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and Nia Robinson

A Climate of Change

African Americans, Global Warming, and
a Just Climate Policy for the U.S.

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Environmental Justice and Climate Change Initiative
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(in alphabetical order)

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EXECUTIVE SUMMARY

A CLIMATE OF CHANGE

AFRICAN AMERICANS, GLOBAL WARMING, AND A JUST CLIMATE POLICY FOR THE U.S.

Everywhere we turn, the issues and impacts of climate change confront us. One of the most serious environmental threats facing the world today, climate change has moved from the minds of scientists and offices of environmentalists to the mainstream. Though the media is dominated by images of polar bears, melting glaciers, flooded lands, and arid deserts, there is a human face to this story as well.

Climate change is not only an issue of the environment; it is also an issue of justice and human rights, one that dangerously intersects race and class. All over the world people of color, Indigenous Peoples and low-income communities bear disproportionate burdens from climate change itself, from ill-designed policies to prevent it, and from side effects of the energy systems that cause it. *A Climate of Change* explores the impacts of climate change on African Americans, from health to economics to community, and considers what policies would most harm or benefit African Americans—and the nation as a whole.

African Americans are thirteen percent of the U.S. population and on average emit nearly twenty percent less greenhouse gases than non-Hispanic whites per capita. Though far less responsible for climate change, African Americans are significantly more vulnerable to its effects than non-Hispanic whites. Health, housing, economic well-being, culture, and social stability are harmed from such manifestations of climate change as storms, floods, and climate variability. African Americans are also more vulnerable to higher energy bills, unemployment, recessions caused by global energy price shocks, and a greater economic burden from military operations designed to protect the flow of oil to the U.S.

Climate Justice: The Time Is Now

Ultimately, accomplishing climate justice will require that new alliances are forged and traditional movements are transformed. An effective policy to address the challenges of global warming cannot be crafted until race and equity

are part of the discussion from the outset and an integral part of the solution. This report finds that:

Global warming amplifies nearly all existing inequalities. Under global warming, injustices that are already unsustainable become catastrophic. Thus it is essential to recognize that all justice is climate justice and that the struggle for racial and economic justice is an unavoidable part of the fight to halt global warming.

Sound global warming policy is also economic and racial justice policy. Successfully adopting a sound global warming policy will do as much to strengthen the economies of low-income communities and communities of color as any other currently plausible stride toward economic justice.

Climate policies that best serve African Americans also best serve a just and strong United States. This paper shows that policies well-designed to benefit African Americans also provide the most benefit to all people in the U.S.

Climate policies that best serve African Americans and other disproportionately affected communities also best serve global economic and environmental justice. Domestic reductions in global warming pollution and support for such reductions in developing nations financed by polluter-pays principles provide the greatest benefit to African Americans, the peoples of Africa, and people across the Global South.

A distinctive African American voice is critical for climate justice. Currently, legislation is being drafted, proposed, and considered without any significant input from the communities most affected. Special interests are represented by powerful lobbies, while traditional environmentalists often fail to engage people of color, Indigenous Peoples, and low-income communities until after the political playing field has been defined and limited to conventional environmental goals.

A strong focus on equity is essential to the success of the environmental cause, but equity issues cannot be adequately addressed by isolating the voices of communities that are disproportionately impacted. Engagement in climate change policy must be moved from the White House and the halls of Congress to social circles, classrooms, kitchens, and congregations.

The time is now for those disproportionately affected to assume leadership in the climate change debate, to speak truth to power, and to assert rights to social, environmental and economic justice. Taken together, these actions affirm a vital truth that will bring communities together: **Climate Justice is Common Justice.**

African Americans and Vulnerability

In this report, it is shown that African Americans are disproportionately affected by climate change.

African Americans Are at Greater Risk from Climate Change and Global Warming Co-Pollutants

- The six states with the highest African American population are all in the Atlantic hurricane zone, and are expected to experience more intense storms resembling Katrina and Rita in the future.
- Global warming is expected to increase the frequency and intensity of heat waves or extreme heat events. African Americans suffer heat death at one hundred fifty to two hundred percent of the rate for non-Hispanic whites.
- Seventy-one percent of African Americans live in counties in violation of federal air pollution standards, as compared to fifty-eight percent of the white population. Seventy-eight percent of African Americans live within thirty miles of a coal-fired power plant, as compared to fifty-six percent of non-Hispanic whites.
- Asthma has strong associations with air pollution, and African Americans have a thirty-six percent higher rate of incidents of asthma than whites. Asthma is three times as likely to lead to emergency room visits or deaths for African Americans.
- This study finds that a twenty-five percent reduction in greenhouse gases—similar to what passed in California and is proposed in major federal legislation—would reduce infant mortality by at least two percent, asthma by at least sixteen percent, and mortality from particulates by at least 6,000 to 12,000 deaths per year. Other estimates have run as high as 33,000 fewer deaths per

year. A disproportionate number of the lives saved by these proposed reductions would be African American.

African Americans Are Economically More Vulnerable to Disasters and Illnesses

- In 2006, twenty percent of African Americans had no health insurance, including fourteen percent of African American children—nearly twice the rate of non-Hispanic whites.
- In the absence of insurance, disasters and illness (which will increase with global warming) could be cushioned by income and accumulated wealth. However, the average income of African American households is fifty-seven percent that of non-Hispanic whites, and median wealth is only one-tenth that of non-Hispanic whites.
- Racist stereotypes have been shown to reduce aid donations and impede service delivery to African Americans in the wake of hurricanes, floods, fires and other climate-related disasters as compared to non-Hispanic whites in similar circumstances.

African Americans Are at Greater Risk from Energy Price Shocks

- African Americans spend thirty percent more of their income on energy than non-Hispanic whites.
- Energy price increases have contributed to seventy to eighty percent of recent recessions. The increase in unemployment of African Americans during energy-caused recessions is twice that of non-Hispanic whites, costing the community an average of one percent of income every year.
- Reducing economic dependence on energy will alleviate the frequency and severity of recessions and the economic disparities they generate.

African Americans Pay a Heavy Price and a Disproportionate Share of the Cost of Wars for Oil

- Oil company profits in excess of the normal rate of profit for U.S. industries cost the average household \$611 in 2006 alone and are still rising.
- The total cost of the war in Iraq borne by African Americans will be \$29,000 per household if the resulting deficit is financed by tax increases, and \$32,000 if the debt is repaid by spending cuts. This is more than three times the median assets of African American households.

A Clean Energy Future Creates Far More Jobs for African Americans

- Fossil fuel extraction industries employ a far lower proportion of African Americans on average compared to other industries. Conversely, renewable electricity generation employs three to five times as many people as comparable electricity generation from fossil fuels, a higher proportion of whom are African American.
- Switching just one percent of total electricity generating capacity per year from conventional to renewable sources would result in an additional 61,000 to 84,000 jobs for African Americans by 2030.
- A well-designed comprehensive climate plan achieving emission reductions comparable to the Kyoto Protocol would create over 430,000 jobs for African Americans by 2030, reducing the African American unemployment rate by 1.8 percentage points and raising the average African American income by 3 to 4 percent.

Combat Racism for Healthy, Efficient Communities

- Racism, both institutionalized and individual, is a driver of sprawl, inefficient housing, and irrational transportation policy.
- The senseless and wasteful energy, transportation, and housing policies that drive up U.S. energy use and

greenhouse gas emissions also damage the physical, environmental and economic health of the African American community.

- Because racism causes bad climate policy, the two problems can not be solved separately, but only together.
- Historically and currently, struggles of relatively powerless people to be free from environmental burdens have been catalysts for essential breakthroughs in environmental policy that benefit everyone. This tendency is clear in the climate arena as well.

Different Approaches to Reducing Greenhouse Gas Emissions Have Very Different Impacts on African Americans and on the U.S. Economy

This paper examines several emission reduction scenarios, including an offset-oriented scenario, a cap-and-trade scenario in which emission rights are given away free to large polluters, and two polluter-pays scenarios—“cap-and-dividend,” in which emission rights are transferred to the people equally on a per capita basis; and the “Climate Asset Plan,” in which a charge on pollution is used to eliminate the cost burden on low and moderate income households, finance energy efficiency and renewable energy, and provide a cash benefit or tax reduction to all households.

ES Table 1. Alternative Approaches to Implementing a Polluter-Pays System

Criteria	Instrument		
	Pollution Tax	Emission Fee	Auctioned Allowance
Political Difficulty	High	Medium	Medium
Enforcement Resources	High	Low	Low
Enforcement Cost	Low	Moderate	Low (upstream) Very high (downstream)
Constitutional or Procedural Limits	Severe in some states; low at national level	Moderate	Low
Limits on Revenue or How Money Can Be Spent	No	Yes	No
Guaranteed Emission Limit	No	No	Yes, unless a “safety valve” or other policy is implemented
Potential for Price Spikes/Shocks	No	No	High, unless borrowing is allowed
Evasion/Enforcement Problems	Low	Moderate	Potentially high if trading or offsets allowed
Prevents Local Pollution Hot Spots	No	No	No

FIGURE ES 1: Cap and Trade Scenario: The Burden of a \$50/tonne CO₂ Charge as a Share of Expenditures by Race and Income

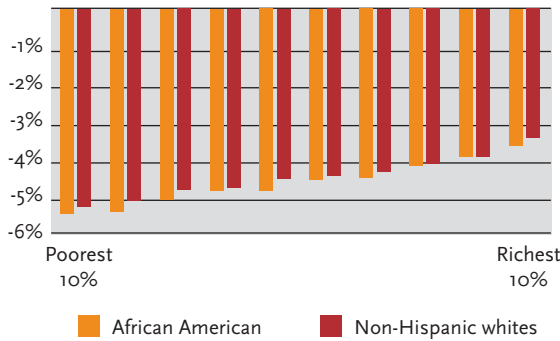


FIGURE ES 2: Equal Per Capita Payment Scenario: Benefits and Burdens of \$50/tonne CO₂ Charge

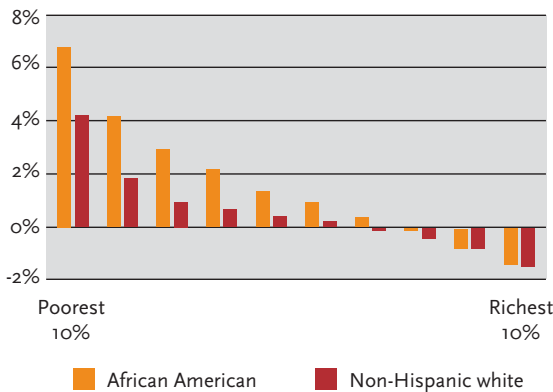
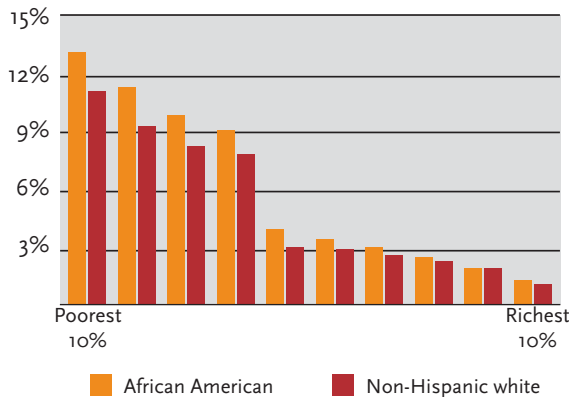


FIGURE ES 3: Climate Asset Plan Scenario: Benefits of a \$50/tonne CO₂ Charge



The no-domestic-reductions (i.e., offset) scenario imposes little direct economic cost, though the environmental cost is largest because the emission reductions it posits can not be assured.

The three graphs above show the distribution of burdens and benefits for the solutions that do have significant economic impacts, from top to bottom. They show: the

cap-and-trade, cap-and-dividend, and Climate Asset Plan scenarios, respectively.

As the graphs show, under cap-and-trade all households lose, low-income households lose most, and African Americans lose more than non-Hispanic whites in every income class. In the cap-and-dividend scenario, all but the highest-income households are net winners, and African American households gain more or lose less than non-Hispanic whites in every income category. This option increases average African American income by about two percent. Under the Climate Asset Plan, all households are net winners as the increase in energy cost is mitigated through energy efficiency. Low-income households and the average African American household both gain about twice as much as under the cap-and-dividend scenario.

The polluter-pays alternative can be implemented in a variety of ways, including a tax, fee, or allowance auction. Each has its advantages and disadvantages as discussed in this paper.

Any emissions reductions achieved by U.S. climate policy can be magnified or reduced by global effects. On one hand, the effectiveness of U.S. policies promoting the development of new clean technologies is increased many times over when these technologies are exported to rapidly growing developing nations. On the other, policies that limit emissions from the production of pollution-intensive goods (like steel and cement) can be undercut if domestic production is reduced and the same goods are imported. This is what environmentalists call “leakage,” and it happens when emissions from foreign production offset any reduction of domestic emissions. Leakage can be prevented if imports and exports are treated by law as though they carried their emissions with them (i.e., consumption-based accounting), so that the U.S. accepts responsibility for all the emissions caused by U.S. consumption.

Perhaps the most important findings of this study are that:

- Widespread economic and environmental impacts tend to have concentrated or amplified effects on African Americans;
- Over a broad range of policy options, the policies that are best for African Americans are also best for the majority of people living in the U.S.; and
- Policies that are worst for African Americans are also worst for the majority.

INTRODUCTION

CLIMATE CHANGE AT THE INTERSECTION OF RACE AND CLASS

CONTENTS

6. African Americans Are Less Responsible for Global Warming
7. Disparities at the Global Level
8. Vulnerability to Energy Price Increases
9. Notes

Global warming has emerged, not only as one of the most serious environmental threats facing the world today, but also as a major threat to people of color in America and around the world. It is now essentially certain that warming is occurring, as evidenced by the melting of glaciers and ice caps, the rising temperature of the seas, and the predicted increase in droughts and storms around the world.¹ In 2008, except for a few industry hired guns, there is unanimous consensus among the world's scientists that global warming is real and that the worst is yet to come. African Americans and people of color worldwide bear the brunt of this climatic shift.

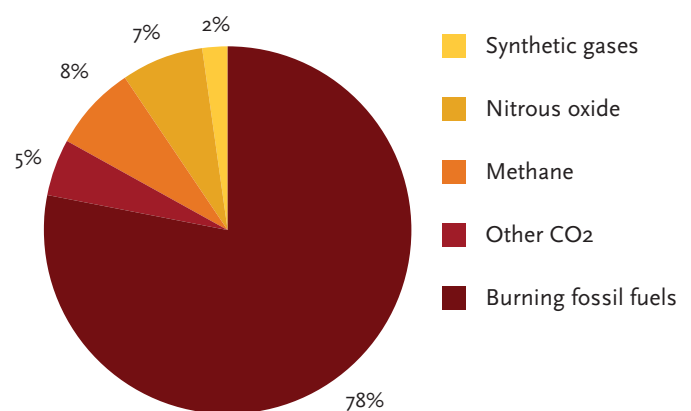
But global warming is not simply an environmental issue. It is an issue of justice and human rights at the intersection of race and class. Global warming will affect transportation policy, energy policy, health policy, labor policy, and even military policy: no area of public life is unaffected. Because of the United States' historic legacy of slavery, Jim Crow, and institutional racism, African American families and communities are highly vulnerable to the whole range of problems caused by global warming including the potential for climate change policy that continues and extends this legacy. Problems of scarce household resources and lack of access to community services will be exacerbated as these communities are increasingly affected.

This report shows that there is a disproportionate burden on African Americans from heat deaths; floods, fires, and other climate-related disasters; tropical storms like Katrina and Rita; and economic disruption of various sorts.

African Americans are less responsible for global warming, with average household emissions of greenhouse gases that are nearly twenty percent lower than that of non-Hispanic whites. At the same time, African American communities are also more vulnerable to the consequences of short-sighted energy policies that are responsible for maintaining the high dependence on fossil fuels (coal, oil, and natural gas), particularly given racially motivated placement of fossil fuel and petrochemical facilities. These policies cause the U.S. to be one of the world's worst global warming polluters, and lead to health, economic, and environmental impacts both from warming itself and from associated air pollution. They also include a range of non-environmental costs ranging from higher energy bills to unemployment from recessions caused by global energy price shocks to wars designed to protect oil company interests abroad. This paper will demonstrate that, on average, African American households are significantly more vulnerable to all of these harms than non-Hispanic white households.

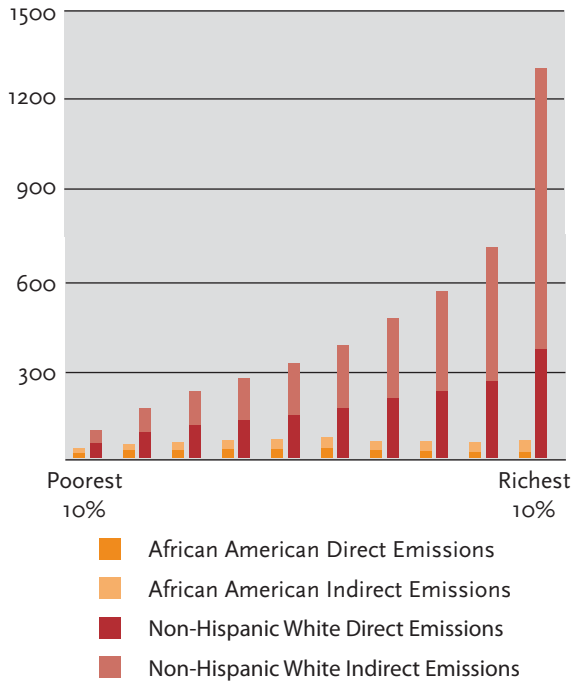
The final sections of this report describe the essential elements of a just domestic climate policy. It finds, first, that specific policies to promote racial and economic justice are essential to achieving cuts in global warming pollution that are rapid, efficient, fair, and equitable.

FIGURE 1: U.S. Global Warming Pollution



Source: EPA, *Inventory of Greenhouse Gas Emissions and Sinks: 1990-2006 (2008)*

FIGURE 2: Direct and Indirect CO₂ Emissions for U.S. Non-Hispanic Whites and African Americans by Decile (Million Metric Tons)



Second, that a well-designed climate and energy policy—one that is financed by polluters—can rapidly substitute energy efficiency and new clean energy technologies for polluting energy sources while strengthening the economy, creating jobs, improving income distribution, compensating low- and moderate-income households for any net burden, and improving the relative economic position of African Americans. This report finds that such a policy is best, not only for the African American community, but for the economy and the nation as a whole.

A Climate of Change is the first in a series that the Environmental Justice and Climate Change Initiative (EJCC) will publish in partnership with members of the EJCC coalition. This first report builds on *African Americans and Climate Change: An Unequal Burden*, a Congressional Black Caucus Foundation report prepared by Redefining Progress in 2004² and on the work of the activists that contributed to the process of drafting the Ten Principles for Just Climate Change Policies in the United States.³ The Ten Principles is the primary policy document guiding the work of the Environmental Justice and Climate Change Initiative. Future reports will continue to explore the effects of climate change on African Americans, but will also examine other segments

of the population that bear a disproportionate burden of global warming.

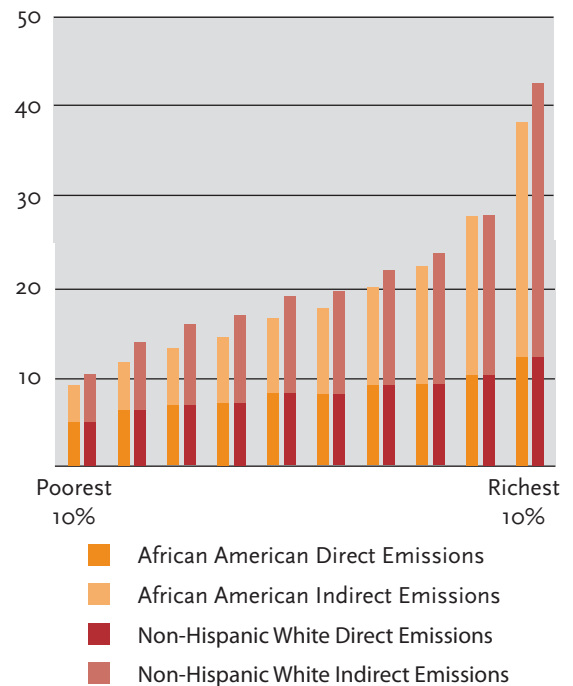
African American Are Less Responsible for Global Warming

Most U.S. global warming pollution is carbon dioxide (CO₂) released from burning fossil fuels—coal, oil, and gas (see Figure 1, previous page).

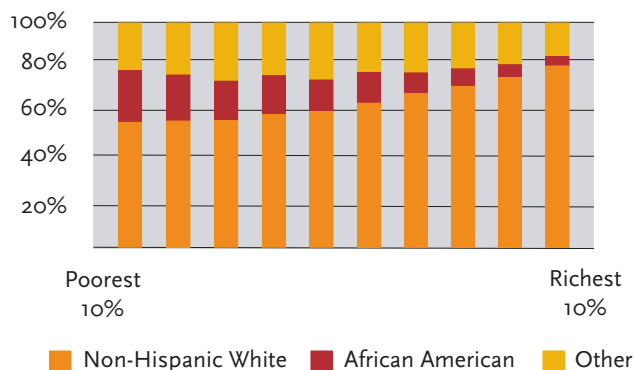
African Americans are far less responsible for global warming pollution than non-Hispanic whites. Including both direct emissions (those that come from a household’s own purchase of fossil fuels and electricity), and indirect emissions (from the use of fuels to produce goods and services consumed by the household), African Americans are responsible for only nine percent of CO₂ emissions, in contrast to seventy-six percent for non-Hispanic whites.

Figure 2, this page, shows the U.S. population divided into ten groups (deciles) by income, ranging from poorest on the left to richest on the right.⁴ For each group the sum of U.S. direct and indirect emissions for non-Hispanic whites and African Americans is shown. (Indirect emissions are emissions from producing products, such as the emissions from a tractor used to

FIGURE 3: Per Capita Direct and Indirect CO₂ Emissions in 2006 for U.S. Non-Hispanic Whites and African Americans by Decile (Million Metric Tons)



**FIGURE 4: Racial Composition of Expenditure Deciles:
Non-Hispanic White, African American, and Other**



harvest the wheat in a loaf of bread. The methodology for estimating indirect emissions is in the Appendix, page 58).

