CLIMATE CHANGE

Climate change presents serious risk for civil society, business, and ecosystems. The Earth's climate is changing in response to increasing concentrations of greenhouse gases (GHGs) and particulate matter in the atmosphere, and human activity is the primary cause. Atmospheric carbon dioxide (CO_2) concentrations are increasing at a rate never observed before, primarily due to emissions from fossil fuel combustion. Extreme weather and related events, such as floods, droughts, hurricanes, heatwaves, and wildfires, are already increasing in frequency and intensity, threatening ecosystems and humanity's physical, social, and economic well-being. Continued uncontrolled GHG emissions will compound the effects and risks of our altered climate state well into the future. The world will experience more extreme weather events which, coupled with sea level rise, will continue to cause coastal property damage and population displacement. Extreme weather and flooding events will further impact infrastructure (such as energy supply and transportation systems) leading to disruption of supply chains, business and industry productivity, and military operations. Ecosystems and natural resources will continue to be stressed, affecting food and water availability, burdening economies, and societies. Climate change threatens human health, leading to increased illness and mortality, increased incidence and distribution of vector-borne diseases, and decreased work force efficiency.

The American Chemical Society (ACS) acknowledges the chemistry enterprise has a critical role to play in helping to mitigate climate change by developing green technologies to meet GHG reduction targets.

Scientific facts and observations must inform climate policy and drive science-based targets at all levels. International cooperation is crucial to addressing the impact of human activities on the global climate system, and U.S. leadership in efforts such as the Paris Agreement is essential. Comprehensive federal climate legislation is urgently needed. Strategies to reduce GHG and pollutant emissions are known and must be implemented through policy changes, partnerships, education, and capital investment. Mitigation policies (e.g. GHG emission reduction targets, use of renewable clean energy technologies, and market-based approaches) must be augmented by improved approaches for anticipating and adapting to adverse and unavoidable impacts of climate change.

There is no single solution to stabilize our rapidly changing climate; aggressive and consistent policy action on all fronts is needed now at increased scales to mitigate and minimize unavoidable global environmental changes.

Recommendations

The United States should lead efforts to combat climate change. The U.S. Government should:

- Work internationally, providing leadership for developing global agreements and their execution.

The American Chemical Society (ACS) Board of Directors Committee on Public Affairs and Public Relations adopted this statement on behalf of the Society at the recommendation of the Committee on Environmental Improvement. ACS is a non-profit scientific and educational organization, chartered by Congress, with more than 158,000 chemical scientists and engineers as members. The world's largest scientific society, ACS advances the chemical enterprise, increases public awareness of chemistry, and brings its expertise to state and national matters.

- Enable support for state and local governments to coordinate and plan mitigation and response strategies.
- Encourage interagency cooperation supporting a multi-pronged approach towards limiting GHG emissions and adapting to the impacts of our already altered climate.
- Recognize short-term climate intervention strategies, such as some forms of geoengineering, are not acceptable substitutes for reducing greenhouse gas emissions, or for responding to climate change through long-term mitigation and adaptation.
- Promote climate science literacy and education for citizens and policymakers about human impacts on climate, and the consequences of climate change.
- Advance policies to drive innovation in green chemistry and sustainable energy technology in partnership with industry and academia.

The United States must take meaningful steps to reduce GHG emissions and deploy advanced and sustainable energy technologies. The U.S. Government should:

- Utilize carbon pricing policies and other regulatory strategies to help mitigate CO_2 and other high global warming potential GHG emissions, to better reflect the true value and external costs of carbon-based fuels, their extraction and use.
- Promote the development and use of safe and sustainable carbon capture, utilization, and sequestration.
- Incentivize and enable partnerships with industry and academia to adopt zero- and low-carbon energy technologies and avoid over-reliance on currently lower-cost GHG-generating fuels as a long-term strategy.
- Stimulate advances in energy storage and grid technology, which will be critical for broader adoption of renewable energy.
- Lead innovation in safe and reliable storage and disposal of nuclear waste and plant safety, to be able to encourage further development and use of civilian nuclear power.
- Support programs aimed at reducing methane (and other GHG) emissions from sectors such as oil and gas, agriculture, and municipal waste facilities.
- Support implementation and updating of energy efficiency standards to help reduce emissions associated with electricity generation and transportation fuel use.
- Provide technological leadership on the global stage for green chemistry and sustainable energy technology, which includes investment in alternative energy strategies, training, and partnerships. This includes domestic and international efforts to sustainably source and recycle critical materials for renewable energy.

The United States should prioritize and provide robust and uninterrupted federal funding for scientific research on climate change, its consequences, and mitigation strategies. In particular, the U.S. Government should:

- Fund comprehensive Earth systems research programs on climate and climate extremes, including wildfires, drought, and extreme weather. A goal of this research is to better quantify the dynamic feedback between air, land, and ocean temperature changes with a focus on reducing uncertainties related to anthropogenic aerosol impacts on cloud formation and the Earth’s energy balance.

- Fund research on the human health and ecosystem impacts of climate change, including the likelihood, frequency and distribution of climate-related disease and the public health impacts of wildfires and extreme weather.
- Fund research to evaluate the effectiveness and implications of climate change response strategies to inform planning, coordination, and decision making.
- Fund federally regulated research into environmentally high-risk climate mitigation approaches, such as geoengineering and carbon sequestration, to ensure their environmental and societal impacts are understood. Federal oversight of field-based research and implementation projects is needed where such activities may pose risks.

The United States should address the inevitable impacts of climate change through planning and action to minimize societal upheaval, loss of life, and destruction of property.

- Government, industry, and society should work to protect disadvantaged groups who might be disproportionately impacted by climate change and lack the means or resources to prepare, adapt, or respond. Environmental equity considerations and guidance from local communities and underrepresented groups who are most impacted by climate change should be incorporated when planning and implementing new projects and infrastructure.
- Federal or local funding for natural disaster response should help communities develop stronger and more resilient infrastructure.
- Develop national strategies for preparedness and adaptation for the short- and long-term risks of climate change, including evacuation, resettlement, supply chain disruption, property insurance, and land use planning.

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