**Fundamentals of Climate Change**
**Remarks of Elliot Diringer**
**at**
**Environment, Education, and the United Nations:**
**Working Towards Sustainable Development**
**United Nations, New York**
**January 11, 2002**

Thank you. I'd especially like to thank the organizers of this conference for inviting me here this morning. It's a tremendous honor to be speaking to you here at the United Nations. And I particularly appreciate the opportunity to speak to you about an issue that so exemplifies the mission of the U.N. – the challenge of global climate change. For climate change is not simply an international issue – it is a quintessentially global issue. It implicates literally every nation, and every person, on Earth. And ultimately it can be overcome only if all nations work together. It was in that spirit that world leaders signed the U.N. Framework Convention on Climate Change in 1992 at the Earth Summit in Rio de Janeiro, launching the international effort against climate change. The decade since Rio has shown us how hard it is to translate that spirit into action. We have made some important headway, but there is still a very long way to go. And I believe that you, as educators, are in a unique position to help get us there.

I'd like to say at the outset, though, that I'm not here to try to enlist you in a cause. For many years I was a journalist. I believed my role was to inform and illuminate, not to advocate. And I'm sure many of you feel the same way about your work. Instead, I'd like to offer some thoughts on how you, by teaching about climate change, can help our children better understand the world in which they live. Yes, climate change is a profound challenge. But it is also a profound window on our world. It is a window on both our past and our future; on the intricate relationship between man and the environment; and on the often difficult relations among nations. Climate change teaches us about the limits of science and the importance of economics. It touches on the most mundane and commonplace: how we heat our homes, cook our food, move from place to place, even how we till our soil. And at the same time, it raises fundamental issues of fairness, and the responsibility of one generation to the next. You can see, there are many directions you might go. The question is where to begin.

Here's where I'd like to begin. I'm not going to focus on causes and consequences and solutions. There is plenty of good material out there. If you stop by our display, you can see some of the reports we've produced on everything from health impacts to emissions trading. We also have a list of on-line resources, including several excellent websites geared specifically for educators. So rather than cover those basics, I'd like to step back a bit and try to describe for you some of the fundamental characteristics of climate change. What are the attributes that really define this challenge, that make it different from any other we have faced before? I believe there are four.

First, as I've already said, climate change is a truly global phenomenon. With the exception of the threat to the Earth's ozone layer, which it appears we are well on our

way to addressing, we have never before faced a challenge so comprehensive in its reach. The buildup of greenhouse gases in our atmosphere influences physical and chemical systems that shape climate literally everywhere on Earth. The impacts of global warming will vary widely from place to place. But no nation is immune. By the same token, every nation bears some responsibility for meeting this challenge. Each molecule of carbon dioxide added to the atmosphere presents the very same risk whether it originates from a taxi in New York or from a power plant in New Delhi. And for that reason, it is futile for any one nation to limit its greenhouse gas emissions unless, ultimately, all do.

That is not to say that every nation must act at the same time or in the same way. I'll come back to this question later. But in time, all must assume their fair share of this common responsibility. Ten years after Rio, we are now at a point where most industrialized countries appear finally on the verge of beginning to tackle their greenhouse gas emissions. Negotiations last fall in Marrakech put the finishing touches on the Kyoto Protocol, which sets the first binding international targets for cutting emissions. Countries are now moving toward ratification and some hope to bring the treaty into force by the 10th anniversary of Rio later this year. Of course, this progress is tempered considerably by the fact that the United States has now abandoned Kyoto. What the United States is prepared to do on its own remains to be seen. But in time, we must bring it back into the international effort, and we must build on Kyoto to forge a framework for action that is as global in reach as the threat it addresses.

A second characteristic of climate change is that it is a long-term challenge. Measured in geologic time, the rapid buildup of greenhouse gases in the atmosphere over the past century, and the impacts that are likely to follow, might seem sudden and precipitous. But measured on the scale of a human lifetime, climate change is very slow moving. The added carbon dioxide now burdening our atmosphere has accumulated over the course of generations. Scientists believe the warming trend has now begun. The 1990s were the hottest decade of the past millennium. 1997, '98, and '99 were three of the hottest years ever, and last year was the second hottest on record. Scientists also believe they are beginning to see the first impacts. The Arctic ice cap is getting thinner. Spring is arriving earlier here and in Europe. And all around the world, glaciers are retreating. Yet the kinds of impacts that will inflict serious harm – extreme flooding and drought, dramatic sea level rise, the spread of tropical diseases, and the disruption of our agricultural and water supplies – those are still decades down the road. And the full impact of *today's* emissions will not be felt until next century.

But just as global warming is slow in coming, doing something about it is *also* a long-term proposition. Certainly, there are steps we can and should take right now – for instance, there are countless ways we could be using energy more efficiently. But ultimately what is needed is a fundamental transformation in the way we power our homes, our factories, our cars – in short, in the way we power our entire economy. We must wean ourselves from fossil fuels, the principal source of greenhouse gas emissions, and adopt alternatives that emit little or no carbon. This means nurturing technologies now in their infancy, and devising others not yet even imagined. Clearly, this can't happen overnight. It will take time – which is all the more reason to get started now.