African Americans have lower emissions for two reasons. First, they have lower emissions per capita within each income decile—nineteen percent lower, on average. This effect is most pronounced in the lower deciles. Emission of global warming pollution by African Americans averages twenty-four percent lower in the bottom four deciles, fourteen percent lower in the next three deciles, and only seven percent lower in the top three deciles (see Figure 3, previous page).

The second reason is that African Americans are disproportionately concentrated in the lower and middle deciles. Figure 4 above shows the racial composition of income deciles.

Note that in Figure 2, the sixth decile actually shows the highest emissions for African Americans, even though emissions per capita continue to rise, as shown in Figure 3. This is because as income rises, the number of African Americans within each income decile declines more quickly than emissions per capita increase.

Disparities at the Global Level

The disparities between African Americans and non-Hispanic whites in responsibility for causing global warming pollution in the U.S. mirror similar disparities at the global level. Predominantly white nations, especially the U.S., have caused far more than their proportional share of the pollution burden, while predominantly of-color nations, especially African nations, have low emissions relative to a fair distribution.

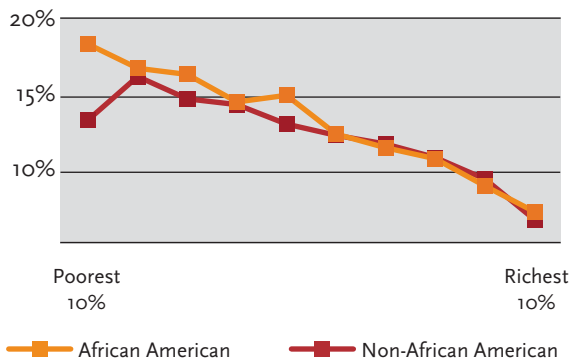
Table 1 below shows the cumulative emissions since 1850 from the U.S., the rest of the developed West, Sub-Saharan Africa, and the rest of the world. It also shows the population of these regions, and finally, the ratio between the actual cumulative emissions and an equal per-capita share of those emissions. Because greenhouse gases linger in the atmosphere for hundreds (and for some of the more potent industrial gases emitted in smaller quantities, thousands) of years, cumulative rather than current emissions are what matters for determining the share of responsibility for global warming. The table shows that the U.S. is using 636 percent of its fair share, while the rest of the developed West uses a little more than half that. Conversely, sub-Saharan

**Table 1. Cumulative Emissions from the U.S., Africa, and Other Regions
Relative to an Equal Share Per Capita (1850-2004)**

Region	Cumulative Emissions (%)	World Population (%)	% of Equal Per Capita Share of Emissions
U.S.	29%	5%	636%
Rest of developed west (E.U., Canada, Australia, Russia)	39%	12%	335%
Rest of world (except sub-Saharan Africa)	30%	88%	34%
Sub-Saharan Africa	2%	11%	15%
Ratio, U.S. to Africa	17:1	0.41:1	42:1
Ratio, rest of west to Africa	23:1	1.04:1	22:1

Source: Calculated from World Resources Institute, *Climate Analysis Indicators Tool*

FIGURE 5: Energy Expenditure as Percentage of Total Expenditure by Expenditure Decile (2006)



Africa uses only 15 percent of an equal per capita share, while the rest of the non-Western world uses 69 percent. Considering the West and non-West as a whole, the West has almost seven times the per capita cumulative global warming pollution. The U.S. has a pollution responsibility per capita that is a startling *forty-two times* that of Africa.

Vulnerability to Energy Price Increases

African Americans are not only less responsible for global warming pollution; they are also more vulnerable to emission reduction policies that increase the already high price of energy. African Americans spend more of their total income on energy, especially in the lower deciles (see Figure 5, this page). Since 2002 this basic pattern has been stable, but the percentage of total expenditure on energy and the difference between African American and non-African American spending have increased substantially because of rising energy costs.⁵

This higher percentage of expenditure is primarily due to a higher use of energy in the home, especially electricity. This appears to be due to some combination

FIGURE 7: Other Energy Expenditures as Percent of Total Expenditure by Expenditure Decile (2006)

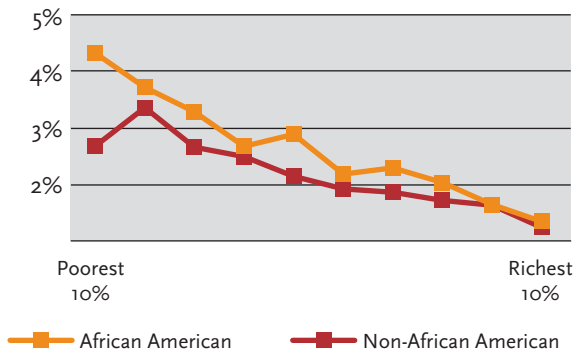
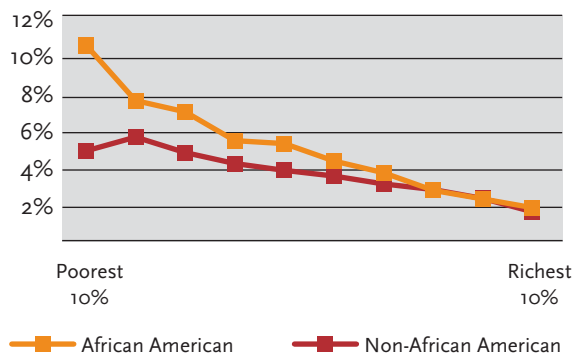


FIGURE 6: Electricity Expenditure as Percentage of Total Expenditure by Expenditure Decile (2006)



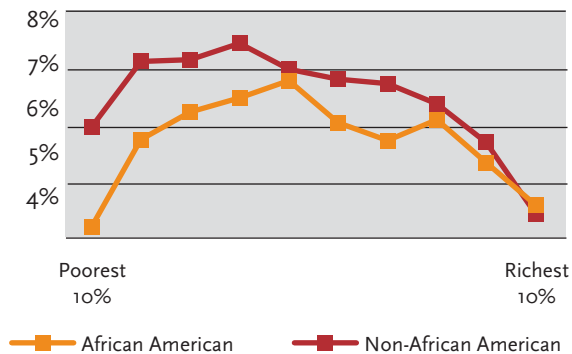
of an inferior housing stock and less efficient appliances. African Americans actually have lower consumption of gasoline, due in part to a lower rate of car ownership, as a share of expenditures than others (see Figures 6, 7, and 8, this page).

Different fuels release different levels of global warming pollution per unit of energy they deliver, with coal emitting the most, followed by oil, and then natural gas. A comprehensive policy to reduce global warming will include measures that increase the price of burning such fuels to discourage their use, such as a carbon fee or tax. Unfortunately, these systems taken in isolation also place a heavy burden on African Americans.

Figure 9, next page, shows the direct and indirect effect of a charge of fifty dollars per metric tonne⁶ of CO₂ as a percentage of expenditure by expenditure deciles.

Overall, the direct burden, from increased costs for fossil fuels and electricity purchased by the household, is a third less than the indirect burden, from increased prices for other goods and services whose production and transportation require fossil fuels. However, the

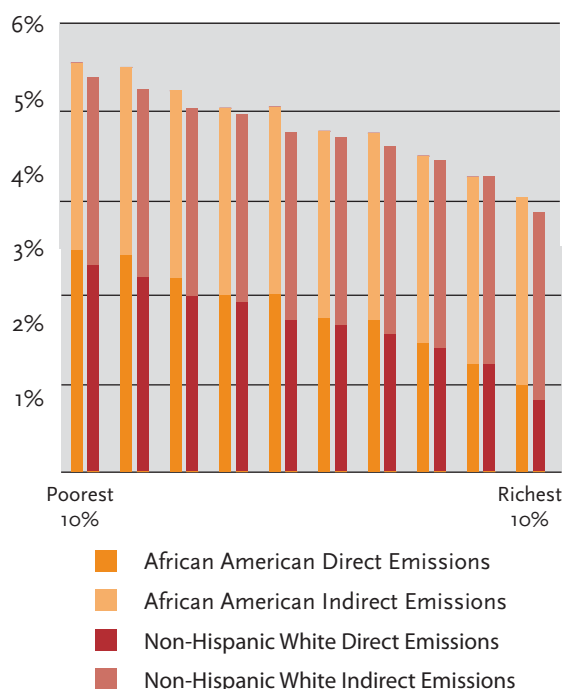
FIGURE 8: Gasoline and Motor Oil Expenditure as Percentage of Total Expenditure by Expenditure Decile (2006)



ratio varies by income and by race. The direct burden is highly regressive, taking a bigger bite out of the incomes of lower-income households. On the other hand, the indirect charge is very close to proportional, taking about the same percentage of every household's income. As a result, the direct burden makes up a larger share of the overall burden of the CO₂ charge for lower-income households. The direct burden is eighty-one percent the size of the indirect burden for African Americans compared to only sixty-two percent the size of the indirect burden for non-Hispanic whites. In upcoming sections, this report will discuss how to neutralize these burdens and instead turn them into net benefits for the African American community.

African Americans account collectively for only about an eighth of the global warming pollution of non-Hispanic whites and have nineteen percent lower emissions on a per capita basis. Despite this, African Americans are particularly vulnerable to energy price increases, whether caused by foreign cartels, political instability, domestic market manipulation, or environmental policy. Because of this combination of lower level of responsibility for and greater vulnerability to the challenges of climate change, African Americans have a unique and vital role in the shaping of U.S. global warming policy—a role that can only be realized if the law- and decision-making process is truly inclusive.

FIGURE 9: The Direct and Indirect Burden of a \$50/tonne Charge as Percentage of Expenditure for U.S. Non-Hispanic Whites and African Americans (Based on 2006 Consumption Levels)



Notes

1. S. Solomon, et al. eds., “Summary for Policymakers,” in *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007).
2. Congressional Black Caucus Foundation and Redefining Progress, *African Americans and Climate Change: An Unequal Burden*, (2004). http://www.rprogress.org/publications/2004/CBCF_REPORT_F.pdf
3. The Ten Principles for Just Climate Change Policies in the United States, developed by members of the EJCC, are:
 1. Stop Cooking the Planet
 2. Protect and Empower Individuals and Communities
 3. Ensure Just Transition for Workers and Communities
 4. Require Community Participation
 5. Global Problems Need Global Solutions
 6. The U.S. Must Lead
 7. Stop Exploration for Fossil Fuels
 8. Monitor Domestic and International Carbon Markets
 9. Caution in the Face of Uncertainty
 10. Protect Future Generations

For a more complete exposition of the ten principles, see www.ejcc.org.

4. Total expenditure is used as a proxy for income, because income reporting has been shown to be highly unreliable in the Survey of Consumer Expenditures data from which these figures are derived.
5. Compare this figure with the one prepared by the authors for Congressional Black Caucus Foundation, *African Americans and Climate Change: An Unequal Burden* (2004). http://www.cbcfinc.org/pdf/AAClim_chg_final.pdf
6. A metric tonne is about 10 percent larger than the “short” or English tons usually used in the U.S. Because of the large amount of international concern about global warming, it has become conventional to use the metric tonne in global warming publications to facilitate comparisons across countries.

DISASTERS, HEALTH, AND CLIMATE

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The world's scientific community has found that global warming causes increases in a number of major threats to public health and safety, and it forecasts that these increases will continue and accelerate as warming accelerates. Without immediate interventions, storms and floods, heat waves, and pollution will have devastating effects. For reasons of history, geography, and demography, African Americans are at disproportionate risk from all of these harms.

Hurricanes and Tropical Storms

Although hurricane and tropical storm prediction is still highly imperfect, the Intergovernmental Panel on Climate Change recently found that “there is evidence for an increase in the average intensity of tropical cyclones in most basins of tropical cyclone formation since 1970 as well as in both the number and intensity of storms in the Atlantic.”¹ This conclusion is reinforced by a recent study by MIT's Kerry Emanuel, finding that in the last 30 years, the destructive power of hurricanes has increased 70 percent in both the Atlantic and Pacific oceans.² A more recent study by Emanuel, using a theoretical model rather than historical review, found that future North Atlantic hurricanes are likely to be more intense as a result of global warming.³

Because high sea surface temperature is a condition for the development of hurricanes and tropical storms, slight increases in sea surface temperature can cause dramatic changes. A group of scientists from University College London recently found that just a 0.5 degree Celsius increase correlates to an increase of approximately forty percent in hurricane activity.⁴

Between 1996-2005, economic losses from hurricanes and tropical storms have averaged \$19.8 billion per year.⁵ Hurricane Katrina alone cost \$127 billion in federal disaster relief,⁶ and uncompensated and consequential damages could bring the total economic cost to over \$2 billion.⁷ Because of migration to the coasts and rising property values, the economic damage caused by hurricanes and tropical storms of a given magnitude is rising rapidly. By the 2020s, it's estimated that a single \$500 billion storm could hit the U.S.⁸

The states most at risk from Atlantic hurricanes are located on the Gulf and Atlantic coasts, and six of these states—Mississippi, Louisiana, Georgia, Maryland, South Carolina, and Alabama—have the highest percentage of African Americans in the U.S.,⁹ putting millions of African Americans in danger from hurricanes. The Caribbean U.S. Territories, Puerto Rico and the U.S. Virgin Islands, like other Caribbean nations,¹⁰ are at even greater risk. Estimates of economic loss from global warming to these territories from just three sources—storms, destruction of infrastructure, and loss of tourism—amount to nearly three percent of GDP for Puerto Rico and over fourteen percent for the Virgin Islands by 2050.¹¹

With the power and potential destruction of climate change becoming evident through increasingly volatile climate events like Hurricanes Katrina and Rita, it is not unreasonable to forecast catastrophic devastation in African American and low income communities.

Heat Deaths

As global temperatures rise, increases in heat-related mortality will be a major health concern for African Americans. Extreme heat events, or heat waves, are increasing in both severity and frequency, and they are occurring more often in colder areas where people do not have ready coping mechanisms. People in urban areas and people with low incomes, both groups in which African Americans are disproportionately represented, are particularly vulnerable to these effects.

The most common causes of death are cardiovascular disease and myocardial infarctions,¹² but elevated

temperatures are also associated with increased rates of death due to diabetes, stroke, respiratory disease, accidents, violence, suicide, and homicide.¹³ In addition, heat exposure can result in non-fatal heat cramps, fainting, heat exhaustion, and heatstroke. Heat deaths and other heat-related health effects are an immediate effect of a temperature spike, typically concentrated within a day of the elevated temperatures.¹⁴ Subsequently, over the following weeks, death rates may be lower than average, indicating that some of the heat-associated mortality occurred among people of fragile health who would have soon died anyway, a phenomenon sometimes known as “harvesting.”¹⁵

Heat waves pose an especially serious threat to urban populations and to low-income people.¹⁶ During a heat wave, urban areas experience higher temperatures than the regions surrounding them. Cities are characterized by asphalt and concrete surfaces that absorb and retain heat, with hotter daytime temperatures and stronger overnight heat retention. Over forty-three percent of African Americans live in these urban “heat islands,” compared to only twenty percent of whites.¹⁷ Low income people, meanwhile, face greater challenges in adapting to elevated temperatures. They are less likely to have access to heat-adaptive features such as thorough insulation or air conditioning because of high capital, maintenance, and energy costs.¹⁸ Here, too, African Americans are disproportionately affected, since they are twice as likely as non-African Americans to live in poverty.¹⁹

Given these factors, it is not surprising that African Americans consistently experience higher rates of heat-related mortality during heat waves. For example, during the 1995 Chicago heat wave, excess mortality rates were fifty percent higher for non-Hispanic African Americans than for non-Hispanic whites.²⁰ Another study of six northern U.S. cities found that the increased risk of death during a heat episode was twice as large for African Americans as for non-Hispanic whites.²¹ Studies have revealed similar patterns in other areas, including St. Louis, Texas, Memphis, and Kansas City.²²

It is possible that these trends towards increased mortality may be mitigated by technological, infrastructural, and physiological acclimatization already in progress. Most northern U.S. cities have experienced statistically significant declines in heat wave mortality since the 1960s.²³ However, IPCC models suggest that acclimatization will ultimately be insufficient to counteract the intensifying heat stress caused by climate

change,²⁴ while reliance on adaptation strategies like improved healthcare and air conditioning is likely exacerbate the gap between the heat mortality rates of the rich and the poor as the poor do not have equal access to either healthcare or air conditioning.

Co-Pollutants

The combustion of fossil fuels is both the main source of global warming pollution and the primary source of air pollutants that harm human and environmental health. However, these two types of pollution act in substantially different ways. As the name implies, global warming pollution acts on a global scale, and climate change occurs as a function of the total burden of this pollution in the atmosphere. Because the most important greenhouse gas, carbon dioxide, lingers in the air for an average of approximately one hundred years, it is the cumulative rather than the current level of emissions that causes warming. For other air pollutants it is the current, local concentration that affects human health. These toxics that are created alongside global warming pollution, overwhelmingly from the burning of coal, oil, and natural gas, are known as co-pollutants. Because of their higher exposure, African Americans suffer higher rates of pollutant-caused asthma, heart attacks, cancer, sudden infant death syndrome, and neurological injuries.

Criteria Pollutants Under the Clean Air Act, the EPA regulates six of the most hazardous of these co-pollutants: ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen oxides (NO_x), and lead (Pb). These six are known as “criteria pollutants.”

Of the co-pollutants, ozone has especially adverse health effects. Ozone is a naturally occurring gas that is formed by a chemical reaction between nitrogen oxides and volatile organic compounds (VOCs) in the presence of sunlight. In the upper atmosphere, ozone is benign and plays an important role in filtering potentially harmful ultraviolet light from the sun. But ground-level ozone is a dangerous pollutant associated with cardiac and respiratory problems, especially asthma. Increases in ground-level ozone are linked to acute asthma attacks, to the onset of asthma in children, and to sudden infant death syndrome (SIDS).²⁵ Elevated concentrations of ozone are also associated with increased rates of hospitalization for cardiac and respiratory concerns and with higher daily mortality counts.²⁶

Particulate matter is less well understood, but at least as dangerous. Particulates can come from a wide

variety of natural and anthropogenic sources and are classified by size as either PM₁₀ (coarse) or PM_{2.5} (fine). Particulate matter has been associated with the exacerbation of asthma symptoms and increased rates of hospitalization.²⁷ Over long periods of time, fine particulate matter and sulfur dioxide are associated with death from lung cancer and cardiopulmonary disease.²⁸

Particulate matter is also associated with elevated risk of respiratory-related post-neonatal mortality, and it is estimated to be responsible for fully six percent of all infant deaths.²⁹ Fossil fuel combustion accounts for a relatively small proportion of particulates, but the particles it does generate appear to be far more harmful than those from natural sources. For example, one analysis showed that increases in particulate matter from mobile sources and coal combustion are associated with increased daily mortality, although naturally occurring crustal particulate matter are not.³⁰

As a result of the cumulative effects of the political and economic disempowerment and racism,³¹ the vast majority of African Americans live in neighborhoods with much higher average exposure to air pollutants of every type. Research indicates that this phenomenon is caused by the discriminatory siting of environmental hazards in existing African American neighborhoods, not (as is sometimes suggested) by a pollution-induced decline in property values and subsequent influx of low-income African Americans.³²

In 2002, an estimated seventy-one percent of African Americans lived in counties in violation of federal air pollution standards, as compared to fifty-eight percent of the non-Hispanic white population.³³ African Americans are more likely than whites to live closer to the nearest industrial emissions source and to live within two miles of multiple industrial emissions sources.³⁴ Seventy-eight percent of African Americans live within thirty miles of a coal-fired power plant, as compared to fifty-six percent of whites.³⁵ In Maryland, census tracts with the highest proportion of African Americans were three times more likely to have a high risk of air-pollution-related cancer than tracts with the lowest proportion.³⁶ Degree of segregation is also correlated with inequity of pollution exposure and with higher cancer risks.³⁷

Children of color are three times more likely than white children to live in areas of high automobile traffic and several studies have demonstrated that African American children are more likely to attend day care, preschool, and school in areas of high automobile traffic.³⁸

To compound the issue of greater rates of co-pollutant exposure, current evidence suggests that African Americans may be more vulnerable to resulting adverse health effects than whites.³⁹ Studies have shown infants of African American mothers are more affected by particulate matter than those of white mothers, and carbon monoxide exposure is more strongly correlated with low birth weight among African American infants

Table 2. Carbon Dioxide Emissions by Fuel
(in million metric tons, unless otherwise noted)

Fuel	2006	2015	2025	Reference Case Annual Growth 2006-2030 (%)
Petroleum ¹	2581	2636	2676	0.30%
Natural Gas	1163	1279	1245	0.20%
Coal	2134	2299	2638	1.20%
Other ²	12	12	12	0.10%
Total	5890	6226	6571	0.60%
Total tons per person	19.6	19.2	18.7	-0.20%

Source: Adapted from Annual Energy Outlook 2008, U.S. Energy Information Administration

1. Includes lease and plant fuel.

2. Includes emissions from geothermal power and nonbiogenic emissions from municipal waste.

Note: Totals may not equal sum of components due to independent rounding. Data for 2006 are model results and may differ slightly from official EIA data reports.

than whites.⁴⁰ Conversely, infant mortality rates respond more strongly to reductions in particulate matter air pollution among African American infants than among non-Hispanic whites.⁴¹

These factors have combined to cause devastating health consequences for African Americans. Asthma, probably the health condition most clearly associated with air pollution, is more prevalent among African Americans than any other ethnic group—thirty-six percent more prevalent than among whites.⁴² African Americans are three times more likely to visit an emergency room due to asthma than whites, and three times more likely to die from the condition.⁴³ Infant mortality among African Americans is twice as high as the rate among whites, and babies born to non-Hispanic African American mothers are twice as likely as those born to non-Hispanic white mothers to die of SIDS.⁴⁴

African Americans therefore stand to gain a corresponding substantial improvement in health when emissions are reduced. Although the exact ratio of emissions reduction from different sources will vary depending on the precise set of policies that has been chosen, in general a one-percent reduction in the major greenhouse gas, carbon dioxide, is estimated as coming roughly fifty percent from coal, twenty-seven percent from oil and twenty-two percent from natural gas.⁴⁵ (Table 2, previous page). This implies that a twenty-five percent reduction in global warming pollution by 2020—a level that has been enacted in California and that is similar to the reductions proposed in major federal legislation—would cause large percentage reductions in local air pollution as well (relative to business as usual). See Table 3, below.

