NATIONAL ROUND TABLE ON THE ENVIRONMENT AND THE ECONOMY
TABLE RONDE NATIONALE SUR L'ENVIRONNEMENT ET L'ÉCONOMIE

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CANADA - JAPAN WORKSHOP ON THE ENVIRONMENT

a summary of the discussion

Organized by the Foreign Policy Committee,
National Round Table on the Environment and the Economy
In Cooperation with the Embassy of Japan in Canada

Held in the Crush Conference Room
Department of External Affairs and International Trade Ottawa
June 26, 1991

PREFACE

Sustainable development, as a concept, recognizes that environmental protection and long term integrity of our biosphere is inextricably linked to factors far beyond industrial production and process, namely the growth, health and education of the population; scientific and technological-based innovations, risk-assessment and risk-management, decision making and governance, and a more profound understanding of social mores, norms and human behaviour in general. To move from concept to action plans is daunting, because the issues are as emotional as technical in their complexity, and the solutions are as political as they are technical in their implementation.

Following the successful completion in 1989 of the Canada-Japan complimentarity Study, which had been commissioned by the two Prime Ministers, environment in a sustainable development context was one of the six research and development areas identified for immediate co-operation and enhanced collaboration. However, it was also clear that there was a timely need for exchange of up-to-date information on the progress, innovations and remaining difficulties dealing with certain environmental issues as a prelude to further work. When approached by the Japanese Embassy to arrange this Workshop, it became clear to me that we needed to know both the Japanese state of play and the Canadian situation. However, we faced a rapidly changing world environmental scenario as countries and organizations moved to prepare for the United Nations Conference on the Environment and Development (UNCED) in Brazil in 1992. The Workshop on the Japan situation was planned first for June 1991 and a Canadian follow-through in Japan will occur post-Brazil.

It is appropriate to focus on opportunities created by the complementarity of Canada and Japan, as we identify issues of common cause for UNCED and bilateral projects, and recognize areas where more research needs to be done because international competitiveness and development issues increasingly link technology to aid, trade, and the environment. This was a continuing theme for many of the speakers at the 1991 Workshop, whose proceedings follow here. For the first time, we can see the major differences that have indeed occurred over the past decade or so in, for example, pollution controls or energy usages, and compare strategic options for the 1990's.

In May 1991, the formation of the Canada-Japan Forum 2000 group was announced with a broad economic, cultural and internationally-focused mandate, and a December 1992 reporting date back to the two Prime

Ministers. These important environmental directions are being pursued within that task. We are building step-wise to achieve some of the foundation stones of an overall sustainable society in the longer term.

In Ambassador Michio Mizoguchi's address to the Workshop, he also referred to complementarity. Like sustainable development, complementarity is a powerfully simple concept that reveals a complexity when it is analyzed for action. Both ideas are embraced by the desire to find balance and harmony between nature and people, whose quests for security, prosperity and well-being drive our common future. I hope these Workshop Proceedings make a positive contribution towards that goal and a greater understanding between Japan and Canada.

As Co-Chairs of the Foreign Policy Committee, Pierre-Marc Johnson and I would like to acknowledge Ambassador Mizoguchi and his embassy staff for their helpful assistance throughout this project and in the publication of this volume, with support from the Foreign Ministry of Japan. Thanks also go to the Department of External Affairs and International Trade Canada for hosting the Workshop in Ottawa. Liaison between all parties was handled by Agnes Pust, who was co-ordinator for the Workshop. Particular responsibility for the writing and production of this document lay in the capable hands of Sarah Kimball and Professor John Drake of McMaster University, who also generated the material here based on the speakers' presentations and data, as well as the ensuing discussions. The full program can be found in the appendix.

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Environment and the Economy

Spring 1992.

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INTRODUCTION

Ozone depletion, loss of biodiversity, global warming, pollution of the oceans; at times the litany of environmental degradation can seem daunting. Equally daunting are the steps necessary to effectively begin the process of addressing environmental concerns. At the same time, global economic development, that is, the progress of industrialization in the developing world and the characteristics of industrially based economies in the developed world, indicates an ongoing commitment to economic growth. The challenge, therefore, becomes finding a balance between sound environmental policies and economic policies that will allow future generations to enjoy a strong global economy in a healthy global environment.

It is clear that solutions to problems such as air and water pollution, waste reduction, energy use, and the disposal of toxic wastes require technological innovation. Global cooperation between industry and science is imperative if environmental protection is to be possible.

While it is clear that solutions to environmental problems must involve technological innovation, it is equally clear that technology alone is not sufficient to fully address these problems. Sound economic and political policies, lifestyle changes, cooperation between industry and science, and governmental commitment are all necessary. In order to adequately address issues related to both the protection and restoration of the environment and economic development, there must be action based upon informed discussion, research, planning, and cooperation across all sectors of society. This will require a reevaluation of how we, in Canada, and indeed globally, conduct our business and form our public policy. It would be a positive step if, while evaluating existing decision-making processes, the importance of consensus-building to address concerns across all sectors of society was more widely recognized.

Environmental issues cannot be addressed without consideration of economic issues. Further, as the scope of environmental problems becomes increasingly global, no country can hope to act effectively in isolation. There is a growing realization that it is not reasonable for any country to assume that its environmental policies have anything less than a fully global impact. Similarly, it is not reasonable to assume that any country can significantly address environmental problems without

cooperation from other countries - cooperation which may be hindered by economic considerations. Solutions to environmental problems must involve global cooperation on both environmental and economic issues.

This point becomes particularly apparent in discussions of disparities between developed and developing countries. Trading patterns and restrictions, the cost and availability of technology, and the real development needs of much of the world are at least as important to an understanding of environmental issues as technical discussions of emission controls and clean-up mechanisms. Cooperation, not only between developed countries, but also between the developed and developing world, will be necessary if we are to achieve global environmentally sustainable economic development.

In keeping with that objective, the United Nations Conference on the Environment and Development (UNCED) has been organized and will bring together world leaders in Brazil in 1992. As part of Canada's preparations for that summit, dialogue must be stimulated across Canadian society. Scientists, business leaders, government decision-makers, and environmentalists must be brought together to discuss issues that are both local and global in nature. As a contribution to this global dialogue, the Foreign Policy Committee of the National Round Table on the Environment and the Economy (NRTEE), in response to proposals from the Japanese government, organized a workshop which was held June 26, 1991 in Ottawa. The presentations and remarks of three Japanese speakers (Dr. Jiro Kondo, Dr. Shuzo Nishioka, and Ambassador Kazuo Chiba) provided Canadian participants with valuable insight into Japanese technologies, decision-making processes, environmental challenges and solutions, and perspectives on UNCED. Hopefully, the discussions stemming from the workshop will form a basis for increased understanding and cooperation between Canada and Japan on environmental issues. The following is a summary of the workshop discussions.

I. THE CHALLENGES

Both Canadian and Japanese participants clearly identified six important areas which they felt must be considered as part of any attempt to affect a comprehensive, global environmental strategy. The next few pages identify and briefly describe these areas.

