

## ***Teacher Background Information: The Future of Climate and Life***

We are now ready to collect and distill some general conclusions for dealing with climate change from our examples of environmental and social interactions. Some of these conclusions and general principles will not seem particularly new; many are simple and age-old. Unfortunately, over and over again societies have been slow to adopt such well known principles. The result is often crisis management, put into place after a situation has deteriorated to an obvious predicament before people wake up and decide to act. Much of the societal damage that is brought about by climatic hazards can often be prevented, and usually does not require great forethought or even great forecasts. What is needed is for society to realistically consider the consequences of potential changes, thereby substantially reducing the adverse impacts of fluctuating climate and weather.

The prediction of future climate change is critically dependent on scenarios of future anthropogenic emissions of greenhouse gases and other climate forcing agents such as aerosols. These depend not only on factors which can be addressed by the natural sciences, but also on such factors such as population and economic growth and energy policy, where there is a large degree of uncertainty and which are the concern of the social sciences. Natural and social scientists need to cooperate closely in the development of future scenarios as well as ways to reduce their impact on society.

Since the 1990 IPCC Report on Climate Change, there has been a greater appreciation of many of the uncertainties which affect our predictions of global climate change. These continue to be rooted in our inadequate understanding of: sources and sinks of greenhouse gases, the role of clouds and other elements of the atmospheric water budget, the influence of the ocean, the polar ice sheets and the land surface processes and feedbacks which couple regional and global climate. Reductions of these uncertainties require:

- improvements in the systematic observation and understanding of climate forcing variables on a global basis;
- the development of improved models which include adequate description of all components of the climate system;
- an improved understanding of social, technological and economic processes, especially in developing countries, which are necessary to develop more realistic scenarios of future emissions;
- the development of national and international inventories of current emissions;

- continued and increasing support from government, as well as support from the private sector, for climate research which crosses national and disciplinary boundaries; particular action is needed to facilitate the full involvement of developing countries;
- improved public education on the complex issues, problems and potential impacts of global change, away from the conflicting, alarmist information of the mass media;
- in addition to objective scientific information about global change, the public also needs to understand the socio-economic-political elements and the ethical considerations, as well as how these issues may be resolved;
- public understanding of how collective and local actions can be taken to respond to the issues and that everyone is- or should be- essentially equal, in their concern for public issues and their competency to make decisions about them;

Despite all the good intentions of individuals, companies and governments, it is very unlikely that we will be able to avert global warming entirely, given our current energy habits and dependence on fossil fuels. However, we can slow down the rate of change, and perhaps buy ourselves several additional decades to implement some of the necessary changes and also figure out how to adapt to changing world conditions. Following is a list of practical actions that can be taken on a personal level:

- conserve energy
- recycle
- encourage reforestation
- support the development of alternative energy sources

Creating a sustainable future for our planet and its inhabitants will inevitably depend on *society permitting* the implementation of policies that recognize and deal with climatic risks and opportunities. Whatever actions are taken will have to allow for fundamental ecological constraints, as well as society's ability to alter the traditional political and social philosophies that are behind a majority of our economic practices. Our value system will have to coalesce into a new political breakthrough in the next century. Many global and environmental laws and regulations will be emerging to go along with an increasing global consciousness. We will be at a period in human social thought where leading thinkers from all cultures will have to join together and address the ethics of the environment and its development as one unified subject and in global perspectives. Decision makers are now designing treaties and international agreements dealing with these global issues. Only time will tell if these actions result in significant decisions that positively impact the environment and the world in which we live.