These reductions would also imply major health benefits for African Americans. The reduction in particulate matter alone would reduce infant mortality, overall mortality, and asthma rates. Elevated particulate matter concentrations are responsible for six percent of all infant deaths, and a 16.1 percent reduction in emissions would reduce emissions in excess of the baseline used in that analysis by 28 percent. This reduction would therefore imply a two percent reduction in all infant deaths, at least a third of whom would be African American. Similarly, if a decrease in particulate matter of only ten micrograms is associated with a 0.51 percent to 1 percent reduction in daily mortality from all causes, it is likely that a 16.1 percent reduction, or around 5 micrograms, would reduce daily mortality by one quarter to one half a percent—approximately 6 to 12 thousand deaths per year.⁴⁶ The incidence of non-asthmatic respiratory symptoms among children has been shown to decrease in line with decreases in particulate matter pollution,⁴⁷ suggesting that a 16.1 percent reduction in particulates would result in a similar decrease in such respiratory symptoms among African Americans.

But these estimates only scratch the surface. Reductions in other pollutants would ameliorate all the health issues discussed in this section, including asthma, cardiovascular ailments, myocardial infarctions, lung cancer, SIDS, and many more. Modeling by an EPA working group estimated that 33,000 deaths per year could be avoided from a climate policy scenario.⁴⁸ A second detailed study indicates that reducing emissions just from older coal-fired power plants alone would save 18,000 lives, three million lost work days, and sixteen million restricted-activity days per year.⁴⁹ Since African Americans have been disproportionately burdened by air

Table 3. Percentage of Major Co-Pollutants From Fossil Fuel Combustion

Pollutant	Emissions due to fossil fuel combustion (% of total emissions)	Projected emissions reduction due to climate policy
VOCs	44.5%	11.1%
PM _{2.5} ¹	64.3%	16.1%
CO	82.7%	20.7%
NO _x	93.5%	23.4%
SO ₂	91.1%	22.8%

Source: EPA 2006

1. PM_{2.5} emissions statistics include only traditionally monitored sources and not less hazardous particulates like dust and ash.

pollution and related health effects, these benefits will affect them even more than other groups.

Mercury Air pollution also poses dangers to human health through mercury pollution. In this case, humans are exposed not by breathing contaminated air, but by eating contaminated fish. Coal-fired power plants, the main source of mercury emissions, are responsible for about one-third of the mercury pollution in the U.S.⁵⁰ The airborne mercury they emit eventually settles into bodies of water, where microbes convert it into bioavailable methylmercury and it is consumed by fish. Mercury levels then accumulate through the food chain, with large carnivorous fish like bass and tuna having the highest concentrations.

Mercury pollution is widespread in U.S. waterways. Currently, forty-eight states have issued fish consumption advisories due to mercury contamination, including twenty-three states that have issued statewide advisories for all of their lakes and/or rivers.⁵¹ These advisories cover fourteen million acres of lakes and almost 900,000 miles of rivers, plus four of the five Great Lakes. In addition, twelve states have issued statewide advisories for all coastal waters, including the entire Gulf Coast. These advisories reflect a serious health threat to recreational anglers, including the 1.4 million African Americans who participated in recreational fishing in 2006.⁵² Studies show that African Americans who fish for recreation are more likely to eat what they catch, eat more of it, and be less aware of fish consumption advisories, than non-Hispanic white anglers.⁵³

Mercury is a powerful neurotoxin, and exposure can have serious health effects, particularly for children and developing fetuses. At very high levels, in utero mercury exposure can cause cerebral palsy, mental retardation, blindness, and deafness.⁵⁴ In adults, high exposure impairs neurocognitive function, motor skills, and attention.⁵⁵ More typically, the chronic, low-level exposure caused by fish consumption can impair mental function later in life, including IQ, attention, fine motor function, language, and memory.⁵⁶ Because mercury accumulates in the body over long periods of time, all women of childbearing age are advised to avoid mercury exposure, in addition to pregnant and nursing women.

Vulnerability to Disasters

When an extreme weather event occurs, its victims face injury, death, displacement, or loss of income just as support structures that provide resiliency—family,

community, employment, housing—are eroded or destroyed.

Even before disaster strikes, African American families and communities are economically weakened by unemployment⁵⁷ and poverty⁵⁸ rates that are almost double those of whites or other minorities.

Health and resistance to illness is undermined by historical and institutional racial discrimination. Physiological stress from discrimination has been found to be an underlying cause of the high rates of diabetes, cardiovascular disease, hypertension and stroke among African Americans.⁵⁹ Along with Asian Americans and Native Americans, African Americans are also more likely than whites to develop Post-Traumatic Stress Disorder after experiencing trauma.⁶⁰

The location of commercial hazardous waste facilities in low-income communities of color has created a greater pollution burden for African Americans than whites. In areas that host such facilities, twenty percent of the population is African American, compared to twelve percent for non-host areas.⁶¹ When hurricanes or tropical storms damage such facilities, those living closest will bear the brunt of any released toxins.

Racism in Disaster Prevention and Relief

The first step of disaster prevention efforts is often on the individual or family level, even though a disaster may affect the whole community, region, or state. People are encouraged to set aside emergency supplies to last for three days without electricity or water, including extra equipment such as first aid kits, flashlights, and blankets. For people living in poverty, these basic necessities are often difficult, if not impossible, to keep in reserve, especially if there is hunger in the family.

When a disaster is imminent, these same families are sometimes encouraged, but often mandated to evacuate. Yet without a car or adequate transit or evacuation systems, how are they to do so? If they are homeowners, and are uninsured, there may be an incentive to stay and protect their homes.⁶²

After the disaster has passed, discriminatory stereotypes can play a significant part in relief efforts, contributing even further to unequal distribution of resources. As noted in the International Red Cross' World Disasters Report 2007:⁶³

New Orleans City Councilman Oliver Thomas

says, about Hurricane Katrina which struck Louisiana in 2005, that people were too afraid of Black people to go in and save them. He claimed rumors of shooting and riots were making people afraid to take in those who were being portrayed as alleged looters. In the name of security, these rumors and stereotypical views of specific communities can be rationalized, and frequently hamper relief efforts.

Stereotypes and racist beliefs and actions hamper not only organized relief efforts, but individual donations to disaster-stricken regions. In a complex study on the effect of news media coverage to natural disaster response, Stanford professor Shanto Iyengar and Washington Post reporter Richard Morin asked 2,300 participants to choose a level of financial aid and the number of the months that aid would be given based on a short newspaper story about a person left homeless by Hurricane Katrina. Each story was identical and featured a person with a non gender-specific name. The photo accompanying the story, however, varied in skin tone and gender. When the person in the photograph was identified as African American, they were awarded nearly one month less of financial aid.⁶⁴

With less access to resources to prevent catastrophic losses during a disaster, and less relief efforts after a disaster, it is no wonder that African American communities often experience the worst consequences of extreme weather events. FEMA's notorious bungling of Hurricane Katrina relief is the latest in a long line of historic government failures where HUD, Food and Nutrition Services, AFDC and other government agencies and programs had long been negligent. After Katrina, New Orleans lost fifty-seven percent of its African American population. Compared to people who continued to live in New Orleans after the hurricane, the people who moved out tended to be younger, poorer, and African American. Additionally, the people who resettled the city were more likely to be higher educated and white.⁶⁵ Much like the redevelopment plans of the 1970s and 1980s, hurricanes and tropical storms have a unique power to destroy communities unless steps are taken to guard economic and social justice.

Housing and Insurance Inequalities

In facing the many new dangers that global warming and climate instability poses, African Americans as a group have two key disadvantages that exacerbate every risk: More people without adequate wealth and precautionary

savings, and more households among the uninsured. As a result, African American households have less of a cushion against damage, injuries, and economic shocks. The average level of wealth among African Americans is only a fifth that of non-Hispanic whites and the median level is only a tenth that of non-Hispanic whites.⁶⁶ Even when matched by income, African American wealth levels are considerably lower. In particular, African Americans have much less housing wealth than matched to non-Hispanic whites,⁶⁷ and those homes appreciate at a lower rate.⁶⁸ African Americans are also less likely to own businesses, and the businesses owned are worth less, constituting less than one percent of the value of all businesses in the U.S.⁶⁹

In 2006, 20.5 percent of African Americans had no health insurance; up from 19 percent in 2005.⁷⁰ The comparable rate for non-Hispanic whites was unchanged at 10.8 percent. Even worse, 14.1 percent of African American children were uninsured, twice the rate as for non-Hispanic whites.

The consequences of this lack of insurance are far more than financial. It has been estimated that the lack of health insurance causes roughly eighteen thousand unnecessary deaths every year in the United States, making it the sixth-leading cause of death among people ages twenty-five to sixty-four—after cancer, heart disease, injuries, suicide, and cerebrovascular disease, but before HIV/AIDS or diabetes.⁷¹ The uninsured are less likely than the insured to have a regular source of care, less likely to receive preventive care, and less likely to benefit from early detection of medical problems. The Commonwealth Fund's 2001 Health Insurance Survey found, for example, that sixteen percent of the uninsured were absent from work during the year because of a dental problem, compared with eight percent of those with health insurance.⁷² As diseases spread into new territories where they are less well-known, the lack of regular and preventative care becomes a problem for the uninsured of literally life-threatening proportions. This problem has spillovers both within communities of color and to society as a whole, as infectious diseases that have not been adequately prevented, or detected and cured, will, of course, spread more rapidly.

Racial discrimination in homeowner's insurance is also extensive,⁷³ and has been a significant contributor to the decay of African American-majority urban neighborhoods.⁷⁴ In the face of increasingly frequent catastrophes such as tropical storms, floods, and

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The greater vulnerability of African Americans relative to non-Hispanic whites in the U.S. mirrors the greater vulnerability of Africans and the mainly non-white developing nations relative to the mainly white nations of the industrial West. The Intergovernmental Panel on Climate Change has found that Africa, due to its multiple stresses and low adaptive capacity,¹ is the continent most at risk from climate change. It projects that within twelve years, Africa will see reductions in its water supply affecting seventy-five to two hundred and fifty million people. In the same time period, the output of rain-fed agriculture in some countries is expected to fall by fifty percent. Between twenty-five and forty percent of natural habitats in Africa could be lost by 2085.²

Policy that begins in the United States has enormous implications for the future survival of Africa. According to the Bush energy plan, West Africa is one of the fastest growing oil and gas regions for the American market.³ Seeking to diversify sources from the volatile Middle East region, the Bush Administration has looked to Africa and found proven reserves of 60 million barrels of oil.⁴

The Niger Delta region in particular has been home to massive environmental devastation due to decades of pollution from multinational oil and gas companies. The communities in the Niger Delta and the Gulf of Guinea suffer from exploitation from oil production, armed conflict from factions vying for power, horrific pollution, and world indifference.

In 1995, the World Bank declared that Nigeria flared more gas than any other country in the world. Gas flares are significant contributors to greenhouse gas emissions, air pollution, respiratory and other health problems, noise, and corrosion of natural and man-made structures. In Nigeria, about 2.5 billion cubic feet of gas associated with crude oil is wasted every day,⁵ equal to 40% of all Africa's natural gas consumption, and the annual financial loss due to

gas flares is about US \$2.5 billion.⁶ Nigeria's flares have created more greenhouse gases than all of sub-Saharan Africa combined,⁷ yet gas flaring continues despite the general opinion that it should stop and former President Olusegun Obasanjo and the major transnational oil companies agreeing to a non-binding commitment to a flare-out date of 2008.

International and U.S.-based financial institutions, such as the World Bank Group, the U.S. Export-Import Bank, and the Overseas Private Investment Corporation, have the leverage to tie financial support for future pipeline projects to requirements that corporations adhere to environmental and human rights guidelines such as the no-flare agreement. For example, the U.S. must encourage the World Bank Group to establish an energy portfolio goal of at least twenty percent clean, renewable energy and to create a renewable energy unit within the Bank to achieve that target. This recommendation is achievable and realistic, and if implemented, will make a significant difference in the lives of poor people around the world.⁸

Sustainable development in the region would also be served by the establishment of a Commission on Sustainable Development in West Africa; the public release of oil company revenue and audits; and the enhancement of current monitoring programs that track transparency, governance, and public participation in dealings between African governments, the U.S., and the oil companies.⁹

The extraction of West Africa's natural resources has the potential of turning the region into either the engine or the exhaust pipe of the continent. It will be U.S. and its policies that determine its future.

—Leslie Fields
*Redefining Progress Board Member;
 National Environmental Justice Director,
 Sierra Club*

wildfires, households that could have made a new start had they been insured will instead face ruin and poverty. Scientists tell us that climate change is already underway, and more, that considerably worse change is already inevitable. Work must be done now to slow the rate of climate change that the next generation will experience and to restore the world to a more natural state for their children. At the same time, communities, families, and children must be protected from the current effects of global warming-caused disasters and health problems.

Wealth-building programs⁷⁵ and national insurance support programs are an essential part of adapting to climate change. It is imperative that social justice, faith, labor, business, and environmental interests stand side by side and demand such programs be available to all who need them as a core part of national climate strategy.

Food Security

Like energy, food is a basic necessity. Like energy, African Americans are more vulnerable to food price increases due to climate change or to climate and energy policy because they spend a higher percentage of their budgets on food than non-Hispanic whites. This is true in part because of lower average incomes, as the percentage of total income spent on food declines as household income increases. However, even when matched for income, African Americans spend a somewhat higher income share on food.⁷⁶

Food security is attained when a household has reliable access to adequate food. This simple condition is out of reach for over 850 million people worldwide, including almost half a billion children, who live with chronic hunger or even fear of starvation.⁷⁷ Climate change can seriously exacerbate this problem as extreme weather events destroy crops and irregular season changes (also called climate variability) reduce yields. Ironically, some efforts intended to address climate change may make matters even worse as food crops and productive farm land are diverted for the production of biofuels.

Since 2005, the world has experienced a dramatic surge in the price of many staple food commodities. The price of maize increased by eighty percent between 2005 and 2007, and has since risen further. Many other commodity prices also rose sharply over this period: milk powder by ninety percent, wheat by seventy percent and rice by about twenty-five percent.⁸⁴

Even the Bush Administration has been forced to respond to the global threat of hunger as food protests, often called “riots,” have been documented Mexico, Haiti, West Bengal, Senegal, Mauritania and Yemen.

What President Bush did not do, like all others before and likely those after, is to make the connection between food security, health, wealth, and climate. But the U.S. can no longer afford such ignorance. As the impact of food insecurity spreads from the developing to the developed world, there will be pervasive impacts due to climate variability, hunger, and associated uprisings of poor peoples worldwide.

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ENERGY MARKETS AND UNEMPLOYMENT

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Historically, business cycles and energy prices have been closely related. Four of the five recessions since 1970 and three of the five between 1948 and 1970 were preceded by big jumps in oil prices. In the same period, 1948 to the present, all large oil price increases but two have been followed by recessions.¹

The run-up in oil prices since the beginning of 2004 had many people scrambling to explain why the price increase was not, at that point, leading to a downturn. The explanation involves changes in the relationship of oil to the rest of the economy. Thanks to a combination of low oil prices and increased energy efficiency, the importance of oil in the economy had dropped from its 1980 level of eight percent of GDP to only around three percent, so the influence of oil price shocks on the wider economy had accordingly lessened. Meanwhile, instead of the clusters of other serious economic problems that have accompanied previous shocks, the economy was being artificially overheated by war spending.

These same factors suggest that immunity to the most recent oil price increase may be coming to an end as well. At \$100 per barrel, oil is back to five percent of GDP, a level at which past shocks had noticeable depressing effects. Should the price of oil rise to \$150 per barrel, oil as a percentage of GDP would be all the way back to its 1980s high. This could easily happen if even a very moderate constriction in the oil supply chain were accompanied by continued robust growth in oil demand from China and India. Indeed, this would appear to be a very likely scenario over the next five to ten years.

The economy has by no means become immune to other economic factors. As recently as 2001-2002, the confluence of the dotcom bust, a host of accounting scandals, and a dive in consumer spending following

9/11 sent the economy into a recession. Today, the U.S. faces a weakening dollar and a potentially accelerating collapse of the housing equity bubble. Moreover, the economy is being artificially propped up by an unsustainable spree of deficit spending to finance an unpopular war. The current recession seems therefore to have revived the dominant pattern of the past, in which recession is brought on by the combination of an energy price shock with other economic weaknesses.

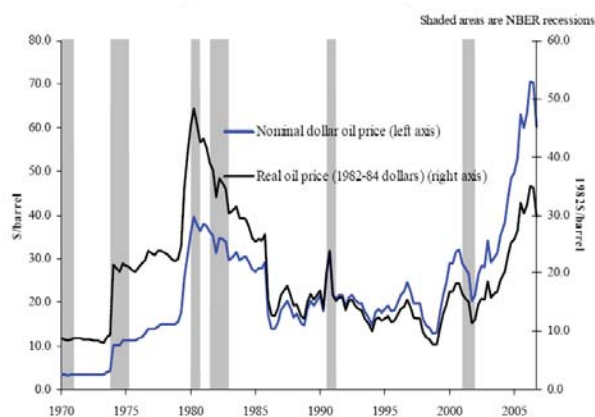
Suppose, then, that this pattern continues—one recession every seven years or so, many of them associated with clusters of shocks that include an energy price shock. The justice issue arises because current discrimination combined with a legacy of historic discrimination places African Americans in a particularly tenuous position with respect to economic downturns.

Unemployment

What do energy shocks cost the African American community? In addition to the obvious costs of higher energy and gas prices, price shocks contribute to recession and unemployment.

Figure 11, next page, shows quarterly unemployment rates for African Americans and whites over a thirty-six year period starting in 1972. During this period, changes in African American unemployment have

FIGURE 10: Oil Prices and the Business Cycle



Source: Federal Reserve Bank of Saint Louis

followed changes in white unemployment very closely, with African American unemployment consistently at about twice the white unemployment rate. This means that not only are African Americans unemployed at twice the rate of whites at any given time, but that they are also hit twice as hard by any increases in overall unemployment.

This disparity means that unemployment spikes associated with recessions have much higher costs for African Americans. During a recession, the increase in the African American unemployment rate is twice as big as the increase in the white unemployment rate. Averaging recessions over the last thirty years, elevated unemployment rates have lasted about eight quarters for African Americans and have peaked at 5.5 percentage points above the non-recession average. Using a simple triangle approximation of lost work time,³ it is found that African Americans lose about \$36.7 billion per recession. At the recent pattern of one recession every 6.75 years, this is an average of \$5.4 billion dollars per year—one percent of the annual after-tax income of all African American households. (This estimate does not include the indirect costs of

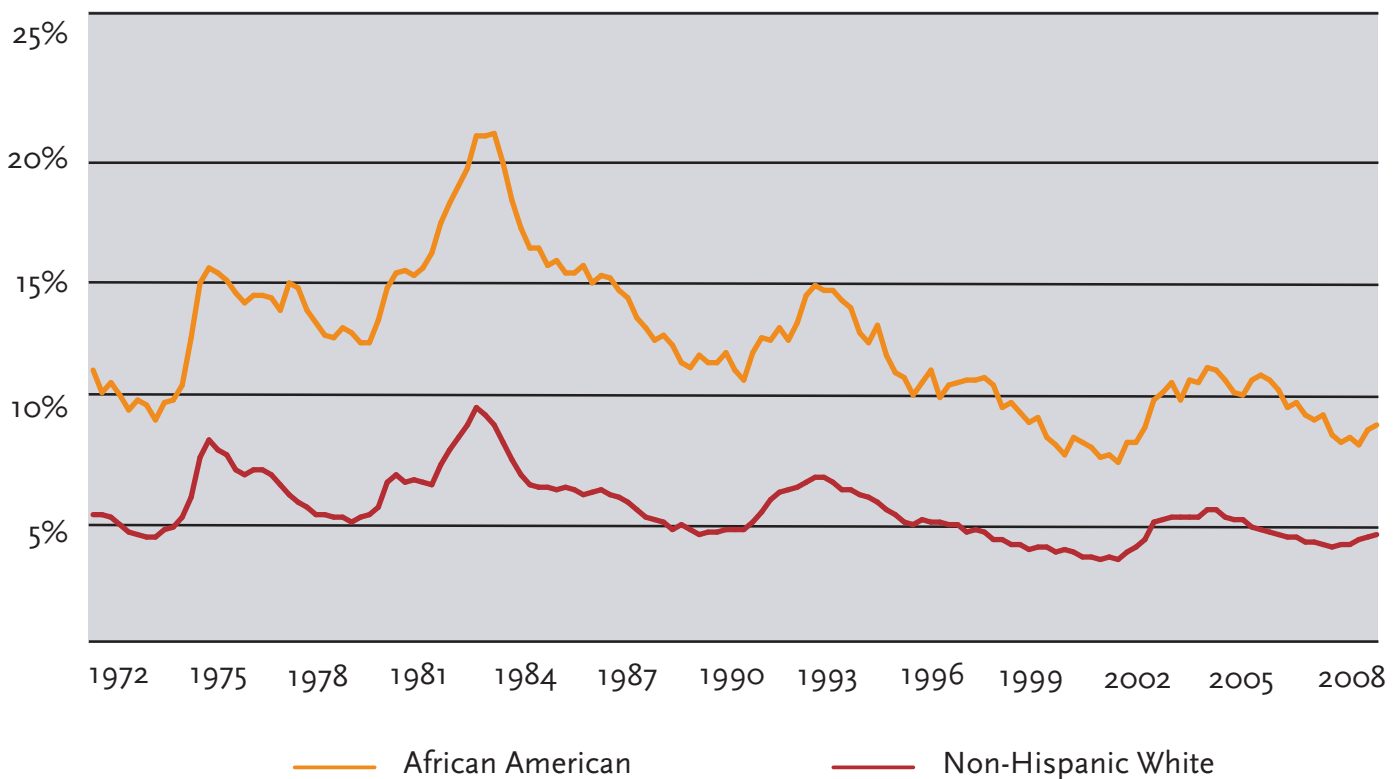
unemployment via effects on mental health, crime, family stability, community health, etc.)

The Best Cure

The effects of oil price shocks are not linear. A large shock, combined with other economic vulnerabilities, leads to recession, while smaller shocks have little effect. When oil is at 6 percent of GDP, a thirty percent price increase pushes it to 8 percent of GDP and can bring on recession. When oil is at 2 percent of GDP, a thirty percent price increase gets it to 2.6 percent of GDP—a mere annoyance. The decrease from oil at 6 percent of GDP in the 1980s to oil at 2 percent in 2002 was accomplished mainly through economic growth and improved technical efficiency.

