

## GOVERNANCE & EDUCATION SECTOR REPORT

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### INTRODUCTION

The Governance & Education breakout group consisted of participants from environmental organizations, academia, Native American tribes, concerned citizens groups, and Canadian government organizations. The Governance & Education breakout group differed significantly from the other workshop groups. Instead of considering climate change in relation to a single subject, governance issues were debated on the first day of the workshop, while on the second day educational issues were discussed. The two facilitators for this sector, one for governance and the other for education, each developed their own set of questions to pose to the group because the questions asked in the other breakout groups did not directly apply to governance and education.

The discussion group was expected to interpret the workshop questions broadly in an effort to reduce the chance that significant issues would be overlooked. Because this was an initial effort, failing to include potentially critical issues was considered a greater mistake than including issues that, upon further study, turn out to be relatively unimportant. The participants were not asked to make quantitative assessments of the impacts that they discussed.

### GOVERNANCE – SIGNIFICANT FINDINGS

Reactions to the role of government in addressing climate change and its impacts varied. One group member suggested that governments should simply get out of the way, stating that the bureaucratic structure is simply too slow and

inefficient to facilitate the radical and innovative changes that may be needed to deal with climate change. Other members of the group disagreed with this radical approach and felt that governments should provide strong international, domestic, and local leadership. Governments should continue to fund research programs in environmental science and renewable energy resource development and communicate the results of this research to the public in a politically unbiased manner. Group members also agreed that governments should participate in voluntary partnerships with business and industry so that the two groups can work together, instead of against each other, to modify industrial practices which have a negative impact on the environment.

Several strengths and weaknesses of current government efforts were discussed. Among the strengths, group members noted the rising importance and visibility of climate change issues on the local, state, national, and international levels. Science research also continues to produce useful information about our changing environment. This progress is due to the sizable amount of money that has been allocated to climate change research and the large number of talented scientists at government agencies and research universities. The fact that climate change is becoming a political issue is both a strength and a weakness. The conflicting interpretations of research results were a large concern to all members of the group. Other weaknesses included the lack of coordination and integration among different government programs, the existence of antiquated energy and land-use laws, which promote methods that have a negative impact on the environment, and the fact that governments listen too strongly to economic, and not social and environmental arguments.

Climate change issues have affected government in the delivery of public services in several ways.

The possibility of climate change has induced more anticipatory work and the development of adaptation strategies. Governments have been spending more money on agencies and services that deal with climate change issues. Governments have also begun to consider tax incentives as a way to encourage business and industry to modify practices that harm the environment.

Group members had several suggestions for actions that governments must take to address climate change impacts. The federal government should create a rational and flexible energy policy that can be adjusted to meet regional climate change concerns. Climate change initiatives should be tied to other regulatory programs instead of creating specific carbon emission regulations. The federal government should promote voluntary partnership programs with business and industry and establish positive and negative economic incentives both for business and industry and the general public. Governments should also review antiquated laws that hinder the use and development of renewable energy resources as well as revise construction codes to prevent people from building or rebuilding on land that is particularly susceptible to frequent natural disasters. It was suggested that the federal government join with insurance companies to develop strategies for dealing with the possibility of the increasing frequency and intensity of natural disasters. Determining whether a public or private weather service will best fit the nation's needs for predicting and monitoring extreme weather events was another suggestion. Group members emphasized that the public should be informed about climate change impacts. Research and the dissemination of research should be funded by federal and state governments. Federal and state governments should also educate citizens and make special efforts to educate the media. State and local governments should encourage use of climate change issues in public school curricula.

## THE 4 QUESTIONS ADDRESSED

Four questions were posed to the group by the facilitator. The following format was used for the discussion of each question. First, group members silently generated ideas. Second, the facilitator went around the table and gave each member an opportunity to speak. Members could either share an idea with the group or pass. Group input was allowed as new ideas were expressed. Ideas were recorded on a chart by the facilitator. We continued the round-robin discussion until every member had passed or time was up. Finally, the group was given an opportunity to reconsider what had been recorded. Members with strong objections to specific ideas expressed their concerns. If the group reached a consensus, then the idea was modified.

