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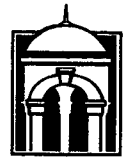

ENERGY, THE ENVIRONMENT, AND GLOBAL ECONOMIC GROWTH

*Summary of Remarks by Maurice Strong, Chairman of Ontario Hydro, former U.N. Under Secretary-General and Chair of the 1992 Rio Earth Summit**

"Energy, the environment, and global economic growth is a broad canvas, and I will paint with a broad brush," began Maurice Strong, who has been involved in the energy business in varying capacities for years and is a staunch environmentalist. Strong believes that most people in the energy business today understand the "direct, intimate, and essential relationship between the economic necessities of the energy business and environmental imperatives."

At the root of this complex of issues is not just the viability of the energy industry or the North American economy, but the viability of the planet earth as a secure and sustainable home, he warned. "Humankind is at one of the most critical crossroads in its history, and time is running out to make some fundamental changes in the way we use the earth's resources."

More than a century ago Theodore Roosevelt said, "To waste and destroy our natural resources, to skin and exhaust the land instead of using it to increase its usefulness, will result in undermining for our children the very prosperity which we are by right to hand down to them." Roosevelt recognized the need for the industrialized world to embrace policies of sustainable economic development at a time when the world population was about 1.5 billion. It is now more than 5 billion. Last year the net increase in population was 90 million, 8 million people a month, all of whom want to "live like we do," said Strong. "This is not achievable."

There is irrefutable evidence that the industrialized world cannot continue its historical patterns of production and consumption, Strong contended. The 1972 United Nations conference on the human environment held in Stockholm saw the first international manifestations of concern about the environment. Fifteen years later the World Commission on Environment and Development, in its landmark report "Our Common Future," made it clear that while progress has been made in particular instances, overall "the environment of the planet has

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deteriorated, and there has been an acceleration of environmental risks." These risks prompted the U.N. General Assembly to convene the Conference on Environment and Development, known as the Earth Summit, in Rio de Janeiro. Contributions from scientists and citizens from around the world showed that the "ecological consequences of our economic behavior are worsening and that rich/poor disparities between and within countries are widening."

The report of the World Energy Council's Commission on Energy for Tomorrow's World predicts that "energy issues will shift from the industrialized to the developing world in the next two to three decades," said Strong. The latter's portion of worldwide energy consumption will rise to 55 percent from 33 percent today. Energy for Tomorrow's World maintains not only that the Earth Summit's target of stabilizing global carbon dioxide emissions at the 1990 level by the year 2000 is unattainable, but also that there is a strong possibility that atmospheric carbon dioxide concentrations will continue to rise for decades.

Circumstances are bringing about changes in energy consumption patterns. Strong cited data from Vital Signs, a book by Lester Brown that describes the 1990s as "the decade of discontinuity, an era in which long-standing upward growth curves for such key economic commodities as grain, steel, and coal are reversed." World coal production, which has risen annually since the Industrial Revolution, declined in 1990, 1991, and 1992; world oil output peaked in 1979. Only natural gas is expanding production. Intolerable levels of air pollution in such cities as Los Angeles and Mexico City have restrained the growth in the use of automobiles. Acid rain and the threat to the ozone layer have curtailed the world's production habits. A growing environmental consciousness has produced improvements in the industrialized world on some short-term problems: cities are visibly cleaner; toxic emissions to air, land, and water have been reduced; and manufacturing processes have reduced their use of raw materials and energy. Yet greenhouse gas problems have worsened. "While we are making inroads on visible problems, we should not become complacent about the more remote and more threatening global perils," Strong cautioned.

Over the past two decades growing environmental concern has been accompanied by the establishment of environmental ministries and agencies in virtually all governments. This has produced a proliferation of regulations, but these rules typically are not linked to and have little effect on national economic policies. "Environmental regulation is necessary, but its effects can be limited or even counterproductive if not accompanied by fiscal and economic policies that provide positive incentives for environmentally sound development," Strong said. A paper issued by Arthur D. Little's Center for Environmental Assurance reports that industry in North America and Europe spends more than $150 billion a year on pollution abatement and control, a huge investment in "end-of-the-pipe remedies. This figure will likely double by the year 2000," predicted Strong.