Since the beginning of 2004, crude oil prices have tripled and consumer prices roughly doubled. If, through a combination of continued growth and improved efficiency, the share of oil in the economy is cut in half, the economy will return to a condition where energy price shocks are unlikely to contribute to recessions and unemployment for African Americans. Prevention is the best cure for recessions caused by energy price shocks.

FIGURE 11: African American and Non-Hispanic White Quarterly Unemployment Rates, 1972-2008



The tools to accomplish this are well established: higher fuel economy standards for cars and trucks, a renewable content standard to encourage the development of alternative fuels, better public transit, and continued progress toward electric vehicles such as plug-in hybrids. It has been shown that—even with lower gas prices—fuel economy standards can be increased by four percent per year at net savings to consumers,⁴ with no sacrifice of vehicle safety.⁵ A recent General Accounting Office study found that most experts supported such tightening of fuel economy standards.⁶ Such standards, combined with a phase-in of a twenty percent renewable content standard at two percentage points per year, a three percent growth rate of the economy, and an (unfortunately realistic) two-year delay for implementation, would cut oil spending as a share of GDP in half again in just twelve years.

If this policy had been adopted at the turn of the century, and with implementation in January of 2002, most of the price increase caused by the Iraq War would already be offset.

All of these policies have side benefits in cleaner air, more jobs and more livable communities, and all of these benefits would apply disproportionately to African American households. The course of action therefore should be clear. What is now needed is not another study; what is needed is a more effective political voice—a distinctive African American voice, supported by the voices of many others—to advocate, establish, and implement the policies communities need.

Notes

1. These figures come from the Business Cycle Dating Committee of the National Bureau of Economic Research, a private, nonprofit body that has become something of an umpire in the contentious area of declaring recessions or depressions. See <http://www.nber.org/cycles/>
2. Katharine Bradbury, "Rising Tide in the Labor Market: To What Degree Do Expansions Benefit the Disadvantaged?" *The New England Economic Review* May (2000): 3-33; Katharine Bradbury, "How Much Do Expansions Reduce The Black-White Unemployment Gap?" *Federal Reserve Bank of Boston Regional Review* Quarter 3 (2000).
3. The rise and fall of unemployment during a recession is roughly a triangle. Using the formula for the area of a triangle (Area = $\frac{1}{2}$ Base * Height), where Base = 2 years, Height = 5.5% * \$17,902 (the average African American income per capita from U.S. Census Bureau, Historical Income Table P-1 <http://www.census.gov/hhes/www/income/histinc/p01b.html>), it was found that this implies a loss of \$984 per person

per recession. Multiplying this by the number of African Americans yields \$36.7 billion per recession.

4. Northeast States Center for a Clean Air Future, *Reducing Greenhouse Gas Emissions from Light-Duty Motor Vehicles*, (September 2004). <http://www.nescaaf.org/documents/rpt040923ghglighduty.pdf/> See also A. Bordetsky et al., *Securing America: Solving Our Oil Dependence Through Innovation*, Natural Resources Defense Council Issue Paper (February 2005) <http://www.nrdc.org/air/transportation/oilsecurity/plan.pdf>; John M. DeCicco, Eric Haxthausen, and Kevin Mills, *Cost-Effective Targets for a 2008+ Light Truck CAFE Rule*, Environmental Defense (June 20, 2005). http://www.edf.org/documents/4722_Cost-EffectiveTargetsCAFE.pdf

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WAR AND PROFITS

CONTENTS

25. Cost of Oil-Related Wars

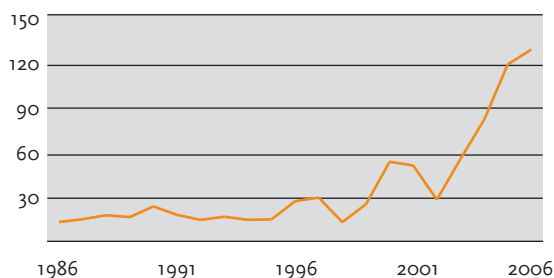
28. Notes

During the decade of the 1990s the profits of major U.S. oil companies averaged \$19.5 billion per year. By 2006, oil companies were able to take advantage of the events of 9/11 and the ongoing disruptions of oil flow from the Middle East to increase their profits to a staggering \$130 billion a year. This figure reflects a profit rate of twenty-five percent (return on equity) and a total return to capital (equity plus debt) of twenty-two percent. The *excess* return to capital—the windfall to oil companies from the amount their rate of profit exceeded the ten percent average for U.S. manufacturing companies—amounted to \$71 billion, or roughly \$611 per household for every household in America, in 2006 alone (see Figure 12, below).

Cost of Oil-Related Wars

Over the last forty years, with the exception of the Beirut deployment of 1982, every U.S. military engagement that resulted in substantial U.S. casualties (Vietnam, Kuwait, Afghanistan, Iraq) has been fought to protect or control nations that constituted a current or potential source of oil.¹ The cost of these struggles to the U.S., both human and economic, has been far in excess of the estimated costs of saving a comparable amount of oil through conservation or the development of alternative fuels. Many of these costs have been disproportionately

FIGURE 12: Profits of Major U.S. Oil Companies, 1986-2006 (\$Bill.)



born by African Americans. Take the current war in Iraq as an example. The stated rationale for invading Iraq—weapons of mass destruction—has been proven false, and President Bush has admitted that Iraq never had anything to do with the 9/11 bombings.² Although the real reason for the Iraq invasion may never be proven with certainty, it is known that:

- Point Three of the Bush Administration's eighteen benchmarks for U.S. withdrawal from Iraq is to enact a new oil law distributing rights to the proceeds of Iraqi oil fields.³
- The first draft of the law was prepared by Interim Prime Minister Ayad Allawi, who was appointed by the U.S.-created Iraq Interim Governing Council as its last act before it was dissolved. Allawi was selected for the position by the Administration's envoy Robert D. Blackwill.⁴
- The Allawi draft proposed to turn sixty-four percent of the nation's oil fields^{5 6} over exclusively to foreign developers.⁷
- This oil has a current market value of at least \$6.4 trillion dollars, and perhaps twice that. \$6.4 trillion is roughly half of the US annual GDP.⁸

What has the war cost Americans, and African Americans in particular? Joseph Stiglitz (winner of the Nobel Prize in economics) and Linda Bilmes (professor of public finance at Harvard's Kennedy School of Government and former Assistant Secretary and Chief Financial Officer of the U.S. Department of Commerce) recently released a "realistic-moderate" estimate of the total cost of the war—past, present, and future—at five trillion dollars.⁹ This cost amounts to more than one hundred times the Administration's original fifty billion dollar estimate, or an average of about forty-three thousand dollars per U.S. household.

This cost breaks down into three components: the social cost (including deaths and injuries) (\$431 billion), the macroeconomic cost in lost growth (\$1.9 trillion), and the current and future direct budgetary cost of the war (\$3.5 trillion). The first two of these costs are born by private citizens directly and can be distributed by race

with a reasonable degree of accuracy. Table 4, below, summarizes the private costs of the war as estimated by Stiglitz and Bilmes and allocates each cost by race based according to the methodology indicated.

Table 4 shows that the average African American household is paying more than sixteen thousand dollars for direct costs of the war, or about thirty-five percent of annual income. Although this is less than the average dollar burden on non-Hispanic white households, it is twenty-eight percent higher as a share of income and almost four times as high as a share of average household wealth.

The third category, direct budgetary costs, is the largest of the three. The distribution of this cost is difficult to estimate as the war has been largely financed by deficit spending, and it is not yet known how these deficits will be repaid. Table 5 (next page) shows the result of two scenarios, one in which the deficit is repaid by across-the-board cuts in federal spending, and the other in which it is repaid by an across-the-board increase in federal taxes.

Distributing the results by income quintile, it is found that if the war is paid for with spending cuts, African American households will pay a disastrously disproportionate share of the budgetary costs of the war: forty-seven percent more than non-Hispanic whites as a percentage of household income. On the other hand, if the war is paid for with tax increases, the burden on African Americans, while still heavy, is fourteen percent lower than the corresponding burden on white households. This is because the Federal tax system is progressive and the average income of African Americans is only fifty-seven percent that of non-Hispanic whites.

When the public and private costs of the war are combined (see Table 6, page 28), the war costs the average African American household sixty-two percent of a year's income. This is only a moderate six percent higher than the burden on an average non-Hispanic white household. On the other hand, if one assumes that repayment will be funded by cuts in services, the war costs fully seventy-seven percent of the income of an average African American household—a striking thirty-

Table 4. Estimated Distribution of Private Costs of the Iraq War for African Americans and non-Hispanic Whites

Type of Injury	Estimated Value (\$Bill)	Non-Hispanic White	African American	Methodology
Direct injury				
Deaths	64	47.8	6.0	DOD, Operation Iraqi Freedom: Military Deaths. http://siadapp.dmdc.osd.mil/personnel/CASUALTY/oif-deaths-total.pdf , cumulated at http://icasualties.org/oif/default.aspx .
Injuries	289	216.0	27.2	Assumed proportional to deaths.
Other Social Costs	78	50.7	15.6	Assumed proportional to share in troop population.
Macroeconomic Costs				
Oil (direct)	400	310.0	32.8	Proportional to household consumption of petroleum products. Calculations by author from U.S. Bureau of Labor Statistics, Consumer Expenditure Survey.
Oil (indirect)	400	307.2	33.5	Proportional to indirect burden of oil price increases. For methodology, see African Americans and Climate Change: An Unequal Burden. http://www.rprogress.org/publications/2004/CBCF_REPORT_F.pdf .
Lower GDP	1,100	910.4	120.5	Proportional to population share in unemployment market by race times average income by race.
Total Costs (\$Bill)	2,331	1842.1	235.6	
Total Costs (% Income)		27.3%	35.0%	
Total Costs (Average Wealth)		3.9%	15.3%	
Total Costs (Per Household)		\$22,281	\$16,416	

eight percent higher than the burden on non-Hispanic whites.

Finally, because the entire cost of the war will be born over a number of years, it may be more appropriate to compare that burden to household wealth rather than annual household income. Mean household wealth for African Americans was \$101,000, only about a fifth (nineteen percent) that of non-Hispanic whites in 2004, and median wealth was only \$11,800, a tenth that of non-Hispanic whites.¹⁰ The aggregate burden of the war is therefore equal to twenty-seven percent of the total net

worth of the African American population assuming the public costs are paid by taxes and thirty-four percent of the total wealth of African Americans if the budget is cut instead.¹¹ As a percentage of net worth, the burden of the war on African Americans is more than three times the burden on non-Hispanic white households even if paid for by taxes and more than four times the burden if paid for by budget cuts.

To summarize, for the seven million African American households with below-median wealth the cost of the war will exceed their total wealth under any plausible

Table 5. Estimated Distribution of Public Costs of the Iraq War for African Americans and non-Hispanic Whites

Type of Burden	Estimated Value	Non-Hispanic White	African American	Methodology
Total Cost (\$Bill.)				
Budgetary	2,039	0	0	
Interest	289	216.0	27.2	
Repayment Burden (\$Bill.)				
Increase Federal Taxes		2,094	180	Distributed to income groups based on marginal federal tax rate, Historical Effective Federal Tax Rates: 1979 to 2005 CBO (Dec. 2007) http://www.cbo.gov/ftpdocs/88xx/doc8885/12-11-HistoricalTaxRates.pdf . Racial composition of quintiles and top 5% from U.S. Census Bureau, Current Population Survey, 2007 Annual Social and Economic Supplement, Table HINC-6.
Cut Spending		1,945	286	Transfer and direct payment allocation based on estimated benefit by income quintile. Who Pays Taxes and Who Receives Government Spending? An Analysis of Federal, State and Local Tax and Spending Distributions, 1991-2004 http://www.taxfoundation.org/files/wp1.pdf .
Repayment Burden (%Income)				
Increase Federal Taxes		31.1%	26.7%	
Cut Spending		28.9%	42.5%	
Repayment Burden (% of Average Wealth)				
Increase Federal Taxes		4.5%	11.17%	
Cut Spending		4.2%	18.5%	
Repayment Burden (\$/Household)				
Increase Federal Taxes		\$25,326	\$12,541	

repayment scenario. As a result, it is anticipated that this segment of the African American community will undergo some combination of painful belt-tightening and wiping out of their accumulated savings over the next five to ten years as a direct consequence of the war.

Notes

1. Although Afghanistan is not itself a major global oil source, it is the proposed location of a series of multi-billion dollar pipelines for oil and gas resources in central Asia that are not otherwise economically viable. However, this paper makes no assertion about the motivation for the invasion of Afghanistan except that securing oil supplies was doubtless one consideration in planning.
2. George W. Bush, White House Press Conference by the President, August 21 2006. <http://www.whitehouse.gov/news/releases/2006/08/20060821.html>

3. U.S. White House, Initial Benchmark Assessment Report, report to Congress is submitted consistent with Section 1314 of the U.S. Troop Readiness, Veterans’ Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (Public Law 110-28), July 12, 2007. <http://www.whitehouse.gov/news/releases/2007/07/20070712.html>
4. Dexter Filkins, “The Reach of War: New Government; A Worn Road for U.N. Aide,” *The New York Times*, May 31, 2004. <http://query.nytimes.com/gst/fullpage.html?res=9E01E0D61F3EF932A05756C0A9629C8B63>
5. *Energy Compass*, “Iraq: Puzzling Over the Future,” October 1, 2004.
6. The proposal was to turn the sixty-three oil fields not currently developed (seventeen developed) over to foreign development. These amounted to sixty-four percent of proven reserves, though “the western and southern deserts may contain an estimated additional 45 to 100 billion barrels of recoverable oil.” (U.S. Energy Information Administration, Country Analysis Briefs: Iraq: Oil, August 2007. <http://www.>

Table 6. Estimated Distribution of Public and Private Costs of the Iraq War for African Americans and non-Hispanic Whites

Type of Cost	Estimated Value	Non-Hispanic White	African American	African American Relative to White (%)
Private Cost (\$Bill.)	2,331	1842.1	235.6	
Private Plus Public Cost	4,986			
Repayment Burden (\$Bill.)				
Increase Federal Taxes		3,936	416	
Cut Spending		3,787	522	
Repayment Burden (%Income)				
Increase Federal Taxes		58.4%	61.7%	106%
Cut Spending		56.2%	77.5%	138%
Repayment Burden (% of Average Wealth)				
Increase Federal Taxes		8.4%	26.9%	320%
Cut Spending		8.1%	33.8%	418%
Repayment Burden (\$/Household)				
Increase Federal Taxes		\$47,608	\$28,957	61%
Cut Spending		\$45,808	\$36,338	79%

eia.doe.gov/emeu/cabs/Iraq/Oil.html)

7. Middle East Economic Survey, “Allawi outlines new Iraqi petroleum policy: INOC for currently producing fields/IOCs for new areas,” September 13, 2004, A1-A4.

8. Iraq has proven oil reserves of 115 billion barrels. The Energy Information Administration estimates the average cost per barrel of crude oil in 2008 will be \$101. In the first three months of 2008, the NYMEX futures for sweet crude delivered in September 2013 have ranged from \$83 to \$102. Taking the midpoint, less the cost of exploration, development, and extraction (generally under \$5 in the Middle East—see “Oil price developments: drivers, economic consequences and policy responses,” OECD Economic Outlook (December 2004)) suggests that the value of the Iraq reserves is about \$10 trillion. \$10 trillion times 64 percent equals \$6.4 trillion.

9. Joseph E. Stiglitz and Linda J. Bilmes, *The Three Trillion Dollar War: The True Cost of the Iraq Conflict* (New York: W. W. Norton, 2008).

10. Edward N. Wolff, “Recent Trends in Household Wealth in the United States: Rising Debt and the Middle-Class Squeeze,” (Working Paper No. 502, The Levy Economics Institute of Bard College, June 2007).

11. Assuming that wealth has grown at the same rate as GDP since 2004.

ENERGY AND GREEN JOBS

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A successful transition to a clean-energy economy will substantially improve the economic condition of African Americans. In a clean-energy economy, coal, oil and gas are replaced by solar, biomass, geothermal, hydroelectric and wind power, and by energy efficiency. This section will show that such a transition would have very large implications for U.S. employment and an even larger effect on the employment of African Americans.

The energy industries together employed 1.9 million people in 2006, of which only nine percent worked directly in the production of coal, oil, and gas. Most of the remainder of the energy industry—pipes, power lines, and such—would be maintained, albeit in altered form, in a clean energy future.¹

The conventional energy industry creates very few jobs per dollar of consumer spending. As measured by the number of full-time employee equivalents per dollar of value added (a standard measure of industry output) the oil and gas extraction industries created less than one-tenth of the jobs per dollar of output than the economy as a whole. The utility industry was one fifth as labor intensive as the economy as a whole, and the petroleum and coal products industry was only thirteen percent as labor-intensive as the national average.² In contrast, a survey of thirteen studies of the relative job creation of renewable and conventional energy found that renewable energy created three to five times as many jobs over the life of the technology.³

The production of coal, oil, and gas employ a far smaller share of African Americans than other U.S.

industries—only 3.4 percent, compared to 9.6 percent for manufacturing and 10.8 percent for the economy as a whole (see Table 7, page 31).

As a result, the switch toward renewable energy is likely to have two effects on African American employment: a *labor-intensity* effect, that comes about because alternative energy sources generally take more labor to produce than coal, oil, or gas; and a *more-representative industries* effect, that comes about because the new industries are likely to have a higher share of African American employment than existing fossil-fuel industries.

Table 7 also shows employment in traditional energy industries and the economy as a whole. In both relative and absolute terms, few African Americans are employed in the energy industry. The coal mining and oil and gas extraction industries, likely to be among the most affected by climate policy, are the least diverse in the energy sector. Petroleum refining, which is also likely to face adverse impacts, employs a share of African American workers which is more nearly proportional to the share in the entire population, but still comprises a small fraction of overall African American employment. A shift away from fossil fuel extraction will therefore involve shrinking sectors where African Americans have fewer jobs and growing sectors where they have a higher percentage of jobs, creating more African American jobs on net.

Already, green jobs employ millions of people in the U.S. According to a study by Roger H. Bezdek of the Management Information Systems, Inc. on behalf of the American Solar Energy Society,⁴ the U.S. renewable energy industry employed 196,000 people directly and an additional 256,000 people indirectly in industries up the supply chain in 2004. The energy efficiency industry which includes both the manufacture of efficiency-specific products like insulation, and the fraction of conventional industries that produce high-efficiency versions of their products, like highly fuel-efficient cars and Energy Star appliances. The existing efficiency industry creates 2.4 million jobs directly and 5.8 million jobs indirectly.

In the study, Roger H. Bezdek examined two scenarios for the growth of the renewable energy industry.⁵ The first is a low-effort scenario in which the proportion of renewable energy rises from its current level of five percent to fifteen percent by 2030. In the second scenario, renewable energy is assumed to rise to thirty percent by 2030. It should be noted that even the advanced scenario is not a particularly remarkable accomplishment. Many European nations have adopted targets that substantially exceed those stated, such as Germany with a forty-five percent renewable goal by 2030. In the U.S., California has announced a goal of thirty-three percent renewable electricity, not by 2030, but by 2020.

According to the study, a quite moderate investment in energy efficiency and renewables consistent with the low-effort scenario could generate over three million additional green jobs directly and indirectly by 2030.

Climate legislation will increase demand for energy efficient products, including appliances and manufacturing, as well as construction for retrofitting

buildings, and service industries that consume relatively less energy than other industries. Employment in these sectors, with the exception of construction, tends to have a higher than average proportion of African Americans.⁶ Research has shown that well-designed climate and other environmental policy can both protect the environment and create jobs in these industries.⁷

Green Jobs: Emerging Growth Sectors

While green energy jobs are widespread throughout the economy, including in many manufacturing industries, transportation, and utilities, and in many service industries, this section examines one important class of green jobs: the emerging renewable electricity technologies.

Renewable electricity is a growth industry by any plausible measure. Globally, installed wind capacity has been growing at a rate in excess of thirty percent per year since 1997, in contrast to the overall rate of growth in U.S. electricity generation of only one percent. This is an industry with a future. Until recently, the U.S. lagged somewhat behind the rest of the world in wind growth, but between April 2007 and April 2008 U.S. wind

Table 7. Employment and African American Employment in Selected Energy and Non-Energy Industries, 2007

	All Races	African American	African American Share
Employment (thousands of jobs) 2003-2007 Average	141,842	15,355	10.8%
Manufacturing	16,464	1,582	9.6%
Wholesale and retail trade	21,049	1,976	9.4%
Transportation and utilities	7,286	1,177	16.1%
Agriculture, forestry, fishing, and hunting	2,201	56	2.5%
Oil & gas extraction	87	5	5.6%
Coal mining	87	1	0.9%
Petroleum refining	138	17	12.2%
Misc. petroleum and coal products	21	4	18.7%
Petroleum products wholesale	133	8	5.7%
Gasoline stations	518	57	11.0%
Fuel dealers	94	5	5.9%
Electric power generation, transportation, and distribution	611	60	9.7%
Natural gas distribution	126	13	10.5%
Electric and gas, and other combinations	84	7	7.7%
Energy Industry Total	1,899	177	9.3%

Source: U.S. Bureau of Labor Statistics

Table 8. Cumulative Emissions from the U.S., Africa, and Other Regions Relative to an Equal Share Per Capita (1850-2004)

Industry	Revenue (\$bill.)	Direct Jobs	Indirect Jobs	Total
Renewable	39.2	196,000	256,000	452
Efficiency	932.6	2,498,000	5,548,000	8046
Total	971.8	3,694,000	4,804,000	8498

power grew at a striking forty-five percent per year, with no immediate signs of slowing. Since 1997, domestic photovoltaic shipment has grown at thirty-six percent per year. Many other renewable energy sources are also growing quickly.

