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**MAURICE F. STRONG  
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Maurice Strong  
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I am so pleased to have this opportunity of returning to the Asian Development Bank with which I had the privilege of being associated at its very inception. Since then the Bank has become one of the most respected and effective multilateral organizations, helping, supporting and the facilitating dynamic process of development which has made the Asian region the main driver of global development. In doing so it has persevered through the tumultuous changes and tragic setbacks that undermined and threatened the development process. In all this the ADB has nourished and supported the determination and dynamism which has enabled the region to move beyond these difficulties to lead the world economy into a new period of recovery and progress.

This is indeed a historic achievement in which the role of the Asian Development Bank has been playing a critically important, I should say, indispensable, role. You are entitled to take pride in this. But as you will know, there is no room for complacency.

The energy and related environment issues on which I will be focusing these remarks are not merely sectoral in nature. Nor do they confine themselves to the geographical areas in which they are first manifest. Indeed both their causes and their consequences are pervasive and systemic in nature influencing profoundly the entire system of through which both the current conditions and the future prospects of the individual countries of the region as well as the region as a whole are being shaped. Of course, many of these factors have roots well beyond the region. It is the voracious and undisciplined appetite

of the more industrialized countries for natural resources that has contributed to the deterioration of the environment of the region as well as its economic growth.

It is encouraging to know that most countries of the region have now embraced the concept of sustainable development as the most promising, indeed the only, pathway to the secure, equitable and prosperous future to which their people aspire. The Stockholm Conference in 1972 recognized the intrinsic relationship between environment and development and the need to bring them into a positive synthesis. Sustainable development is now understood as incorporating the social as well as the economic and environmental dimensions of the development process. The Chinese leaders have further elaborated the concept of sustainability, calling for a scientific, harmonious approach to development.

My comments today will draw mainly on the work I have been doing in Northeast Asia where I have been concentrating my attention recently particularly in examining the prospects for supplying the energy needs of the Democratic People's Republic of Korea as a necessary component of a peaceful settlement of the nuclear weapons controversy. While Northeast Asia is not formally defined as a region, it is normally considered to include Japan, Northeast China, the Republic of Korea, the Democratic People's Republic of Korea, Eastern Russia and Mongolia. Looked at as an economic region, its most remarkable feature is its great diversity. Japan and ROK are rich in capital and advanced technologies while China and DPRK have low-cost labor forces, GDP per capita ranges from 32,000 dollars per year for Japan to 450 dollars per year for Mongolia. Eastern Russia has extensive oil, natural gas and hydroelectric power resources while the other countries rely increasingly on imports. Japan is most dependent on imports but as a mature economy its imports are expected to grow only modestly or even decline

while the other oil importing countries particularly China and ROK will increase their reliance on imports. They will be competing for oil and natural gas from Russia while their dependence on the Middle East will undoubtedly increase as well. Coal will remain the major source of energy in the region so overall fossil fuels will remain the dominant energy source. This means that environment problems, including air pollution and CO2 omissions, will undoubtedly worsen. The production, transportation and use of fossil fuels all create significant environmental impacts. To reduce these impacts while meeting the growing energy needs of the region is clearly one of its most formidable challenges.

Although the process of reducing our dependence on fossil fuels has already begun, the fossil fuels era is far from over. Indeed oil is expected to retain its dominant, though gradually reducing role, in the energy mix for at least the next two decades accompanied by the development of new and alternative sources and efforts to improve efficiency and reduce the environmental impacts of fossil fuels.

I foresee an intensification of competition for reliable access to oil and gas on the part of the countries most dependent on them. Competition is already emerging between Japan, China and Korea for access to major new reserves of oil and natural gas now being developed in eastern and northern Russia. The recent decision by Russia to build its biggest pipeline ever to bring its oil to Japan's doorstep and into Pacific markets is seen as a significant victory for Japan in this competition.

The Middle East will continue to be the main source of oil supply for the foreseeable future as well as a major supplier of natural gas. Elsewhere, while advancing technology is facilitating the discovery of new oil and gas reserves and increasing recovery from

existing reservoirs the costs of exploration, development and transportation are orders of magnitude higher than those of the Middle East. The same is true of Canada's Athabasca Oil Sands which have recently been moved into the category of oil reserves. This has placed Canada near the top of the list of countries in terms of total oil reserves although environmental constraints will limit their rate of development. The high costs of these sources will undoubtedly serve to keep upward pressure on oil prices.