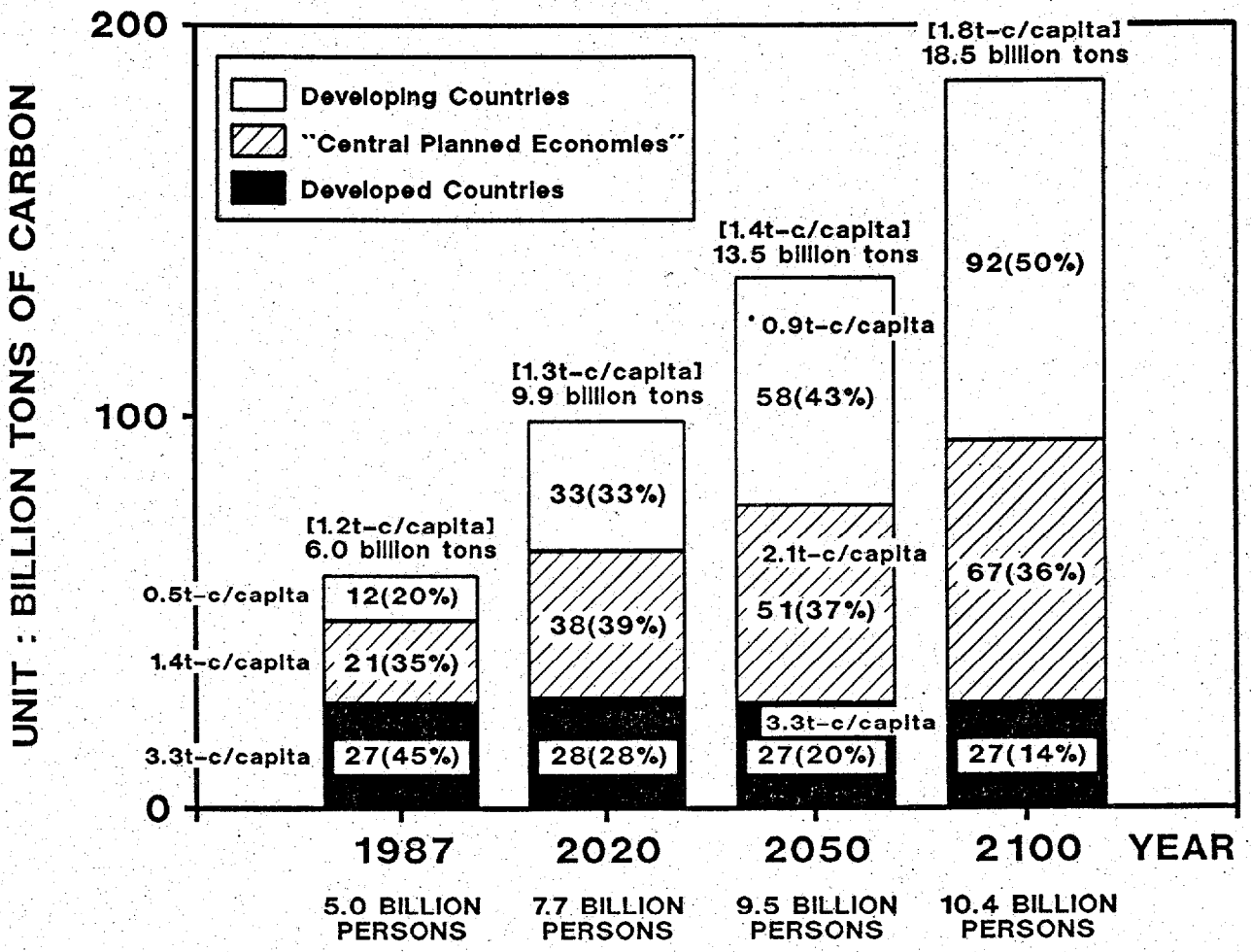
1. ATMOSPHERIC POLLUTION

As a result of increasing public awareness of ozone depletion, global warming, and acid rain, emission levels of CO_2 , Nitrous Oxides (NO_x), and Sulphurous Oxides (SO_x) have become the subject of much discussion, both in Canada and around the world. Addressing the issues associated with these emissions must involve: an evaluation of the criterion used to establish acceptable emission levels, the creation of new emission control mechanisms, and a review of the cost and availability of these processes. It is apparent that the developed world, if it hopes to have a significant impact on issues such as global warming, can do so only in cooperation with the developing world. However, economic growth in many developing countries is based on industrial activity often driven by equipment producing high levels of CO_2.(see chart on following page)

2. NATURAL RESOURCE MANAGEMENT

Deforestation, the loss of biodiversity, and threatened marine resources are increasingly being viewed, particularly in the developed world, as issues requiring serious attention. Dealing with these issues will require the greatest level of international cooperation. It was concluded by the workshop participants that it may become necessary to look seriously at the manner in which economic growth is encouraged, perhaps through the policies of the World Bank and the IMF. For their part, many developed countries have started to look at innovative political solutions to problems, such as debt for nature swaps, green loans, and technology transfer to compliment research on purely technical innovation. Resource management, incidently, is an area that was identified by Japanese participants as one in which they could benefit from Canadian expertise.

ESTIMATE OF GLOBAL CO_2 EMISSIONS BY REGION



(source) = estimates based on World Bank and other data

(note 1) = "Centrally Planned Economies" include China

(note 2) = Assumptions for the future CO_2 emissions per capita are as follows:

- Developed Countries: stabilization at current levels
- Developing Countries: increase to double current levels by 2050
- Central Planned Economies: increase to 50% over current levels by 2050

3. CHANGING EXISTING ATTITUDES AND PROCESSES

As noted earlier, finding a balance between environmental protection and economic development requires a serious reevaluation of the decision-making processes in society. Only in this way can increased cooperation between often competing interests be fostered.

Canadian participants clearly identified existing decision-making processes, which are characterised by an absence of cross-sectoral cooperation, as an area of concern to them. It was concluded that Canada could potentially learn from the Japanese decision-making model, which places significant emphasis on cooperation and dialogue between disparate groups.

Further, both Japanese and Canadian participants agreed that it was necessary to encourage a reevaluation of lifestyles in industrialized countries and to encourage the adoption of more environmentally sustainable practices. Once again, a conflict between environmental and economic priorities is quite evident. However, the Japanese seem to be making significant progress in this regard, as indicated, for example, by the success of their domestic recycling programs.

4. TECHNOLOGY: AVAILABILITY AND COST

Japan has developed a variety of environmental technologies in order to cope with its own environmental problems. These will be examined later. While technology can provide innovative solutions to some of our environmental problems, its development raises a number of issues. Its availability, cost, and transfer to developing countries present challenges which will require global cooperation and innovation.

5. ENVIRONMENTAL REGULATIONS

There are a number of regulatory mechanisms that governments can employ domestically to encourage environmentally responsible behaviour. The need to modify decision-making processes and attitudes has already been noted. However, more direct approaches must be discussed and considered. Legislation as a means of regulating pollution is the most obvious of these options. The introduction of market mechanisms into industry is another. For example, a floating tax based on the level of polluting emissions might provide a viable alternative or compliment to legislation.

A number of potential actions with more

international ramifications were also identified. For example, the use of environmental standards as a criterion for possible trade restrictions was identified as an area for discussion. As well, the question of industry behaviour overseas, particularly in countries with minimal environmental protection legislation, was identified as an area which needed to be addressed.

6. GLOBAL TRADE AND RELATED ISSUES

It was noted that a reevaluation of international economic institutions and practices is necessary as we move into an increasingly global economy. North-South economic disparity, trading patterns and legislation, technology transfers and money must all be addressed. The UNCED process, if it is to serve as a catalyst for action, must begin to respond to these issues. However, it is unclear how much can be accomplished without significant cooperation and understanding between developed and developing countries.

Because these issues involve both economic and political policies they represent the greatest challenges to sustainable development. Accordingly, it is vital that countries such as Japan and Canada meet these challenges effectively, utilizing existing international political, monetary and trading organizations.

II. SOLUTIONS: THE JAPANESE EXPERIENCE

Finding solutions to environmental problems requires coordination between often competing sectors of society. There must be a financial commitment from both industry and government, cooperation between industry and government, and, finally, there must be technological innovation. It is worth noting that Japan made an initial commitment to environmental protection and renewal at a time when it was undergoing unprecedented economic expansion. This would seem to indicate that with sufficient commitment from both governmental and industrial sectors, it is possible to achieve both economic growth and environmental protection - objectives which often appear contradictory.

It was during the early 1970's that Japan first made a serious commitment to both environmental research and legislation. The founding of the Japanese Environmental Agency in 1971 and the National Institute for Environmental Studies in 1974 are examples of responses to growing environmental concerns. This comparatively early investment and government commitment made it possible for Japanese industry to make significant advances in the development of environmental protection technology.

By the mid 1970's, emission control of atmospheric pollutants was one of Japan's main priorities. The Central Council of Environmental Pollution Control was established and legislation such as the Clean Air Act was passed. This action was once again accompanied by a significant financial commitment. Initially, the greatest financial expenditures were focused on atmospheric protection, which led to developments in denitrification and desulphurisation technology. In the early 1980's, the focus shifted to a concentration on water treatment programs.

Throughout the course of the previous two decades Japan has invested an average of $5 billion (U.S.) annually on environmental protection research and technology. This is the equivalent of approximately 0.35% of its annual GNP. This section touches upon specific areas in which this investment, along with other efforts, have been focused.

1) TECHNOLOGICAL INNOVATION AND INVESTMENT IN EMISSION CONTROL

Since the early 1970's, the Japanese government has financed a number of

open scientific facilities dedicated to environmental research. Over the past two decades these institutions have focused on, among other things, the tracking of greenhouse gases, providing researchers with access to supercomputers for global research, and the development of innovative pollution control mechanisms. The Research Institute for Innovative Technology of the Earth (RITE) and the National Institute of Environmental Studies are two such centres.

The National Institute of Environmental Studies, which was established in 1974, has facilities to test the effect of pollutants on plants and animals. More specifically, they are engaged in research that monitors and attempts to improve the capability of plants to absorb, and thereby help control the emissions of, NO_x and SO_x.

In addition to the advances made in reducing NO_x and SO_x emissions, Japan has also been able to make significant progress reducing CO_2 emissions, lead concentrations in gasoline, and pollution from the steel industry. Technological innovation which facilitated these reductions have, in part, been stimulated by the goal of increasing production efficiency and by the availability of low cost financing.

