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Environmental Issues

JPRS-TEN-93-016 *16 June 1993*

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Officials Urge Improvement in Rural Environment

HK0306093093 Beijing CHINA DAILY in English 3 Jun 93 p 1

[Report by staff reporter Wang Yonghong: "Warning Is Sounded on Rural Pollution"]

[Text] Top agricultural officials yesterday urged governments at all levels to work together to halt the deterioration of China's rural environment.

"More than 10 million hectares of farmland in the country have been polluted to different extents, resulting in a loss of 12 billion kilograms of grain every year," Vice Agricultural Minister Hong Fuzeng said at a press conference in Beijing.

From 1989 to 1992, 3,000-3,500 serious pollution cases occurred in China, and 60-80 percent of them caused about 1 billion yuan ($175 million) in losses to farming, fishery and animal husbandry.

"Immediate and strict measures must be used by the central and local governments to keep a cleaner environment for China's agriculture, which feeds about 1.2 billion people," Hong said.

The news conference was held to mark World Environment Day tomorrow and was attended by the heads of the ministry's departments of fishery, animal husbandry and township enterprises.

Of the 10 million hectares of polluted farmland, 3.3 million hectares were contaminated by filthy water 5.3 million hectares by foul air, and 900,000 hectares by solid waste and other pollutants. China has 96 million hectares of arable land, or 0.0866 hectares per person.

At the same time, Hong said, the shortage of farmland is becoming worse as more acreage is lost to mushrooming "development zones."

According to rough estimates, more than 2,700 development zones of various kinds were set up last year across the country, encompassing over 733,330 hectares. More than 80 percent was farmalnd.

Statistics from Hong's ministry show that more than 90 million hectares of grassland, one-third of the country's total, have been damaged and over the past 25 years an average 1,560 square kilometres of land become desert each year.

According to Zhuo Youzhan, Director-General of the Bureau of Fishery and Fishing Port Superintendency, the offshore environment has been deteriorating just as fast.

About 82 percent of the country's rivers and lakes have become fouled to one degree or another, and fish and shrimp have disappeared along more than 2,800 kilometres of waterways.

What contamination has extended from waterway outlets and beaches out into the coastal waters, causing frequent recurrences of red tide, according to Zhuo.

Every year more than 200,000 tons of fish, shrimp and shellfish die from pollution, with economic losses in the billions of yuan, he said.

Such pollution severely hinders the development of fisheries and even threatens people's health, Zhuo said.

Excessive fishing by Chinese fishermen and illegal harvesting by foreign fishing vessels in recent years has also reduced fishery resources, said Zhuo.

The officials pointed out that although most major pollutants originate in cities and industrial enterprises, pollution caused by the proliferating rural enterprises and the widespread use of crop pesticides, chemical fertilizers and farm-use films should not be neglected.

Wang Bingqian Opens Youth Environmental Forum in Beijing

OW0306125993 Beijing XINHUA in English 1248 GMT 3 Jun 93

[Text] About 400 Chinese environmentalists gathered at the Great Hall of the People here today, marking the beginning of the first meeting of the Chinese youth forum on the environment.

Most of the participants in the non-governmental forum, which has been supported by the All-China Youth Federation and the State Administration of Environmental Protection, are young Chinese researchers and government officials in their 20s and early 30s.

The conference is the first large and comprehensive academic gathering of youth in the history of China's environmental protection, organizers said.

Addressing the opening session of the forum, Wang Bingqian, vice-chairman of the Standing Committee of the National People's Congress, said that the forum would eventually bring more Chinese youth into action for the protection of the environment.

According to the United Nations Environmental Program (UNEP), the population of young Chinese between 14 and 28 has reached 300 million, larger than the entire population in the United States and Canada.

"As the largest youth group in the world, Chinese youth are not only shouldering the historical mission of realizing China's modernization but also have to make their due contributions to easing the contradictions between economic development and environmental protection and to solving the environmental problems in China and in the world," said 29-year-old Luo Jianhua, one of the organizers of the forum.

According to Luo, the forum has received 360 papers for the meeting. "Most of the articles are about flashpoints of global environmental problems as well as problems

associated with the high rate of development of the Chinese economy," he said.

Organizers at today's meeting distributed three documents including "Environmental Action of Chinese Youth for the 21st Century," "Green Declaration of Chinese Youth," and "Policy Proposals for Environmental Protection Under the Market Economy."

Ecologist Wang Yi, 30, one of the authors of the documents, said that four major problems such as environmental pollution, damage of the ecosystem, shortages of resources and overpopulation are handicapping China's sustainable economic and social development. "China must make a quick shift from the traditional path of development to a path of sustainable development," he said.

At today's meeting, participants called on the youth of the country to set up all kinds of youth environmental protection groups and put forward their specific plans for environmental protection and control of environmental problems.

According to organizers of the meeting, in order to sustain the action, a coordinating group of the Chinese youth forum on the environment will be set up after the meeting. The group will be responsible for formulating follow-up action programs, promoting exchange of information, organizing cooperative research, coordinating academic practices and raising funds.

