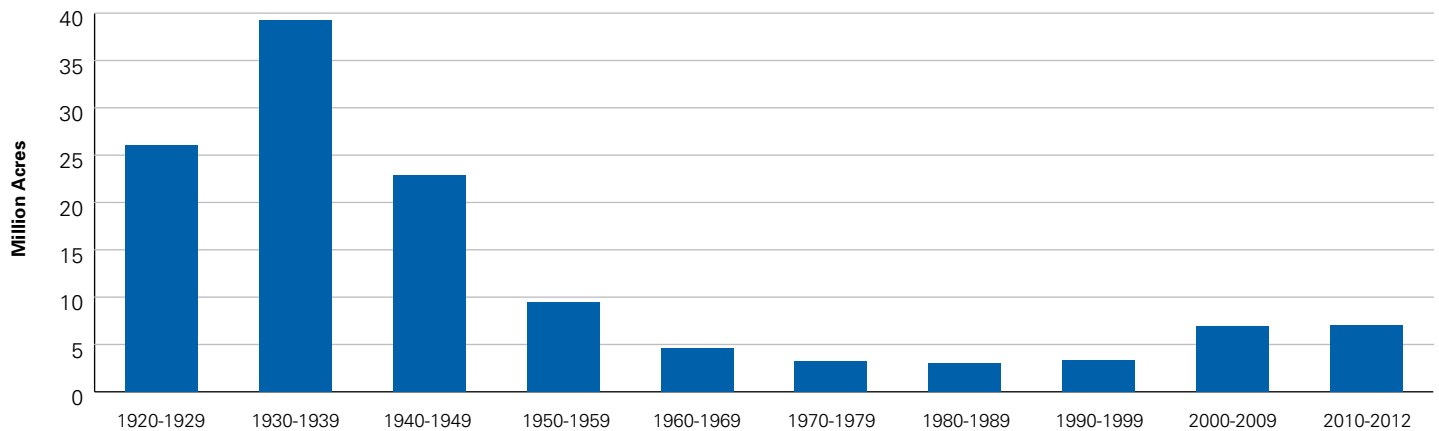
When these higher food costs are added to the estimated \$14 billion in losses by the FCIC, total taxpayer losses from this past year’s scorching drought are expected to exceed \$16 billion.

## GOVERNMENT COSTS RELATED TO FOREST FIRES

The Forest Service (FS) and the Department of the Interior (DOI) are responsible for protecting most federal lands from wildfires. The Forest Service was created in 1905 with an early focus on halting wildfires. Its efforts were largely successful

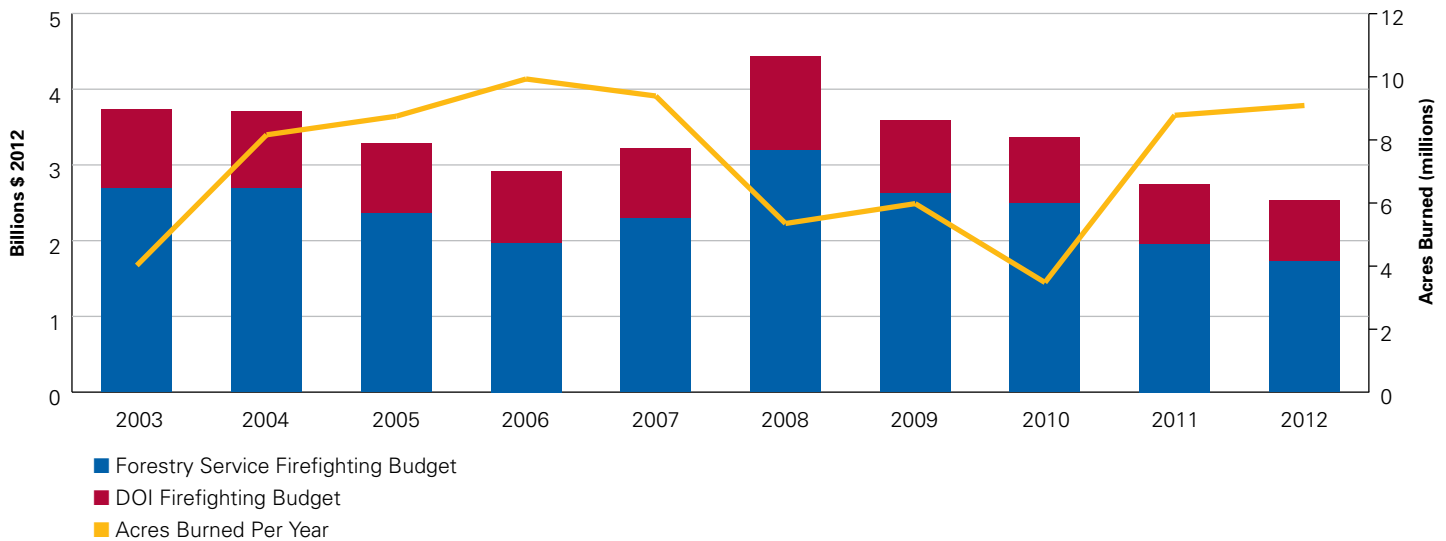
early on, but the costs of wildfire prevention have risen in the past decade due to drought conditions, beetle infestation, human interaction, and past suppression in fire-dependent ecosystems. While increased budgets for fire prevention helped reduce acres burned between 2007 and 2010, total area burned rose back above 9 million acres in 2012.<sup>20</sup>

**Figure 11: Average Annual Acreage Burned by Decade**



Source: CRS, Wildfire Today.