SO_x Emissions

Japan has been able to achieve low levels of SO_x emissions largely due to a combination of technological innovation and sound energy policy. For example, since Japan imports almost of all of its natural resources it has been able, and willing, to select crude oil and coal that do not have a high sulphur (S) content. Similarly, encouraging the use of natural gas has contributed to the reduction in S emissions.

Furthermore, import policy and technological innovation have been complimented by market incentives to industry. Pollution taxes, proportional to SO_2 emissions, were instituted in the 1970's. This provided industry with an incentive to install desulphurisation equipment. As a result, SO_2 emissions have been decreasing steadily since 1970, and were largely controlled by 1975.

NO_x Emissions

As in the case of SO_x controls, stringent environmental standards for NO_x emissions (0.25g/kg.) were implemented in the 1970's. Complimenting regulatory action was the invention of Exhaust Gas Recycling (EGR), which provided a

technological means of further controlling the emission of NO_x.

Other means of reducing emission levels which are being used by a number of Japanese industries include the recycling of inert gases as a coolant, two stage combustion, and the introduction of catalytic denox facilities.

However, the NO_2 problem has not been solved, particularly in urban areas. Automobile and urban pollution has left Japan at double its target emission levels. Currently the Japanese are concentrating on developing methods of alleviating the this problem.

CO_x Emissions

Significant progress has been made in the development of technology to reduce CO_2 and CO emissions. Japan first set strict CO_2 emission standards in the early 1970's. These standards were primarily designed to reduce automobile emissions which were causing significant problems, particularly in urban areas. These strict standards led to considerable technological innovation, including the development of the dimensional catalyst converter for the automobile engine. By the end of the 1970s, the problem was largely corrected, and by the late 1980s, levels of CO_2 emissions in Japan compared very favourably with those in other developed countries (see next page).

In 1990, the Japanese government decided to commit to a further reduction. It set as its goal the stabilization and reduction of CO_2 emissions on both a per capita and net basis. Toward that end, 1990 CO_2 emission levels were established as a target for maximum CO_2 emissions in the year 2000. Based on Japan's average annual growth rate of 4%, this would constitute a 50% reduction in real terms.

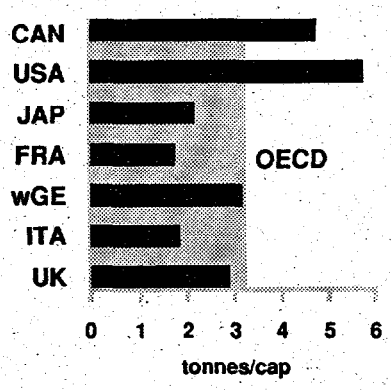
Generally speaking, this goal is being pursued in five ways, all of which could be utilized in an attempt to reduce the emission of other pollutants as well. They are:

1. Urban structure change;
2. Changes to the transportation system;
3. Production systems that produce low levels of CO_2 ;
4. Changes to the energy production supply system; and
5. Lifestyle changes.

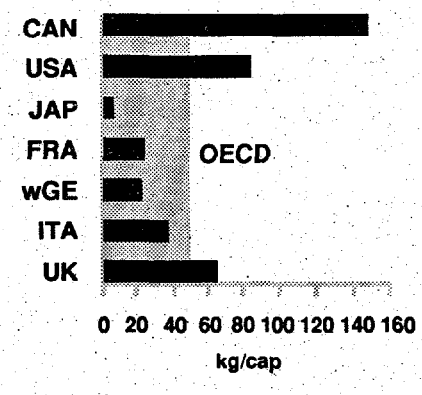
From a purely technological perspective, there have been a number of innovations related to reducing CO_2 emissions that could have global application. For example, it was discovered that by condensing CO_2 and adding hydrogen (H_2) through a catalyser, it is possible to produce

methanol, which can be used as a fuel. As well, the Research Institute for Innovative Technology of the Earth (RITE) is experimenting with the use of the process of photosynthesis as means of absorbing CO_2 directly from the stack. Through the use of optical fibres to channel sunlight during the day, and electrical light at night, it is possible to stimulate large scale photosynthesis in plankton which, in turn, converts CO_2 to non-toxic gases. As a result of these and other technologies, Japan has been able to achieve significantly lower SO_x, NO_x , and CO_2 emission levels than other G-7 countries. The chart below illustrates this point.

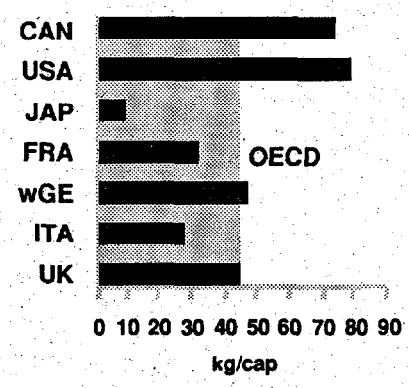
Gas Emissions (late 1980's)



CO_2 Emissions



SO_X Emissions



NO_X Emissions

Lead

The maximum allowable level of lead concentration in gasoline in Japan is significantly lower than in Canada and other countries. These standards were implemented in 1970 following public pressure that was stimulated by cases of lead poisoning from auto emissions. This led the Ministry of International Trade and Industry to ban all kinds of lead which, in turn, motivated the development of the catalytic converter for the automobile engine.

GASOLINE LEAD CONTENT IN SOME MEMBER COUNTRIES

Country	Present Maximum Lead Content, g/l	Future Maximum Lead Content, g/l (in effect)
EEC	0.15-0.4	0.013(voluntary, 1986 compulsory Oct.1, 1989
Australia	0.4-0.8	0.013 (1985)
Austria	0.15	0.013
Canada		
Unleaded	0.013	
Leaded	0.77	0.29
Finland	0.4	0.15
Japan	0.004	
Spain	0.48-0.65	0.4 (1986)
Sweden	0.15	0.0 (1987)
Switzerland	0.15	0.013 (1986)
United States		
Unleaded	0.013	
Leaded	0.13	0.026 (1986)

Industry Efficiency

Thus far, this section has briefly outlined the way in which technological innovation has contributed to a reduction in the emission of a number of pollutants. However, emission reduction has also been achieved, in part, by increasing the efficiency of industry in general. Japan has found that by improving industrial efficiency it is possible to enhance sustainable development programs since increased efficiency reduces the amount of waste produced. It is estimated, for example, that approximately 20% of emission reductions described thus far can be directly attributed to oil conservation.

The Tokyo Electric Power Company (TEPCO) uses fan jets, developed by Mitsubishi heavy industry, in their turbines to increase their intake temperature. This has allowed them to achieve a fuel efficiency level of 43% while the industry average in Japan is 40%. However, while this does lower the consumption of oil, higher temperatures may result in increased NO_x emissions which must be countered by scrubbing.

Perhaps the most graphic illustration of this principle comes from the example of the Honda auto company. In 1976 they realized that manufacturers of smaller, more efficient engines could greatly benefit from using technology to produce fuel efficient cars, which also produced low NO_x exhaust levels. Since it is impossible to argue with the financial success of Honda, it is apparent that through increased efficiency it is possible to develop environmentally sound technology without sacrificing economic growth.

