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Ten Actions of Climate Justice Policies

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A growing body of western scientific evidence now suggests what Indigenous Peoples have expressed for a long time: life as we know it is in danger. We can no longer afford to ignore the consequences of this evidence. We must learn to live with this shadow, and always strive towards the light that will restore the natural order. How western science and technology is being used needs to be examined in order for Mother Earth to sustain life.

--Albuquerque Declaration[1]

Abstract

Everyone feels the effects of global warming, but people of color, Indigenous Peoples, workers, and poor communities are the first to experience climate change's negative impacts. Those communities have fewer resources to adapt to climate change's effects. The economic, cultural, and health costs associated with global warming also fall hardest on those with the least resources. Because climate change and climate policies will disproportionately affect these groups, policymakers must address these differential impacts.

Introduction

Global warming affects everyone. Temperatures are rising all over the world. Glaciers are melting, ecosystems are being disrupted, and tropical diseases are spreading toward the poles. Global climate change imperils humanity's relationship with the Earth's natural resources, and its effects are reducing peoples' ability to sustain themselves.

People of color, Indigenous Peoples, workers, and poor communities are the first to experience climate change's negative impacts. Our communities have fewer resources to adapt to climate change's effects. The economic, cultural, and health costs associated with global warming also fall hardest on those with the least resources.

Because climate change and climate policies will disproportionately affect poor communities, Indigenous Peoples, workers, and people of color, policymakers must address these differential impacts. Representatives from these communities must be involved in climate policy discussions. We can best achieve social equity in the long-term by stabilizing the climate system through the replacement of fossil fuels with other, "greener" sources of energy.

Ending our planetary fossil fuel addiction is the most fundamental step to secure the well being of our children, the poor, society as a whole, future generations, and other species. We cannot have a just society in a world of ever rising food and energy costs, shifting and severe weather patterns, rising sea levels, species extinctions, and emerging diseases.

We must protect our most vulnerable communities, by stopping the human influence on global warming. Then we must apply our knowledge, skills, and resources to helping those most affected by the impacts. Society has a responsibility to care for its people and provide them with opportunities to adapting.

We must break the cycle of poverty and empower our neighbors, friends, and communities to thrive in a post fossil fuel society. This will require adapting to new ways of thinking and living, while at the same time preserving cultures, beliefs, and customs. In the face of rapid change the integrity of community ties are of paramount importance. The actions we take should reflect the value we place in individual growth and social solidarity.

The following are 10 Principles for Just Climate Change Policies in the United States that will ensure the protection of our livelihoods:

1. Stop Cooking the Planet

Any approach to climate change must start with actions to slow global warming. The world's leading climate scientists have concluded that "the balance of evidence suggests a discernible human influence on global climate."[2] Climate change is caused by a build up of heat-trapping gases (called greenhouse gases) in the atmosphere.

The gas most responsible for global warming is carbon dioxide (CO_2). We must enact policies that reduce CO_2 emissions and stabilize the atmospheric CO_2 concentration as soon as possible. Since 1750 the level of CO_2 in the atmosphere has increased by 31%, and the current level, which is 370 parts per million (ppm), is likely to be the highest in 20 million years.[3] New industrial processes (such as fossil fuel burning) and changing land use patterns (such as the large-scale destruction of forests) have greatly increased the concentration of CO_2 in the atmosphere. We need to reverse this trend, and strengthen efforts to decrease greenhouse gas emissions, especially CO_2, in order to stop the human influence on global warming.

Reducing the CO_2 concentration in the atmosphere will take strong commitments to reducing CO_2 emissions. According to the latest report from the Intergovernmental Panel on Climate Change (IPCC), scientists estimate that stabilizing the atmospheric CO_2 concentration at 450 ppm would require reducing global CO_2 emissions to below 1990 levels within a few decades, and steadily decreasing emissions thereafter.[4] However, stabilizing at any concentration above the current level guarantees an acceleration of global warming compared to current warming trends, and would not prevent some of the dangerous impacts of global warming, such as the destruction of coral reefs around the world and the impoverishment of people that rely on them for food.5 We must make deep cuts immediately to reduce human-caused global warming and its negative effects.