### **1. What is the appropriate role of government (at any level) in addressing issues associated with climate change?**

Governments should simply get out of the way. The bureaucratic structure is too slow and inefficient to facilitate the radical and innovative changes that may be needed to deal with climate change.

Government at all levels (federal, state/tribal, and local) should provide strong leadership and be environmentally responsible ("walk the talk"). All levels of government should inform and involve the public and encourage them to act politically and personally.

All levels of government, especially federal and state governments, should provide research funding, particularly in environmental science and renewable energy resource development.

All levels of government should interact with business and industry via a balance of regulatory and voluntary programs. While there is a strong need for regulation, governments should

also participate in partnerships with business and industry to help the private economic sector to reach emissions and energy consumption goals. Governments should also encourage the development of energy-efficient technology and support innovative environmentally-responsible industries.

The federal government must participate and play a leadership role in international negotiations on greenhouse gas emission regulations and targets. Instead of simply thinking globally and acting locally, the federal government should promote international action.

The federal government should steer the direction of country and state policy making, support technology transfer (conversion of new research results into usable technology) and the creation of adaptation strategies, and promote and enforce conservation of water and energy.

The federal government should facilitate the communication of research results. It is important that the scientific community and the general public receive factual and unbiased information. All sides of the issues should be presented and misrepresentation of information for political purposes must be avoided. A federally-funded yet politically independent body of scientists should exist to review and disseminate research.

State and tribal governments should interpret federal policy in terms of what needs to be done at a state or regional level.

State and tribal governments should not only get the information about climate change to the people, but also apply the research.

State and local governments should actively participate together in land-use planning.

Local governments should involve all members of the community in strategic planning

activities related to climate change adaptation strategies.

## **2. What are the strengths and weaknesses associated with current government efforts?**

### *Strengths*

Climate change issues have been of rising importance and visibility on local, state, national, and international levels.

The United States is participating in international discussions on climate change. The United States has a large amount of international influence that it could use to promote further debate.

Vice President Al Gore has provided strong leadership in environmental issues.

Some educational outreach programs have been successful.

Scientific research continues to produce useful information about our changing environment and as a result our knowledge about the Earth and its climate is increasing at a rapid rate.

A sizable amount of money has been allocated to a large number of diverse organizations for climate change research, although this amount still pales in comparison to the funds the military receives from the federal government.

The partnership between the federal government and research universities has been strong. The United States has a large number of talented scientists.

### *Weaknesses*

There are conflicting interpretations of research results. This is a result of the promotion of a political agenda or due to the “de-contenting” or “research brokering” that inevitably must happen in order to communicate research

results to politicians, the general public, and even scientists.

The influence of large companies and their lobbyists on the government was considered a weakness.

The lack of coordination and integration among different government programs, particularly between federal and state governments has hindered progress.

Some broad national policies miss regional concerns completely.

The existence of antiquated energy and land-use laws promote methods that have a negative impact on the environment and discourage the development of new practices which have smaller environmental footprints.

Government agencies such as the Environmental Protection Agency (EPA) have limited authority, especially in terms of the ways in which they can spend money on public outreach and education.

Weakness: Governments listen too strongly to the economic arguments. The social and environmental concerns are often ignored.

Weakness: The public is largely uninformed and an uninformed public will not support the legislation that is needed to slow climate change.

### ***Strengths & Weaknesses***

The climate change issue is becoming politicized.

A large number of oversight committees in the House and Senate are involved with climate change issues. Although this is evidence that the level of concern is high, the sheer number of the committees means that it is very difficult to pass climate change legislation.

### **3. How are climate change issues affecting government (at any level) in the delivery of public services?**

The possibility of climate change has induced more anticipatory work and the development of adaptation strategies. Governments have begun to look forward to the future.

Governments have been spending more money on agencies and services which to with climate change issues, e.g. this workshop.

Weather and long-term climate prediction have become priorities for the Federal Emergency Management Agency (FEMA).

There has been an increase in expenditures for natural disaster relief.

The federal government has begun to consider tax incentives as a way to encourage business and industry to modify practices that harm the environment. There has been an emphasis on alternative, creative responses as opposed to just regulation.