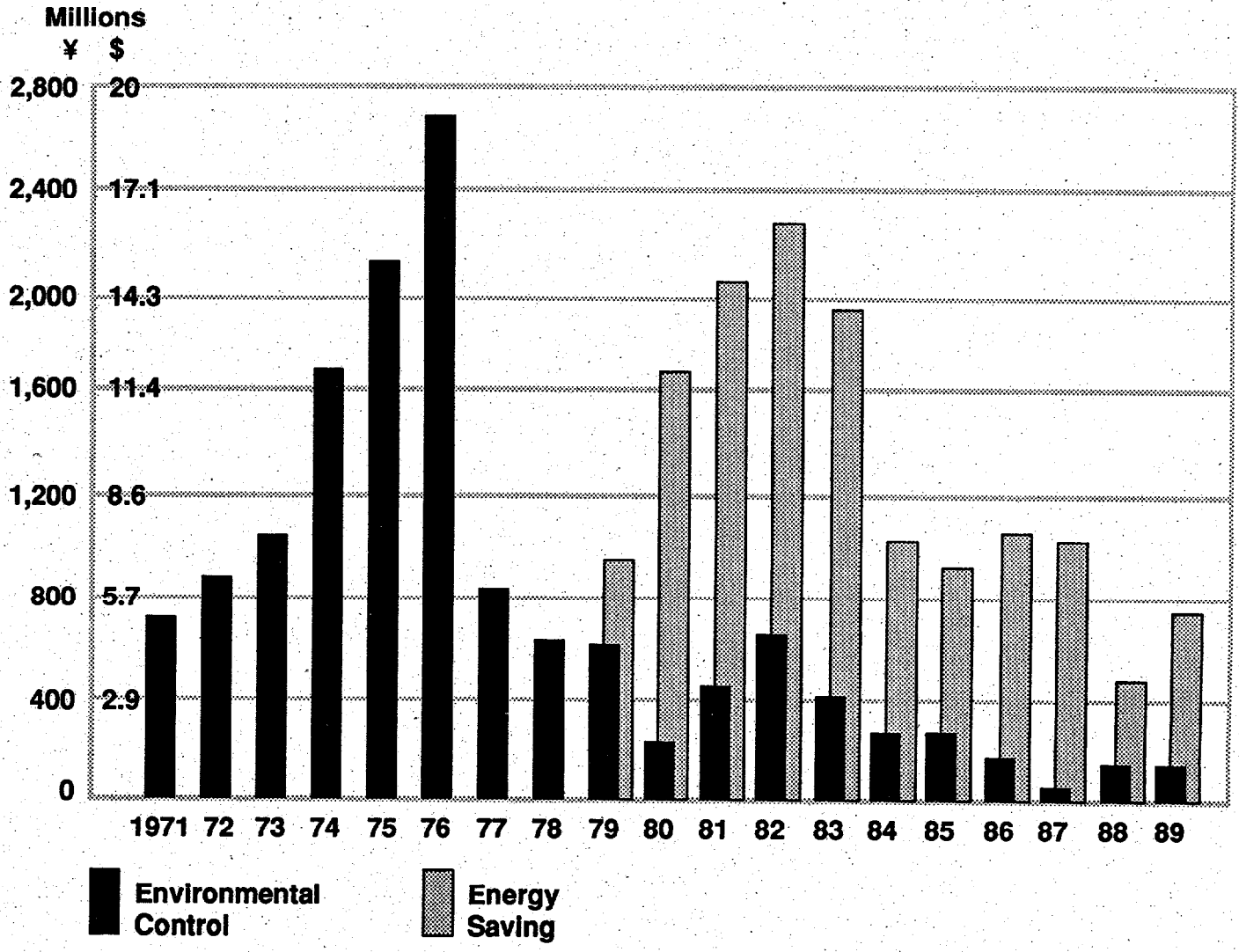
Carbon steel production in Japan provides another example of this principle in action. A comparison of the process utilized to produce carbon steel in Japan with that of other countries reveals that the former produces significantly lower pollution levels. This has been accomplished through the rationalization of the production process, the use of blast furnace gases to run turbines which generate electricity, the use of inert gases for cooling, and finally, by making the production process continuous.

The case of Carbon Steel production emphasises the change in focus from saving the environment to saving energy, which is part of the trend towards increased efficiency. The chart on the next page illustrates this trend.

It is impossible to overestimate the importance of the relationship between efficient industrial processes and a healthier environment. If applied globally in the steel, chemical, cement, electrical

and auto production industries, the above process improvements could reduce CO_2 emissions worldwide by as much as 20%.

Steel Makers' Investment for Environmental and Energy Benefits



Financing Innovation

The development and adoption of innovative technologies, both those directly focusing on environmental protection as well as those designed to improve industrial efficiency, is heavily dependent on the availability of financial resources. Japanese financing models could provide insight for Canadian government and industry.

In Japan, government does not give money directly to companies for the purpose of improving environmental performance. Instead, the government creates arms-length private foundations which provide capital to industry, at very low rates of interest ("soft loans"), for the purpose of improving equipment and rationalizing production processes. Additionally, the introduction of market incentives makes it beneficial in the long run, through lower taxes, to install equipment. In effect, the tax serves to stimulate long-term investment in environmental protection.

During the 1970's, the Japanese Government did play a more direct role. Between 1972-78 it provided 1 trillion yen annually, at very low rates of interest, which was invested to equip power stations. One third of these funds were earmarked for pollution control devices.

In Canada there is some question as to whether such financing would be considered an unfair subsidy under the terms of the 1989 Canada/U.S. Free Trade Agreement. However, such financing should be acceptable if it is made available on a competitive basis, as is the case with tax credits for research and development. The federal government is currently considering the creation of financing corporations as one method of providing greater access to low cost capital.

2) DECISION MAKING AND COOPERATION

Institutions

Much of the success which Japan has had in the field of environmental protection can largely be attributed to cooperation between legislators and industry. In part, this cooperation is a product of necessity; public reaction to serious environmental problems in Japan forced the adoption of an action oriented approach to environmental clean up. It was not, however, easy to forge cooperative relationships across various sectors of society. Japan was subject to the same intense debate, between interests representing industry and those representing the environmental lobby, observed frequently in Canada. However, experience with

would result in an estimated savings of one billion dollars a year. In Canada, the province of Alberta is considering the use of a combination of pollution taxes and credits as a means of controlling SO_2 emissions. Globally there have been discussions, as part of UNCED preparations, regarding the possible creation of an emissions tax, related to CO_2 production, between countries.

Self Regulation

Self-regulation by Japanese industry has resulted in environmental standards and codes of behaviour for use both within Japan and abroad. The KEIDANREN (Federation of Japanese Economic Organizations) Charter (see Appendix 4) sets forth guidelines for Japanese enterprise operating abroad that member companies are expected to comply with. Among the guidelines are that:

- environmental protection be made a priority at overseas sites and, as a minimum, Japanese companies abide by local standards generally and Japanese standards concerning the management of harmful substances;

- the company establish an environmental management system, including staff responsible for environmental control; and

- local residents be included in discussions on environment-related issues as they arise.

The Canadian Chamber of Commerce has released a similar charter that member companies are being asked to endorse.

Quality Control Circles

While it is important for management to be involved in the environmental protection process, it is equally important that workers be involved. Japanese industry, particulary when discussing means of improving efficiency, has implemented quality control cycles which encourage worker input into technological development.

4. RESOURCE MANAGEMENT

Industrial technology and regulatory activity are important aspects of addressing environmental problems. Just as important is the management of natural resources.

Recycling

Recycling represents one of the most obvious means of reducing waste. Since 50% of waste in Japan is currently incinerated, this is clearly an area in which the Japanese feel they have to make significant advances. The involvement of citizens' groups in the process of separating materials has contributed to increasing levels of recycling. Currently 50% of iron, 40%

Minimata diseases, caused by high mercury levels in fish, led the Japanese Government to adopt the position that, when in doubt, it is important to take positive action even before available scientific evidence was one hundred percent conclusive. As a result, Japan has managed to avoid the burden of an adversarial approach to environmental policy-making which requires indisputable evidence as a prerequisite to regulatory activity.

Cooperation between research institutions and government has permitted the latter to set environmental standards that are stringent enough to require substantial initiative on the part of industry. At the same time, financing methods and collaboration between industry and research institutions has made it possible for industry to meet, and often surpass, government standards.

Lifestyles

Unfortunately, the macro-level success of environmental policy-making in Japan has not been entirely matched at the level of the individual. Rapid washout to surrounding oceans reduces incentives to protect water supplies zealously by creating a picture of a Japan that is relatively unpolluted. Further, some of the gains made in the area of improving fuel efficiency are being offset by a shift in consumer preference to larger luxury cars in which mileage is not a primary consideration. An overall increase in the number of cars on the road is also contributing to this problem.

It is, therefore, necessary to instill in young people, through education, the attitude that an environmentally friendly way of life is desirable. Naturally, this applies to the youth of both Canada and Japan.

Recent polls in Japan reveal that attempts to do this have met with some success. Sixty per cent of those interviewed said that global environmental issues should be among those receiving priority attention from government. Fifty-eight percent felt that environmental measures, where warranted, should be taken even in the absence of indisputable scientific evidence. Thirty-six percent felt that in the face of competing environmental and economic interests, the environment should have priority, while twenty-three per cent felt that priorities should be determined on a case by case basis, and twenty percent felt that environmental and economic concerns could be compatible. Of those aged 20-50, who are at the core of the Japanese economy, sixty-three percent felt that environmental issues are the most important faced by government today.

Long-Term Planning

Despite the problems associated with competing interests in environmental policy and economic development, Japan has been able to make significant advances in long-term planning. Its hundred year plan, "Earth Action--21" (attached as Appendix 3), is an attempt to develop a cohesive, long-term strategy that which will facilitate the protection of the planet. It combines the development of new technology and environmental reclamation measures such as reforestation.