Biofuel production is a popular alternative to conventional fuels, and the production of solid, liquid, and gaseous biofuels are all rising rapidly. However, much of the U.S. biofuel production is based on food crops like corn, which are not only less efficient in terms of energy gain but also threaten potentially devastating social effects as necessary food is diverted to fuel uses.⁸ Other so-called biofuels confirm that a biological origin is not enough to assure that an energy source is ecologically or socially sustainable, as witnessed most notably by the environmental justice community's struggle with trash incinerator power plants.⁹

Biofuels are not inherently dirty, but their use should be confined to appropriate technologies such as emerging cellulosic ethanol, which can be made from crop wastes and sustainable-yield energy crops rather than from foodstuffs, and which produces more net energy than grain-based ethanol. As a substitute for gasoline, cellulosic ethanol reduces global warming pollution by eighty-five percent,¹⁰ while food-based biofuels can actually increase emissions by a factor of two or more.¹¹

Expanding the use of renewable energy sources is a potential source of jobs, and especially African American jobs, for two reasons. First, renewable electricity production creates on average about four times the jobs as energy production from coal and gas per kilowatt hour sold. Second, the share of African Americans hired by the industries that produce renewable energy, though still below proportion of African Americans in the population as a whole, is twenty-seven percent higher than the African American share of employment in fossil generation over the total fuel-cycle. The result is both more jobs and a more fair distribution of jobs.

If You Build It (and Maintain It and Fuel It), Jobs Will Come

Table 10, next page, shows the jobs created by generating a megawatt of delivered electricity for a year,¹² including jobs in construction, operation and maintenance, and in the fuel supply chain.¹³ Estimated jobs for each component and technology are derived from material presented in a study by the Energy and Resources Group at the University of California, Berkeley, analyzing and summarizing thirteen studies of the employment impacts of investing in renewable energy.¹⁴

As of 2008, electric generators produce almost half of U.S. electricity with the fuel that causes the most global

Table 9. African American Share of Employment, Selected Industries 2006

	All	African American	African American Share
Construction	1,124,920	80,374	7.1%
Electrical Equipment, Appliances, and Components	339,780	39,512	11.6%
Retail Trade	7,005,493	1,034,791	14.7%
Automobile and Light Duty Vehicle Manufacturing	234,917	43,891	18.7%

Source: U.S. Equal Employment Opportunity Commission

warming pollution, as well as the most health and environmental impacts overall: coal. Roughly a fifth of electricity comes from gas, another fifth from nuclear power, and the remaining tenth from renewable sources. Oil provides only one percent.

The coal industry has an abysmal record of racial diversity in its workforce. Even when transportation and processing are included, African Americans account for only 3.4 percent of workers in the coal industry. As a result, substitution of almost any form of energy for coal results in net job creation for African Americans. The natural gas industry has an average which is closer to the manufacturing norm. However, only thirty-two percent of gas production goes to electricity generation, as opposed to ninety-two percent of coal.

Because industries vary in the proportion of African Americans they hire, the number of African American jobs per average delivered megawatt-hour is estimated in the same manner as above, using 2006 industry concentrations from the U.S. Equal Employment Opportunity Commission (EEOC).¹⁵ The results are shown in Table 11, next page.

Given that the estimate of African American jobs per average delivered megawatt hour varies among industries by more than a factor of ten, alternative future energy scenarios would have major implications for employment. Suppose the U.S. switches one percent per year of its total generating capacity from fossil fuels to renewables. This is by no means an unreasonable

target. For example, between 2000 and 2007, Germany increased its share of renewable energy from six percent to fourteen percent, or 1.14 percent per year. Half of that increase has been from wind power, and another fifth from biomass.¹⁶ Under such a one-percent-per-year scenario, starting in 2009, by 2030 the share of fossil electricity would fall from its current level of seventy-one percent to just fifty percent.¹⁷

Jobs Under Four Policy Scenarios

This section considers two scenarios for achieving the renewable increase, a wind/solar scenario and a biomass-centered scenario. Similarly, two scenarios are considered for achieving the associated reductions in fossil fuels, an equal megawatt reduction scenario and a mainly-coal scenario. Table 12 (page 35) shows the assumptions of each scenario.

Because of the relatively high price of photovoltaic (solar) cells, modest market penetration is assumed, even under the high-solar scenario. A more complete analysis with a wider range of solar technologies would explore greater penetration of the market from those technologies, such as through the more cost-effective central station/concentrating mirror array form of solar generation.

Table 13 (page 36) states the effects on employment in the electricity generation industry under each of these scenarios, assuming no change in the rest of the sector. The upper set of four numbers is the change in total jobs; the lower set is the change in African American jobs.

Table 10. Jobs in Renewable and Fossil Electricity Generation

Technology	Jobs per Megawatt of Delivered Power				Jobs per 1% of U.S. Electric Generation
	Construction, Manufacturing & Instalation Jobs	O&M Jobs	Fuel Extraction & Processing Jobs	Total	
PV (low)	6.21	1.20	0.00	7.41	35,358
PV (high)	5.76	4.80	0.00	10.56	50,389
Wind (low)	0.43	0.29	0.00	0.72	3,420
Wind (high)	2.51	0.29	0.00	2.80	13,338
Biomass (high)	0.40	0.52	1.92	2.84	13,552
Biomass (low)	0.40	0.05	0.33	0.78	3,722
Coal	0.27	0.23	0.51	1.01	4,819
Gas	0.25	0.12	0.58	0.95	4,533

For total national jobs, all scenario combinations show a substantial net job gain, about twenty-three percent better than a business as usual scenario (zero net jobs). Comparing the mainly-coal reduction to the fifty-fifty share reduction, the latter is very slightly the better of the two, but the difference is so small that it is probably within the margin of uncertainty for an analysis of this type. However, because coal-generated electricity produces nearly twice the emissions per megawatt hour as gas-fired electricity, the “mainly coal cuts” option also has a twenty-six percent greater reduction in global warming pollution and lower levels of various local co-pollutants.

The results for African American employment are qualitatively similar, overall, with a similar scale of net job creation relative to the size of the African American population. The wind/solar option is better than the biomass option by a similar amount, twenty-two to twenty-four percent more jobs. However, for African Americans, unlike the nation as a whole, the pro-environmental option of a coal-oriented reduction is also unambiguously a net job creator, by eleven to thirteen percent more than the reduction split fifty-fifty between gas and coal. This is because of the lower employment of African Americans by the coal industry.

Growth, Employment, and Green Jobs

The benefits of a move to a more sustainable economy are not always obvious at first read. Although jobs in the new clean energy industries provide the most visible benefit of moving to a more sustainable energy future to the nation and to African Americans, they are not the largest or the most economically important class of jobs created, nor the most important to the African American community. Deeper but more subtle macroeconomic changes could produce—or destroy—many times the number of direct energy jobs.

These “invisible” green jobs come about because the traditional fossil fuel industries employ fewer people per dollar of output than almost any other sector of the economy, and many of these jobs (in oil drilling, for example) are overseas. When a policy promotes cost-effective energy conservation, the dollars that households and businesses save are spent on other things—and almost all of those things create more jobs per dollar than the energy purchases did. These jobs are “invisible” because they are simply the result of households and companies having more dollars to spend, so they are spread over the entire economy. Such jobs do not come with a label saying, “this is a green job,” even though they are a direct result of policies to reduce global warming and air pollution.

Table 11. African American Jobs in Renewable and Fossil Electricity Generation, Based on 2006 Industrial Concentrations

Technology	African American Jobs per Megawatt of Delivered Power				Jobs per 1% of U.S. Electricity Generation
	Construction, Manufacturing & Installation	Operations and Maintenance	Fuel Extraction & Processing Jobs	Total	
Black employment share	7.9%	7.8%			
Biomass			9.5%		
Coal			3.4%		
Natural Gas			10.2%		
PV_1	0.49	0.09	0.00	0.59	2,799
PV_2	0.46	0.37	0.00	0.83	3,969
Wind_1	0.03	0.02	0.00	0.06	270
Wind_2	0.20	0.02	0.00	0.22	1,056
Biomass (high)	0.03	0.04	0.18	0.25	1,213
Biomass (low)	0.03	0.00	0.03	0.07	319
Coal	0.02	0.02	0.02	0.06	272
Natural Gas	0.02	0.01	0.06	0.09	421

Table 12. Assumptions for the Emissions Reduction and Renewable Generation Increase Scenarios, 2030

Renewable Scenarios	Fossil Scenarios
Wind/solar focus: 85% wind, 9% biomass, 6% PV	Equal cuts: 50% coal, 50% natural gas
Biomass focus: 40% wind, 57% biomass, 3% PV	Mainly coal 90% coal, 10% gas

Economic analyses of climate policy have forecast a wide range of different outcomes for growth and employment. For example, the World Resources Institute surveyed a collection of studies of the economic impact of climate change policy, finding costs ranging from a loss of 4.3 percent of GDP to an increase of 3.5 percent of GDP. The study found that, although a small portion of this variation in outcomes comes from the differing methodologies and models used in projecting them, most of the variation is caused by the choice of policies that were modeled.¹⁸

Generally, it has been found that the sudden application of strict greenhouse gas emission limits, using a cap with allowances that are given away free to polluters and no policies to promote new technologies or offset the competitive burden on energy-intensive industries, will harm the economy. On the other hand, a more gradual reduction, with auctioned allowances or a carbon charge; recycling of the revenue to cut taxes or for high-value public investments such as education or infrastructure; accelerated introduction of new clean technologies or energy efficiency; and appropriate policies to level the playing field for energy-intensive companies in traded products, are invariably found to have a positive net effect on GDP and employment. Theoretical analysis finds that returning the revenue offsets most of the cost of an allowance system or tax,¹⁹ and the combination of such policies with efficient technology promotion will result in net gains in almost every case.²⁰

For example, a survey of over one hundred European studies that examine the relationship between environmental taxes, GDP and job creation found that the combination of a tax on greenhouse gas emissions and revenue recycling through cuts in other taxes creates jobs, and that the mean impact on GDP of such environmental tax reform was zero. Only a handful of these studies also included technology promotion policies; but of these, eighty percent found net GDP increases.²¹ Other surveys have found similar

results.²² Theoretical studies have also shown that this combination—technology promotion and revenue recycling—can be expected to produce net positive effects on economic output.²³

Such a policy for the U.S. was analyzed by the Economic Policy Institute and Redefining Progress using the LIFT model, a sophisticated ninety-eight-sector macroeconomic model built by the Inforum modeling group at the University of Maryland College Park.²⁴ It found that a policy that would cut emissions by fifty percent over twenty years relative to business as usual would, by the end of that period:

- Increase GDP by 0.6 percent;
- Increase employment by 0.87 percent, or 1.6 million jobs;
- Reduce the unemployment rate by 0.8 percentage points; and
- Increase real wages by 0.3 percent.

It should be observed that this study assumed that a significant part of the revenues from a carbon emission allowance auction or fee would be used to offset any burden on low-income households. This slightly reduced the level of economic growth that was stimulated, but resulted in the package being progressive in its overall income distribution.

As shown previously, a 0.8 percent decrease in the overall unemployment rate means a 1.8 percent decrease in the African American unemployment rate or about 433 thousand jobs for African Americans in 2030, 27 percent of all the new jobs created. Together with the 0.3 percent increase in wages and the progressive distribution of the tax cut that this study assumed, the policy package described in that report would increase the average income of African Americans by about 3.1 to 4.2 percent, not including the value of the health and environmental benefits.

In other words, a good climate policy is also a powerful economic justice policy.

Green Jobs Legislation

In the preceding sections, it was assumed that the proportion of African American jobs in the green jobs sector would be similar to the historical proportion of African Americans in the same industries. Imagine, however, that African Americans had made a strategic decision thirty years ago to move into the computer industry in large numbers, at every level from entrepreneur to maintenance and repair. Because this is a relatively well-paid industry with a growth rate well above that of the economy as a whole, the result would have been a higher income and employment rate for African Americans than actually occurred over that period. The African American community now faces this same opportunity with respect to the emerging green jobs industries, especially those relating to energy efficiency and renewable energy. Like the computer industry, the clean energy industry expects rapid growth for many years. It is also similar in that studies have established that clean industry provides good jobs, not McJobs—even for those with relatively low initial skill levels.²⁵

How can assurance be given that the African American community is best positioned with respect to this growth industry? If it is possible to do better than the historic rate of employment of African Americans in these

Table 13. Net Employment Change in 2030 from Alternative Scenarios for Shifting 1% of Electricity per Year from Fossil to Renewable

Fossil Scenarios	Renewable Scenarios	
	Wind/Solar Focus	Biomass Focus
	Net New Jobs, Total	
Equal Share	708,825	577,859
Mainly Coal	695,291	564,326
	Net New Jobs, African Americans	
Equal Share	76,285	61,428
Mainly Coal	84,323	69,466

industries, then the job estimates given above could be too low by a factor of three or more.

One approach to greater participation of African Americans in the coming “Green Wave” is through direct green workforce training and development initiatives. This approach is exemplified by the Green Jobs Act,²⁶ which was passed by the U.S. Congress and signed into law in late 2007, along with funding of state and local energy efficiency and renewable energy programs, as exemplified in the Energy Efficiency Block Grant Program.²⁷ The Green Jobs Act authorized \$125 million per year to create an Energy Efficiency and Renewable Energy Worker Training Program.

The Green Jobs Act provides funding for national and state-level research programs, multi-stakeholder worker training partnerships in efficiency and renewable energy, and the Pathways Out of Poverty Program, which is specifically directed at removing people from poverty through training and employment in efficiency and renewable energy. The Act states that grants are to be awarded “on a competitive basis to nonprofit partnerships to carry out training programs that lead to economic self-sufficiency and develop an energy efficiency and renewable energy industries workforce.”

The Green Jobs Act, if fully funded by the appropriations process (which was not assured at the time of publication) will train 35,000 workers per year for green energy-related jobs. While this is considerably less than it needs to be to achieve substantial reduction in either poverty or pollution, the Act was consciously designed as a pilot program and has been introduced in tandem with the Energy Efficiency Block Grant Program. The Block Grant Program authorizes the spending of up to two billion dollars per year, sixteen times the funding level of the Green Jobs Act. Both were passed as part of the Energy Independence and Security Act of 2007. However, similar to the Green Jobs Act, authorized funding has yet not been appropriated.

The Block Grant program could be the medium for expanding Green Jobs Act-like programs many times over. It will almost certainly benefit African American communities in both health and jobs terms. However, its benefits are not as carefully targeted to improve distributional and environmental justice as the Green Jobs Act itself. Instead, distribution will primarily be at the discretion of states and localities, opening a state-by-state political process that will not be certain to

achieve maximum benefit for the communities that need and deserve it most.

Good examples of state-level programs already exist in California and Washington. The California EPA has done an economic analysis of the California Global Warming Solutions Act of 2006 (AB32), concluding that it would create more than 80,000 jobs.²⁸ That number can be expected to increase as the plan evolves, because the bill requires the state to consciously maximize the economic efficiency of the program.

Further, the Ella Baker Center²⁹ has developed a California initiative to invest three billion dollars in green jobs California, which has now been introduced in the California senate as SB 1672, the Renewable Energy, Climate Change, Career Technical Education, and Clean Technology Creation Bond Act.³⁰ The bill would create a bond initiative for a three billion dollar fund to provide grants and loans to state, regional, and local partnerships for career technical education and job training; to support green business growth and job creation; to create meaningful employment and green pathways out of poverty; and to promote high school completion. The bill is supported by an unusual coalition of justice and civil rights groups like the Ella Baker Center, traditional environmental groups like the Sierra Club, and the California Manufacturers and Technology Association, the state's main association for manufacturing industries. As of May 1, 2008, no vote on the bill had been held in the full senate.

Washington State has passed the first bill to explicitly link a limit on greenhouse gases to a green job generation program, the Climate Action and Green Jobs Act (HB 2815).³¹ This bill was the result of a joint organizing initiative by the Washington State Apollo Alliance, Climate Solutions, Green for All, Solid Ground, the Workforce Alliance, and others.

The Act requires total emissions to be at least twenty-five percent below 1990 levels by 2035 and at least fifty percent below 1990 levels by 2050, and mandates emissions reporting from large emitters. It also establishes a green jobs growth initiative designed to at least triple the number of green jobs by 2020, adding more than 17,000 new jobs in clean energy and energy efficiency, and provides funds for labor market research and job training. A report by the state Climate Advisory Team found that target to be feasible.³² It directs the Washington State Department of Ecology to work with

other Western states to develop a market-based system to implement limits on global warming pollution. Finally, it directs the Department of Transportation to develop strategies to reduce vehicle miles traveled by eighteen percent in 2020, thirty percent in 2025, and fifty percent in 2080.

Strong initiatives have also been established in many cities and communities, including Los Angeles, Chicago, Oakland, and the South Bronx. These are surveyed in a recent joint study by Apollo Alliance and Green for All.³³

Missing from the green jobs initiatives to date is any effort to engage or create African American capital or wealth. The Green Jobs Act should be complemented by a program of low-interest loans or loan guarantees and business development and assistance initiatives such as green business incubators.³⁴ Such incubators should be sited in low-income and high-unemployment communities, or in communities with unusually low energy-efficiency in their housing stock. Creative design will be necessary to achieve the maximum benefit, and alternatives such as public-private partnerships, collaboration with state universities and community colleges, and devices to leverage private funds (such as buy-downs and loan guarantees) to finance both the incubators and the incubated businesses should be explored. Such proposals should also include prevailing wage standards or similar measures to assure that the jobs created are living-wage jobs.

Notes

1. It is anticipated that the electric utility industry would actually expand as under likely renewable scenarios, and the refining industry is sufficiently similar to the biomass fuels industry that no substantial net job reduction from the switch is likely. Similarly, the difference between gas station jobs delivering gasoline and biodiesel or ethanol is modest.
2. U.S. Bureau of Economic Analysis, *Annual Industry Accounts* (2006).
3. D. M. Kammen, K. Kapadia, and M. Frupp, *Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate?* Renewable and Appropriate Energy Laboratory, University of California, Berkeley (2004).
4. Roger H. Bezdek, *Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century* (Washington DC: American Solar Energy Society, 2007).
5. Bezdek also analyzed job growth for the energy efficiency industry, but this paper limits its analysis to the renewable energy portion of his study. The efficiency industry as defined by Bezdek includes many jobs producing products that are close substitutes for conventional products which they replace, such a high-efficiency car for a lower-efficiency

car, or a compact florescent light bulb for an incandescent bulb. Bezdek's scoping of the energy-efficiency industry is enlightening and a substantial contribution to the field. However, when determining the economic benefit of a proposed policy, the authors believe net job creation should be measured compared to a baseline in which the money proposed to be spent in the policy case is still spent, but in more traditional ways. Not confident that such a baseline for the Bezdek study could be conducted, the authors are cautious in interpreting his estimate.

6. Note: EEOC data is based on annual surveys of large employers and government contractors that cover fewer than forty percent of total employment, and are thus not comprehensive.

7. See Barrett and Hoerner, *Clean Energy and Jobs: A Comprehensive Approach to Climate and Energy Policy* (Oakland, CA: Redefining Progress & Washington DC: Economic Policy Institute, 2002) <http://www.rprogress.org/publications/2002/Clean%20Energy%20and%20Jobs.pdf>; Barrett and Hoerner, "The Impacts of Increased Corporate Average Fuel Economy Standards on the U.S. Auto Sector" (2005) http://www.rprogress.org/publications/2005/net_cafe.pdf and Bezdek and Wendling, "Potential Long Term Impacts of Changes in U.S. Fuel Efficiency Standards," *Energy Policy* 33 (2005): 407-439.

8. Biofuels made from foodstuffs have been implicated in the sharp spike in food prices since 2005. The prices of staples are up eighty percent since 2005, resulting in food riots in developing nations around the world. The World Bank Group has forecast hunger and hunger-caused unrest in at least thirty-three nations as a direct result of the food price increase. Other factors, such as the increasing share of grain going to meat production, are also involved in the price increase. (Simon Roughneen, "The Global Food Fight," *ISN Security Watch* April 14, 2008, <http://www.isn.ethz.ch/news/sw/details.cfm?ID=18857> See also Susan Jones, "Global Food Crisis Expected to Produce Social Unrest," *CNSNews.com*, April 3, 2008. <http://www.cnsnews.com/ViewNation.asp?Page=/Nation/archive/200804/NAT20080403c.html>; Ana Revenga, *Rising Food Prices: Policy Options and World Bank Response*, PRMPR, World Bank Group (2008). http://siteresources.worldbank.org/NEWS/Resources/risingfoodprices_backgroundnote_apr08.pdf) Because of a large federal subsidy, almost a fifth of U.S. corn production is going to make ethanol. See, e.g. Mark Clayton, "As Global Food Costs Rise, are Biofuels to Blame?," *Christian Science Monitor*, January 28, 2008.

9. See, e.g., D. Clayton Smith, Edward J. Walsh, and Rex Warland, *Don't Burn It Here: Grassroots Challenges to Trash Incinerators* (University Park, PA: Pennsylvania State University Press, 1997).

10. US Department of Energy, "Argonne Expert Addresses Energy and Environmental Impacts of Fuel Ethanol," *TransForum* 5, No. 2 (Fall 2005). <http://www.transportation.anl.gov/pdfs/G/352.pdf>

11. Timothy Searchinger et al., "Use of U.S. Croplands for

Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change," *Science* 319, no. 5867 (2008): 1238 - 1240; Joseph Fargione et al., "Land Clearing and the Biofuel Carbon Debt," *Science* 319 no. 5867 (2008): 1235 - 1238.

12. That is, to produce a megawatt-year of electricity, or 8760 megawatt-hours. For energy sources with lower sustained capacity factors, like photovoltaics, the peak capacity has to be increased accordingly.

13. These are annualized jobs, with construction jobs spread out over the expected life of each type of plant.

14. D. M. Kammen, K. Kapadia, and M. Fripp, *Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate?* Renewable and Appropriate Energy Laboratory, University of California, Berkeley (2004 revised and corrected 2006). <http://rael.berkeley.edu/files/2004/Kammen-Renewable-Jobs-2004.pdf>

15. Corresponding industries are, for construction, industrial non-building structures, NAICS 23493, which includes power plant construction; for operation and maintenance, electricity generation, NAICS 22111; for coal, the sum of coal mining, NAICS 2121, and coal share of oil and coal products, NAICS 32419; for natural gas, the sum of the gas share of oil and gas extraction, NAICS 2111, and gas distribution, NAICS 2212; and for biofuels, miscellaneous organic chemicals, NAICS 32519, which includes the biodiesel and the ethyl alcohol industries. Industry racial composition for 2006. <http://www.eeoc.gov/stats/jobpat/2006/index.html>

16. Arbeitsgruppe Erneuerbare Energien-Statistik, *Entwicklung der erneuerbaren Energien in Deutschland im Jahr 2007* (Stuttgart, Germany: Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, March 2008). http://www.erneuerbare-energien.de/files/pdfs/allgemein/application/pdf/ee_hintergrund2007.pdf

17. Note that a gradual shrinkage of an industry does not need to imply substantial layoffs if the rate of shrinkage is less than the natural rate of retirement plus the rate of voluntary turnover. The sum of these rates is nine percent per year or higher in most industries. See discussion in Barrett and Hoerner, *Clean Energy and Jobs: A Comprehensive Approach to Climate and Energy Policy* (2002). <http://www.rprogress.org/publications/2002/Clean%20Energy%20and%20Jobs.pdf>

18. R. Repetto and D. Austin, *The Costs of Climate Protection: a Guide for the Perplexed* (Washington, DC, World Resources Institute, 1997).