2. Protect and Empower Individuals and Communities

Some communities already experience the impacts of climate change. The residents of Tuvalu, a small island nation that will be submerged under the Pacific Ocean within 50 years, are preparing to evacuate. In the United States, Alaska is the first state to undergo disruption because temperatures there are increasing faster than in other areas of North America. In July 2002, the native village of Shishmaref, located on the Chukchi Sea just south of the Arctic Circle, voted to move the entire village inland in order to escape the higher water encroaching on their homes and community. The village has existed there for several hundred years.[6]

Climate change causes three types of disruption: economic, health-related, and cultural. See Box 1 for detailed descriptions of these disruptions.

BOX 1. Vulnerabilities to climate change

The poor, indigenous peoples, and communities of color will feel disproportionate impacts of climate change in three major ways: health, economic and cultural disruption. For example, expected health effects include an increase in pollution-related respiratory illnesses; deaths and illness due to thermal extremes; and cases of infectious diseases from carriers such as mosquitoes, ticks, rats, and algae.

Global warming projections predict an increase in summer temperatures and ozone formation. Respiratory illnesses, such as asthma, reduced lung function, and respiratory inflammation, are aggravated by ground-level ozone. On hot days (above 90 degrees) air pollution, such as nitrogen oxide, interacts with sunlight, and ozone formation accelerates.[7] Communities of poor people, Indigenous Peoples, Latinos, African-Americans, and Asian-Americans are exposed to more pollution that the overall population.[8] These groups will have to cope with more cases of respiratory illness, often in the absence of access to health care.

Increased temperatures will cause more heat-related deaths. Studies show that "climate change could bring about a 90 to 540 percent increase in total heat-related deaths." A study of heat-related deaths in St. Louis showed that non-whites were twice as likely to die as a result of heat waves as whites.[9] The elderly are also particularly vulnerable to hot temperatures. Warming during the summers, including longer and more frequent heat waves, endangers seniors,

especially those that cannot afford air conditioning equipment, as was the case for three recent deaths in Southern California.[10]

Infectious diseases, such as malaria, require early detection and treatment, but low-income and people of color households are less likely to have access to health care, which makes them more vulnerable to these and other health problems.[11] Global warming will hit the uninsured hardest. Today there are 44 million Americans, including 11 million children, without health insurance, and the uninsured rate for people of color is twice the rate for whites.[12]

The economic impacts of climate change and more frequent natural disasters could reach $150 billion per year in the next ten years.[14] Climate change risks include increases in the cost of energy and food, which will disproportionately affect the poor. Climate change will reduce discretionary spending for all consumers because prices will rise across the board. However, low-income families will have to spend even more on food and electricity, which already represent a large proportion of their budgets.[15] Employment restructuring within and across industries, including layoffs and hiring freezes, along with the "last hired, first fired" phenomenon, will exacerbate the economic damage caused to individuals, families, and communities.

In addition, the expected increase in the frequency of natural disasters will be devastating to the poor and communities of color, who often are renters, don't hold renters' insurance policies, and lack the savings to recover from disasters. Low-income individuals typically lack insurance to replace possessions lost in storms and floods. Less than 30 percent of renters have renters' insurance, compared over 90 percent of homeowners who have homeowners' insurance.[16] Approximately 10 percent of people of color in the United States live in coastal regions, which will be vulnerable to an increase in floods and hurricanes.

Climate change also threatens to disrupt cultures, particularly in Native American communities and other Indigenous Peoples. In areas of the United States, such as Alaska, we are already seeing large-scale landscape changes. Glaciers are retreating, new lakes are forming due to glacial runoff, and permafrost melting is causing land to subside. These processes can destroy towns and the natural and man-made resources that people depend on, especially plant and animal populations. As mentioned above, whole villages will need to be moved, creating unique burdens for people trying to adapt to these changes.