This type of long-term planning has been made possible by the decision-making process itself. In the following passage, taken from seminar transcripts, Ambassador Chiba was able to provide Canadian participants with an insight into this process:

...in Japan we have (a) consensus process (that) varies from time to time and issue to issue... However, there is one common thread... we don't jump into our pronouncements right away without talking to various parties. But the actual process is very different from time to time.... (for example) there will be lots of talk between young bureaucrats of different ministries... and between young people in various organizations which have a bearing on the decision. ...these talks seep upstairs in those organizations and eventually reach the ministers. By that time, however, the talk would already be going to the trade unions, and the junior members of the trade union hierarchy would be talking to the junior officials in the labour ministry...this talk will be fed back... and also go upstairs. By the time it gets upstairs all the great captains of industry will know about it, but when first asked about it by the ministers they feign surprise and say "we have to think about that"... one day you get a leak in the newspaper. Now this leak is sometimes coordinated, sometimes uncoordinated, but it is in the main direction and not completely wild. By the time that you read about the leak... the initiated will know people have been talking for two or three years about it already....basically if we are very careful about things and... talk very discreetly at the right levels I think we might get a consensus.

3. ENVIRONMENTAL REGULATION - ALTERNATIVES TO LEGISLATION

Japan employs an interesting combination of legislative and non-legislative measures to effect environmental protection. In the non-legislative category, financial incentives and voluntary self-regulation account for much of industrial Japan's impetus to develop new technology and act in an environmentally positive manner.

Pollution Taxes

As illustrated by the reduction of SO_2 in Japan after the implementation of emission taxes, it is clear that this type of mechanism can work as an environmental protection mechanism. Other countries have also experimented with pollution taxes. In the United States, the trading of emission credits was used to help achieve a reduction in the lead content of gasoline. As well, the US Clean Air Act is utilizing trading permits in an attempt to achieve a 50% reduction in acid-forming emissions. This

of aluminum cans, 59% of cullet, and 50% of paper is recycled. These numbers compare very favourably with those in other G-7 nations.

Forests

Forests are one of the earth's most important renewable and multifaceted resources. They act as CO_2 sinks, habitats for biological diversity, and provide both protection of the watershed and soil cover. They are also a source of many raw materials. This makes them an important economic resource, particularly in developing countries.

Problems associated with increasing deforestation once again illustrate the need to balance environmental protection and economic development. The International Tropical Timber Organization (ITTO) attempts to affect such a balance through the promotion of sustainable development and forest conservation. The World Bank, and other international agencies, is attempting to address, through financial measures, the problem of deforestation.

The idea of a Forest convention, the purpose of which is to protect tropical and temperate forests, was first endorsed at the G-7 summit in Houston in 1990. However, the difficult process of international negotiation, and the resistance of countries dependent on forestry for their development, has made apparent the difficulties inherent in striking an acceptable, legally binding charter.

Recognizing this, Japan has proposed that a non-legally binding international charter for the protection of the world's forests be discussed as part of the UNCED process. It is Japan's position that such an agreement would serve as an important first step in assuring sustainable development of the world's forest resources. At the same time, it would respect the sovereign rights of developing countries that may depend heavily upon the development of forest resources.

Biological Diversity

Despite ongoing negotiations, considerable division remains between developed and developing countries on issues related to maintaining and protecting biological diversity. There is, however, some hope that by focusing on issues where agreement might be reached during the UNCED process, such as the establishment of protected areas, negotiators might be able to develop mechanisms for addressing other problems as well.

While biological diversity conventions are

being negotiated in preparation for UNCED, they are becoming enmeshed in debates concerning technology transfer between developing and developed countries. This once again serves to highlight the difficulty of separating economic issues from the environmental protection process. It also serves to illustrate the manner in which global environmental issues are rapidly becoming among the most important North-South issues to be dealt with in the coming years.

Water and Marine Resources

This is an area that was identified as one in which there is a potential for significant cooperation between Canada and Japan. The Japanese participants indicated that greater investment, particularly in the area of waste treatment plants, was necessary in their country.

5. TECHNOLOGY SHARING

The debate surrounding the global management of natural resources is directly connected to the larger issue of technology transfer to developing countries. The transfer of technology is hindered by a number of obstacles. For example, for technology transfer to be an effective tool in dealing with environmental problems, it is necessary that a selection process be developed to ensure that the *appropriate* technology is offered. Similarly, if transfers are going to be effective, it will be necessary to transfer skills and training in addition to basic technology. Another barrier comes from organizations such as the WIPO (World Intellectual Property Organization) which are hesitant to include intellectual property in any form of trade talks.

As a means of addressing some of these concerns, Japan has created the International Centre for Earth Technology Transfer (ICETT). It was created to collaborate with other industrial countries regarding the transfer of environmental technologies, some of which are developed at RITE, to developing countries.

Costs

The problem of technology transfer is further compounded by the high cost of technology. Canadian participants in the workshop concluded that it was necessary to either find a way to increase competition in order to drive prices down or to develop a way to fund the cost of purchasing available environmental technology. A lack of competitively priced alternatives and, more seriously, the high cost of capital

in Canada, contribute to the difficulties facing Canadian industry wishing to utilize environmental protection technology. While this is a problem in Canada, it is an even greater problem for developing countries.

Related to the above is the issue of linking development aid to the environmental practices of recipient countries. This represents yet another twist to the oft-noted problem of coming to terms with potentially competing aims associated with economic development and environmental protection. Japan has considerable experience in dealing with this problem, most notably in policies concerning development aid to China.

As part of its industrialization strategy, China has plans to build numerous new coal-generated factories. It would be preferable, from an environmental standpoint, if they were to install plants with desulphurisation equipment. Unfortunately, they are far more expensive than factories that do not have such equipment. Given their primary goal, which is economic expansion, China is primarily concerned with increasing the total number of plants, so there is a preference for utilizing less expensive, and hence less environmentally sound, technology.

The choice between a high number of factories and more rapid economic growth and fewer factories offering greater protection to the environment illustrates one of the most pressing North-South issues the world currently faces. Developing countries are seeking to maximize their economic potential while the developed world is moving towards tying development aid to environmental protection. This issue was discussed by representatives of 41 developing countries at an UNCED preparatory meeting held in Beijing in 1990. It was their conclusion that developed countries should seek to provide aid to developing countries that would allow them to develop environmental protection measures without sacrificing economic growth.

6. GLOBAL COOPERATION

Given the importance of, and interrelated nature of, issues such as resource management, technology transfer, and economic development, it is apparent that global cooperation will be critical to environmental protection. Indeed, it can be argued that the focus of environmental protection should not be on research but rather on action. In the case of Japan, the KEIDANREN Charter and the initiatives of the ICETT represent a positive starting point in this regard. However, it may be possible for Japan to take on an even more active role as a catalyst in the transfer of technology

given the scope of its economic power and success of its established management practices.

Initiatives of this kind cannot, however, be taken in isolation. Trade practices and laws, financial aid policies, and existing international institutions must be recognized and utilized wherever possible.

Trade Practices

While legislation has proven to be an effective tool to control domestic pollution problems, the potential problem of corporations leaving countries with stringent environmental standards and establishing their operations in countries with lower standards must be addressed. Other issues of this kind requiring consideration include the potential use of trade barriers based on environmental policies, and the use of developing countries as a location for the production and/or storage of hazardous waste.

In short, the issue that will have to be addressed is whether or not international trade laws will permit what amounts to "shopping" for industrial sites with environmental regulations requiring the lowest operating costs. There is evidence to suggest that within the GATT, and other trade negotiations, a movement has already begun to include environmental performance when discussing countervail duties. It is also possible that this issue can be addressed through the International Business Council of the International Chamber of Commerce, the United Nations, or the United Nations Environment Program. In this regard the KEIDANREN Charter (see pg. 17) is a step forward because it calls upon Japanese companies to "abide by Japanese standards concerning the management of harmful substances."

Debt for Nature Swaps

There is discussion in world banking circles that links the "swapping" of the Amazon forest, that is to say further large scale development there, for the debts of Brazil. Japanese banks are among those actively pursuing discussions of this nature with the World Bank. This is, however, a particularly sensitive issue among developing countries. As alluded to earlier, attempts to in any way dictate the manner in which sovereign nations may or may not utilize domestic resources, particularly when those resources represent the primary means through which economic development can be achieved, could easily be interpreted as arrogant. This is particularly true given the fact that the industrialization of the developed world, along with lifestyles therein, account for

many of the environmental problems facing the world today.

On a more practical level, it is difficult (although some progress is being made) to assign a dollar value to natural resources. This is true both in terms of calculating an immediate market value and estimating the value of the opportunity costs associated with the loss of any particular resource. Undoubtedly, fairly assessing and meeting such costs will require a high level of both political and financial commitment from the developed world.

International Institutions

While it is important to establish an international consensus on environmental and economic issues, it is equally important to establish a mechanism for implementing programs and development. Hopefully, UNCED will serve as a forum for discussing how existing organizations, such as UNEP, can be more effectively utilized and how new mechanisms for cooperation can be developed.