Ms. Elizabeth Dowdeswell, executive director of UNEP, sent a congratulatory letter to the forum, saying that involvement and active participation of Chinese youth in the environment and decision-making processes will set a worthy example for other developing countries to follow.

Ministry Promises Increase in Nature Reserves

HK0306091093 Beijing CHINA DAILY in English 3 Jun 93 p 3

[Report by staff reporter Wang Yonghong: "Nature Reserves To Number 1,000 Soon"]

[Excerpt] To further protect wildlife and plants, China has decided to increase to 1,000 from a little over 700 the number of its nature reserves by the year 2000, according to an official from the Ministry of Forestry.

"By then, nearly all of China's rare and endemic wildlife, species and ecological systems will be put under protection in these reserves, of which 200 will be at State level," said Jiang Hong, director-general of the Department of the Protection of Wildlife, Woods and Plants under the Ministry of Forestry, yesterday.

By the end of 1992, China had established 708 nature reserves, which cover 56 million hectares, 5.6 percent of the country's territory, according to the official.

And 77 reserves at State level were set up by the central government, such as Wolong in Sichuan Province, Changbai Mountain in Northeast China, and Xishuangbannain Yunnan Province.

These State-level reserves serve as models for the country and have been playing a substantial and leading role in environmental conservation, said Jiang.

At the same time, 631 regional reserves have been established by local governments around the country, according to the official.

"The establishment of reserves has yielded agreeable ecological, social and economic results with multiple purposes for ecological protection, environmental improvement, research, breeding, sightseeing and international co-operation," said the official.

For the protection of giant pandas, 13 special reserves were set up in the provinces of Sichuan, Shaanxi and Gansu. Only about 1,000 pandas still exist in China.

And more than 70 wetland reserves have been built across the country. These provide safe habitats for rare birds, such as the red-crowned crane and the white crane.

Recently, the Ministry of Forestry decided to build the Qiangtang area in the northern part of Tibet into the biggest zoo in the world for animals living in the highlands.

As a result, the Qiangtang reserve and the existing such reserve in Aerjin Mountain in Xinjiang Uygur Autonomous Region will be China's largest reserves. They will cover 28 million hectares and protect more than 60 wildlife species, such as the yak, antelope, snow leopard, and brown bear.

Government Bans Trade of Rhinoceros Horns, Tiger Bones

OW0206223293 Beijing XINHUA in English 1500 GMT 2 Jun 93

[Text] The State Council issued last Saturday [29 May] a circular throughout China, banning trade of rhinoceros horns and tiger bones.

The circular says that rhinoceroses and tigers are endangered and internationally protected wildlife. In order to protect the world's rare animal species, the State Council of the People's Republic of China reiterates the banning of all activities relating to the trade of rhinoceros horns and tiger bones.

According to the circular, the import and export of rhinoceros horns and tiger bones including recognizable parts of rhinoceros horns or tiger bones and medicines and arts and crafts that contain rhinoceros horns or tiger bones are all banned. Any unit or individual is not allowed to transport, carry or post rhinoceros horns or tiger bones across the border of the country.

Sales, purchases, transportation, carrying and posting of rhinoceros horns and tiger bones are all prohibited. Those stored rhinoceros horns and tiger bones should be sorted out, re-registered and sealed up for safekeeping.

Rhinoceros horns and tiger bones are no longer allowed to be used to make medicines. Those finished medicines containing elements of rhinoceros horns and tiger bones should be sealed up for safekeeping within half a year since the day when the circular is issued.

The circular says the research for development of substitutes of rhinoceros horns and tiger bones in medical use will be encouraged. When rhinoceros horns or tiger bones are needed in such research under special circumstances, it is necessary to get approval from the Ministry of Public Health, to report to the Ministry of Forestry for the record and to be supervised by the local administration departments of the forestry industry.

Those violate the circular will be published according to the laws concerned of the country, the circular says.

The circular got into effect as of the day when it was issued.

UNDP To Help Phase Out Ozone-Depleting Substance Production

OW2404113693 Beijing XINHUA in English 0819 GMT 24 Apr 93

[Text] The United Nations Development Program (UNDP) will assist China in developing a 2.1 billion U.S. dollar program to phase out use of ozone-depleting substances, according to UNDP sources today.

Under a comprehensive action plan mapped out with assistance from UNDP, China has embarked on a massive effort to completely phase out the use of ozone-depleting substances (ODS) by the year 2010.

Funding for China's ODS program—estimated to cost 2.1 billion U.S. dollars over the next 17 years—will be provided by a multilateral fund set up under the Montreal Protocol.

This fund helps developing countries meet the incremental costs of switching from using chlorofluorocarbons and halons to other chemical substances that do not deplete the ozone layer.

Among developing countries, China is the largest consumer and producer of ODS, which are used in everything from refrigerators and fire extinguishers to aerosol cans and foam for mattresses, seat cushions and food packaging.

In 1991, the Chinese Government selected UNDP as the lead agency to help it develop a comprehensive country program aimed at completely phasing out the use of ODS and promoting the production of more ozone-friendly chemical substitutes.

The action plan, which begins to be implemented this year, will involve more than 150 projects.

At the regulatory level, China will set up a permit and quota system requiring government permission for the manufacture of any ODS products.