The prospect of a massive increase in Third World energy consumption reinforces a position Strong has advocated for years: The industrialized world must "reduce its environmental impacts in order to leave space for developing countries to fulfill their development needs and aspirations. Earth cannot sustain another traumatic round of undisciplined growth." Energy efficiency is a critical area in which environmental and economic goals can reinforce each other. The energy industry today has an opportunity to help customers cut their energy use

and costs and to increase their competitiveness. The Electric Power Research Institute has estimated that electricity use in the United States could be reduced by as much as 55 percent employing cost-effective conservation measures; others say it could be reduced by 75 percent. Most electric utilities have an energy management program in place, but Strong believes "we are just on the threshold of savings. Unfortunately, with many companies having surpluses of energy to sell, the drive to conserve is reduced."

More than one-third of the world's private cars can be found in the United States. A study for the National Academy of Sciences determined that straightforward technological improvements using existing lightweight materials could make vehicles 50 percent more efficient and save about 2 million barrels of oil per day, more oil than the United States imports from the Gulf. President Clinton's recent initiative on lightweight cars is only a modest step. "The fossil-fuel era is far from over, but it is radically changing," asserted Strong. The World Energy Council predicts that by the year 2020 Canada and the United States will be using 21 percent less coal, but only 2 percent less oil. These reductions will be largely offset by a 21 percent increase in the use of natural gas. Viewed in isolation, this would indicate that North America can expect to enjoy cleaner air, but in the same period, developing countries will increase their coal consumption by up to two-and-a-half times, resulting in a net global increase in coal-burning of 31 percent.

The Chinese estimate they could double their gross national product without increasing emissions if they could afford to convert 700,000 industrial boilers from coal to some cleaner alternative, but they do not have enough capital to make the necessary infrastructure changes. Strong is convinced the period ahead will continue to be characterized by pressures to reduce the role of coal and oil, even though some countries will increase consumption of both. Natural gas is emerging as the fuel of choice among fossil fuels, but it is only a transitional adjustment, not a permanent solution.

"We have not yet discovered a reliable, viable, environmentally sound, economically feasible energy mix," Strong observed. As long as energy prices remain at current low levels and do not reflect the full external costs of producing the energy, there is little incentive to develop alternatives to the current dependence on fossil fuels and nuclear energy. Low taxes on gasoline further diminish the pressure to conserve. Ontario Hydro, which uses nuclear power and fossil fuels, is in the process of adopting full-cost accounting as a guide to decision-making, although competitive pressures dictate that these costs cannot be reflected in rates until other companies do likewise. Strong advocated a "fundamental revision in the system of incentives and penalties by which governments motivate the conduct of citizens and corporations. There should be positive incentives for environmentally sound practices, products, and services, penalties for unsound behavior, and full-cost accounting at the national level."

Some believe that energy efficiency costs more than it is worth and that conservation is a recipe for slow growth, but the experience of industrialized countries, notably Japan, has demonstrated that environmental improvement and efficiency in the use of energy and resources is compatible with good economic performance. More than any other nation, Japan has reduced its levels of air and water pollution and the amount of energy and raw materials it uses to produce

a unit of gross domestic product. In the process, it has created a new generation of competitive advantages for Japanese industry, which realizes that the next generation of economic and industrial opportunity will be environmentally driven. In the new global economy the principal sources of added value and competitive advantage will be capital and technology. Those who have only raw materials to sell will be disadvantaged. Those who only have labor to sell will face an increasingly selective market, particularly if they lack the specialized training and skills the market demands.

"All of this is deeply relevant to the United States and Canada, which together enjoy a higher standard of living than any region on earth," commented Strong. "It is also relevant to energy, for energy is the fulcrum between the environment and the economy. Virtually every environmental issue has an energy component, which gives the energy business a special responsibility to lead the process of transition to a sustainable planet." Canada is "the most energy self-indulgent nation in the world," but every sector of the North American economy is faced with the need for massive restructuring to ensure that it can continue to compete in the global economy.

Ontario Hydro is in the last stage of a large-scale restructuring, a cost-reduction program that has reduced its ten-year capital expenditures by $24 billion; operating, maintenance and administration costs by $1 billion a year; and staff size by 10,000 over the last year alone (at the vice president level, the reduction was 50 percent). Consequently, Ontario Hydro has been able to stabilize its rates for the rest of the century. This was the first step towards living up to a corporate goal recently adopted by the board of directors: "to help Ontario become the most energy-efficient and competitive economy in the world and a leading example of sustainable development." Strong commissioned a task force on sustainable development that drafted a series of recommendations in response to the Global Agenda 21 adopted by governments at the Earth Summit.