Toward that end, Maurice Strong, Secretary General for UNCED, has called for the creation of linkages between environmental research facilities worldwide. This has been started with the creation, through UNEP, of the International Environmental Technology Centre in Japan, which will focus on the environmentally sustainable management of big cities and fresh water lakes and reservoirs. Its mandate is to provide training and consulting services and to establish a pertinent data base using appropriate sources from around the world. There is a great deal of potential for this agency to coordinate research with other centres such as the Canadian Centre for Inland Waters.

Similarly, both the Global Environmental Facility (GEF) and the multilateral fund of the Montreal protocol for the protection of the ozone layer may be used to further global cooperation. Both funds are attempts to establish a financial mechanism that will make full use of existing international organizations such as the World Bank, the UNEP, and the UNDP.

7. UNCED

UNCED is increasingly being viewed in Japan as the focal point for a range of specific environmental and economic issues. People in political, academic, business, and labour circles, as well as environmental NGO's, are involved in the preparatory process. This is also true in Canada.

Agenda 21 (Appendix 5) identifies a

number of specific issues and general areas of concern that will considered leading up to UNCED. UNCED, it is hoped, will provide a forum for the signing of a number of conventions related to these issues.

Japanese Perspectives on UNCED

Japan hopes to contribute to the development of an earth charter that has worldwide applicability. In doing so it will draw on experience gained in overcoming its own serious environmental problems.

UNCED represents a valuable opportunity to deal with institutional aspects of the global environmental problem. In so doing, however, the challenge will be to avoid creating huge new bureaucracies by restructuring and coordinating already existing institutions.

UNCED also represents an opportunity to deal with issues such as technology transfer, financial resources, climate change, deforestation, biological diversity, and marine resources. However, it must be seen as an opportunity to improve North-South relations as well.

Canadian Perspectives on UNCED

The Canadian environmental movement, as well as NGO's, is working closely with the Canadian government in the preparatory process. However, there is some concern that progress is moving too slowly on a number of issues.

Canadian expectations are very similar to those of Japan in terms of the items on Agenda 21. It was the opinion of Canadian seminar participants, however, that negotiations are being slowed down because many people are having difficulty understanding the relationship between economic and technological development issues and environmental protection initiatives. This relationship is crucial to all issues that will be, and are currently being, raised through the UNCED process. Difficult North-South issues, such as technology transfer and financing, are becoming the real issues for discussion. It is those issues, rather than talks related to global warming, biological diversity or deforestation, which will be the key factors that determine UNCED's ultimate success or failure.

CONCLUSION

Solving environmental challenges will require more than mere technological innovation. It will require a fundamental restructuring of the way we live and think. Increasingly, it is apparent that environmental problems, such as those articulated in the 1987 Bruntland report, must be dealt with as part of the larger issue of global economic development. This sentiment was reinforced throughout the workshop discussions. Several trends became apparent, trends which were identified by both Canadian and Japanese participants. The importance of technological innovation, for example, seems to have become overshadowed by the necessity to make technology available and affordable to the developing world. At the same time, the global cooperation necessary for joint action on environmental issues is hindered, even in the UNCED process itself, by economic and political realities.

Countries, particularly those in the developing world, are increasingly required to choose between the need for economic development, compounded by rapid population growth, and environmental protection. Yet, ironically, the experience of Japan shows that with sufficient financial resources and political and industrial will, these two options do not have to be mutually exclusive.

Clearly, it is not sufficient to lament the loss of tropical forests as CO_2 sinks and advocate remedial action without in some way compensating the countries whose immediate economic development may depend on the development of those forest resources. It is not reasonable to expect developing countries to sacrifice the potential for economic growth that may improve the lives of their citizens in order to meet environmental standards set by the developed world, particularly if developed countries are not willing to make similar sacrifices.

While the magnitude of the problem may be quite different, in many ways the current economic debates in Canada mirror the development process that is going on in the developing world. Access to capital for environmental protection technology, an increasing awareness of the need for international competitiveness, and the challenges being raised by free trade talks with the United States and Mexico are issues with which Canadian industries must deal. They are the same kinds of issues which developing countries must address.

North-South economic issues will be part of the UNCED process, and

corresponding solutions to economic concerns will have to be addressed before there can be real progress on environmental issues. Perhaps Canada, given the fact that it has a number of concerns similar to those of developing world countries while, at the same time, is industrialized with well developed research capabilities, can help provide a link that brings North-South issues closer together.

Similarly, because of the close ties that already exist between Canada and Japan, there is potential for the two countries to not only engage in an increased level of cooperative environmental research, but to use their common political and economic interests to make complementary contributions to the UNCED process.

As members of the G-7, and participants in GATT, Canada and Japan can also bring environmental issues into trade negotiations and policies. The G-7 nations will have to seriously evaluate their priorities vis-à-vis development aid, debt relief and "green swaps". While the World Bank and the UN are discussing these kinds of issues, it is becoming apparent that, in the short-term at least, bilateral efforts will be useful.

Japan has already made such efforts in the Asia Pacific region. However, this is one area in which there is room for greater cooperation between Canada and Japan. Canada clearly has greater expertise in the field of resource management since a substantial part of the Canadian economy is still resource based. This knowledge could be transferred, perhaps in cooperation with UNEP or through ICETT, to compliment Japanese industrial technology.

Japanese industry chose to implement the KEIDANREN charter; the International and Canadian Chambers of Commerce are adopting similar statements of principles. While this corporate self regulation is laudable, it is, in and of itself, insufficient. The reality of global politics and economics dictates that without a concentrated commitment from government, as well as from industry, the amount of real change that can be made will be limited.

The challenge of integrating decision-making processes was another re-emerging theme. While financing and legislative models may vary form country to country, what is significant is the process through which the models are developed. Clearly the Japanese decision-making process encourages a higher degree of consensus and cross-sectoral integration than do Canadian processes. While Canada could not simply adopt Japanese models - cultural differences would undoubtedly prevent this - there is certainly the potential for

improving current processes through thoughtful consideration of these models.

From a Canadian perspective, it is necessary to seriously evaluate methods of establishing and implementing environmental protection legislation. There is no question that financing mechanisms utilized in Japan would prove advantageous to Canadian industry. One of the challenges for Canada will be increasing integration in decision-making between industry, government, and environmentalists so that a balance between the interests of economic growth and environmental protection can be addressed at both local and global levels.

As economic and environmental issues become increasingly interrelated, it is apparent that solutions to existing problems will only be found after a long and difficult process. Unfortunately, the world does not have the luxury of an infinite amount of time to reach a consensus on common action. At the national level, increased dialogue offers the best chance of arriving at some form of consensus. Internationally, perhaps the two countries, and others, will be able to work together to accomplish something during the UNCED process. In any event, there must be a serious reevaluation of priorities, policies and lifestyles, particulary in the developed world. The National Round Table hopes that activities such as this Canada-Japan workshop contribute to that ongoing process.

Appendix 1

AGENDA

CANADA-JAPAN WORKSHOP ON THE ENVIRONMENT
DEPARTMENT OF EXTERNAL AND INTERNATIONAL TRADE
CRUSH CONFERENCE ROOM (MAIN FLOOR)
JUNE 26, 1991

08:30-09:00	**REGISTRATION** Coffee and juice will be available in the lobby.	
09:00-09:15	**WELCOMING AND OPENING REMARKS** **Dr. G. Kenney-Wallace and Dr. P.M. Johnson**	
09:15-10:30	**EMISSION CONTROLS OF JAPAN** **Dr. J. Kondo**	Dr. H. Wynne-Edwards (session chair) Dr. R. Peltier (respondent)
10:30-10:45	**REFRESHMENT BREAK** Coffee and juice will be available in the lobby.	
10:45-12:00	**JAPANESE TECHNOLOGY FOR ENVIRONMENTAL PROTECTION** **Dr. S. Nishioka**	Mr. R. Franklin (session chair) Mr. P. Vivian (respondent)
12:15-13:30	**LUNCH** Hosted by His Excellency, **Mr. M. Mizoguchi**, in the lobby. **" The Environment: Another Dimension of Canada-Japan Relations"**	
13:30-14:45	**JAPAN'S EXPECTATIONS FOR ECO'92** **Mr. K. Chiba**	Dr. J. Kirton (session chair) Ms. E. May (respondent)
14:45-15:00	**REFRESHMENT BREAK** Coffee and juice will be available in the lobby.	
15:00-16:00	**WORKSHOP SUMMARY AND DISCUSSION**	Dr. H. Wynne-Edwards (panel chair) Dr. R. Page Mr. H. Brehaut
16:00	**CLOSING REMARKS**	

Appendix 2

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Member, Foreign Policy Committee, and
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Resource Person. Foreign Policy Committee