The permit system will require ODS manufacturers to follow the phase-out schedule, or risk being shut down or penalized.

The government plans to restrict the import of ODS, raise taxes and prices for them, and strengthen laws aimed at controlling their use.

The government also plans to support the local development and production of ODS substitutes and encourage investment policies that promote ozone-layer protection.

A special fund will be set up to support scientists and research institutions in the development of technologies that can contribute to the phase-out effort.

Public awareness about the importance of protecting the ozone layer will be raised through TV, radio, newspaper and magazine campaigns.

The government will also issue a green label for products that are either ODS-free or made with ODS substitutes. China has set target dates to end the use of ODS in aerosol cans by 1997 and the foam industry by the year 2000. All phase-out efforts are expected to be completed in the year 2010.

Presented by the Chinese Government at the ninth meeting of the executive committee of the multilateral fund held in Montreal last month, the UNDP-assisted country program was praised for its integrated mix of policies, incentives and technologies. It has been designated to serve as a model for other large countries in their effort to phase out ODS.

Campaign Launched To Protect Wildlife

OW1905135593 Beijing XINHUA in English 1327 GMT 19 May 93

[Text] China has launched a nationwide campaign to crack down hard on illegal hunting, trading and transporting of wildlife.

Meng Sha, an official in charge of wildlife protection under the Ministry of Forestry, said that a recent circular issued by the ministry urged local forestry departments to oversee the implementation of laws and regulations on wild animal protection.

According to the circular, local forestry departments should work together with local law enforcement departments such as the Public Security Bureau.

In a recent discussion with wildlife protection officials from several provinces, Vice-Minister of Forestry Shen

Maocheng said illegal killing, trading and transporting of wild animals is quite serious in some parts of the country.

The vice-minister attributed the illegal hunting and trading to a lack of a sense of environmental protection and law by many people.

The campaign should serve as a chance to put an end to rampant hunting and trading of wildlife, but also an opportunity to give mass publicity to the importance of protecting wild animals, said the circular.

Since last winter, a number of people violating the law on wildlife protection in Guangdong Province, the Tibet Autonomous Region, Shaanxi Province, Heilongjiang Province and Fujian Province, have been punished according to law.

The Environmental Protection Committee under the State Council plans to hold a national telephone conference at an appropriate time in the future on environmental protection, particularly on the protection of wildlife.

An inspection tour of provinces and regions where the illegal hunting and trading of wildlife is rampant is also planned by the groups, which consist of officials or high-ranking legislators from the Ministry of Forestry, the Standing Committee of the National People's Congress and other departments in the Chinese Government.

Government Strengthens Environmental Protection Legislation

OW0406085593 Beijing XINHUA in English 0825 GMT 4 Jun 93

[Text] China has been strengthening environmental protection legislation over the past 20 years, an official said here at a recent conference on acid rain control.

China has drafted and publicized more than 100 laws and regulations concerning environmental protection since it held the first working conference on environmental protection in 1973, according to Wang Yangzu, vice-director of the State Bureau of Environmental Protection.

So far the National People's Congress and its standing committee, the highest power organs in China, have passed and publicized Law on Environmental Protection, Law on the Prevention and Control of Water Pollution, Law on the Prevention and Treatment of Air Pollution and Law on the Marine Environmental Protection.

Governments of various provinces, autonomous regions and municipalities have also worked out local rules and regulations on environmental protection.

So far the State Council has stipulated and declared more than 200 standards on environmental protection with reference to international standards.

Over the past 10 years, the output value of marine economy has quadrupled in the coastal areas of the country thanks to the well-protected environment in coastal waters.

AUSTRALIA

Government Renews Pressure on UK To Clean Up Maralinga

BK2505060693 Melbourne Radio Australia in English 0500 GMT 25 May 93

[Text] The Australian Government is renewing pressure on Britain to help clean up atomic bomb test sites at Maralinga in South Australia. Luke Lola reports the campaign begins today with a visit to the plutonium contaminated areas and the discussions with the local people by primary industry minister, Simon Crean.

During a visit to London next month, Mr. Crean hopes to raise Australia's argument that the UK is legally and morally obliged to make a substantial contribution to clean up and bear the cost of compensating the traditional landowners.

Foreign Affairs Minister Gareth Evans also plans talks on Maralinga when he visits London next month.

JAPAN

Tokyo To Give 6 Billion Yen in Environmental Aid to China

OW0206150193 Tokyo KYODO in English 1446 GMT 2 Jun 93

[Text] Japan will extend 6 billion yen in aid to China during the current fiscal year to help environmental protection programs, a Japanese trade official said Wednesday.

Yuji Tanahashi, vice minister of international trade and industry, told reporters the assistance is based on a "green aid project" designed to help developing countries implement environmental protection measures.

The project was agreed on in April last year when then Japanese International Trade and Industry Minister Kozo Watanabe visited China.

In fiscal 1992 which ended March 31, Japan set aside 1 billion yen for such aid to China.

The substantial year-on-year increase in aid for fiscal 1993 has apparently been prompted by allegations that acid rain in Japan was caused by air pollution in China.