19. L. H. Goulder, "Effects of Carbon Taxes in an Economy with Prior Tax Distortions," *Journal of Environmental Economics and Management* 29, no. 3 (1995); I.W.H. Parry and A. M. Bento, "Tax Deductible Spending, Environmental Policy and the Double Dividend Hypothesis," *Journal of Environmental Economics and Management* 39, no. 1 (2000); I. W. H. Parry, R.C. Roberson, and L. H. Goulder, "When Can Carbon Abatement Policies Improve Welfare? The Fundamental Role of Distorted Factor Markets," *Journal of Environmental Economics and Management* 37, no. 1 (1999): 52-84; N. Mabe and Nixon, "Are Environmental Taxes a Free Lunch? Issues in Modeling the Macroeconomic Effects of

Carbon Taxes,” *Energy Economics* 19, no. 1 (March 1997).

20. Florentin Krause, et al., “Cutting Carbon Emissions at a Profit (Part I): Opportunities for the United States,” *Contemporary Economic Policy* 20 (2002): 339-36. See also appendix E-4 of Interlaboratory Working Group, *Scenarios for a Clean Energy Future*, LBNL-44029 and ORNL/CON-476 (2000).

21. J. Andrew Hoerner and Benoit Bosquet. *Environmental Tax Reform: The European Experience* (Oakland CA: Redefining Progress, 2000). http://www.rprogress.org/publications/2001/eurosurvey_2001.pdf

22. N. Mabey et al. *Argument in the Greenhouse*. (London: Routledge, 1997); R. Shackleton et al., “The Efficiency Value of Carbon Tax Revenues,” in *Reducing Global Carbon Emissions: Costs and Policy Options*, ed. D. Gaskins and J. Weyant (Stanford, CA: Energy Modeling Forum, Stanford University, 1996); Z. X. Zhang and H. Folmer, “Economic Modeling Approaches to Cost Estimates for the Control of Carbon Dioxide Emissions,” *Energy Economics* 20 (1988): 101-120.

23. Ibid. footnote 83.

24. J. Andrew Hoerner and James Barrett. *Clean Energy and Jobs: A Comprehensive Approach to Climate and Energy Policy* (Oakland CA: Redefining Progress & Washington DC: Economic Policy Institute, 2002). <http://www.rprogress.org/publications/2002/Clean%20Energy%20and%20Jobs.pdf>

25. See, e.g., Patrick Burns and Daniel Flaming, *Jobs in LA’s Green Technology Sector*, A report prepared for the Department of Water and Power and the Workforce Investment Board of the City of Los Angeles (Los Angeles, CA: Economic Roundtable, 2006). <http://www.economicrt.org/download/form.html>; Raquel Pinderhughes, *Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with Barriers to Employment* (Berkeley CA: City of Berkeley’s Office of Energy and Sustainable Development, 2007). <http://bss.sfsu.edu/raquelrp/documents/v12OctoberFullReport.pdf>

26. Title X of the Energy Independence and Security Act of 2007 (EISA), enrolled as Section 171(e) of the Workforce Investment Act of 1998 (29 U.S.C. 2916). <http://thomas.loc.gov/cgi-bin/query/F?c110:8:./temp/~c110wuljKw:e820564>:

27. Energy Efficiency Block Grant Program (H.R. 6, §275; H.R. 3221 §9091, subsequently incorporated into the Energy Independence and Security Act of 2007 (EISA) Title V(E), Public Law No: 110-140, 42 U.S.C. 17151).

28. California Environmental Protection Agency, *California Climate Action Team Report to Governor Schwarzenegger and the Legislature* (March 2006), 84-93. http://www.climatechange.ca.gov/climate_action_team/reports/2006report/2006-04-03_FINAL_CAT_REPORT.PDF

29. For information about the Ella Baker Center’s Green Collar jobs initiative, see <http://ellabakercenter.org/page.php?pageid=5>.

30. Available from the California Senate website at http://info.sen.ca.gov/cgi-bin/postquery?bill_number=sb_1672&sess=CU R&house=B&site=sen

31. For full text and legislative history, see <http://apps.leg.wa.gov/billinfo/summary.aspx?bill=2815&year=2007>

32. Washington Climate Advisory Team, *Leading the Way: A Comprehensive Approach to Reducing Greenhouse Gases in Washington State* (January 2008). <http://www.ecy.wa.gov/pubs/0801008b.pdf>

33. Apollo Alliance and Green For All, *Green-Collar Jobs in America’s Cities: Building Pathways Out of Poverty and Careers in the Clean Energy Economy* (2008). <http://www.apolloalliance.org/downloads/greencollarjobs.pdf>

34. A green business incubator is a facility that offers a broad range of business services to small start-up green companies. Such services can include access to office and manufacturing space, the use of meeting rooms and business equipment, basic phone and computer systems and networking, administrative, bookkeeping and secretarial help, and mentoring and advising from established business leaders, academics, experienced retirees, and the like. These services allow an entrepreneur to begin with a lower initial capital investment and to focus on building their business.

COMBATING INSTITUTIONALIZED RACISM AND CREATING HEALTHY COMMUNITIES

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Any discussion of climate change and African Americans would be academic, incomplete, and irrelevant without addressing the issue of racism. Since the 1987 publication of *Toxic Wastes and Race in the United States* by the United Church of Christ Commission for Racial Justice¹ and the 1994 release of *Unequal Protection: Environmental Justice and Communities of Color*,² by Dr. Robert D. Bullard, sometimes called the father of environmental justice, the voices of those on the front lines of the struggle for environmental justice have been reaching a broader audience within the United States.

After a long struggle, the emerging awareness of the need to take on environmental injustice was manifested in the 1994 U.S. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. It appeared that for the first time the U.S. government was promising to pay more than lip service to environmental injustice, and those in the environmental justice movement had reason to celebrate. The memorandum accompanying the order stated:

Environmental and civil rights statutes provide many opportunities to address environmental hazards in minority communities and low-income communities. Application of these existing statutory provisions is an important part of this Administration's effort to prevent those minority communities and low-income communities from being subject to disproportionately high and adverse environmental effects.³

However, these promises were soon broken. By 2004 President George W. Bush's EPA was found to have failed

to implement Executive Order 12898 by the Office of the Inspector General, in a report entitled *EPA Needs to Consistently Implement the Intent of the Executive Order on Environmental Justice*.⁴ Today environmental justice has become all but invisible in President Bush's administration and the U.S. government. This turnaround is an example of how, without the strong and united voice of people of color in the political arena and allies in positions of power, yesterday's victories become once more today's battles.

Environmental Justice, Sprawl, and Healthy Communities

Institutional racism is a system under which white people—whether consciously or not—exercise power and privilege at the expense of people of color.⁵ The U.S. has joined the world in denouncing and opposing institutions and arrangements that tend to support racial inequality,⁶ though it has not yet conquered it on its own shores. Without addressing racism, the underlying conditions that create disproportionate vulnerability to climate change in cities and communities cannot effectively be addressed.

According to the United Nations' Declaration on Race and Racial Prejudice, racism includes "racist ideologies, prejudiced attitudes, discriminatory behavior, structural arrangements and institutionalized practices resulting in racial inequality as well as the fallacious notion that discriminatory relations between groups are morally and scientifically justifiable; it is reflected in discriminatory provisions in legislation or regulations and discriminatory practices as well as anti-social beliefs and acts."⁷

Racism is one of the principle causes of sprawl, as whites flee central cities out of racial fear.⁸ Sprawl harms African Americans by separating jobs and resources from those who need them, increasing transportation costs, and allowing political processes to provide different levels of service to different communities.⁹ Other manifestations of racism that African American communities experience and that lead to higher environmental and climate injustice impacts include inefficient substandard housing;¹⁰ low home ownership, lower rates of property

value growth and the resulting reduction in wealth and resources to invest in efficiency;¹¹ geographic segregation, and neighborhoods without jobs, opportunities, entertainment, markets and schools.¹²

African Americans, at all income levels, spend a higher percentage of their income on energy¹³ and are more likely to spend more time in transit to get to distant jobs and opportunities. African Americans are more likely to suffer the consequences of health impacts from energy-related pollution, and reduced economic resources from higher energy prices and related macroeconomic costs. The combined impacts of the U.S.'s shortsighted policies encouraging over-reliance on fossil fuels and the wide range of social policies that are either caused by racial animus, or serve to preserve racial disparities,¹⁴ multiply as they ripple through African American communities; and the result can be devastating.

Housing in African American communities suffers from pervasive energy inefficiencies including inadequate insulation, older appliances, and inefficient heating and cooling systems. The result is that African Americans spend a higher percentage of income on energy and entire communities are drained of much-needed resources.

Weatherization programs to retrofit substandard homes in low-income communities have a proven track record but are grossly under funded, with only about sixteen percent of eligible households having been served.¹⁵ Indeed, despite the huge increase in energy prices in recent years, there has not been a comprehensive assessment of the potential benefits of a weatherization program since 2002.¹⁶ When weatherization programs are undertaken, the benefits are multiple: over the last thirty years, U.S. Department of Energy has weatherized the homes of more than 5.5 million low-income households, reducing heating bills for those households by thirty-one percent and overall energy bills by \$358 per year at current prices as of April 2006.¹⁷ These savings, when spent locally on goods and services, can spur job growth and economic development in low-income communities.¹⁸

When environmentalists, climate justice advocates, and housing and economic development activists work together in support of requirements to include energy efficiency and renewable energy in new housing projects and to retrofit older housing, one collective step is taken towards addressing the challenges of climate change.

Policies that promote urban development and sustainable, equitable, and racially just expansion also lead to more livable communities with less pollution, accessible transportation, shorter commute times, lower crime rates, and a host of other benefits—including lower greenhouse gas emissions. This has been recognized by traditional environmental groups such as the Sierra Club, as demonstrated by its statement of principles to help guide the creation of such policies:

1. All neighborhoods should have a fair share of the benefits as well as responsibilities of growth.
2. Growth should meet the economic, environmental, and social needs of low-income and other communities.
3. Low-income neighborhoods and communities of color should have a strong voice in decisions about growth.
4. Growth should not displace low-income residents or people of color in urban or rural areas from their homes, livelihoods, or communities.
5. Growth strategies should promote racial, economic, and ethnic integration.
6. Growth strategies should make use of the human, economic, and physical assets within communities.¹⁹

The Sierra Club and other environmental groups are coming to understand that only by creating and implementing social, economic, and energy policies that overcome institutionally racist practices can the challenges of climate change be addressed.

Communities can begin to address the challenges of global warming immediately by taking a new look at planning processes and decisions. Housing is a necessity, and any smart growth policy that restricts the stock of housing or increases its price, such as density limits, tends to backfire, harming both real community development and social justice. For example, low-density zoning discourages infill development, excludes multi-unit and affordable housing, and ultimately encourages sprawl by driving housing outside of the low-density zone.²⁰

But smart growth policies, if properly designed, will reduce inequity.²¹ Such policies are much more likely to result if local communities, communities of color, and low-income and traditionally underserved communities are involved in the planning process. However, pro-forma involvement is not enough, as these communities typically need resources and support to participate

Catching the Wave

Historically Black Colleges and Universities and Climate Justice

Students at Historically Black Colleges and Universities (HBCU) have a unique role to play in the larger climate change picture. Green jobs in energy efficiency, renewable energy, clean technologies and urban environmental remediation are the wave of the future. Students must prepare for the coming economic transformation and take advantage of the opportunity to catapult the Black community into the forefront of this emerging growth industry. HBCU students must also be part of the internal transition to a new sustainable economy that effectively addresses global warming.

Environment will become a defining issue for HBCU student activists going into the next decade. Already, students are beginning to demand accountability and sustainable practices within the HBCU system. Given the disproportionate impacts of environmental degradation in communities of color, it is imperative that our minority-serving institutions, particularly historically Black colleges and universities, begin to teach and practice sustainability.

Dr. Beverly Daniel Tatum, President of Spelman College, said in a press release announcing the college's environmental initiatives, "Building 'green' is a smart investment in the future." Expressing her concern about environmental sustainability, she added, "The very future of our planet is at stake. I believe we have an obligation to increase our own environmental responsibility at Spelman and to educate students about it." Dr. Michael A. Battle, President of the Interdenominational Theological Center (<http://www.theoecology.org/>), is working hard to advance an innovative, spiritually based Theo-Ecology theme. While these efforts are to be commended, they are just the beginning, and African American students must lead the way by recognizing climate justice as the civil rights issue of their day.

—Felicia Davis
EJCC Steering Committee, Black Leadership Forum,
and Benjamin E. Mays Center

effectively. Without such resources and support any "open" process is just a sham. As Georgetown law professor Sheryll Cashin states in her discussion of how racism is undermining the American Dream:

To ensure that smart growth policies are properly designed to overcome past practices requires and is dependent upon the participation of local community members. Local planning practices must develop agendas that encourage citizen involvement in planning; planning should always consider developing housing and commercial projects around transit stops; the training of former welfare recipients and other community members for living-wage jobs in the environmental remediation field and where applicable the redevelopment of polluted urban brownfields, should always be part of overall planning efforts.²²

Urgent action is necessary to prevent dangerous climate change, and, because institutional racism imposes major barriers to a rational energy policy, global warming will not be solved without addressing these racial barriers directly. Institutionalized racism in the U.S. is an overarching institution of power that acts as a force for inertia, blocking progress on climate and many other urgent priorities. A joint attack on racism and climate change is therefore more likely to be effective than either effort pursued in isolation.

Public Transit, Economic Opportunity, and Regional Economic Health

Despite the policies of the current administration, low-income communities are tackling global warming head-on. A good example of a local initiative showing what engaged communities can accomplish took place in Los Angeles, where the freeway system was invented.

For low-income residents of Los Angeles, the poor quality of urban bus services provided by the Metropolitan Transportation Authority (MTA) undermined the ability of the urban population to gain access to jobs and life necessities, while increasing local smog and global warming pollution. After an extensive community campaign the organizations leading the struggle turned to litigation as a strategy to bring the issue to a head. In this case, *Labor/Community Strategy Center and Bus Riders Union et al. v. Los Angeles County Metropolitan Transportation Authority*, the Bus Riders Union (BRU) and the NAACP Legal Defense and Education Fund challenged the MTA's policies of racial discrimination and won. They secured for themselves and all the people of L.A. a settlement agreement that included a ten-year contract that obligated the MTA to improve L.A.'s bus system. The October 1996 landmark

civil rights Consent Decree was intended to remedy years of MTA racial discrimination policies.

The BRU filed their case because they had no other choice. Prior to the litigation, the MTA bus system was in disrepair—a system that was the transit lifeline to employment, education, public services, extended family, and cultural and recreational sites for 400,000 bus riders, of which nearly 90 percent are people of color, 60 percent women, and an overwhelming number of low-income residents.

Thanks to the BRU’s legal and grassroots organizing and advocacy, hundreds of millions of dollars in bus improvements for low-income transit dependent riders were generated as a result of the law suit. Victories since the 1996 decision include:

- “Reducing the monthly bus pass—which the MTA had tried to eliminate—to \$42 a month (from \$49), and creating the first \$11 weekly bus pass. Consequently, bus pass use has increased and low-income riders have saved tens of millions of dollars each year. At the same time, lower cost transit led to a significant increase in transit use since 1996.
- 2,100 new clean fuel compressed natural gas buses to replace a mostly diesel fleet.
- Fleet expansion by more than 300 buses.
- The first Rapid Bus lines that dramatically reduce transit times on major surface streets.”²³

The connection between protecting people of color, indigenous and low-income communities and solving key environmental problems is a recurring theme of the history of U.S. environmental policy. Just as the banning of the toxic pesticide DDT, one of the most critical milestones in the development of U.S. policy on toxics, began with a campaign by the United Farmworkers and a lawsuit by California Rural Legal Assistance to protect migrant farmworkers from dangerous exposure, so the BRU case is a milestone in creating the kind of urban transit infrastructure needed to defeat global warming. And just as it has been shown that residential segregation and racial disparities in political power lead to higher levels of pollution for everyone,²⁴ so victories like that of the BRU build a better bus system and cleaner air for all the people of Los Angeles.

The BRU case shows clearly that social solidarity within communities and across racial lines is essential to identifying the policies that simultaneously

A Brief Timeline of the Struggle for Climate and Environmental Justice in the U.S.

1896 Plessy v. Ferguson codifies racism and formally ends Reconstruction with “separate but equal” doctrine.

1968 Martin Luther King, Jr. leads Black Memphis sanitation workers in garbage strike.

1969 California Rural Legal Assistance’s Ralph Abascal files suit on behalf of six migrant farm workers that leads to ban of DDT.

1970 U.S. Public Health Services finds lead poisoning disproportionately harms African Americans and Hispanic children.

1979 Linda M. Bullard files the first civil rights suit challenging a decision to site a waste facility in a people of color community (Bean v. Southwestern Waste Management, Inc.) for Northeast Community Action Group in Houston.

1982 Dr. Benjamin Chavis coins the term “environmental racism” to describe PCB landfill in Warren County, North Carolina.

1987 *Toxic Wastes and Race in the United States* report issued by United Church of Christ Commission for Racial Justice.

1991 First National People of Color Environmental Justice Summit.

1991 Principles of Environmental Justice created.

1996 L.A. Bus Riders Union wins landmark Consent Decree addressing transportation segregation and environmental racism.

1998 Indigenous Environmental Network facilitates the Native Peoples/Native Homelands Climate Change Workshop, leading to the “Albuquerque Declaration,” sent to the UN Fourth Conference of the UN Framework Convention on Climate Change.

2000 Environmental justice leaders participate in Climate Justice Summit in The Hague, Netherlands.

2001 Environmental Justice and Climate Change Initiative formed.

2001 Ten Principles of Just Climate Policy created.

2002 Second National People of Color Environmental Summit.

2005 Katrina strikes (a current and ongoing disaster).

2007 Hottest year on record.

2008-2009 Comprehensive climate policy language developed based on equity and justice.

address global warming and reduce racial and income inequality—and that such coalitions and policies lead to political victory and successful implementation. The cooperative development of sustainability policy within coalitions is essential for any climate policy that hopes for long-term success. People of color must be in the leadership of such fights for the battle against climate change and for sustainable communities to succeed.

Notes

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ELEMENTS OF A JUST CLIMATE POLICY

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Our research has shown the vast scope of the harm to African Americans from global warming and current energy policy, and it makes clear that, considering major alternatives for cutting global warming pollution, the African American community is greatly helped by some and seriously injured by others. In fact, the policies that are best for African Americans are best for all Americans and for the economy as a whole, while policies that provide windfall profits to big producers of dirty energy harm the economy and African Americans disproportionately.

Polluters Must Pay

When the impacts of global warming on African American families and others are compared to the inordinately high rate of profits the industry has reaped at the public expense, largely through profiteering from wars that have cost many American and non-American lives, it is clear that the cost of reducing global-warming causing pollution should be borne as much as possible by the polluters themselves. Emissions reductions should be quick and effective, and must not increase the burden on those most harmed and least able to bear the costs.

Alternate futures: phony reductions, corporate windfalls, and polluter-pays There are three broad kinds of future energy scenarios that can be defined by who will pay for global warming, each of which has powerful advocates. They will be called the *phony reductions* future, the *corporate windfalls* future, and the *polluter-pays* future.

In the *phony reductions* future, the U.S. does not cut its emissions by much, but instead pays other nations, mainly in the developing world, to cut pollution for us. The advocates of this approach stress voluntary measures, the clean development mechanism (CDM) under the Kyoto Protocol (which allows developed nations to pay for reduction projects in the developing world and take credit for the resulting reductions), and international trading. Often they stress offsets, such as planting trees or other crops that absorb CO₂, over actual emissions cuts. Sometimes they propose other expensive and untested technical “solutions” that allow us to continue to burn fossil fuels unabated, like pumping CO₂ from power plants down abandoned oil wells. These reduction schemes are touted as a cheap and easy way out of the U.S.’s reduction obligations.

Unfortunately these schemes often have nasty social or environmental side effects.¹ On February 8, 2008, an international coalition of environmental justice groups addressed these concerns in a document entitled *The California Environmental Justice Movement’s Declaration on Use of Carbon Trading Schemes to Address Climate Change*.² Regarding CDM, the coalition found that:

14. Whereas, the European Union Emissions Trading System (EU-ETS) and the CDM sanctions the continued exploration, extraction, refining, and burning of fossil fuels and finances projects such as private industrial tree plantations and large hydro-electric facilities that appropriate land and water resources jeopardizing the livelihoods of local communities in the Developing World as carbon dumps for industries in the Developed World; and
15. Whereas, the EU-ETS and CDM fail to address and further deepens entrenched social inequalities, irresponsible development trends, inadequate hazard reduction policies, and are silent on confronting disaster vulnerability of populations worldwide; . . .

Indeed, it is not yet possible to assure that the emission reductions achieved by such offset programs and international trading schemes are even real.³ For example, many kinds of offsets “leak,” in that emission reductions that take place in one state or country or at one time then cause increases in emissions in another state or country or at a later time. Such policies may actually produce net increases in emissions.

Consider for example, an initiative that preserves a forest that would otherwise have been clear cut. If this initiative has no effect on the global demand for wood products, as it probably does not, then every tree which is not cut down in the preserved forest is offset by another tree which is cut down somewhere else to supply the demand for wood that would otherwise have been met from the preserved forest. As a result, no net carbon dioxide is sequestered. Yet the purchase of a forest “offset” has allowed polluters to continue to burn fossil fuels and dump global warming pollution into the air.

The phony reductions approach has little direct effect on the economy, positive or negative, because it does not really cut emissions. But all the harms that flow from global warming will be much worse if this path is followed.