Ecosystem imbalances and shifts in plant and animal populations can also disrupt cultures. Indigenous Peoples are losing traditional medicinal plants to a warming climate, and subsistence households are suffering from the loss of species that are unable to adapt. A recent example of how climate change influences the Alaskan ecosystem was evident in the destruction of millions of acres of Alaskan spruce trees caused by ballooning populations of spruce bark beetles.[18]

Economic pressures to develop natural resources, such as hydropower and fossil fuel deposits, combined with population pressures from environmental refugees, also threaten to disrupt Native cultures.[19]

Just climate policies would build capacity in communities to adapt to climate change impacts. The power to adapt depends in part on access to resources, including physical capital, human capital, health and health care, and mobility. Low-income communities and people of color have less access to the resources, such as personal savings, that are necessary to adapt to the effects of climate change. The needs of people with least access to the various kinds of resources should be met. Rather than simply compensating people for their losses, climate policies should build capacity in vulnerable communities, so that people are less vulnerable in the first place, and so they can help themselves once disaster strikes. Instead of treating people for heat stroke, policies should aim to prevent it, for example, by providing air-conditioning and cooling centers, and health care that keeps people healthy.

The overall focus of climate justice policy is to assist individuals and communities in adapting to the impacts of climate change, while the specifics of policies deal with issues of access to resources. Extending health insurance coverage to uninsured individuals, weatherizing homes, and improving vehicles' fuel efficiency are just a few of the policy options for building capacity.

Just climate policies must also be designed and implemented in ways that do not further burden communities of color and the poor. Policies that discourage fossil fuel use, or that threaten existing jobs, must reduce the economic impact of these policies on vulnerable communities.

The goal of climate policy should not be merely to maintain the standards of living for the poor and people of color. Climate policy should be proactive in championing economic justice, and providing the means for workers and devoted community members to get ahead.

BOX 2. Revenue Recycling

One way that climate policy can address economic justice concerns is through "revenue recycling." This means returning money collected from climate policies to the economy, such as through targeted tax cuts. The overall economic impact of the policies on vulnerable populations, and even consumers as a whole can be beneficial. Revenue raised from climate policies can be used to protect low-income consumers who may be temporarily harmed by price increases resulting from greenhouse gas reductions. According to Redefining Progress' analysis of several climate change policies, the revenue could easily take care of the most vulnerable industries, workers, and consumers while leaving plenty to distribute more widely through rebates or tax deductions.[20] The impacts of policies must be understood and monitored, and if necessary, policies should be revised to ensure equity among individuals.

3. Ensure Just Transition for Workers and Communities

A just transition is about making sure no group of people shoulders a disproportionate burden when it comes to transitioning to a renewable resource economy. Effective climate policy will not only phase out fossil fuels in favor of renewables, but it will also make the transition as fair as possible. To ensure equity and self-sufficiency, policies must engage and empower communities with the information and resources to transition to a renewable resource economy.

Ensuring a just transition could mean compensating workers and communities for job loss, loss of tax base, and other negative economic effects, including the implementation of worker-retraining programs for workers in the fossil fuel industry and other impacted industries. Other programs could include an expanded Earned Income Tax Credit for low- and moderate-income households (including those without children), weatherization of homes to improve their energy efficiency, and temporary unemployment compensation and interim health insurance coverage for displaced workers.

The effects of global warming, as well as climate policy, will probably result in across-the-board price increases for consumers. Low-income households spend most of their budget on necessities like food and energy. As a result, any policy that raises energy prices would put a disproportionate burden on low- and moderate-income households. The unique vulnerability of these households to price increases due to climate change, and due to climate policy, should be considered.

Policies should also promote ownership and stewardship of renewable resources, create economic opportunities for workers, and improve access to decision-making. These programs could be funded through a tax on carbon emissions in line with the polluter pays principle.