MITI Advisory Bodies Agree on Global Environmental Issues

93WN0173A Tokyo TSUSANSHO KOHO in Japanese 9, 10 Nov 92 pp 3-13; 3-8

[Two-part article by the Minister's Secretariat Planning Office: Matters of study by the Planning Subcommittee (Meetings 3-5) of the Industrial Structure Inquiry Board, Comprehensive Energy Inquiry Board, and Industrial Technology Inquiry Commission]

[Text]

Introduction

As a result of lively discussion on global environmental issues, the following points on environmental problems, beginning with the issue of global warming, were generally agreed upon at the time of the second joint session:

- Because the global environment is the basis of human existence and activity, it is necessary to tackle global environmental problems as cultural problems, and consider these issues from a long-term and comprehensive point of view.
- Conformity of responses to long-term views on global restoration plans should be taken into consideration when studying ways to deal with the problem prior to 2000.
- To say the least, it will be far from simple to make both environmental protection and economic growth compatible in the short term (from now until 2000).
- Neither environmental protection or economic growth have absolute goals, nor should one be considered superior to the other; we must study how to make them compatible.
- Immediate promotion of energy conservation policies and alternative energy policies should be considered as tentative measures.
- However, rather than relying only on energy conservation and alternative energy policies to solve global environmental problems, we must think of comprehensive responses through a variety of policies.
- Technological breakthroughs are necessary and indispensable for fundamental resolutions to environmental problems, and promotion of technological development is necessary in the mid and long term.
- If we consider environmental problems to be global, it is important to promote international cooperation, beginning with technology transfer to developing countries.

Based on the above assertions, the Planning Subcommittee decided to study long-term and comprehensive measures that are generally balanced and have the potential to be implemented. Listed below are subjects studied during the subcommittee's third through fifth meetings, presented as individual measures that are components of a comprehensive policy.

I. Pressing Issues

- Energy conservation policies: Rationalization of energy use (efforts to conserve energy) is the basis of policies for reducing the burden on the environment while maintaining the vitality of industrialactivity and an affluent standard of living. Therefore plans to drastically expand policies for efficient utilization of energy within the fields of industry, public welfare, and transportation are being investigated.
- Reforming the energy supply structure: Expanding the supply of energy without CO_2 emissions (or reducing the amount of CO_2) is necessary in order to guarantee economic growth and the supply of needed

energy while controlling the burden on the environment. Therefore plans for re-introducing and promoting types of energy that can be immediately brought in, such as nuclear power, natural gas, and new and reusable energy sources, are being studied.

- Building a pro-environment socioeconomic structure: In order to implement compatible economic development and environmental preservation, each individual citizen, industry, and the government must reconsider its values and lifestyle with regard to comfort. Using these respective viewpoints, the way a socioeconomic system should be structured is being studied, when based on voluntary actions that take the environment into consideration, such as conservation of energy, promotion of recycling, long-term use of products, and rationalization of packaging.
- Introduction and promotion of technologies for energy and the environment that can be put to practical use: Current technologies do not take into account practical use, such as some technologies for efficient energy use and energy that eliminates or reduces CO_2 emissions. Speedy promotion of delayed (for reasons other than cost) practical applications for technology that has been introduced is being investigated.
- International cooperation: Because a single nation's plans for resolving global environmental problems are inadequate, and in view of the importance of international coordinated efforts, the content and methods for technological and financial cooperation for comprehensive support for energy and environmental policies are being studied, such as efficient utilization of energy in developing countries; in addition, plans for stimulating environmental policy efforts on the part of the country in question are also being studied.
- Enriching scientific knowledge: Plans for comprehensive and speedy promotion of investigation and research are being studied in order to enrich scientific knowledge, as basic preparation for solving global environmental problems.

II. Mid- and Long-Term Issues

- Technology development: Under plans for global restoration, measures for comprehensive and speedy promotion of innovative technology development in the field of energy are being studied, for fundamental solutions to global environmental problems.
- Facing long-term energy supply restrictions: Because providing expanded supplies of energy that do not emit CO_2 is necessary for meeting the increasing supply and demand for energy which accompanies future expansion in economic activity, the feasibility of increasing supplies of non-fossil fuel sources of energy, and plans for increasing these supplies, are being studied.

Reforming the Energy Supply and Demand Structure. Part One: Reforming the Structure of Energy Consumption

I. Drastic Expansion of Policies for Efficient Utilization of Energy

1. Fundamental Views

Direct controls on the quantity of CO_2 emissions, where removal of NO_x and SO_x is difficult, is tied to controls on industrial activities in which energy is used and to general regulations on the standard of living.