Meanwhile, natural gas is gaining a greater share of the market in some countries as the technologies of storing and transporting it in liquefied form have improved. This is enabling cities like Beijing in China and Los Angeles and Phoenix in the United States to utilize liquefied natural gas in their bus fleets, effecting significant reductions in local air pollution. A recently developed technology which enhances the attractiveness of "LNG" as a motor fuel by combining it with hydrogen will, I predict, lead to a major expansion of LNG use as a motor fuel. One constraint that expansion of LNG use will face, which has also constrained development of the nuclear power industry, is the resistance of communities to the location of facilities in their area.

The low costs of Middle East oil has enabled its producers to sell it at relatively low prices while all their interest is in managing production so as to maintain prices at the highest levels consistent with their desire not to inflict significant damage to the world economy or encourage development of competitive alternatives. Another factor which will increasingly affect the availability and price of oil and gas is the fact that so much of it must be delivered over long distances, particularly by pipeline, tanker and LNG vessels. These are likely to be more and more vulnerable as targets for disruption by sophisticated terrorism. Disruptions can also be expected to occur at sources of production as well through political and social unrest at the local level. Prices are highly

susceptible to being influenced by such disruptions, or even the threat of them, as the cost of being deprived of supply even for short periods, can be so highly costly, particularly for large consumers who bid prices up, often sharply. Of course, prices can decline just as sharply when the disruption, or threat of it, has been resolved.

Environmental constraints will undoubtedly limit the development and increase the costs of oil and gas as well as coal, the dirtiest of the fossil fuels. Most important of these are the emissions of greenhouse gases which the majority of scientists agree are giving rise to global warming and turbulence in the global climate system. The Kyoto Protocol and the Climate Change Convention provide the essential framework for international cooperation to deal with this issue. But though the actions called for by Kyoto must be seen as only first steps there is growing resistance to them. Unfortunately, even the modest targets accepted by a number of countries are not likely to be met and the political will to keep Kyoto alive, let alone strengthen it is clearly weakening, even, I am sorry to say, in my own country, Canada.

The recent meeting of the parties to Kyoto in Montreal managed to agree to continue negotiations to seek approval for a new set of Kyoto targets. Prospects for achieving this do not appear promising at this time despite the fact that its urgency has become more compelling. This would be a tragic setback to the processes of international cooperation that are essential to averting this ominous threat to the global future. With all its weaknesses, Kyoto represents one the most important instruments of international cooperation to address this threat and there is an immense amount of political and technical energy invested in it.

Renunciation of Kyoto by the United States as the world's "Super Polluter" in terms of greenhouse gas emissions has undermined its effectiveness and clouded its future. While it is unlikely that United States will return to Kyoto, there are some encouraging signs in the actions being taken by states and cities and the prospect of further measures by the Federal Government to provide incentives to energy conservation and development of alternatives. In the final analysis, our efforts to counter global warming can not succeed without the United States. The United States cannot escape—and I am confident will ultimately accept—its responsibilities to reduce its emissions. Its commitment to do so will have an important influence on the countries of this region, notably China and India, which are now the principal sources of growth in greenhouse gas emissions. It is encouraging that these countries are signaling their willingness to participate in global efforts to reduce emissions despite the fact that on per capita basis, they are still at a level much lower than those like United States and other industrialized countries.

Trading of emission credits and the Clean Development Mechanism (CDM) provided for by the Kyoto Protocol promise to reduce the costs of limiting emissions. It also provides new opportunities for resource transfers to those, notably in developing countries, that offer the most efficient and cost-effective means of absorbing or offsetting emissions. While still controversial and only at the first stages of development, a number of emission trading regimes have already been established or are being planned. This is clearly an area to which the ADB can make an important contribution.

It is in our development and use of energy that the most extensive and difficult changes must be made to meet this challenge. We can expect a revival of the nuclear power industry as public concerns about the greenhouse gas emissions of fossil fuels begin to

counter concerns about nuclear safety and the disposal of nuclear waste. While recent nuclear mishaps in Japan seem to have reduced the enthusiasm for nuclear power, some increase in nuclear capacity is nevertheless in prospect, most of it in Asia. Substantial progress has now been made in the development of new, more compact and safer plants and increasing public confidence in plans and procedures for the storage of wastes.