BOX 3. The Polluter Pays Principle

The concept that the people or companies responsible for creating pollution are also responsible for paying for its cleanup is called the polluter pays principle. It is widely accepted around the world as standard environmental policy. The United States uses the polluter pays principle in most of its environmental laws and regulations. For example, when the oil tanker *Exxon Valdez* spilled 11 million gallons of oil off the Alaskan coast, Exxon paid $900 million to fund ecosystem restoration.[21]

4. Require Community Participation

All individuals, workers, and communities, especially those that have been marginalized in the past, should have access to the policymaking process and be participants in the climate change discussion. Furthermore, the process should not favor individuals, groups, or institutions with more resources; instead, it should be transparent and include all affected individuals, workers, and communities.

In July 2002 the State of California adopted a law aimed at cutting vehicular emissions of greenhouse gases. Included in the text of the bill was a provision requiring public workshops in three of the communities in the state with the most significant exposure to air pollution, including communities with low-income or minority populations. This framework for public involvement is a good first step toward the full participation of affected communities in the decision-making process.[22] In this and similar ways, the concerns and interests of a diverse range of participants will be reflected in climate change policies.

Climate change policies have the potential for allowing environmental injustice to continue if the people affected by the policies have no say in the process. To prevent this from happening, those who have been excluded in the past must be included today.

5. Global Problems Need Global Solutions

Climate change is a global problem that needs global solutions. No nation working alone can stop climate change. We know that burning coal in Kansas accelerates desertification in Kenya. We can see the link between oil extraction in Venezuela, and the sea level rise that will drown the small island nation of Tuvalu. Since actions taken in one country create climate change impacts in another, we need global cooperation in addressing global warming. All countries, including the Untied States, should participate in international agreements that ensure global accountability, have binding emissions reduction targets, and powerful compliance and enforcement mechanisms.

The U.S. is home to 4.5% of the world's six billion people,[23] yet it is responsible for 25% of the world's annual CO_2 emissions. In contrast, China is home to 21% of the world's population, but it emits only 13% of total carbon dioxide emissions.[24]

Current CO_2 emissions are not solely responsible for climate change. Other greenhouse gases and historical CO_2 emissions are to blame as well. Because CO_2 is a stable molecule, and because carbon sinks (things that soak up CO_2 like the atmosphere, oceans, and forests) work over a long time, CO_2 emissions persist in the atmosphere for hundreds of years and are a major cause for concern. Considering the lifetime of CO_2 emissions, the United States is responsible for 35% of the historical increase in the global CO_2 concentration.[25]

Although the majority of historical and annual emissions are largely the responsibility of industrialized nations, all countries will have to work together to stop global warming. Industrialized countries must claim responsibility for the inevitable change in global climate caused by past emissions and be leaders in mitigating for climate change effects. Industrialized countries must also be actively involved in transferring technologies to developing countries that will allow them to grow without relying on fossil fuels.

The United States has an obligation to take part in an international partnership to reduce CO_2 emissions because it has benefited the most from using the atmosphere. But it can only succeed in cooperation with an international body of nations. International agreements should require that every country be entitled to its fair share of the atmosphere.

To date, the Kyoto Protocol is the most viable first step in addressing climate change. The United States should ratify the Kyoto Protocol or propose an alternative global emissions plan that would be more comprehensive and more effective in stopping global warming.

6. The U.S. Must Lead

Developing countries and certain parts of the United States are among the first to experience the impacts of climate change, such as desertification in Africa, sea-level rise in the Pacific, and warming in Alaska. In addition, developing countries have less resources and infrastructure to adapt to climate change. These countries are being forced to adapt to a problem that they did not create.

The 30 industrialized member nations of the Organization for Economic Cooperation and Development (OECD) were responsible for 52.8% of global carbon dioxide emissions in 1999,[26] yet the populations of those countries only make up 18.6% of the world population.[27] Per person, greenhouse gas emissions in the U.S. are higher than every other industrialized nation except Australia, and in absolute terms, the U.S. is the biggest polluter.