In order to maintain the vitality of industrial activity and deal with an affluent standard of living without instituting sacrifices, policies which are modeled after the principles outlined below are appropriate as the basis of efforts for "rationalizing energy use" (improving the efficiency of energy consumption) in order to produce greater benefits from less energy:

- Encouragement methods: If policies are allowed to focus on methods that actively encourage independent efforts by business, then because of the need for renewed efforts by those businesses which have made reasonable efforts thus far, it is important to concentrate on measures that give as much support as is politically possible. Furthermore, with regard to measures guaranteeing efficiency of efforts by business, it is appropriate to have a system that values as much as possible the independence of business people. At the same time, it is important to adopt measures for political support for development of technology near the application stage, in order to hasten practical use of technologies for efficient utilization of energy.
- Policies for every kind of sector: Because it has been difficult in the past to anticipate large-scale improvements in energy efficiency in the industrial sector, and because the relative weight of energy consumption within the public sector and the transportation sector has increased, it is important to have policies that take into account each of these fields. Moreover, as we approach 2000, and a situation where energy conservation becomes even more important, renewed improvement efforts are required, even for sectors that have up until now made reasonable efforts to rationalize energy use.
- From facilities to systems: Under existing conditions where the margin of effectiveness of current energy conservation drops for individual facilities, one policy target is pursuing expansion of industrial systems, building systems, and regional and social systems as additions to individual facilities. For example, a system method based on a new concept that allocates waste heat produced by industrial processes for external energy demand is being pursued.

2. Issues and Policies for Every Sector of Consumption

(1) Policies in the Industrial Sector

In the industrial sector, which accounts for over half of total energy consumption, a remarkable improvement in primary units could be seen during the first half of the 1980's, by adding the primary factors that changed the industrial structure to efforts to rationalize energy use under existing promotional measures. However, the following conditional factors exist for renewed improvement efforts:

- Investment in energy conservation yielding big returns has run its course, due to past efforts.

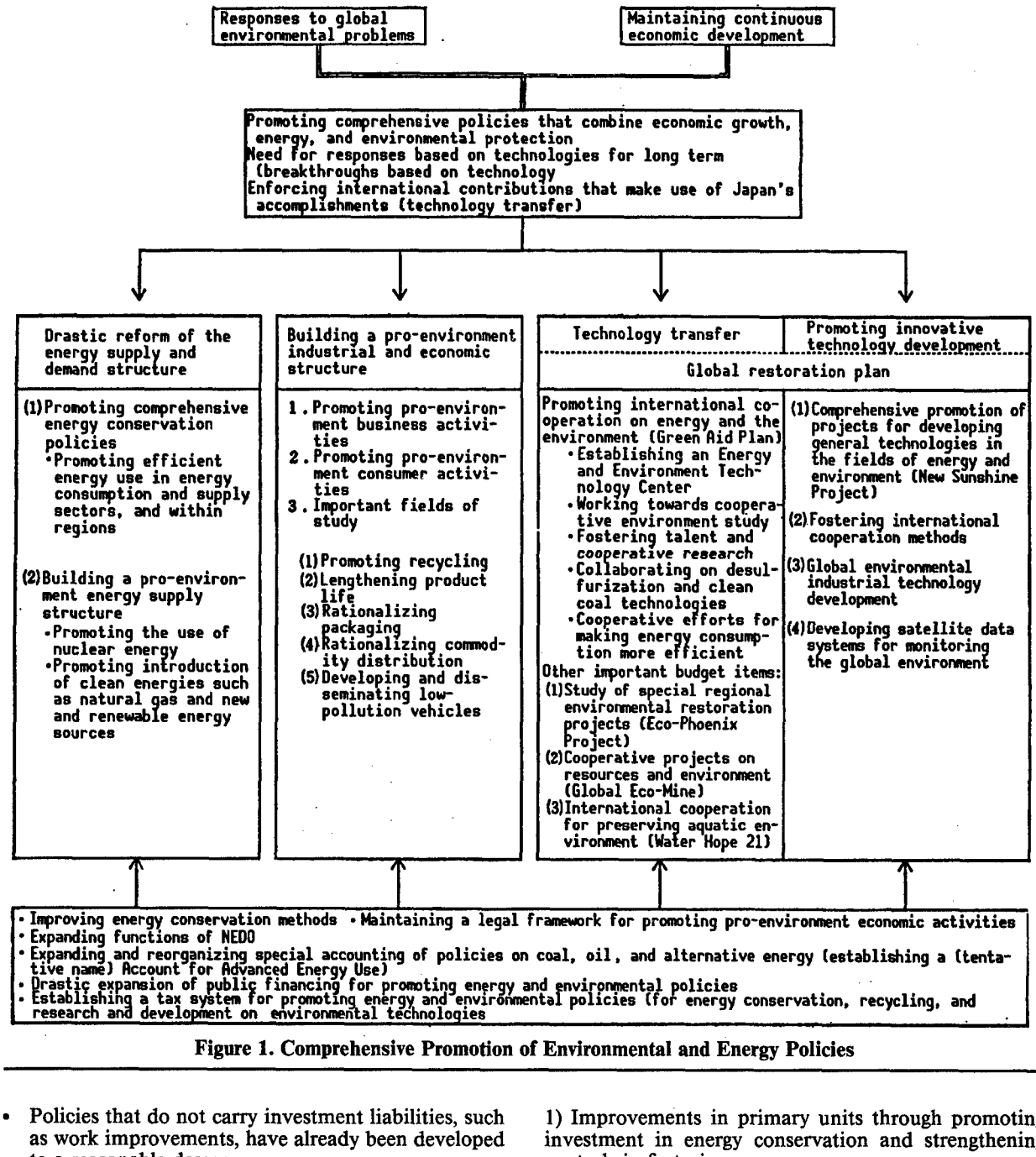

Figure 1. Comprehensive Promotion of Environmental and Energy Policies

- Policies that do not carry investment liabilities, such as work improvements, have already been developed to a reasonable degree.
- Primary causes of increases in energy use, such as adding value to products and improving the work environment, are increasing.