On the other hand, even with the anemic effect on emissions reduction cited above, there are three good things that can be said for this family of policies if they are sufficiently well designed and screened. First, they reflect some recognition that the developed world caused most of this problem and has an obligation to pay, or at least help to pay, for low-emission solutions in the developing world. Second, this approach has the potential to accelerate the development of renewable energy sources like photovoltaic (solar) cells in both the developed and the developing world, because the price of new technologies falls as the market expands, which then leads to further expansion in a virtuous circle. Paying for the development of zero-emission renewables in the developing world can help accelerate this process. Finally, these policies can be used to protect rapidly disappearing habitats that preserve essential biodiversity as well as sequester carbon dioxide. If this family of policies were completely eliminated, and not merely brought under tight control, some other way should be found to finance these three priorities.

In the *corporate windfalls* future, big polluters are treated as if they have a right to pollute and consumers

and taxpayers are obligated to bribe them to quit. This option is sometimes called “cap-and-trade” because polluters are given a share of the total pollution allowed (the “cap”) and can then sell their allowances to other polluters who want to keep polluting (the “trade”). Polluters who keep or buy allowances have to justify doing so to their stockholders by earning a return on their market value, which they can only do by passing the cost of the allowances on to consumers, who ultimately have to pay for them.

These corporate bribes burden the economy, destroy jobs, and affect poorer households disproportionately. For reasons given above, they also harm average African American households more than white households, even when households are matched by income.

Cap-and-trade advocates sometimes claim that the system is actually beneficial to the end users. They assert that if polluters do not have to pay for the allowances they have no additional costs to pass along to consumers. This is like saying that, because OPEC does not set the price of gasoline in Atlanta, they reap no economic benefit from the shortages they can create—or that U.S. consumers face no burdens from such shortages.

A basic understanding of economics and a review of actual past practices shows that restricting supply drives up the price of fossil fuels, and the profits go to whoever has their hand on the spigot that controls the flow. Under cap-and-trade, that is the entity that owns or sells the allowances. The resulting higher prices turn straight into oil and coal company profits while draining money and jobs from the entire rest of the economy, and, as shown above, hurting African American households and communities most.

The free allocation of allowances to polluters assumes that the right to pollute belongs to polluters, rather than recognizing the atmospheric commons as the shared birthright of all people. *The California Environmental Justice Movement’s Declaration on Use of Carbon Trading Schemes to Address Climate Change* criticizes cap-and-trade systems and particularly the European Union Emissions Trading System (EU-ETS), stating:

11. Whereas, Phase 1 of the EU-ETS has been documented as giving billions of dollars worth of these “rights,” free of charge, to the biggest corporate emitters of greenhouse gases who are responsible for causing the global warming crisis

and thereby created one of the largest transfers of wealth from low- and middle-income people to private corporations in the modern industrial era; . . .

BE IT FURTHER RESOLVED, that the California Environmental Justice Movement will oppose efforts by our state government to create a carbon trading and offset program, because such a program . . . will not result in a shift to clean sustainable energy sources, it will support and enrich the state's worst polluters, it will fail to address the existing and future inequitable burden of pollution, [and] it will deprive communities of the ability to protect and enhance their communities,...

Further, the coalition observes that there has been a history of gaming such systems—forms of cheating in which the cheater not only engages in cheating themselves, but also sells the allowances acquired by cheating to others.

17. Whereas, the political power of the major global polluters has resulted in carbon trading schemes that include inadequate reporting systems, are impossible for the public and regulatory agencies to monitor, allow gaming of the system by market participants, and lack meaningful penalties for failure to comply; . . .

Such gaming was also rampant in the U.S. Ozone-Depleting Chemical tax and trading system until adequate cross-checks and enforcement mechanisms were put in place.⁴

Cap-and-trade systems are inherently more complex and opaque than corresponding tax, fee, or auction provisions, because under cap-and-trade the allowances are distributed bureaucratically and subject to political manipulation. Cap-and-trade systems must have an elaborate system of baselines assigned to thousands and perhaps tens of thousands of emitters. Because allowances will be very valuable and allocated politically, it is essentially inevitable that the allocation process will be opaque. The large value of the allowances also means that the system must have rules for mergers, spin-offs, start-ups, bankruptcies, and all the complexities of modern corporate finance. They need all this even if just one percent of the allowances are given away for free, because any free allocation to polluters requires the full machinery that is conceptually necessary. Under a

tax, fee, or auction, by contrast, none of these things are needed: no baselines, no trading rules, no tacking beyond first sale, and no rules for mergers, spin-offs, bankruptcies, or start-ups.

A cap-and-trade system can also lead to local pollution “hot spots” if generation is consolidated in a smaller number of locations, or if certain technologies with low global warming pollution but high local pollution (like trash incinerators) are adopted. As discussed above, history has shown us that such hot spots will invariably be located in communities of color.

It should be observed, however, that eliminating trading does not guarantee the elimination of all the abuses that trading has facilitated. For example, phony reductions from voluntary initiatives were an important element in the Clinton Administration's climate policy, and reliance on questionable offsets, foreign emission reductions, or opaque regulatory regimes can be built into a national climate policy even without trading. It is not enough to reject bad policies; they must be replaced with good ones.

In the *polluter pays* future, polluters are charged for all the pollution they produce, and the money from those payments is invested in new technology to reduce pollution or returned to households to offset any costs that polluters are able to pass on. The polluter-pays option can be implemented in a variety of ways that are economically similar though substantially different in their legal, administrative, and political features. These include an emission fee, a pollution tax, and an allowance auction. Each has its own advantages and disadvantages which must be weighed in light of any particular state or federal legal, administrative, and political constraints.

Fees, Taxes, or Auctions?

There are several common features of fees, taxes, and auctions. Each would provide a similar economic incentive to reduce emissions, could be set to produce a comparable level of revenue, and should be understood to supplement and not replace a regulatory system. None could be relied on to prevent the development of co-pollutant hot-spots unless other measures were adopted simultaneously. Taxes and fees, but not auctions, share the economic advantage and the environmental disadvantage of not building a firm emissions cap into the system.

Advantages and Disadvantages of a Fee Approach Fees are harder to “game” than allowance systems because under a fee or tax a company can only offset its own emissions. Under allowance systems, companies that cheat have sometimes been able to sell the allowances generated by cheating to others, creating even more phony emissions reductions.⁵ For example, the ozone-depleting chemicals (ODCs) cap did not restrict the use of recycled chemicals. Smugglers imported ODCs that were falsely certified as recycled. Until these smuggling rings were broken, ODCs in excess of the cap were used, and smugglers profited from the higher ODC price as the declining cap reduced the legal supply.⁶

A fee sets a fixed price for emissions, providing the business community with predictability they can use for planning. The related downside is that a fee does not provide a hard limit on aggregate emissions the way a well-enforced cap does.

Environmental fees face a political problem in that they have traditionally been relatively small and used only for the administration of environmental programs. A substantial fee, large enough to finance a major economy-wide program of investment in new energy technologies while simultaneously offsetting the burden on low- and moderate-income households, would violate norms and expectations about such fees. In some cases this will cause political or administrative problems.

The federal government and California and many other states make a significant distinction between fees and taxes, a distinction that varies from jurisdiction to jurisdiction in both its scope and its implications. For instance, at the federal level, taxes must originate in the House of Representatives, and must be approved by the Senate Finance and the House Ways and Means Committees. Many customs, rules and expectations have grown up around fees, and new fees that violate these expectations are much more likely to be found to be taxes under a range of traditional tests. Whether this is an advantage or a disadvantage depends on the particular rules and circumstances of the jurisdiction, but, as discussed further in the next two sections, it is more often a disadvantage. Thus, attempting to structure a provision as a fee may limit its overall size and scope.

An emissions fee would presumably be collected by the environmental agency. Again, this has advantages and disadvantages. Such agencies have a considerable experience with implementing fees on large polluters,

and may be most expert in how to measure and monitor emissions, but have very little expertise in using market incentives well or wisely, and are often confused about their potentials, limits, and implications. Further, the enforcement resources of such agencies are normally already strained to the breaking point.

Advantages and Disadvantages of a Tax Approach

The most obvious drawback of a tax approach is the relative political unpopularity of taxes, especially but not only among conservatives. Many conservatives have a long history of opposing taxes, and have been willing to consider revenue sources only when they are not characterized as taxes, such as a user fee or a sale of government property. In some cases, conservatives have decided that a few particular taxes, most often “sin” taxes on alcohol, gambling, or tobacco, are not taxes, or not the sort of taxes that they pledged to oppose.⁷ The record of attempting to put pollution or natural resource extraction taxes into this mold has been mixed.

Taxes are economically similar to fees, in that both generally involve a fixed charge per ton of emissions. However, they are collected by a different agency under a different set of legal rules. Tax enforcement has legal resources and powers that most other agencies lack. A tax approach allows for a financial audit to examine the money trail of fuel purchases as a cross-check against emissions. Virtually all businesses have financial monitoring systems that are far more developed and sophisticated than their systems for monitoring emission flows. The enforcement resources of the revenue agencies are many times those of the environmental agencies at both the state and the federal level. For example, the U.S. IRS has roughly twenty times the number of enforcement employees as the U.S. EPA.

In many jurisdictions, there are additional procedural or constitutional restrictions that tax bills must follow to be enacted.⁸ For example, in California taxes must be passed by a two-thirds majority under the state constitution. Because more than a third of the current legislature have taken a “no new taxes” pledge, this two-thirds vote is essentially impossible to achieve. Thus a tax proposal originating in the California state legislature can only be enacted if one hundred percent of the revenue is used to reduce other taxes. (When a bill proposes an increase in tax revenue, that same bill must reduce another tax. Thus, the bill does not increase taxes, but only changes them, and does not fall under California’s the two-thirds majority requirement).

Advantages and Disadvantages of a Cap-and-Auction

Approach Another approach is for the state to issue a limited number of emission allowances equal to the target emissions level and then sell them to those that wish to buy them. This choice is sometimes called “cap-and-auction,” (or just auction) because the limited amount of pollution allowed (the cap) is assumed to belong to the public and companies that want to continue polluting are required to buy a share of it from us (the “auction”)—or rather, from the government acting on the people’s behalf.

A cap-and-auction system implements the moral value that the environment is a shared birthright. Thus it contrasts with a cap-and-trade option described above, where polluting is a right that belongs to the polluter. Under cap-and-trade, the biggest polluters are usually awarded the biggest share of the allowances, and so make the most profit off of the system. This is morally offensive. With a cap-and-auction, on the other hand, the more a company pollutes the more allowances it has to buy, and so the more it has to pay.

Allowance systems such as cap-and-auction provide incentive systems that are better matched to a strict environmental goal than to taxes or fees. This is because, with a fixed supply of allowances, the price rises with demand, so that it is always strong enough to keep total emissions under the cap.

This advantage has a drawback, however. An unexpected shock to demand, such as a cold winter or a higher-than-expected growth rate, can use up the supply of allowances and send prices skyrocketing with terrible distributional and economic consequences. The best way around this is to allow some very limited degree of borrowing of allowances—say, with a requirement that a company pays to replace them by buying 120 percent of the allowances at the next auction. Auctions could be held quarterly, so that purchasers are never more than three months behind on payment.

Such a “truing-up” mechanism also plays another very important role in a cap-and-auction system: *it eliminates the need for trading*. Under cap-and-auction, people buy only and exactly the allowances they expect to need. All the efficient allocation and efficient pricing benefits that economists claim for cap-and-trade systems also accrue to an auction system for this reason. Still, people do make mistakes, and if correcting them is not to be unduly expensive, the system needs allow either a small

amount of trading or a small amount of truing up at the beginning of each auction period, with the opportunity to purchase allowances required to make up any shortfall for the emissions of the previous quarter. Such a truing-up system poses much less risk of gaming and evasion.

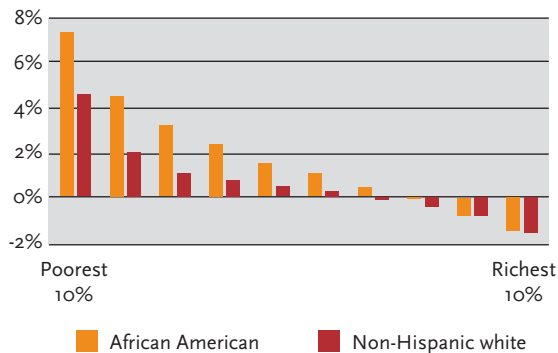
Cap-and-auction also has a combination of legal and political features that can be attractive in some circumstances. In California, for example, cap-and-auction has some extra benefits that it may not enjoy in other states. Under rules declared by the state Supreme Court, a charge is considered a tax if its purpose is primarily to raise revenue, while it is a fee if its purpose is mainly ancillary to law enforcement or if it pays for a benefit or service the government provides. A cap has its purpose as system to limit pollution stamped on its structure, function, and history. It is hard to see how it could be construed as primarily a revenue-raising tool, even if it raises a large amount of revenue. Instead, it is merely a way of returning to the public the monopoly-like profits that energy companies collect as an unwanted side-effect of the allowance system. As a result, the cap-and-auction system can both be passed by a simple majority under the California Constitution (like a fee), and can be used to raise an arbitrarily large amount of revenue (like a tax).

Finally, cap-and-auction has been endorsed by a coalition of major environmental organizations.⁹ If environmental justice and environmental advocates unite around a common position, this would strengthen both their arguments when negotiating with regulators and legislators. Although cap-and-auction is not a solution to the differences between environmental and environmental justice communities, it does offer one framework around which discussion might take place.

Advantages and Disadvantages of a Cap-and-Dividend Approach

A fee approach (if it can avoid being characterized as a tax), a tax approach (if it can overcome legal and procedural obstacles) and a cap-and-auction approach (if it can be kept clean and free of offsets) all raise revenue that can be used in a variety of ways. Of course, if one believes the government is corrupt or unrepresentative, this may be seen as a drawback. Cap-and-Dividend is the name of a proposal by Peter Barnes and others to assure that collective ownership of the atmospheric commons is fully recognized.¹⁰ Under this proposal ownership of the allowances is initially given to individual human beings on a per-capita basis or to a trust to hold in their names.

FIGURE 13: Benefits and Burdens of Equal Per Capita Natural Birthright Payment Financed by a \$50/tonne CO₂ Charge



Polluters must then buy the allowances from people. The political advantages of this approach should not be underestimated. An annual or quarterly “dividend” from the sale of pollution allowances paid directly to every person in the state or country would transform the way the public thinks of the atmospheric commons. Because they would visibly own an interest in the sky that they control and profit from, there would be a large, permanent increment to people’s interest in and support for the system, and a lively public attention that could prevent many abuses.

On the down side, the Cap-and-Dividend approach cannot function without a trading system because the people to whom the allowances initially belong (individuals) are different than the people who need them to continue to operate (businesses). Trading then creates opportunities for gaming. Because Cap-and-Dividend sets up an entirely new system to distribute allowance revenue, it also has a potential for higher administrative costs than other programs that distribute the money through existing channels.

A final drawback is that, because the auction is not a source of government revenue under Cap-and-Dividend, it does not provide financing for developing new clean technologies, offsetting burdens on low-income households with unusually high energy consumption, or providing assistance or compensation to those injured by the changing climate. See further discussion of these issues in the next section.

Although there would be a reduction in the overall level of co-pollutants under any of the polluter-pays systems—cap-and-auction, Cap-and-Dividend, fee, or tax—*none of them* provide any guarantees against the

development of local pollution hot spots as the overall emission shrinks. Additional regulatory provisions are required to assure that these are prevented.

Return Revenue to Communities

Let us consider a basic emission fee of fifty dollars per ton of pollution, collected by the state environmental agency, and returned to consumers directly. Figure 13 (this page) shows one way that a simple fee and recycling proposal could work. Under this approach, the revenues from an emissions fee are returned to households on an equal per-capita basis. Although the per capita payment is the same amount for all groups, it constitutes a larger percentage of income for low-income households. And even though it is financed by a pollution charge that bears down more heavily on low-income households, the net effect is positive for all but the highest-income deciles. (As discussed below, there will still be a small number of low income households with unusually high energy consumption that would have an increased burden under such a program. This burden can also be offset, but to do so requires additional policy measures).

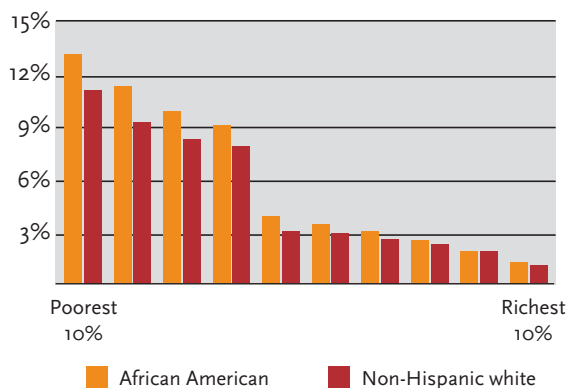
Figure 13 also shows that this proposal would create a disproportionate benefit to African American households, who have a greater benefit or a lower cost in every decile. Overall, the African American community would see net benefits amounting to nearly two percent of the total income of all African Americans.¹¹

Thus, a flat per-capita return of the revenues from a pollution fee, tax or auction is progressive and helps African Americans as a group. However, a more nuanced approach may allow us to reap even larger benefits for justice, the economy, and African Americans.

First, a per-capita give-back does not guarantee that low-income households with unusually high energy use will not be harmed, particularly if a large share of the revenue is used for other purposes. The bottom forty percent of all households is responsible for eighteen percent of the direct and indirect CO₂ emissions. Thus an appropriate targeted give-back program using a mix of income-based mechanisms like the earned-income tax credit and energy-specific hardship programs like the Low Income Home Energy Assistance Program (LIHEAP) and funded with eighteen percent of the revenue would ensure that no low- or moderate-income household is harmed.

Second, it has been shown that cost-effective programs to promote energy efficiency and new clean energy

FIGURE 14: Benefit of Low-Income Offsets, Energy Efficiency, Energy Efficiency Investments, and Per Capita Birthright Benefit Financed by a \$50/tonne CO₂ Charge



technologies can save families and the economy money. A review of such opportunities suggests that by investing about twenty percent of the revenues it is possible to achieve efficiency gains sufficient to offset the price increase from the auction or fee and keep energy bills constant. As these energy efficiency measures phase in, the revenue which is returned as a give-back cash benefit would then become a net source of income and wealth for the poorest households.

Moreover, the provision of energy-efficiency services could strengthen community institutions in ways that indirectly increase the community's capacity to participate in public debate over energy policy, environmental policy, and distributional justice issues.

Finally, it is worth remembering that a certain small segment of industry that is both very energy intensive and subject to direct international or interstate competition is also at risk from a strong polluter-pays policy. These companies can and should be protected in a way that does not diminish the incentive to reduce emissions.

Redefining Progress has studied a combination of these five elements—(1) a polluter-pays fee, tax, or allowance auction; (2) substantial investments in energy efficiency; (3) low-income offsets through a mix of income-support,¹² energy assistance,¹³ and energy-efficiency programs; (4) revenue recycling through taxes and transfers or high-value public investment such as better schools; and (5) leakage/job-loss prevention measures for electricity and energy-intensive traded goods¹⁴—which is collectively referred to as the Climate Asset Plan. Figure

14 (this page) shows the result of one such a program, with eighteen percent of revenues to offset the price increase on the poorest forty percent of households, an additional twenty percent going to promote energy efficiency, and the remaining sixty-two percent being returned per-capita as in the Cap-and-Dividend scenario (though a similar return through the tax system, refundable to low-income households like the earned-income tax credit, might achieve a similar distribution with lower administration costs).

For the bottom four deciles the benefit of this approach is nearly twice that of the simple Birthright Dividend approach cited in Figure 13. Moreover, the energy efficiency provisions eliminate the net burden of higher energy prices on the higher-income households. The result of these efficiency gains is that all sections of the economy enjoy a net income increase.

By comparing this chart with Figure 10 (page 22), showing the distribution of burden without an auction or give-back mechanism, it is apparent that the Climate Asset Plan provides not only greater benefits to African Americans, but also to Americans of every race and across the income spectrum. In effect, although the Climate Asset Plan is designed to provide climate justice, it also succeeds in providing *common justice*, justice for all. The only people worse off are the stockholders in companies producing dirty energy, and even they have a way out by reinvesting their profits in emerging clean energy alternatives.

This version of the Climate Asset Plan described above provides the average African American household with net benefits equal to 4.9 percent of income and the average non-Hispanic white household with a net benefit equal to 2.3 percent of income. It would also provide the macro-economic benefits discussed in “Energy Markets and Unemployment” (page 22), and offset a substantial fraction of the co-pollutant burdens discussed in “Disasters, Health, and Climate” (page 10).

As an alternative to the per-capita Cap-and-Dividend give-backs, sixty-two percent of revenues could be used to cut sales taxes or some combination of income and payroll taxes in such a way that the cut is proportional to expenditures overall. Figure 15 (next page) shows the result of this option. Like the previous scenario, it provides a net benefit to every income group. That benefit is larger than under the Climate Asset Plan for top three deciles and smaller for all others.

Note that there is a philosophical difference between the Cap-and-Dividend and the Climate Asset Plan approaches described here. Cap-and-Dividend allocates all the revenue flows directly to households, whereas the Climate Asset Plan involves government allocation of a portion of the revenue from the carbon charge.

Another appropriate use of a portion of the revenue is to provide assistance to those communities that have been most harmed by the existing energy system. Funds could be used to:

- Identify and monitor potential hot-spots and cheaters who try to emit in excess of the state cap;
- Prevent local air pollution and enforce global warming laws and rules; and
- Support redevelopment of the communities that have seen the most environmental damage historically via community development corporations.

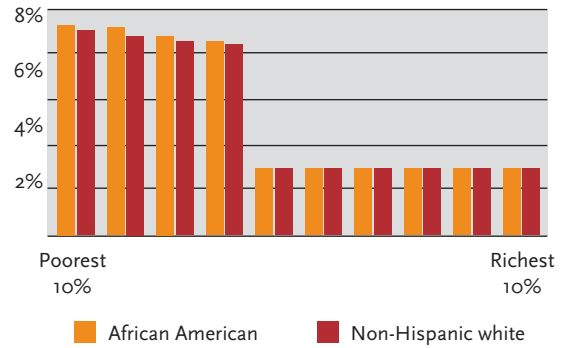
Export Solutions, Not Problems

The developed nations are responsible for creating most of the huge buildup of global warming pollution in the atmosphere, gases with a half-life of over one hundred years. Therefore, it is their responsibility to do most of the work to solve the problem.¹⁵ Developing nations lack the massive research capacity that the Western nations have. Moreover, such resources as those nations possess are urgently needed efforts to escape from the grinding poverty that they still endure.