BOX 4. Per Person Emissions and Small Nations

Although the United States is the largest polluter in the world, in per person terms, many small nations are much worse. The U.S. Virgin Islands, Qatar, and the United Arab Emirates top the list. What these and other nations with high per capita rates share are small populations and dependence on fossil fuels. Many are also nations that rely heavily on tourism. The emissions caused by visitors flying back to their home countries in commercial jets get counted in the host country's emissions inventory. This makes accounting for emissions easier, but also leads to distortions in per person figures.

The richer nations owe a debt to the poorer nations because they have been using more than their share of the ultimate collective good: the atmosphere. For centuries industrialized countries have been emitting pollutants into the atmosphere, and have realized fantastic economic gains. With the effects of global warming becoming clearly dangerous, requiring reductions in global emissions, developing countries will be diverted from the path of fossil fuel driven development.

The global North has already produced technology to reduce greenhouse gas emissions. By transferring technology to developing countries, the North can be sure that its reductions efforts will not be undermined, and the South can follow a more sustainable path to prosperity.

Countries that contribute the most to global warming should take the lead in solving the problem. The human activities that cause greenhouse gas emissions occur around the world. However, industrial activity and the burning of fossil fuels, which are responsible for almost all greenhouse gas emissions, are concentrated in industrialized nations. These nations must reduce their emissions for global climate change mitigation efforts to be effective. In addition, leadership in developed countries is necessary to ease the global transition to a renewable energy resource economy.

The top four greenhouse gas emitting nations that have not reduced emissions compared to 1990 levels are the U.S., Japan, Australia, and Canada. Targeted pressure must be directed at these nations to force them onto a path of renewable energy sources. Other major emitter nations are Germany, France, Italy, and the United Kingdom, but these nations have already reduced their emissions to below 1990 levels.[28]

The United States of America has an essential role to play in reducing emissions. Our nation is the largest contributor to global warming, emitting one-quarter of the world's greenhouse gases. We have a responsibility to

make deep cuts at home first, not only because we are a major contributor to the problem, but also because we have the resources to make a just transition.

7. Stop Exploration for Fossil Fuel

Fossil fuels, such as oil, coal and gas, produce greenhouse gas emissions when burned for energy. Together they account for 80% of the world's total energy supply. [29] The IPCC Third Assessment Report concludes that "most of the observed warming [of the Earth] in the last 50 years is likely to have been due to the increase in greenhouse gas concentrations" that are mainly the result of the burning of fossil fuels.[30] If we are to be serious about climate change, we must halt the exploration of fossil fuels and increase investments in renewable energy sources, so that we come to rely on the reserves we already have in combination with renewables.

The impacts of our dependence on fossil fuels extend beyond climate change. Harm to individuals, communities, and the environment begins with resource extraction. There are numerous and well-documented violations of human rights by energy companies and militaries, such as those suffered by the Ogoni in Nigeria. "The nonviolent campaign of the Movement for the Survival of the Ogoni People (MOSOP), led by Ken Saro-Wiwa, forced Shell Oil from the Ogoni homeland. The Nigerian government crackdown that followed included the military occupation of Ogoni, deadly raids on Ogoni villages, detention of dozens of political prisoners, and the execution of Saro-Wiwa and eight others."[31]

In Ecuador, the Quichua have also experienced human rights abuses during their struggle against the TransEcuadorian pipeline. "In a 1998 report, Amnesty International detailed instances of torture and ill-treatment of detainees and prisoners in the custody of the National Police, the military and prison authorities; deaths resulting from the use of firearms by the security forces; "disappearances;" and the practice of institutionalized impunity."[32]

In addition to human rights violations, fossil fuel exploration and development requires building infrastructure, such as pumping stations, pipelines, roads, airstrips and worker housing, and this often displaces Indigenous Peoples from their ancestral lands.

Fossil fuel exploration and development is occurring in remote areas across the globe from Canada and Russia to Venezuela and Indonesia, with detrimental impacts on the environment. Indigenous communities are more dependent on natural resources, and therefore more susceptible to environmental disasters associated with oil and gas activities. Deforestation and water and soil contamination can lead to human health catastrophes, crop failures, and the collapse of fisheries and animal populations, all of which endanger the survival of indigenous ways of life. Climate change is making the situation worse. Indigenous people all over the world are fighting for their lives and livelihood against exploitation of the natural resources they depend on.