From now on, it will be necessary to adopt policies for developing new technology, promoting and strengthening controls on investment in factory energy conservation, and expediting replacement of outdated, widely used equipment. Concrete policies are discussed below.

1) Improvements in primary units through promoting investment in energy conservation and strengthening controls in factories:

- Promotional measures beyond current policies for investment need to be adopted, based on relevant plans for enterprises that independently plan and implement projects to raise the effectiveness of energy conservation, which is a large part of a factory's total sum.
- In factories designated for energy management based on energy conservation methods, there is a need to employ measures to raise efficiency in rationalization

of energy use, through investment in facilities and intensive management. (Note: "factories designated for energy management" are factories and enterprises provided for industrial use, which belong to the manufacturing industry and industries supplying electricity; or factories and enterprises in which the amount of energy used in a year exceeds 3,000 kl of fuel when converted to crude oil, or 12 million kWh of electricity. These are determined by the MITI minister; there are about 3,200 at the present time.)

- Measures to promote investment are needed in order to raise energy conversion efficiency in sectors that supply energy (especially the power generation sector).

2) Expediting replacement of outdated, widely used equipment that consume energy:

- Promotional measures are needed in the future, in order to expedite replacement of outdated, low-efficiency equipment that is being maintained by small and medium enterprises; this includes widely used industrial equipment such as industrial furnaces, boilers, and various kinds of machinery using motors (these three types of equipment account for 70% of total energy use in the industrial sector).

3) Developing high-performance industrial furnaces and boilers:

- Promotion of development of new industrial furnaces and boilers in which the energy loss approaches zero is necessary, through rapid improvements in combustion control technology.

(2) Policies in the Public and Business Sectors

The relative weight of energy consumption by the public and business sector is 10% of total energy consumption but has shown high growth in recent years. Moreover, in the midst of more and more advances in the primary causes of increased energy use, such as the move towards a service economy, office automation, and the pursuit of amenities, the importance of policies for the business sector has increased. Concrete policies are discussed below.

1) Increasing efficiency of energy use in buildings used by business:

- Promotional policies beyond those currently in place need to be adopted, for investment in construction based on projects for owners who independently plan and implement construction where the energy efficiency of the entire building greatly exceeds average standards.
- In addition, during construction of larger than standard sized buildings, it is important to incorporate measures that stimulate energy efficient construction into a system of energy conservation.

2) Improving efficiency of energy consumption in business machines:

- Supplemental designation for special machinery based on energy conservation methods, and improvements once mid-term goals to improveefficiency are determined, are necessary. (Note: "special machinery" are used in large quantities in Japan, and are machines and tools that consume a fair amount of energy. These are determined by government ordinance as items where improving efficiency of energy consumption is particularly critical. At the present time, gasoline automobiles and air conditioners are designated items.)
- Establishing a system that guarantees thorough demonstration of energy efficiency, and promoting technological development that contributes to improvements in efficiency, are necessary.

(3) Policies for the Public Welfare and Domestic Sectors

Current energy consumption by the public welfare and domestic sectors show renewed growth in home heating and cooling demand, and even more widespread use of electrical appliances is forecasted, which follows changes in lifestyle. Rather than sacrificing our affluent standard of living by restricting the popularity of machinery (demand for a second or third, for example) or the amount of energy used, an approach that curbs to a minimum the consumption of energy, through rationalization and increased efficiency, is appropriate. Concrete policies are discussed below.

1) Rationalizing domestic energy use through measures such as increased insulation:

- Following the February 1992 notification of new standards on increasing home insulation, the Housing Loan Corporation instituted a premium financing system in April. Due to this system, a reasonable level of energy efficiency is expected.
- Because of strong promotion of not only the insulation structure, but popularization of homes incorporating various types of guided systems, it is important to support construction of homes that have introduced technologies that are past the development stage in contributing to efficient domestic use of energy, such as waste heat utilization systems and solar power systems.

2) Improving energy efficiency of home appliances:

- Supplemental designation for special machinery based on energy conservation methods is needed, as are improvements once mid-term goals to improve efficiency are determined.
- Establishing a system that guarantees thorough demonstration of energy efficiency, and promoting technological development that contributes to improvements in efficiency are necessary.

3) Raising public consciousness through better public information:

- In addition to drastic expansion of information on energy conservation that is currently available, there is a need to raise public consciousness through detailed policies for every objective, such as strengthening energy education in the schools.

(4). Policies for the Transportation Sector

Energy consumption in the transportation sector accounts for about one-fourth of the total energy consumed, and in recent years, its remarkable rate of growth has exceeded that of other sectors. Automobiles in particular, which account for about 85% of energy consumed by the transportation sector, are forecasted to greatly raise demand in the future as well, and a very important question is how to meet the increase in the amount of fuel consumed by automobiles without suppressing economic activity and the standard of living. Below are concrete policies.