Ms. Agnes Pust
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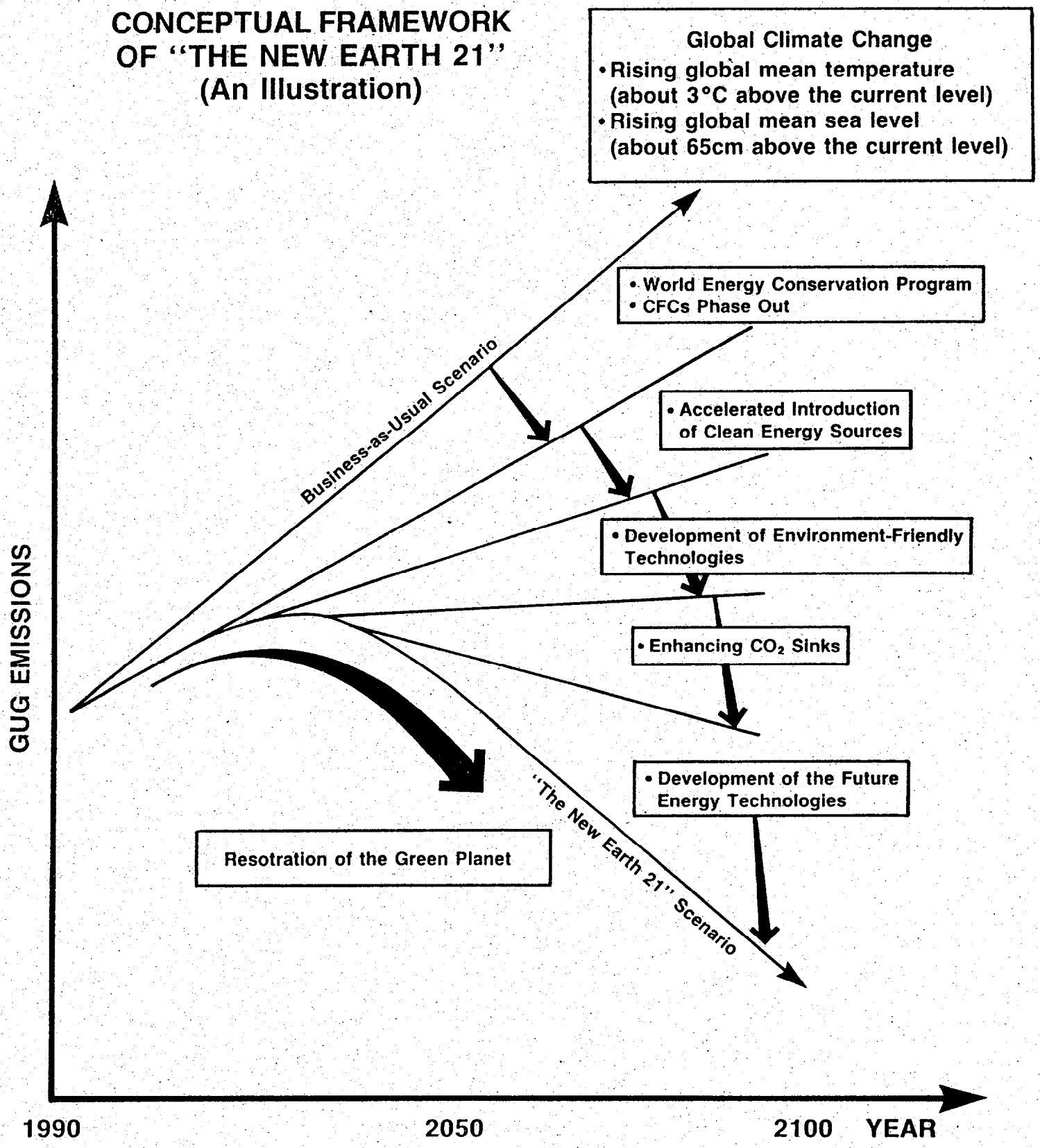
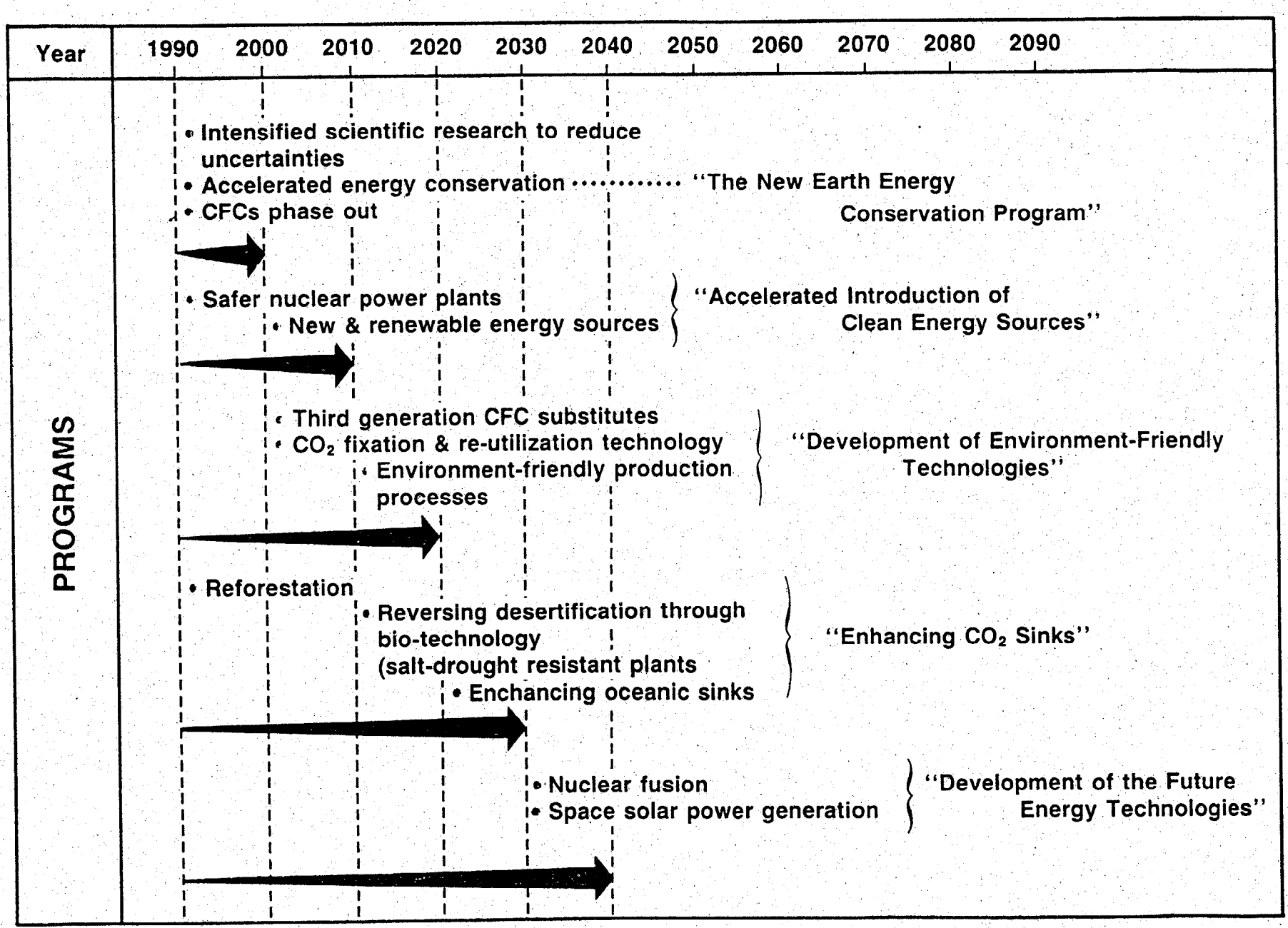
Ms. Sarah Richardson
Resource Person, Foreign Policy Committee

Mr. Harold Corrigan
Member, Waste Reduction Committee

Appendix 3


CONCEPTUAL FRAMEWORK
OF "THE NEW EARTH 21"
(An Illustration)
Global Climate Change
• Rising global mean temperature
(about 3°C above the current level)
• Rising global mean sea level
(about 65cm above the current level)
• World Energy Conservation Program
• CFCs Phase Out
Business-as-Usual Scenario
• Accelerated Introduction
of Clean Energy Sources
• Development of Environment-Friendly
Technologies
• Enhancing CO_2 Sinks
• Development of the Future
Energy Technologies
"The New Earth 21" Scenario
Resotration of the Green Planet
GUG EMISSIONS
1990
2050
2100
YEAR

"THE NEW EARTH 21"
Action Program for the 21st Century



Appendix 4

Keidanren Global Environment Charter

Keidanren
April 23, 1991

Introduction

The Japanese government and industrial world have been actively striving to protect the environment, promote health and safety, and use energy and resources more efficiently ever since pollution became a problem in the high-growth 1960s and especially since the two oil crises of the 1970s. Japan now has some of the most advanced technologies and systems in the world to reduce industrial pollution, enhance safety and hygiene, and conserve energy and other resources.