"Global agendas do not mean much unless they become the basis for agendas at the community and corporate level," he asserted. "Ontario Hydro is determined to become a much more active and positive force for revitalizing the economy, by helping to make it more competitive and by setting an example of sustainable energy development. Energy efficiency is our highest priority." The task force found that Ontario Hydro was its own "best and worst customer." It was using 50 percent more electricity in its corporate system than the entire city of Toronto—and the company did not pay for it. The company now charges itself current rates. Ontario Hydro estimates it can save at least 800 to 1,000 megawatts of capacity—the equivalent of a medium-sized coal plant - within its own system merely by using energy more efficiently. The company also has been helping its customers become more energy-efficient and competitive because that will make them more secure customers in the long run.

Strong believes change is imperative in both economic and environmental terms, that waiting until better economic times to do something about sustainability would exact heavy costs from the economy and the environment. The dilemma facing the energy industry clearly illustrates the need for "fundamental changes in our economic life, changes that fully integrate environmental and economic policies, decision-making, and behavior." This can be achieved only through significant adjustments in the system of incentives and

penalties that shape the economic conduct of corporations and citizens. Strong has extracted a promise from Canada's finance minister to examine all economic, tax, and fiscal policies from the point of view of environmental sustainability to ensure that they provide positive incentives for sustainable performance while meeting the objectives for which they were originally designed.

In its report to the Earth Summit, "Changing Course," the Business Council on Sustainable Development, comprised of the chief executive officers of sixty of the leading corporations in the world, made it clear that eco-efficiency is the key to the new generation of industrial opportunity, and that the present industrial culture is not viable and must be changed. The issues that were addressed at the Earth Summit are integral to the processes of civilizational [sic] change underway today. "The demise of the Cold War signaled the end of the old order, yet a new world order has not emerged. In this dangerous interregnum, political leaders are prone to *ad hoc* responses to problems based on political expediency rather than facing the root causes," said Strong. This has important implications for the prospects of the transition to sustainable development called for at the Earth Summit. It threatens to deepen and entrench the rich/poor dichotomy within and among nations. "Even as Marxism has been discredited as a political doctrine, one of its main tenets may be proved by the emergence of a new class war," Strong speculated. The economic growth of developing countries may soon overtake industrialized countries as the principal source of global environmental impacts, and a continued shift of energy production and markets to the developing world will increase the environmental risks to levels that the world community "cannot afford to accept."

Nevertheless, the right of developing countries to grow cannot be denied or constrained by external conditions imposed by industrialized countries. Strong argued that efforts to reduce the demands on the earth's resources can open up far more business opportunities than it constrains, but there must be basic changes in patterns of production and consumption and increased support for developing countries trying to make the transition to sustainable development. "Helping developing countries make better choices than we did would be among the most cost-effective investments in global environmental security possible. This new eco-industrial economy implies a new industrial revolution, not a patching up of old political and economic systems. Today's world cannot be retooled with yesterday's blueprints."

Is there any basis for confidence in humankind's ability to rise to this challenge? Strong is optimistic, "because we must do it, or civilization will degenerate in the next century to chaos, conflict, and degradation of the environment." Throughout history nations have demonstrated their willingness to devote the resources, establish the alliances, and make the sacrifices needed to confront risks to their security. Strong believes "the people and nations of the world are joined as never before in facing the greatest security risk ever, a threat to the capacity of our planet to sustain life as we know it. These risks can be avoided only with a worldwide system of managing these global environmental threats. The agreements reached at the Earth Summit, the Declaration of Rio and Agenda 21, can provide the foundation for launching this new alliance. Only through our practical actions and the examples set in our own lives as

businessmen, community leaders, citizens, professional people, will our hopes for a more secure, sustainable future be realized," Strong concluded.

QUESTIONS AND ANSWERS

Q: Would you advocate increasing the price of energy across the board, beyond pricing energy to reflect the social and environmental costs?