1) Making commodity distribution efficient, and promoting modal shifts:

- In the future, policies to make distribution more efficient includes indicating guidelines for rationalizing commodity distribution; promoting information, standardization, and joint transportation and distribution by small and medium industry according to methods making distribution more efficient; and promoting support for investment made by individuals who make distribution more efficient.
- In addition to these policies, in response to increases in inter- and intra-city commodity distribution, there will be a need for a policy that provides wide-area distribution points that are incorporated into a high-speed transport system, as the focus for constructing an efficient distribution network.
- In order to hasten a modal shift in the field of freight shipping, and a shift to public transportation vehicles in the field of passenger transport, intense promotion of transportation policies for providing rail and shipping facilities, and for harmonious cooperation with automobile traffic, is expected.

2) Improving automobile fuel consumption:

- Along with study results of collected experts on the joint MITI and Ministry of Transportation inquiry board that met in June 1992, standards for improving fuel efficiency by 2000 in gasoline-powered automobiles designated as "special machinery" based on energy conservation methods were announced; currently, appropriate implementation of these standards is necessary.
- Along with setting and revising goals for improving fuel efficiency in gasoline trucks, and studying the necessity and feasibility of setting target values for other vehicles, it is necessary to provide a system that ensures accurate indications of fuel consumption, and promotes technology development that contributes to improving fuel consumption.

(5) Policies on Technology (Policies That Span Sectors)

At the present time, work that aims for basic research and partial application of large-scale technologies with a long lead time is continuing, centered on the "Moonlight Project" for technology development on energy conservation. In the future, this kind of promotion of efficient, high speed projects based on the "New Sunshine Project" is important, but in addition, promotion of technology development for 2000, the target date for pressing policies, is also an important issue. Concrete policies are given below.

- Establishing a system to partially subsidize the costs of public enterprises that engage in developing applicable technologies contributing to efficient energy use is necessary. Examples include: technologies for efficient energy use in manufacturing processes, such as saline electrolysis, and technologies for high-performance insulating materials and high-efficiency cooling mediums.

3. Effects of Lowering Energy Consumption by Radical Expansion of Policies for Efficient Energy Use

For energy demand objectives, which are prerequisites for alternative energy supply objectives (achieving this is indispensable for achieving targeted CO_2 emissions for the "Global Warming Prevention Project"), final energy consumption in 2000 will be 391 million kl (same or less, converted to crude oil). Final energy consumption in the year 2000, if based on current efforts without special steps to strengthen new policies, is estimated to be 420 to 430 million kl, if the growth rate of recent years is taken into account. Consequently, between the goal and the trend, a gap of about 3,000 to 4,000 kl is expected toarise.

Under the premise that these previously described energy utilization policies will be sufficiently ingrained into the socioeconomic system by 2000, the amount of energy consumption that can be reduced, determined by combining the calculated effects of reduced energy consumption estimated for each policy for the year 2000, is estimated to be 30 million kl, with the industrial sector accounting for 13.1 million kl + a, the public sector 8.2 million kl + a, and the transportation sector 9.5 million kl + a.

Achieving energy demand goals by 2000 will not be easy, based on these estimates, but in addition to devoting maximum efforts into policies for efficient energy use in all sectors, we can add: introducing technology development that aids energy efficiency, making the supply sector more efficient, which includes forming a pro-environment energy community (described below), and changing the behavior of enterprises and consumers that cause societal trends, including government actions. If these other factors work in a desirable direction, closing the gap between trends and goals is not thought to be impossible.

From now on, in addition to reaching the goals described in the Global Warming Prevention Plan, which calls for stabilizing the amount of CO_2 emitted per person to 1990 levels, it will be extremely important to tackle renewed expansion and continuation of energy efficiency policies for every sector.

II. New Concepts for Regional Energy Efficiency Policies

1. A Plan for a Pro-Environment Energy Community

Two-thirds of Japan's total primary energy supplies (500 million kl, converted to crude oil) is a loss, but by changing the proportion by 1%, to 35% usable energy and 65% loss, 14 million kl of energy (converted to crude oil) can be saved.

As indicated in the June 1990 interim report of the Comprehensive Energy Inquiry Board, "Strengthening the entire energy system, from energy supply to final consumption, and strengthening policies to improve efficient utilization of energy, with objectives that extend to our social system" are indispensable as part of a comprehensive energy conservation policy. From this kind of viewpoint, we should work towards maximum practical use of surplus energy from waste heat and other sources; it is important to organize a system for generating as much electricity as possible before heat is produced, along with maximum use of heat produced by electricity generation, and to promote construction of an energy system that combines heat use in stages. Concrete policies are listed below (policies for promoting the formation of an pro-environment energy community).