### **4. What specific actions must government (at any level) initiate to fulfill its role in addressing climate change impacts?**

All levels of government should take advantage of the current positive political environment.

The federal government should recognize its leadership role in the international community and promote the development of climate change policy by ratifying the Kyoto treaty or offering a reasonable alternative.

The federal government should initiate discussions with Canada about climate change adaptation strategies in the Great Lakes region.

Strategies to limit emission of greenhouse gases and to adapt to potential climate change should

be developed at all levels of government, especially at the local level.

The federal government should create a rational and flexible energy policy that can be adjusted to meet regional climate change concerns and develop national energy conservation goals.

The federal government should attempt to reduce carbon emissions not with explicit regulations but by tying climate change initiatives to other regulatory programs.

The federal government should promote voluntary partnership programs with business and industry and establish positive and negative economic incentives in the form of tax breaks or tax increases to encourage the use of renewable energy resources.

Federal and state governments should review antiquated laws that hinder the use and development of renewable energy resources.

Governments should revise construction codes to prevent people from building or rebuilding on land that is particularly susceptible to frequent natural disasters.

The federal government should team with insurance companies and develop strategies for dealing with the possibility of the increasing frequency and intensity of natural disasters.

The federal government should impose penalties for purchasing cars that have low gas mileage ratings and offer incentives for the purchase of energy-efficient automobiles.

The federal government should continue to fund the investigation of the use of nuclear-generated power and the safe storage of nuclear wastes.

The federal government should determine whether a public or private weather service will best fit the nation's needs for predicting and moni-

toring extreme weather events, the most likely manifestation of climate change.

Governments should discourage the further expansion of urban areas by promoting public transportation.

All levels of government should continue to fund research and the dissemination of research.

The federal government should create and support a politically independent consortium of scientists that would advise the government and provide some sort of unbiased information source.

Federal and state governments should educate citizens about climate change impacts by conducting outreach activities, creating public service announcements, and supporting the development of resource materials for K-12 teachers. Special efforts should be made to educate people in the media such as newspaper editors and television news directors in order to increase the amount of media coverage of climate change issues.

State and local governments should encourage the use of climate change issues in public school curricula.

## **EDUCATION – SIGNIFICANT FINDINGS**

Since global warming and other possible manifestations of climate change are slow and intangible processes, group members decided that it is essential to be opportunists and distribute information about the impacts of climate change during severe weather events, major international conferences, and at other times when the public's attention is focused on climate. This information would include a general description of the atmosphere and the greenhouse effect. It would emphasize that although not all things are known about climate change, the consequences of all possible climate change

scenarios must be considered. The public should also understand that scientific data can be interpreted in different ways in order to promote a specific point of view. Finally, it is important that people realize that the causes of climate change are directly linked to human behavior. The negative effects of climate change can only be reduced by lifestyle modification.

Because the issues associated with climate change involve science, math, and social studies, climate change education provides a unique opportunity to build integrated, multi-disciplinary educational experiences. These experiences can be used to promote team-teaching methods and to generate student-centered activities that use real-world examples to teach problem solving skills. This interdisciplinary approach would avoid the extremely difficult task of changing curriculum standards to include climate change education objectives. Materials developed for climate change education should target specific educational proficiencies found on standardized tests, take advantage of real-time weather information that can be provided by the internet, and utilize other distance learning activities. Producers of such educational materials should design the curricula so that all school districts can participate. Teachers must be trained not to advocate particular agendas since the improper discussion of politically sensitive issues can jeopardize climate change education.

Informal methods of educating the public about climate change impacts include museums, posters, and temporary information booths placed in highly traveled areas. These sources of information should emphasize the personal actions that can be taken to help slow climate change. Partnerships between government organizations and business and industry can also be used to educate the general public. The refurbishing of public and private buildings with energy-efficient and money-saving technology are golden opportunities to educate people about the causes of climate change. Religious organi-

zations may provide a forum to address the issues of overpopulation and overconsumption which contribute to climate change. Activities are needed to make people think about the consequences of certain behaviors in terms of how they may contribute to climate change. Televised public service announcements and national debates may also be an effective way to inform the public. Finally, the issues of climate change should be linked to the sustainability movement.