Yet today's environmental problems are too critical to be dealt with solely through measures to prevent industrial pollution. If we are to minimize the load on the environment from, for example, waste disposal and water pollution generated in cities, society itself must be fundamentally changed. We must radically revise various social and economic systems, such as the layout of cities and the arrangement of transport networks, and we must also upgrade social infrastructure and, indeed, raise the consciousness of citizenry.

On the international agenda are such world-scale problems as global warming, the depletion of tropical rain forests, desertification, acid rain, pollution of the oceans. The international community's response to the problem of global warming in particular will be having profound effects on our ways of life and business. Naturally, there must be overall measures taken, but technological breakthroughs will also be necessary. The problems are such that no country alone can come up with all the answers.

The task before us is not merely one of rethinking the problems caused by the pursuit of affluence in a culture that encourages mass consumption; we must also come to grips with the global problems of poverty and population increase, aiming to hand over to future generations a healthy environment that allows sustainable development on a global scale. The governments, companies, and people of each nation must become more aware of their roles in this endeavour. People throughout the world must join hands to create new social and economic systems that allow the advancement of the welfare of all

human beings and the conservation of the whole world's environment.

Japan must not rest content with its good record in pollution control thus far. The business world, academic circles, and government must pool their resources to create innovative technologies for preserving the environment, conserving energy, and cutting back on resource consumption. Solving Japan's own environmental problems is not enough; while drawing on the Japanese experience in reconciling economic development with environmental protection, we must actively participate in international environmental undertakings. Concerning such problems as global warming, we should support the efforts on more scientific research into their causes and effects and also begin work immediately on the feasible countermeasures.

By showing that it takes environmental problems seriously, the business world can gain the trust and sympathy of the public. This will foster a mutually beneficial relationship between producers and consumers, thereby encouraging the healthy development of the economy. With the above situation in mind, Keidanren offers the guidelines outlines below to its members. It is to be hoped that each member, always consulting with and seeking the understanding and cooperation of consumers, government officials, and others, will conduct its business in conformity with these guidelines.

Basic philosophy

A company's existence is closely bound up with the global environment as well as with the community it is based in. In carrying on its activities, each company must maintain respect for human dignity, and strive toward a future society where the global environment is protected.

We must aim to construct a society whose members cooperate together on environmental problems, a society where sustainable development on a global scale is possible, where companies enjoy a relationship of trust with local citizens and consumers, and where they vigorously and freely develop their operations while working to preserve the environment. Each company must aim at being a good global corporate citizen, recognizing that grappling with environmental problems is essential to its own existence and its activities.

Guidelines for corporate activities

Companies must carry on their business activities to contribute to the establishment of a new economic social system for realizing environment protective society where sustainable development is possible.

1. Management policies to deal with environmental problems

Companies should always bear the guidelines below in mind in carrying on their activities. They must work to (1) protect the global environment and improve the local living environment, (2) take care to protect ecosystems and conserve resources, (3) ensure the environmental soundness of products and (4) protect the health and safety of employees and citizens.

2. Corporate organizations

(1) Companies shall establish an internal system to handle environmental issues by appointing a director and creating a department in charge of environmental problems.

(2) Environmental regulations shall be established for company activities, and these shall be observed. such internal regulations should include goals for reducing the load on the environment. An internal inspection to determine how well the environmental regulations are being adhered to shall be carried out at least once a year.

3. Concern for the environment

(1) All company activities, beginning with the siting of production facilities, shall be scientifically evaluated for their impact on the environment, and any necessary countermeasures shall be implemented.

(2) Care should be taken in the research, design, and development stages of making a product to lessen the possible burden on the environment at each level of its production, distribution, appropriate use, and disposal.

(3) Companies shall establish internal standards in addition to those of national and local laws and regulations for environmental protection when they are necessary.

(4) When procuring materials, including materials for production, companies shall endeavour to purchase those that are superior from such viewpoints as conserving resources, preserving the environment, and recyclability.

(5) Companies shall utilize technologies that allow efficient use of energy and preservation of the environment. Companies shall endeavour to recycle byproducts, use resources efficiently, and reduce waste products, and shall deal with pollutants and waste products.

4. Development of technology

In order to help solve global environmental problems, companies shall endeavour to develop and supply innovative energy and resource-efficient

technologies and products that allow preservation of the environment.

5. Technology transfer

(1) Companies shall seek appropriate means for the domestic and overseas transfer of their technologies and expertise for dealing with environmental problems and conserving energy and other resources.

(2) In participating in official development assistance projects, companies shall carefully consider environmental and antipollution measures.

6. Emergency measures

(1) If environmental problems ever occur as a result of an accident in the course of company activities or deficiency in a product, companies shall adequately explain the situation to all concerned parties and take appropriate measures, using their technologies and human and other resources, to minimize the impact on the environment.

(2) Even when a major disaster or environmental accident occurs outside of a company's responsibility, it shall still actively provide technological and other appropriate assistance.

7. Public relations and education

(1) Companies shall actively publicise information and carry out education activities concerning their measures for protecting the environment, maintaining ecosystems, and ensuring health and safety in their activities.

(2) The employees shall be educated to understand the importance of daily close management to ensure the prevention of pollution and most efficient use of energy and resources.

(3) Companies shall provide users with information on the appropriate use and disposal, including recycling, of their products.

8. Community relations

(1) As community members, companies shall actively participate in activities to preserve the community environment and support employees who engage in such activities on their own initiative.

(2) Companies shall promote dialogue with people in all segments of society over operational issues and problems seeking to achieve mutual understanding and strengthen cooperative relations.

9. Development of overseas operations

Companies developing operations overseas shall observe the Ten-Points-Environmental Guidelines for the Japanese Enterprises Operating Abroad in Keidanren's **Basic Views of the Global Environmental Problems (April 1990) (see attachment)**.

10. Contributing to environmental policy making

(1) Companies shall work to provide information gained from their experiences to administrative authorities, international organizations, and other bodies formulating environmental, as well as participate in dialogue with such bodies, in order that more rational and effective policies can be formulated.

(2) Companies shall use their experience to make rational proposals to bodies formulating environmental policy and offer advice on consumer lifestyles.

11. Response to such problems as global warming

(1) Companies shall cooperate in scientific research on cause and effect of such problems as global warming and in the economic analysis of possible countermeasures for them.

(2) Companies shall actively work to formulate policies which are effective and rational to reduce energy and other resource use in response to such environmental problems.

(3) Companies shall play an active role when the private sector's help is sought to implement international environmental measures, including work to solve the problems of poverty and overpopulation in developing countries.

Ten-Point Environmental Guideline for Japanese Enterprises Operating Abroad

1. Establish a constructive attitude toward environmental protection and try to raise complete awareness of the issues among those concerned.

2. Make environmental protection a priority at overseas sites and, as a minimum requirement, abide by the environmental standards of the host country. Apply Japanese standards concerning the management of harmful substances.

3. Conduct a full environmental assessment before starting overseas business operations. After the start of activities, try to collect data and, if necessary, conduct an assessment.

4. Confer fully with parties concerned at the operational site and cooperate with them in the transfer and local application of environment-related Japanese technologies and know-how.

5. Establish an environmental management system, including the appointment of staff responsible for environmental control. Also, try to improve qualifications for the necessary personal.

6. Provide the local community with information on environmental measures on a regular basis.

7. Be sure that when environment-related issues arise, efforts are made to prevent them from developing into social and cultural frictions. Deal with them through scientific and rational discussions.

8. Cooperate in the promotion of the host country's scientific and rational environmental measures.

9. Actively publicize, both at home and abroad, the activities of overseas business that reflect our concern for environmental considerations.

10. Ensure that the home offices of the corporations operating overseas understand the importance of measures for dealing with environmental issues, as they affect overseas affiliates. The head office must try to establish a support system that can, for instance, send specialists abroad whenever the need arises.

Appendix 5

AGENDA 21

1. Climate Change
2. Ozone Depletion
3. Transboundary Air Pollution
4. Deforestation
5. Desertification
6. Biodiversity
7. Biotechnology
8. Marine Pollution from Land Based Sources
9. Living Marine Resources
10. Freshwater
11. Disposal of Toxic and Hazardous Wastes
12. Poverty and Environmental Degredation
13. Urban Environment
14. Environment and Health
15. New and Renewable Sources of Energy
16. Financial Resources for Environmental Protection
17. Technology Transfer for Environmental Protection
18. Legal Aspects/International Environment Law
19. International Institutional Arrangements
20. Economic Instruments
21. Environmental Education and Information

NOTES