The harm caused by fossil fuels starts with exploration and ends with environmental damage due to the burning of oil, coal, and gas. Power plants and other sources of pollution are most often located where the poor and people of color live, and they bear a disproportionate pollution burden.[33]

To achieve our carbon dioxide concentration reduction goals and to reduce the impacts on workers, communities of color, and Indigenous Peoples around the world, our reliance on fossil fuels must be reduced and eliminated. Policies can encourage the switch to a renewable resource economy by restricting and eliminating the use of fossil resources where it begins, with exploration. A moratorium should be placed on any new coal, oil, and gas exploration to jump-start the transition to a healthy and sustainable energy economy.

We currently have enormous known reserves of fossil fuels. Using only our conventional oil and gas reserves would release 200 gigatons of carbon into the atmosphere. That is in comparison to the 300 gigatons that have been released since the beginning of the industrial revolution. Investing in energy efficiency and renewables, combined with conservation policies, could extend the useful life of known fossil fuel reserves indefinitely.[34] At a minimum, subsidies for fossil fuels must be eliminated, or at least equal subsidies must be directed toward research and development of renewable energy sources. We need a comprehensive and sustained grand plan, along the lines of the Marshall Plan that reconstructed Europe, or the Apollo plan that landed a man on the moon. This grand plan

would direct the resources of the United States governmental, academic, and private sector institutions toward eliminating our dependence on fossil fuels and transitioning to a 100% clean energy economy.

8. Monitor Domestic and International Carbon Markets

The current international mechanism for addressing global warming relies on CO_2 emissions allowance trading among nations, and much of the domestic policy discussion includes trading as well. International and domestic programs that involve trading allowances for CO_2 emissions and credits for CO_2 sinks have the potential to reduce atmospheric CO_2 concentrations efficiently.

However, relying on unchecked markets alone can worsen environmental injustice. The likelihood of fraud, and therefore policy ineffectiveness, is great without close monitoring of emissions.Most serious is the possibility that more pollution will be forced on low-income communities and communities of color, which is absolutely unacceptable.

Although CO_2 is not a pollutant in the standard sense because it does not directly affect human health, the processes by which it is produced also result in pollution that does harm humans and the environment. Co-pollutants of CO_2, such as sulfur dioxide and nitrogen oxides in particular, are produced alongside CO_2 by electric utilities and other fossil fuel burning operations. Both compounds contribute to acid rain and respiratory illness.[35] In the absence of regulations restricting co-pollutants of CO_2, it is possible that carbon-trading markets could encourage "hot spots" of emissions, including both CO_2 and its copollutants. This would be a serious issue in developing countries that have lax environmental regulations, and places with a track record of environmental racism, such as the United States. A strong multipollutant regulatory framework must accompany any domestic and international carbon-trading policy.

In addition to the debate surrounding emissions permits, considerable debate remains regarding the role that carbon sinks, for example forests, grasslands, and oceans that soak up CO_2, should play in climate mitigation. There is a great deal of unresolved scientific discussion of how much CO_2 can be absorbed into sinks. Any climate policy that includes sinks should ensure that control of CO_2 sinks stays within the relevant community, and that carbon sinks are effective in removing CO_2 from the atmosphere. Sinks policy should also ensure that monoculture plantations do not replace native forests.

For carbon markets to address environmental justice and climate change concerns, impacted communities must have a say in every step of the process. Mechanisms must be developed that allow communities to participate in the creation of the market, and in its continuing operation. For example, community representatives should have strong influence in the rules making process. In addition, once the market has begun working, a portion of revenues should be set aside for grants of options to impacted individuals and communities who can then choose to buy permits, maintain sinks, or use the money in any other way to adapt to climate change.