A: As we saw with price increases engineered by the Organization of Petroleum Exporting Countries, when oil prices increase all energy prices increase. OPEC's price increase helped trigger a world recession, reduced demand, and the price came down. But the price of oil today could go to thirty dollars a barrel without significant deleterious economic impacts. Who is going to get that money? Governments, through taxes? OPEC? The most effective tool governments have is the tax system. The energy tax that President Clinton failed to enact is not popular, but it was an effort to increase the incentive to develop alternative sources, to make America less energy-intensive, to make it more competitive overall economically, and to decrease dependence on outside sources of oil. A tax is probably the best single method of accomplishing those goals. The marketplace as presently designed will not automatically incorporate the environmental costs of producing oil. It will take national policy.

Comment: Your premise is based on the assumption that the environment is doomed through the burning of fossil fuels. I have a statement by the Science Environmental Policy Project, signed by forty-six gentlemen in environmental fields, who disagree with that premise of the environmental movement.

A: I have seen that, but I will take another copy. As George Woodwell will tell you, the preponderance of scientific opinion tells us what common sense tells us, that greenhouse gases are filtering the atmosphere, which determines the heat balance, which makes life on earth possible. When you change the filter, you change the heat balance. No one disputes that we are changing the filter, though they may argue the effects of changing the filter. If there was ever a case for acting on the precautionary principle, surely it is on this issue, which goes to the very basis of life on earth. Our military defense system is based on the precautionary principle, which says that it is better to act on the premise that something might happen. By the time the evidence on global warming is irrefutable, it will be too late. In addition, the remedial action is good for us anyway. Energy efficiency will help the economy become more competitive and less dependent. We cannot afford to wait for the post-mortem. Are you going to refuse to take the advice of your doctor because he might be wrong and wait for the post-mortem to find out if he was right or not?

Q: You mentioned that industrial countries need to leave space for the developing countries to develop their potential. What rationale or guidelines might be followed for the allocation of that space?

A: There is no international basis for that today. We have a treaty on climate change that has started the process of agreements between governments to reduce carbon dioxide emissions. It is the beginning of the kind of framework necessary to design that space. We will have to make scientific estimates of the maximum level to which we can allow carbon dioxide to rise, and there will have to be some apportionment among nations. A good interim measure is to use the marketplace and a system of tradable permits, which has begun in the United States.

Q: How is a concern for the environment consistent with the use of nuclear power?

A: I did not create the nuclear power our company runs. I have concerns about nuclear power. In fact, I put a moratorium on any new nuclear power at Ontario Hydro, but nuclear energy is a fact of life, and we cannot wish it away. It does have a place in the energy mix. What that place will be ultimately, we do not know. Nuclear power has problems, particularly with waste disposal. Badly built plants, as in the former Soviet Union, are a tremendous risk. If nuclear power is to have a future, I think it will be a new generation of smaller, safer plants. That will happen only when a solution to the waste disposal problem is found. But any part of the energy business, whether nuclear or fossil, has to contend with some environmental problem.

Q: I agree wholeheartedly with your determination to assign societal environmental costs to energy pricing. Several years ago the American Solar Energy Society hired about eight multidisciplinary people to figure the societal costs of various forms of energy. How does your utility figure the costs of waste disposal in arriving at kilowatt/hour cost of nuclear powered electricity?

A: Waste disposal is a major element of our cost, but I do not know the figure. We store our nuclear waste on the surface. There is always the possibility that an earthquake will release that radiation, so it is not absolutely safe. We will have to monitor it for as long as our civilization exists. There have not been many real problems with disposal of nuclear waste in the near term, the problem is ensuring that you can continue to maintain the security of the waste over the long term.

Q: You have not mentioned many alternative sources of energy. Especially when talking about Third World countries, solar and wind energy may be the answer. What do you think?

A: The present price structure provides a disincentive for developing alternatives, but the alternatives, which are promising for selected uses, are relatively modest in their ability to replace the main sources we now use. It is going to take a long time and a lot more money to develop alternatives. We have never had a successful major development of an energy source without substantial and sustained support at the level of government policies and tax incentives. The nuclear and oil industries have received that support, but the development of renewables has not. Our civilization is addicted to energy, and we do not have the answer for the future. There is lots of energy. The question is how to harness it for economical and environmentally sound use.