**Figure 12: Wildfire Prevention Budgets and U.S. Acreage Burned**



Source: Forest Service, Department of Interior.

## CONCLUSION

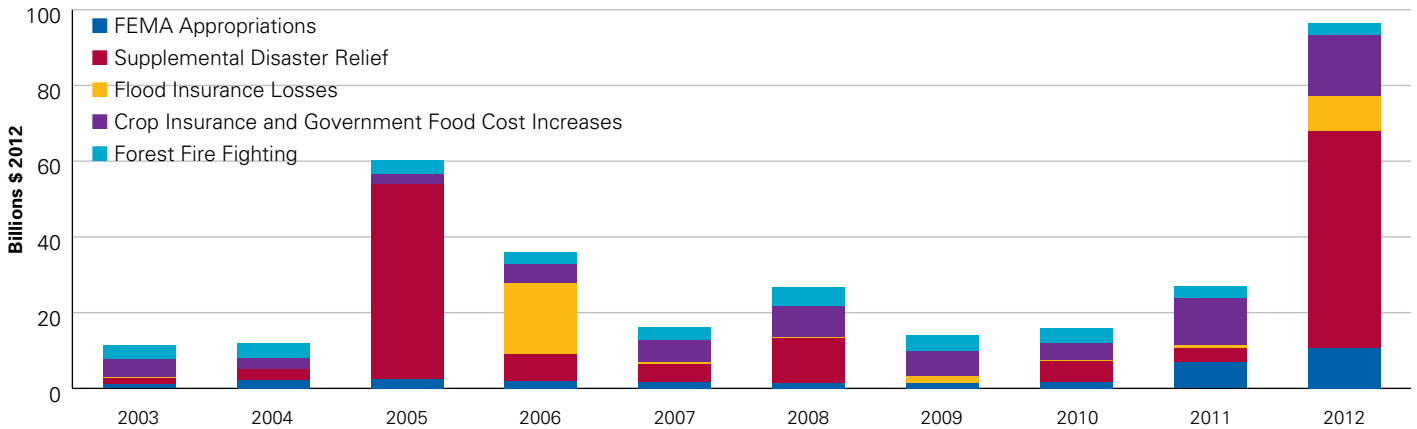
Taken together, the costs of disaster recovery, flood insurance, crop insurance, and forest firefighting represent a major expenditure in U.S. federal budgets, reaching an all-time high of \$96 billion in 2012.

Increases in these costs due to climate change not only damage the economy and heighten uncertainty with respect to investment, but they also crowd out spending on other government programs. Indeed, if these losses were accounted

for as a line item in the federal budget, they would be equivalent to 16 percent of all non-defense discretionary spending in fiscal year 2012—more than we spend on transportation or education each year.

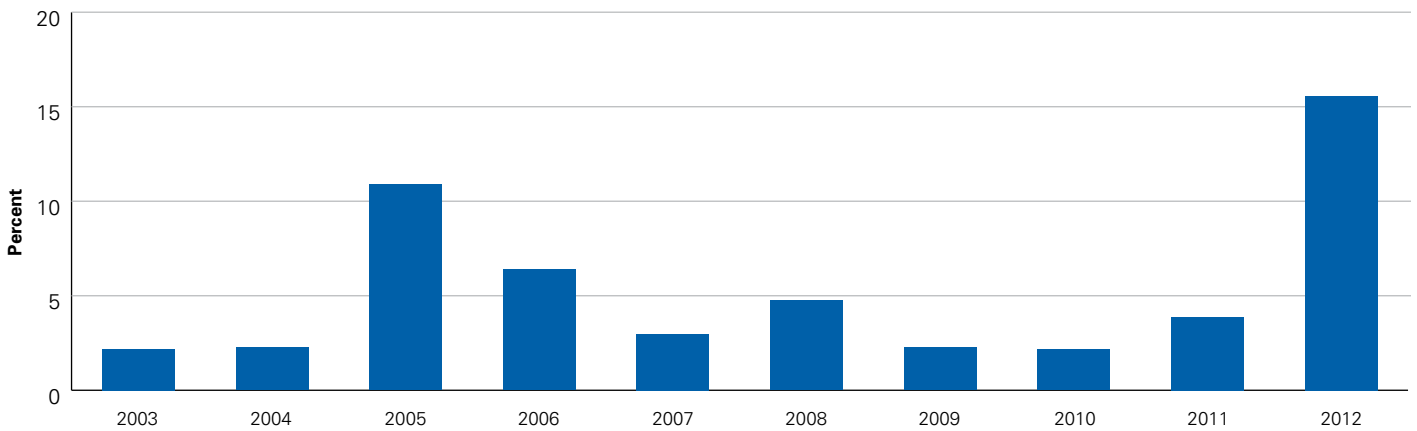
Furthermore, when these climate-related costs are compared to total costs paid by the insurance industry for climate-related disasters it is clear that the U.S. government is now paying far more in preparedness and insurance costs than the entire insurance industry combined by a factor of three.