#### THE 4 QUESTIONS ADDRESSED

The discussions were similar to brainstorming sessions. The facilitator initiated each discussion by presenting four questions concerning the methods, audience, concepts, and activities associated with climate change education, but the topics gradually changed over the course of time. Eventually the questions concerning methods and audience were combined and a new topic was created: problems encountered in climate change education.

##### **1. What are the methods for fostering an informed debate on climate change and what are the ramifications and audiences these methods would target?**

All methods should be used. Additionally, it is possible that there are no new methods left to try: all methods may have already been used to educate the public about climate change.

Museums, posters, and temporary information booths should be placed in highly traveled areas to educate the public.

Government should partner with business and industry to educate the general public.

Information should be distributed and the public should be informed during the times when climate issues are in the public eye (during severe weather events or major international conferences).

Materials should be distributed at national teacher conferences.

Materials should be prepared about climate change science which target specific educational proficiencies found on standardized tests and that help the teachers learn how to use them.

Teachers should be trained to address the wide variety of political, economical, and ethical issues that are associated with climate change in a sensitive manner.

Curricula for school districts that exploit the interdisciplinary nature of climate change education should be prepared. In order to allow all school districts to participate, curricula should be designed so that only inexpensive materials, which can be obtained locally are required. Climate change should be used as a case study to integrate science, math, English, and social studies. A team-teaching approach to climate change education should be promoted. Teacher-directed yet student-centered hands-on learning experiences should be promoted that can be used to teach students at all levels problem solving skills and the general process of science.

Create courses on climate change impacts and science should be created at the community college level.

Materials should be produced that can be used by religious, environmental, and civic groups to inform the public about climate change issues.

Distance learning and/or the internet should be used more.

A national debate should be televised on the potential causes and manifestations of climate change involving representatives from business and industry, government, and academia to inform the general public. Public service announcements produced by government

agencies and environmental groups should also be televised.

Public and private buildings should be refurbished with energy-efficient and money-saving technology as opportunities to educate students and the general public about the causes of climate change.

Issues of climate change should be linked to the sustainability movement.

Geographic information systems (GIS) software should be used to produce if-then scenarios dealing with future changes in land-use due to climate change.

## **2. What are the problems encountered when educating people about climate change?**

Environmental education is often seen as advocating a liberal agenda, which makes it an easy target for politically conservative groups.

Changing curriculum standards to include climate change education would be extremely difficult.

A large gap is developing between science and the media.

Getting climate change education into the classrooms of teachers who are not highly motivated to change their curriculum.

Global warming and other possible scenarios are slow, intangible, and uncertain processes which makes it hard to motivate people to make the changes that may be necessary to slow climate change.

Atmospheric science, the centerpiece of climate change, is often caught between other academic subjects, and therefore very few students learn about the atmosphere.

Improper discussion of politically sensitive issues such as overpopulation and overconsumption can jeopardize climate change education.

**3. Which identify concepts should be presented as a necessary part of a climate change curriculum?**

There are inherent uncertainties in science. There are things that are known about climate change and things that are not known. The consequences of all possible manifestations of climate change should be taught.

Scientific data can be interpreted in different ways in order to promote a specific point of view.

A general understanding of the atmosphere and the greenhouse effect is crucial.

The causes of climate change are directly linked to human issues such as overpopulation and overconsumption. The negative effects of climate change can only be reduced by modifying our lifestyles.

**4. Which activities might best stimulate an informed debate on climate change issues?**

Several activities that were discussed include:

Activities which present unusual facts about the Earth's climate.

Interdisciplinary laboratory activities relating to climate change, which require the integration of several academic subjects in order to solve problems.

Real time weather information over the internet and the exchange of weather-related personal experiences.

Activities that calculate the amount of carbon dioxide and other greenhouse gases that are added to the atmosphere by common everyday

practices such as taking a shower, driving to work, washing the dishes, etc.

A "life skills" game that requires the players to think about the consequences of certain lifestyles in terms of how they may contribute to climate change.

Posters that emphasize the personal actions that the public can take, such as insulating the home, carpooling, etc., to help slow climate change.