In addition to realism and ethical responsibility, there is a third reason to take the lead in developing clean energy technologies: because as U.S. technologies spread throughout the world and are adopted in more populous and more rapidly growing nations, the emissions savings from investment in domestic emissions reductions will be increased many-fold. If the point can be reached where clean technology is cost-effective against cheap coal here in the U.S., then it will naturally spread rapidly as developing nations adopt it out of simple self-interest. Conversely, the failure to develop new, cleaner ways of doing business will be multiplied as the world's developing economies continue to adopt historic, dirty technologies instead.

This is a mission the U.S. should take up with pride and enthusiasm. If the U.S. can succeed in developing clean renewable energy sources that are cheaper than coal, then

FIGURE 15: Benefit of Low-Income Offsets, Efficiency Investments, and Consumption Tax Cuts Financed by a \$50/tonne CO₂ Charge



solving global warming is almost inevitable. To succeed without such technologies, the U.S. faces an even harder challenge of finding a way for large and rapidly growing developing nations to reduce their emissions without undermining their citizens' efforts to achieve a decent standard of living.

This is also another reason to oppose international trading and offsets as a cheap way out of carbon reduction obligations. In the words of the *California Environmental Justice Movement's Declaration on Use of Carbon Trading Schemes*:

12. Whereas, carbon trading under Phase 1 of the EU-ETS benefited fossil-fuel intensive corporations and stands in the way of the transition to clean renewable energy technologies and energy efficiency strategies that are critically necessary to substantially reduce greenhouse gas emissions; and
13. Whereas, the Clean Development Mechanism (CDM) under the Kyoto Accord, as well as voluntary private sector trading schemes, encourages industrialized countries and their corporations to finance or create carbon dumps in the Developing World as lucrative alternatives to reducing greenhouse gas emissions in Developed Countries; . . .

In contrast to the export of technological solutions, poorly designed market incentives can export both jobs and pollution. If the cost of domestic energy is increased, energy-intensive producers such as aluminum plants may be driven overseas and their products re-imported instead. The emissions go into the atmosphere anyway, with additional emissions from transport; U.S. jobs are

lost and no environmental benefit accrues to anyone. Environmentalists call this “leakage,” businesses call it “loss of competitiveness,” and unions call it “runaway shops”—but whatever it is called, it is a bad idea.

The solution to this problem under an allowance system is consumption-based accounting; under a pollution tax or fee system it is border adjustment. Under either system, it works the same way. For a relative handful of highly energy-intensive products (of which the most important is often electricity) the emissions from the fuels used in production are treated as if they move with the product. Importers must buy allowances or pay the pollution fee as if they had produced the product domestically, and exporters get a rebate of allowances or fees spent to produce exported products. The outcome is a level playing field. Everyone inside the state or country pays the state’s charge, and no one outside of it does. This arrangement is legal under GATT/WTO rules because it does not discriminate against importers or subsidize exports, but only levels the field.¹⁶

Adopt Wealth Building Community Climate Justice Policies

Global warming cannot be solved without conquering sprawl and working towards livable communities with sustainable transportation systems. Such communities and transportation systems can only be achieved by combining smart economics with a firm commitment to overcoming the patterns of injustice that have blocked them up till now. Such commitments should include, at a minimum:

1. Zoning laws that mandate affordable housing in high-growth areas instead of preventing it.
2. Strong enforcement of laws against redlining and discrimination in housing sale and rental.
3. Housing policies that disperse rather than concentrate subsidized housing.
4. Urban policies to encourage retention of businesses in central-city areas.
5. Regional policies to maintain strong, healthy, central cities.
6. Transportation and infrastructure spending favoring safe, affordable, reliable mass-transit networks over highways, metropolitan expansion and urban sprawl.
7. Policies to guarantee that all urban areas have access to high-quality schools to prevent urban fragmentation. These include state and regional policies to equalize school funding and quality and overcome excessive reliance on property taxes;

continued progress toward school desegregation; and effective diversity and conflict-resolution education in all public schools.

8. Impact fees, Adequate Public Facilities Ordinances, and other policies to assure that development in new areas pays its own way rather than being subsidized by existing communities.
9. Policies that encourage infill development by both business and residences and discourage low-value uses of urban land. These include split-rate property taxes that lower the rate on buildings and increase the rate on land, and location-efficient mortgages, which provide better loan terms based on a home’s proximity to public transportation or the center of a city.

Notes

1. Many proposed offset programs, such as monoculture tree plantations and refuse incinerators, can create local environmental hazards and displace indigenous and low-income populations. However, to date most of the worst offenders in these categories have been part of voluntary private trading schemes rather than the CDM.
2. The full text of the statement and a list of signatories can be downloaded from <http://www.ejmatters.org/declaration.html>
3. In testimony before the United Kingdom Parliament’s Environmental Audit Committee, a coalition of environmental organizations reviewing the attempts to develop an international trading system found: “International emissions trading systems (ETS) as currently conceived are not feasible. In particular, mixed trading systems which treat as exchangeable (a) credits allowing the emission of carbon dioxide from fossil fuel combustion and (b) credits for carbon sequestration, ‘avoided emissions,’ ‘emissions reductions’ or baseline-and-credit projects generally, are not verifiably effective or relevant and hence are a waste of time.” The Corner House, SinksWatch and Carbon Trade Watch, *Memorandum to Inquiry into the International Challenge of Climate Change: UK Leadership in the G8 and EU*, submitted to the UK Parliamentary Environmental Audit Committee, 29 October 2004. <http://www.sinkswatch.org/pubs/Inquiry%20into%20the%20International%20Challenge%20of%20Climate%20Change%20final%20w%20disclaimer.doc>
4. J. Andrew Hoerner, “Taxing Pollution,” in *Ozone Protection in the United States: Elements of Success*, ed. Elizabeth Cook (Washington DC: World Resources Institute, 1996).
5. The California Supreme Court, *Sinclair Paint Company v. State Board of Equalization, et al.* 15 Cal.4th 886 (1997).
6. For a more detailed account see J. Andrew Hoerner, “Taxing Pollution,” in *Ozone Protection in the United States: Elements of Success*, ed. Elizabeth Cook (Washington DC: World Resources Institute, 1996).
7. According to standard economic theory, most taxes distort the economy and reduce economic efficiency because they

discourage beneficial productive activity. “Sin” taxes, by contrast, discourage harmful and unproductive activities. Pollution taxes no greater than the economic damage done by the pollution can in fact correct distortion and improve efficiency. Furthermore, most taxes pay to expand the government sector, while pollution taxes substitute for government regulation, and so allow government to be smaller than it would otherwise be.

8. For example, many states have constitutional requirements that tax increases have to pass by a greater majority than most bills. Often this is a hurdle that a controversial bill can not pass. Complex legal doctrines have grown up around these provisions to distinguish precisely what a “tax” is for purposes of this requirement. In California the critical question is whether the purpose of the provision is to raise revenue or was passed pursuant to a general “police power” to protect the public health and safety. *Sinclair Paint Company v. State Board of Equalization, et al.* (1997) 15 Cal.4th 886.

9. These include Californians Against Waste, Environment California, the Natural Resources Defense Council, the Pacific Forest Trust, the Sierra Club California, and the Union of Concerned Scientists.

10. Peter Barnes, *Carbon Capping: A Citizen’s Guide* (Tomales Bay Institute, 2007).

11. This does not account for local re-spending and multiplier effects that could increase the benefit to African Americans even further.

12. That is, programs like the Birthright Dividend or an increase in the refundable earned-income tax credit.

13. Such as the federal Low-income Home energy Assistance (LIHEAP) program, or utility energy assistance programs.

14. As described in “Export Solutions, Not Problems,” page 52.

15. See Principle 6, Ten Principles for Just Climate Change Policies in the U.S., page 56.

16. See, e.g., J Andrew Hoerner, and Frank Muller, “Compatibility of Offsets with International Trade Rules,” in *Ökologisch orientierte Steuerreformen: die fiskal- und ausenwirtschaftspolitischen Aspekte*, ed. E. Staehlin-Witt and H. Blöchliger, published for Swiss Federal Office for International Economic Affairs (Bern, Switzerland: Verlag Paul Haupt, 1997); J. Andrew Hoerner, “The Role of Border Tax Adjustments in Environmental Taxation: Theory and U.S. Experience” (paper presented at the International Workshop on Market Based Instruments and International Trade, organized from the Institute for Environmental Studies, Amsterdam, Netherlands, March 19, 1998) http://www.rprogress.org/publications/1998/BTA_1998.pdf; Frank Biermann and Rainer Brohm, “Border Adjustments on Energy Taxes: A Possible Tool for European Policymakers in Implementing the Kyoto Protocol?,” *Vierteljahrshefte zur Wirtschaftsforschung* 74, 2 (2005): S. 249–258. http://www.diw-berlin.de/documents/publikationen/73/43452/diw_vjh_05-2-11.pdf; Roland Ismer & Karsten Neuhoff, “Border Tax Adjustment: A Feasible Way to Support Stringent Emission Trading,” *European Journal of Law and Economics*,

vol. 24, no. 2 (Oct. 2007): 137-164.

CLIMATE JUSTICE NOW

Ultimately, accomplishing climate justice will require that new alliances are forged and traditional movements are transformed. The environmental justice movement must continue to build strong alliances with racial, economic, and other social justice movements to ensure the creation and implementation of just climate policy. At the same time, the environmental movement must be willing to significantly diversify in staff, leadership, thinking, and agenda.

In the final analysis, everyone is at risk. Any effort to craft climate change policy that effectively addresses the challenges of global warming will fail unless race and equity are part of the discussion from the outset and an integral part of the solution. This report has found that:

Global warming amplifies nearly all existing inequalities. Under global warming, injustices that are already unsustainable become catastrophic. Thus it is essential to recognize that all justice is climate justice and that the struggle for racial and economic justice is an unavoidable part of the fight to halt global warming.

Sound global warming policy is also economic and racial justice policy. Successfully adopting a sound global warming policy will do as much to strengthen the economies of low-income communities and communities of color as any other currently plausible stride toward economic justice.

Climate policies that best serve African Americans also best serve a just and strong United States. This paper shows that policies well-designed to benefit African Americans also provide the most benefit to all people in the U.S.

Climate policies that best serve African Americans and other disproportionately affected communities also best serve global economic and environmental justice. Domestic reductions in global warming pollution and support for such reductions in developing nations

financed by polluter-pays principles provide the greatest benefit to African Americans, the peoples of Africa, and people across the Global South.

A distinctive African American voice is necessary. Currently, legislation is being drafted, proposed, and considered without any significant input from the communities most affected. Special interests are represented by powerful lobbies, while traditional environmentalists often fail to engage people of color, Indigenous Peoples, and low-income communities until after the political playing field has been defined and limited to conventional environmental goals.

A strong focus on equity is essential to the success of the environmental cause, but equity issues cannot be adequately addressed by isolating the voices of communities that are disproportionately impacted. Engagement in climate change policy must be moved from the White House and the halls of Congress to social circles, classrooms, kitchens, and congregations.

The time is now for those disproportionately affected to assume leadership in the climate change debate, to speak truth to power, and to assert rights to social, environmental and economic justice. Taken together, these actions affirm a vital truth that will bring communities together: **Climate Justice is Common Justice.**

10 PRINCIPLES FOR JUST CLIMATE CHANGE POLICIES IN THE UNITED STATES

1. Stop Cooking the Planet

Global climate change will accelerate unless we can slow the release of greenhouse gases into the atmosphere. To protect vulnerable Americans, we must find alternatives for those human activities that cause global climate change.

2. Protect and Empower Vulnerable Individuals and Communities

Low-income workers, people of color, and Indigenous Peoples will suffer the most from climate change's impact. We need to provide opportunities to adapt and thrive in a changing world.

3. Ensure Just Transition for Workers and Communities

No group should have to shoulder alone the burdens caused by the transition from a fossil fuel-based economy to a renewable energy-based economy. A just transition would create opportunities for displaced workers and communities to participate in the new economic order through compensation for job loss, loss of tax base, and other negative effects.

4. Require Community Participation

At all levels and in all realms, people must have a say in the decisions that affect their lives. Decision makers must include communities in the policy process. U.S. federal and state governments, recognizing their government-to-government relationship, must work with tribes as well.

5. Global Problems Need Global Solutions

The causes and effects of climate change occur around the world. Individuals, communities, and nations must work together cooperatively to stop global climate change.

6. The U.S. Must Lead

Countries that contribute the most to global warming should take the lead in solving the problem. The U.S. is four percent of the world's population but emits 25 percent of the world's greenhouse gases. All people should have equal rights to the atmosphere.

7. Stop Exploration for Fossil Fuels

Presently known fossil fuel reserves will last far into the future. Fossil fuel exploration destroys unique cultures and valuable ecosystems. Exploration should be halted, as it is no longer worth the cost. We should instead invest in renewable energy sources.

8. Monitor Domestic and International Carbon Markets

We must ensure that carbon emissions and sinks markets are transparent and accountable, do not concentrate pollution in vulnerable communities, and avoid activities that harm the environment.

9. Caution in the Face of Uncertainty

No amount of action later can make up for lack of action today. Just as we buy insurance to protect against uncertain danger, we must take precautionary measures to minimize harm to the global climate before it occurs.

10. Protect Future Generations

The greatest impacts of climate change will come in the future. We should take into account the impacts on future generations in deciding policy today. Our children should have the opportunity for success through the sustainable use of resources.

TAKE ACTION

We are at a crucial moment in the fight against climate change. There is a significant likelihood of passing federal climate legislation within years, if not months. We must be a voice for just climate policies because, as this paper has shown, only just policies will be effective. Climate change cannot be truly solved, either domestically or internationally, without policies that address racial and economic inequities.

When faced with the challenge of changing history's course and the planet's temperature while opposed by some of the world's largest corporations, many of us struggle with a sense of futility and hopelessness. We ask whether it makes sense to worry about such large affairs, when, as individuals and as a community we often do not have the resources to waste on fights we seemingly cannot win.

But there are reasons to believe that, with determined and united action, this particular fight can be won:

- **The need is urgent.** The scientific community is essentially unanimous in its assertion that prompt and effective action is needed to avert catastrophe.
- **The people are with us.** Polling results show a substantial majority of people in the U.S. believe global warming is real and that additional action should be taken to prevent it.
- **The problem is solvable.** Policies and technologies to cut global warming with a net economic benefit are known and established.
- **The time to act is now.** Majorities in both houses of Congress and all three major presidential candidates have pledged to take strong action to reduce global warming.

For the first time, a solution to global warming appears to be on the horizon. Our energy must be concentrated on assuring that a just solution is adopted. In this fight, every voice is needed, and every voice could be the deciding voice. Whether you are a high school student or a U.S. Senator, there are specific, concrete steps that you can take to put the U.S. on a path to achieving positive and significant legislation for climate justice:

- Recognize the enormous role that race and class plays in the consequences of global warming.
- Work with and support groups like EJCC (www.ejcc.org), and work with other racial and ethnic justice groups to include climate justice on their platforms.
- Demand lawmakers use the 10 Principles of Just Climate Change Policies (previous page) as a guide in drafting legislation.
- Demand that all state and federal legislation are equitable and just. Specifically, insist that:
 - Polluters must pay to solve the problem,
 - Any revenue raised must be returned to vulnerable households and communities,
 - New clean technologies are developed to cut domestic emissions and to export to the world,
 - The U.S. does not export either pollution or the burden of reducing it to developing nations, and
 - Just wealth-building policies for livable cities and towns must be adopted.
- Demand that a Climate Justice Advisory Board be set up at the federal level with funding for participation by low-income and heavily-impacted communities.
- Get involved with climate initiatives at the state level. If your state is currently developing a comprehensive climate plan with ambitious goals, get involved in the planning process. If not, demand to know how elected officials will support the creation of such a plan.
- Work with labor/environmental alliances to draw connections between racial, workplace, and climate justice.
- Reduce your own global warming activities by using tools like the Ecological Footprint Quiz (myfootprint.org). Ask your school or workplace about plans for reducing global warming pollution, and support effective policies.
- If you belong to a church, ask your church to take a public stand in support of an effective global warming policy based on the principles of climate justice. Work toward sending a church a delegation to your local, state and federal representatives to ask that they implement such policies.
- For more information, resources, and specific examples of what you can do, please visit www.ejcc.org.

APPENDIX

METHODOLOGICAL NOTES

CONTENTS

- 57. **Climate Change at the Intersection of Race and Class: Distribution of Energy Consumption and Emissions**
 - 57. **War and Profits: Distribution of Military Costs and Burdens**
 - 58. **Notes**
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Climate Change at the Intersection of Race and Class

Distribution of Energy Consumption and Emissions

All the graphs in “Climate Change at the Intersection of Race and Class” are based on data compiled from the 2006 U.S. Bureau of the Census Survey of Consumer Expenditure (CEX) Public Use Microdata Files, which provide information on household expenditures on a range of products for a representative sample of the American population. CEX data includes variables for region, demographic variables, and a highly disaggregated list of consumer goods.

CEX aggregate consumption for deciles is adjusted upward by multiplying by the ratio of total CEX consumption to National Income and Product Accounts (NIPA) consumption for 2006. This approach may understate the share of consumption in the top decile, especially indirect consumption, as part of the difference between CEX and NIPA consumption is top-coding of former. For direct consumption, CEX fuel purchase categories are assigned carbon coefficients by dividing the total dollars of CEX consumption of a fuel type by the EPA inventory of residential emissions relating to that fuel and year. A fifty-five percent share of transport-related use of gasoline and diesel fuel is assigned to household consumption based on comparing the U.S. Energy Information Administration (EIA) estimate of household motor fuel consumptions in 2001¹ to the EIA State Energy Data System (SEDS) transportation sector fuel consumption estimate for that year and applying the same ratio to 2006 EPA emissions inventory data (which are generally highly consistent with SEDS data).

Previous work by the authors has shown that the law of one price does not hold for the major classes of fossil fuels, which have prices that vary by a factor of two to four from the most to the least fuel-intensive industries.² This relationship is estimated using data from the EIA Manufacturers Energy Consumption Survey (MECS), and then use the estimated relationships to forecast the fuel price for non-MECS industries. The carbon content of final products is estimated using the BEA 498-industry input-output tables, re-aggregating the result to CEX consumption categories. As with direct emissions, indirect emissions coefficients are calculated by taking the estimated carbon content in industries goods sold in 2006 and dividing by the dollars of expenditure from the CEX. No effort was made to harmonize carbon intensity per dollar estimates derived in this way from those derived from the input-output analysis alone. A more detailed description of this analysis can be found in the report “Good Business: A Market Analysis of Energy Efficiency Policy,”³ assessing costs and benefits of a combination of efficiency and incentive policies for 498 industries.

The analysis has been restricted to carbon dioxide emissions, which account for approximately seventy-eight percent of U.S. greenhouse gas emissions on a carbon-equivalent basis. An analysis of other gases (e.g., methane, sulfur hexafluoride, nitrous oxide, etc.) is clouded by the difficulties in obtaining precise consumption emissions figures and is consequently left for future studies.

War and Profits

Distribution of Military Costs and Burdens

African Americans are disproportionately highly represented relative to their population share in the military generally and in the soldiers doing duty tours in Iraq in particular. However, they are not over-represented in the casualty count, and indeed have a somewhat lower than proportionate share of total fatalities. This appears to be because African Americans have regarded the military largely as a route to career training and mobility, and so are concentrated in military specialties that have civilian analogs, generally not combat specialties.⁴

As discussed by Stiglitz,⁵ the war reduces aggregate domestic demand through a variety of channels. Examples include spending federal dollars abroad rather than at home, consumers spending more on foreign oil imports, etc. If the war had not taken place the increase in aggregate demand would have caused an increase in GDP because the U.S. is not currently very close to full employment. (If it were, increased demand might simply become inflation). Therefore the reduction in GDP caused by the war is distributed proportionally to the number of unemployed in each race times the average income for workers of that race. This represents the uptake of economic slack based on historically observed patterns in periods of higher and lower unemployment. As discussed in the paper, African American unemployment tracks white unemployment very closely, but at 2.2 times the amplitude.

The tax burden is estimated by assigning African American and white households to income groups: the four lower income quintiles, and the top quintile divided into the richest five percent and the next fifteen percent. The income of each quintile is estimated by race based on census data.⁶ Average marginal rates for each income group are then taken from the Congressional Budget Office, and multiplied by the income earned within that income group by race. Total taxes paid are then summed over income groups for each race.

For spending, a similar methodology based on assessing the benefits of government spending on various income groups is used, and then households to income groups are allocated by race using the same methodology and Census data. Allocation of the benefits of government spending by income class is taken from a study by the Tax Foundation.⁷

Notes

1. U.S. Energy Information Administration, *Household Vehicles Energy Use: Latest Data & Trends*, DOE/EIA-0464 (2005), Office of Energy Markets and End Use, U.S. Department of Energy (Washington, DC, November 2005). http://www.eia.doe.gov/emeu/rtecs/nhts_survey/2001/
2. J. Andrew Hoerner and Jan Mutl. *Good Business: A Market Analysis of Energy Efficiency Policy* (Oakland CA: Center for a Sustainable Economy, 2001). http://www.rprogress.org/publications/2000/goodbusiness_2000.pdf
3. Ibid.
4. Samuel H. Preston and Emily Buzzell, "Mortality of American Troops in Iraq" (PSC 06-01, PSC Working Paper Series, Population Studies Center, University of Pennsylvania, 2006). <http://repository.upenn.edu/cgi/viewcontent>.

[cgi?article=1000&context=psc_working_papers](http://www.taxfoundation.org/files/wp1.pdf)

5. Joseph E. Stiglitz and Linda J. Bilmes, *The Three Trillion Dollar War: The True Cost of the Iraq Conflict* (New York: W. W. Norton, 2008).
6. U.S. Bureau of the Census, *Current Population Survey, 2007 Annual Social and Economic Supplement*, (Washington, DC, 2007). See especially Table HINC-6.
7. Andrew Chamberlain and Gerald Prante, *Who Pays Taxes and Who Receives Government Spending? An Analysis of Federal, State and Local Tax and Spending Distributions, 1991-2004* (Washington DC: The Tax Foundation, 2007). <http://www.taxfoundation.org/files/wp1.pdf>

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