Coal is the dirtiest of the fossil fuels, also the most abundant and least expensive source. The fact that some of the main energy consuming countries, notably the United States, China and India, have large reserves of coal, will ensure that coal will continue to be a major energy source. Indeed in oil-equivalent terms, world coal consumption is expected to rise from 2.3 billion tons in 2000 to 3.5 billion tons in 2020 of which Asia should account for some 70%. 90% of coal demand comes from the power sector. The very abundance of coal and its importance to the energy economies of some of the main consumers provide a strong incentive to accelerate research and development to reduce its environmental impacts. Clean coal is not in prospect but cleaner coal is an absolute necessity.

Recently I have been impressed by an example of how local initiative and entrepreneurships can make an important contribution to this process. In China's Shanxi Province, a young man of this major coal producing area became concerned by the effects of the pollution it generated on the health of the people and agricultural productivity of his home area. He developed an innovative process for producing coke without releasing into the environment the toxic wastes, contaminated water and particulate matter which are so polluting while capturing the waste heat to produce electricity. This grassroots example of sustainable development has the potential to

revolutionize the industry, especially as the coke users and their customers become increasingly responsive to environmental impacts. At the same time this local entrepreneur has built his company into one of the most successful and profitable producers of coke.

The development of new and renewable energy sources with little environmental impacts is receiving a great deal of attention and incentives by many governments. While its share of primary energy consumption is expected to rise from 5% in 2000 to 6% in 2020, it cannot be expected to replace fossil resources to any great extent.

Electric power is not in itself an energy source but rather the principal medium through which energy sources are converted to electricity as the form in which most users receive their main energy supplies. The generation and distribution of electric power generate serious environmental impacts most of which are susceptible to substantial reductions. During the period in which I headed what was then North America's largest electric power utility, Ontario Hydro, I discovered firsthand how greater efficiency in its production, distribution and use could substantially reduce environmental effects, and at the same time, contribute to the profitability of both the company and its customers. I know that the ADB is well aware of the potential advantages of promoting greater efficiency and conservation of energy and is already contributing significantly to the prospect of helping its member countries to realize the economic and environmental manifests of energy efficiency and conservation.

The energy-environment relationship is intrinsic. It is also pervasive in nature, affecting virtually every aspect of the cause-and-effect system through which human actions are shaping the conditions of life on earth and its future. The availability of water, particularly

for human use, conservation of biological resources and their diversity, protection of endangered species of plant and animal life, sustainability of marine resources, loss and degradation of soil, conservation of tropical forests and endangered eco systems are all now increasingly seen as intrinsically linked. It is now widely recognized that these issues can only be dealt in an integrated, systematic manner; yet our policies, institutions and practices remain highly compartmentalized with only limited mechanisms for integration and cooperation. Nowhere is the need for an integrated approach to these issues more compelling than Asia. Although there are a number of regional institutions that can contribute to such cooperation, North-East Asia which is devoid of such structures, is most urgently in need of them. The Six-Party talks convened by China to negotiate a peaceful resolution of the Korean nuclear weapons issue could form the basis for a permanent forum in that important region. One of the most important contributions that the Asian Development Bank could now make is to take a lead in strengthening the institutional structures of the region and establishing new mechanisms where necessary to facilitate the extensive increases in sub-regional cooperation so necessary to ensure the realization of the immense potential of this region.

One of the greatest challenges of the 21<sup>st</sup> century is to free vast numbers of the world's people who continue to suffer from poverty and to close the gap between the majority of the world's population that are still at the lower levels of the economic ladder as compared to those who are the prime beneficiaries of our industrial civilization. Their claim to a growing share of energy resources deserves high priority which will require major support from the international community if it is to be met. Developing countries, notably China and India, are rapidly increasing their dependence on imports and can be expected to add substantially to world demand for oil and gas. Innovative practices and development support on a much larger scale will be needed to affect the immense

increase in energy supplies required for the poor and disadvantaged at prices they can afford. Paradoxically, trying to do this from traditional energy sources, including renewable alternatives at the present state of the art, is bound to produce major increases in demand and tend to drive prices upward. If we do not address this dilemma and do so in the immediate future, we will be sowing the seeds for a world-scale calamity which will threaten the peace, security and stability of the entire international community.