**Figure 13: Climate Change Costs of U.S. Federal Government**



Source: USDA, FEMA, DOI, Forestry Service, ERS.

**Figure 14: Climate Disruption Costs as a Share of Non-Defense Discretionary Spending**



Source: OMB, FRED, BEA, USDA, FEMA, CRS.

While some of these federal insurance programs offer wider benefits to the country, it should be noted that these liabilities have largely been assumed by the public sector due to a lack of private-sector alternatives. The true scorekeepers of climate risk—the insurance industry—are withdrawing from climate-related product lines, and the federal government is spending far more on responding to extreme weather than on preventing it.

Fortunately, there is much President Obama can do to fight climate change without waiting for Congress to pass new legislation. Regulating emissions from existing power plants, emphasizing energy efficiency, and strengthening implementation of the Clean Air Act will put us on the right track.

## How to Cut Carbon Pollution and Relieve Americans of the Burden of the “Climate Disruption Tax”



NRDC's report *Using the Clean Air Act to Sharply Reduce Pollution from Existing Power Plants* outlines a road map for cutting carbon emissions from existing power plants by 26 percent by 2020. Such reductions will chip away at the costs Americans pay for climate disruption. Read our plan: <http://www.nrdc.org/air/pollution-standards>

## Endnotes

- 1 [http://thoughtleadership.aonbenfield.com/Documents/20130124\\_if\\_annual\\_global\\_climate\\_catastrophe\\_report.pdf](http://thoughtleadership.aonbenfield.com/Documents/20130124_if_annual_global_climate_catastrophe_report.pdf); <http://www.nrdc.org/globalwarming/files/ClimateDisruptionTax.pdf>.
- 2 Towers Watson State of the Reinsurance Market – Confex Pg. 13; <http://www.artemis.bm/blog/2013/03/25/pcs-re-survey-leaves-hurricane-sandy-loss-estimate-at-18-75-billion/>.
- 3 Ibid.
- 4 Tables 4.1 and 8.7, <http://www.whitehouse.gov/omb/budget/Historicals>.
- 5 This figure includes budget authority that will result in spending in fiscal year 2012, 2013, and possibly future years for the programs in question addressing extreme weather in calendar year 2012, and not outlays for fiscal year 2012.
- 6 Table 8.7. <http://www.whitehouse.gov/omb/budget/Historicals>.
- 7 [http://op.bna.com/env.nsf/id/avio-94wqlx/\\$File/Energy%20Letter-February%20Sequester%20Hearing.pdf](http://op.bna.com/env.nsf/id/avio-94wqlx/$File/Energy%20Letter-February%20Sequester%20Hearing.pdf).
- 8 <http://www.nrdc.org/air/pollution-standards/>.
- 9 [http://switchboard.nrdc.org/blogs/rhwang/clean\\_car\\_standards\\_shows\\_way.html](http://switchboard.nrdc.org/blogs/rhwang/clean_car_standards_shows_way.html).
- 10 <http://www.wri.org/publication/can-us-get-there-from-here>.
- 11 <http://www.fas.org/sgp/crs/misc/R40708.pdf>; [http://www.fema.gov/pdf/about/budget/fema\\_fy2013\\_bib.pdf](http://www.fema.gov/pdf/about/budget/fema_fy2013_bib.pdf).
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- 13 <http://www.fas.org/sgp/crs/homsec/R41981.pdf>; <https://www.fas.org/sgp/crs/misc/R42869.pdf>.
- 14 <http://www.fas.org/sgp/crs/misc/R42850.pdf>.
- 15 [http://switchboard.nrdc.org/blogs/dlashof/extreme\\_drought\\_is\\_extremely\\_e.html](http://switchboard.nrdc.org/blogs/dlashof/extreme_drought_is_extremely_e.html).
- 16 <http://www.climate-science-watch.org/2013/04/12/drought-study-misses-underlying-climate-connections/>.
- 17 <http://www.usda.gov/oig/webdocs/05401-0002-11.pdf>.
- 18 <http://www.rma.usda.gov/aboutrma/budget/fycost2003-12.pdf>.
- 19 <http://www.ers.usda.gov/data-products/food-price-outlook.aspx#.UWtYlrXqnTo>.
- 20 <http://www.fas.org/sgp/crs/misc/RL30755.pdf>; <http://www.fas.org/sgp/crs/misc/RL33990.pdf>; <http://wildfiretoday.com/2012/11/23/2012-third-highest-number-of-wildfire-acres-burned/>.



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