But here is the dilemma: We must make investments and take actions now to avert threats that might not even materialize in our own lifetimes. If you could calculate the real costs and the real benefits of reducing emissions – something our most sophisticated economic models can only take a stab at – I'm confident the long-term payoff would be well worth the investment. But our decision-making structures are not geared to taking the long-term view. Our investment decisions are made with an eye to the quarterly earnings reports. Our political decisions are made with an eye toward the next election. Part of confronting climate change, then, is learning to think, and to act, for the long term.

Here is a third characteristic of climate change – uncertainty. There is much we do not know about climate change. We know it is happening. But we cannot accurately predict how much the earth's temperature will rise or how quickly. Will it be just two degrees over the next century, which is the low end of the scientists' best estimate? Or will it be 10 degrees, the high end? Nor can we forecast precisely what impacts will be felt where. Is it safe to assume a gradual rise in temperature and impacts? Or, as some scientists believe, is there a significant risk of triggering sudden changes in the climate system that will have swift and catastrophic consequences? There are tremendous economic uncertainties as well. How quickly can our engineers perfect climate-friendly technologies? How quickly will companies and consumers adopt them? Might the economic benefits of addressing climate change be greater than we think because we will at the same time be solving other problems, like air pollution and our costly reliance on imported oil?

We don't have good answers to these questions. So how do we, as a society, act in the face of such uncertainty? One approach is to wait and see. Maybe the warming won't be as bad as the scientists say. So why not give them more time to figure all this out before investing a lot of money that could go to other priorities? The problem is that uncertainty cuts two ways. Maybe the warming will be much worse than the scientists say. Do we want to take that risk? As I said earlier, the strategies needed to address climate change must be implemented over many years. The sooner we begin the less costly they will be. Can we really afford to wait? Climate change forces us to weigh the knowns against the unknowns. Do we insist on absolute certainty? Or do we begin to act now, with smart, flexible strategies that allow us to change course as we learn more?

There is one more characteristic of climate change I'd like to discuss: It is deeply unfair. Earlier I said that climate change affects us all and, that to successfully overcome it, all of us must act. It represents a common threat, and a common challenge. But climate change confronts us as well with extraordinary inequities. First, who is responsible for it? If you look only to the past, the answer seems clear: the industrialized countries. Nearly two-thirds of the greenhouse gases added to the atmosphere over the past century as a result of human activity came from developed countries. Nearly a third was contributed by the United States alone. That is not because our populations are larger, but because we are wealthier and consume more. Per-capita emissions are nearly 20 times higher in the United States than in India. If you look forward, however, the

calculus changes. As developing countries build their economies, their emissions are growing. And within a few decades, they will surpass those of the industrialized world. In the long run, climate change cannot be effectively addressed without limiting their emissions also. But developing countries are understandably reluctant to sacrifice hard-won gains, or their aspirations for the future, to solve a problem that is not of their making.

There is an even crueler inequity, however – and that is the unequal distribution of the impacts of climate change. Simply by virtue of their location on the planet and their natural endowments, different nations will be affected very differently. And it appears the worst impacts will fall disproportionately on the poorer nations. Countries like Bangladesh, where the flooding of low-lying lands could displace millions. Or small island states like Tuvalu in the southern Pacific, whose people have decided to abandon their homeland before it is swallowed by rising seas. Or the nations of Africa, where increased drought and desertification could mean widespread famine. In other words, the consequences of climate change will fall most heavily on the countries that bear least responsibility for it, and are least able to cope with them.

Ten years ago, in Rio, these inequities were understood, and it was agreed that for all these reasons, the developed countries would act first. That is why the Kyoto Protocol sets emissions limits only for developed countries. President Bush said he was rejecting Kyoto, in part, because it was unfair – it imposed limits on the United States while requiring nothing of large developing countries like China and India. Fairness, it would seem, is a matter of perspective. But one thing, I believe, is clear: We cannot expect nations to agree on an effective global plan against climate change, let alone abide by it, unless each perceives it to be fair. Finding an equitable way of sharing this common burden may the toughest dilemma of all.

Those are four fundamental characteristics of climate change: it is global; it is long-term; it is fraught with uncertainties; and it confronts us with deep inequities. These characteristics define what I believe to be one of most profound challenges we face in this new century. Meeting this challenge will severely test the capacity of the global community, and institutions like the United Nations, to forge a common, effective path forward. It will require political will. It will require tremendous creativity and resourcefulness. It will require new ways of thinking. It will require understanding.

That is where you can help. I said at the outset that I was not here to enlist you as advocates. That is not your role. Yet I am confident that any honest examination of these issues can only help lead us in the right direction. No matter where we begin – by exploring the evidence buried deep in Arctic ice, or the energy systems that sustain our economy, or the ethical quandaries of what is fair – we can arrive at a clearer, deeper understanding of the world in which we live. And by imparting that understanding to our children, we can help ensure a fairer, safer, more secure world for generations yet to come. Thank you very much for listening.