This will require international cooperation on an unprecedented scale. Indeed, all must join in the launching of an energy revolution which will drive a radical transition from today's unsustainable energy economy. Fortunately some initiatives are already underway to try to establish the basis for such cooperation. I am particularly encouraged by the world energy study now being launched by Inter-Academy Council, composed of 90 of the world's Academies of Science and led by 15 of the leading Academies. The cooperative nature of this study lends it special authority and credibility which could produce an agreed agenda for the large-scale program of research and development on new and alternative energy sources which we must undertake. So far the funds available for this study are too modest to produce such an agenda. I submit that if the Asian Development Bank were to take the lead in mobilizing support of this cooperative study it would be well-positioned to play a key role in the research and development program that should follow from it and its benefits.

I am impressed with the number of innovative ideas and projects that are already available that have remained dormant and unsupported on the margins of our energy economy. One such exotic idea is to place giant reflectors in space or on the moon's surface to receive the sun's rays, transmit them by laser to the earth and convert them to

electricity. I am told by space experts that this is technically feasible, could be made economically viable and has the potential to meet the entire energy needs of the world.

While a good deal of work has been done on this there is no serious effort in prospect proceed in this direction for surely it will be a much more advantageous use of space technology and resources than the militarization of space.

Other potential solutions must be examined seriously if we are to put in place a program for energy security and sustainability on which the future of humanity depends. In a period in which oil is still relatively cheap, there had been a complacent assumption that this will likely continue very much as usual. But today business as usual is no longer an option. If we do not act now to avoid the potentially catastrophic consequences of passivity or neglect by the time the crisis that will result becomes more apparent it will be too late to avert it.

The costs of a program that would involve increasing current energy research and development expenditures by a factor of at least 10 could be borne by the agreement of all the participating countries to levy a charge against all fossil fuels which consumers would be likely to understand and accept. If adopted by agreement amongst all participating countries no one would suffer a comparative disadvantage by such a levy. But however it may be financed I believe it represents an investment that is necessary – indeed imperative.

Let us also be reminded that energy can be a source of conflict. It was clearly a factor in the First Iraq War and must certainly have been a consideration in the latest Iraq War. We can expect terrorists seeking to disrupt Western economies to escalate their attacks on energy infrastructure, adding to the vulnerability of the energy supply system. I also

see the likelihood of the search for and transportation of energy resources becoming a source of increased conflict in the global commons, particularly the oceans which lie beyond national jurisdiction and areas subject to competing claims.

United Nations Secretary-General Kofi Annan to keep prepare the way for a peaceful settlement of the Korean nuclear weapons crisis has, as I have already mentioned, undertaken through a working group established for this purpose, extensive studies of alternatives to ensure DPRK access to the energy it will need to revitalize its economy. This will be an essential prerequisite to a peaceful settlement of the conflict and to the prospect of a new era of economic and social development which would follow from it. China is already supplying significant amounts of energy to the DPRK, and ROK is to prepare to do so. Other partners to the Six-Party talks have made it clear that support for the DPRK's energy and economic development on a long term basis would be available following and as part of an agreed resolution of the nuclear weapons issue. In a very real sense then, energy is at the core of the prospects for peace in Korea.

Preventative measures are almost always most cost-effective but because they come at the initial stages of projects there is too often a tendency to defer them. The great advantages of prevention can often be achieved through better planning, management and more effective use of available technologies with only a modest investment in the retraining required to ensure that the people involved have the necessary skills, knowledge and tools. The single most severe impact of environmental deterioration is its effects on human health. It is estimated that already the costs to the Chinese economy are on the order of 720 billion of RMB. The costs in human and social terms are beyond measure. This is why reducing air and water pollution and maintaining quality at levels

compatible with human health is so important, indeed urgent—for all countries of the region.