9. Caution in the Face of Uncertainty

Climate change is a long-term problem. Our actions today always have consequences for the future, but in the case of global warming the effects of not acting will be irreversible. There is a clear scientific consensus that global warming is occurring and that human activity is the cause. The questions remaining are about the magnitude of the impacts, where they will occur, and how we can minimize them.

We should use the precautionary principle as our guide in enacting policies to minimize the impacts of climate change. A precautionary approach seeks to identify alternatives that minimize harm before it occurs rather than trying to figure out "acceptable" levels of harm based on our limited understanding of the interactions between humans and the environment.[36]

The precautionary principle entails that when an activity, such as the burning of fossil fuels, raises threats of harm to human health or the environment, precautionary measures should be taken, even if some cause and effect relationships are not fully established scientifically. This is a departure from the current "dead body" and "smoking

gun" approach to regulation where the regulating agency must have iron-clad proof of environmental damage before it can take action.

We have already decided as a society that in areas of human health it is better to avoid harm than allow citizens to be used as unrestricted guinea pigs. We require new pharmaceuticals to be rigorously tested for their effectiveness and side effects before doctors can prescribe them to patients. The F.D.A. requires drug companies to prove that their products are safe and effective before they can be brought to market.

The precautionary principle has been used in forming environmental policy in the United States as well. The Massachusetts Toxic Use Reduction Act of 1989 (TURA) required companies using large volumes of toxic chemicals to create a plan for reducing the use of those chemicals in their production processes. TURA is generally considered to be a success and has resulted in a 41% decrease in toxic chemical use from 1990 to 1999. Several companies profited from implementing their toxic reduction plans. One firm, Boston Retail Products, saved $180,000 in the first year and $150,500 annually thereafter in reduced hazardous waste costs, reduced down time, increased process efficiency, and reduced regulatory costs.[37]

The precautionary principle makes sense in the climate change context not only because our actions today will have consequences for the future, but also because climate change is irreversible and no amount of action later can make up for lack of action today. Using the precautionary principle as a basis for responding to global warming can reduce the costs associated with adapting, as it has for other environmental problems. According to leading U.S. climate scientist Steve Schneider and Swedish energy economist Christian Azar, economic growth in the next century will far outpace the costs necessary to stabilize atmospheric CO_2 concentrations. Schneider argues that we can fix global warming by postponing future prosperity by as little as two years.[38]

By focusing efforts on prevention of harm, resources can be applied in an efficient manner, allowing a wider range of strategies to be employed. Policies should be adopted that provide the most just use of resources.

10. Protect Future Generations

Our choice to exploit resources today will affect our children and our children's children. We should take into account the impacts on future generations in deciding policy today. The horizon for evaluating the effects of policies should be extended into future generations to guarantee that our actions today will not destroy future opportunities of responsible economic growth and environmental stewardship. Financial and environmental analyses of policies should account for present and future costs and benefits to ensure multi-generational equity.

Human caused global warming is a long-term phenomenon. Several centuries after CO_2 emissions occur, about a quarter of the increase in CO_2 concentration caused by these emission is still present in the atmosphere.[39] This means we will experience the warming effects of current emissions long into the future. Some of these effects could have disastrous and unavoidable consequences. Higher ocean temperatures could lead to a breakdown in large-scale ocean circulation patterns, which would exacerbate climate change in some areas. Warming in certain areas, such as Antarctica, could cause the West Antarctic ice shelf to break off or melt, which would result in a sea level rise of up to 17 feet.[40]

We must leave all of our children, and their children, with the opportunity for success through the sustainable use of resources.

Authors

Ansje Miller coordinates the Environmental Justice and Climate Change Initiative hosted by Redefining Progress. She joined Redefining Progress at its infancy in 1995 and has worked on various issues including sprawl, alternative measures of progress, the equity dimensions of environmental tax reform, and the impacts and economics of climate change. She is the author of numerous reports on these topics, most recently *What's Fair: Consumers and Climate Change*, "A Fair Climate for All," and "Market-Based Mechanisms for Reducing Sprawl: A Critical Overview". Ms. Miller received her Bachelor of Arts in economics and english from Oberlin College.

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