We have learned a great deal about the environmental problems we face since the Stockholm Conference in 1992 put this issue on the international agenda. We know a great deal too about we should do to deal with these problems. Why then, are we not implementing what we know can and must be done? In the final analysis implementation must be driven by motivation. The risks and vulnerabilities we face provide a strong motivation for action, but have not yet been sufficiently strong and immediate to compel us to act expeditiously. All people and societies are ultimately motivated by their deepest moral, ethical and spiritual values and the desire to ensure a secure and promising future for those who follow them. This is why I joined with a number of others in launching following the Earth Summit in 1992, a worldwide movement to produce an Earth Charter, a basic statement of principles to guide the conduct of people and nations towards the Earth and each other. It has now been embraced by many leading organizations and literally millions of people throughout the world. I strongly commend it to you to adopt it as a guide to your own work and promote its acceptance by the other organizations, governments and people of the region.

Environment and sustainable development cannot be dealt with separate from the management of the economy as a whole and its efficiency. Sustainable development requires fundamental changes in economic management to provide a positive synthesis between the environmental, social and economic dimensions of the development process. Industrial efficiency is a proven pathway to sustainable development. Japan's experience has demonstrated that major improvements in the efficiency of its industry have produced significant reductions in the energy and materials content of a unit of

GDP, contributing to impressive improvements in Japan's environment in the 1980s and to the competitive advantage and profitability of Japanese industry.

To succeed in the transition to sustainable development requires that the environment be a full partner in planning and decision-making processes. Environmental industries and agencies cannot themselves be expected to ensure environmental protection and improvement. It is the ministries and organizations which make economic and industrial policy and implement it in each of the sectors that impact on the environment. Environmental industries and agencies influence and regulate these policies and their implementation to ensure their effectiveness in achieving environmental goals. Thus they must participate fully in the processes of economic and industrial policy and decision-making which affect environmental performance. This is another area in which ADB's influence can make an important contribution to the region.

We must move away from the tendency to treat environmental protection and sustainable development as the source of extra costs and impediments to economic development. In the early days of the environmental movement, conventional wisdom was that environmental problems needed to be tolerated and subordinated to the priority which must be given to economic growth. It is now recognized that this approach is counter-productive and for most countries not feasible. That mind-set must change. Environment and sustainable development must be recognized as opening up promising new areas of economic opportunities, for technological and institutional innovation and for the development of environmental services and products. I am convinced that the new generation of economic opportunities for this region can be driven primarily by its transition to a sustainable development pathway and that energy is at the core of this challenge.

I am encouraged by the increase in public awareness of importance of the environment and sustainable development and the political will to deal with these issues since I came to this region more than three decades ago to seek its participation in the first world environment conference, The UN Conference on the Human Environment held in Stockholm, Sweden in 1972. At that time there was little positive interest in the issue which was seen by many as a threat to the central priority of economic development. Nevertheless, largely due to the example set by India's then Prime Minister Indira Gandhi, as the only developing country head of government to come to Stockholm, she forcefully articulated the importance of environment issues to developing countries in the context in their priority needs for economic development and poverty eradication. Personally, I persuaded more now than then that ensuring the security and sustainability of the Earth's environmental and natural resources, is the indispensable key to the capacity of our precious planet to support life as we know it. This is the reason I am continuing to do everything I can to encourage, strengthen and support the organizations and movements of this region that are striving to bring about the better, more secure and sustainable future that is still possible. The principal institutional instrument for my work is the Earth Council Alliance, a network of member and partner organizations, both at the policy and the grassroots level, working together to help ensure that Earth will remain a habitable and hospitable home for life in all its forms. The first executive head of the Earth Council was the dedicated and visionary Philippine activist, Maximo Kalaw. Sadly he is no longer with us, but his inspiration and influence remains and I am pleased to have this opportunity to pay tribute to him in his home country.

I am encouraged also to note the strong Asian participation in Globe, the Biennial trade fair, and conference held in Canada's Pacific Capital, Vancouver which has become the most influential forum of its kind. I am sure I will see many of you at Globe 2006 at the end of March.

The Asian Development Bank has demonstrated its capacity to contribute to shaping the policies and priorities of this region and to support implementation of the programs and projects which give effect to them as the most effective and influential institution of the region. This is the reason I am so pleased to have the opportunity of renewing and strengthening my ties with you. It is the reason, too, why your members must continue to increase their support for ADB as the best investment they can make in ensuring the positive future for the people and nations of this region to which all aspire and which the entire world community will share.