1) The Concept of a Pro-Environment Energy Community

- Taking into consideration the fact that distance limitations exist for heat transport, due to factors such as adiabatic loss of heat, and promoting maintenance of an energy system that conserves energy with large-scale regional cogeneration heat supply facilities, industrial parks using cascades, high-efficiency waste to energy facilities, and supply facilities that utilize surplus energy from power plants and factories.
- As for this kind of energy system that conserves energy, other important factors that constitute the municipal structure are effective; for example, waste collection and disposal systems, the position of buildings that take into account the effectiveness of naturalcirculation cooling, road maintenance, and systematic maintenance that makes allowances for green areas and organic coordination. Promoting the formation of a "Pro-Environment Energy Community" as a so-called systemization policy is planned.
- At this time, utilization of surplus energy is weak in terms of essential profitability, even at the same time it has a profile for keeping basic lifestyle infrastructure strong for the public interest, such as providing heat supply pipelines. Because we cannot expect sufficient promotion by relying only on public welfare activities based on economic rationality, it is vital that we adopt systematic, stable policies for energy.

2) Concrete details on the Pro-Environment Energy Community:

- Promoting maintenance of the following facilities as part of an energy system: large-scale regional cogeneration heat supply facilities, industrial parks utilizing cascades, high-efficiency waste to heat facilities, and facilities that utilize surplus energy from power plants and factories.
- Regional heat supply from energy not yet utilized, by current promotion based on the same goals: radical expansion of policies to promote spread of facilities.
- Details of aid policies include:
  - — Budget: promoting the formation of a pro-environment energy community and spread of a regional heat supply system using energy not yet utilized
  - — Low-interest loans: Japan Development Bank, Hokkaido and Tohoku Development Corporation
  - — Tax exemption: application of the current favorable tax system
  - — Other: systematic environmental maintenance

To give an example of an energy system that conserves energy, calculations for a large-scale regional cogeneration heat supply system show that conservation of 14% can be achieved compared to current energy supply methods. By introducing policies to promote this kind of energy conservation system, it is possible to build a social system that saves nearly a million kl of primary energy input by the year 2000.

Reforming the Energy Supply and Demand Structure. Part Two: Expediting the Introduction of Non-Fossil Fuels

1. Promoting Nuclear Energy

The urgent issue in terms of energy supply is promoting the placement of nuclear power plants with zero CO_2 load, in order to reach the goal of controlling CO_2 emissions as outlined in the Global Warming Prevention Plan. Development goals for nuclear power generation, as outlined in the Electrical Industry Inquiry Board's Supply and Demand Committee interim report (June 1990) include:

- Facility capacity: 50 million kW by the end of 2000; 72 million kW by the end of 2010.
- Amount of power generated: 329 billion kWh by the end of 2000; 473 billion kWh by the end of 2010.

When all nuclear power plants currently operating, under construction, or preparing for the start of construction are combined, approximately 46 million kW of capacity are assured, but it will be necessary to put maximum efforts into achieving the goals set out for 2000 and 2010.

When looking at the recent conditions surrounding the selection of nuclear power sites, there have been no new sites presented before the Diet since the Shiga plant in 1986, but an agreement for compensation to the fishing industry at the Higashidori site in Aomori Prefecture wasjust concluded on 21 August, which is good news for new sites as well as for the possibility of expanding existing sites. A new viewpoint on the coexistence of nuclear power and local areas can be included with

steady promotion of construction currently under way, and policies will make efforts to achieve the goals stated above.

Until now, in addition to maintenance of facilities for public use such as roads, harbors, and schools subsidized through policies to promote sites for power sources, "soft" policies for promoting regional power, such as marketing, technology introduction, and event activities have just been adopted, through subsidies to aid and foster regional power industries. But judging from the situation of recent years, where the placement of nuclear power plants has been delayed, it will be necessary to tackle the following issues:

- In contrast to the established value that parties with land rights and fishing rights receive for plant placement, due to the rise in prices for buying land and compensating the fishing industry, the value for other area residents with regard to the plant cannot be sufficiently quantified.
- Although each kind of subsidy is granted for selecting power plant sites, there are few concrete policies that link the power plants themselves with regional promotion, and their relationship is fundamentally separate. Consequently, during the initial stages of site selection, it is difficult for the utility to seize an opportunity for dialogue with the local area through direct participation in appropriate regional promotion.
- Although infrastructure maintenance is encouraged by means of aid for policies promoting site selection for power plants, young workers do not stay in local areas because industrial site selection is not encouraged, and long-term regional development is not tied in.
- Although public relations activities regarding the safety of each nuclear power plant site has expanded, at the national level, understanding and image improvement for nuclear power and regional nuclear power has been inadequate, and this results in thinking twice about each site.

In order to tackle the issues discussed above, the following concrete policies will be adopted next year and following years:

1) Increasing the value for area residents (large-scale expansion of subsidies for areas surrounding nuclear power facilities): in order to increase the value for area residents in regions with nuclear power, and in turn promote industrial location, subsidies discussed above will be expanded, and in cases where nuclear power facilities undergo expansion, the communities in which the power plants are located will be granted appropriate subsidies amounting to a 50% reduction of actual electrical rates. (Currently about 15%)

2) Promotion of a plan for regionally interdependent power plants: in order to encourage regional promotion that puts power plant resources to practical use (examples: cultivation that utilizes hot waste water and steam, and research facilities utilizing human resources), subsidies will be established to aid planning, pilot enterprises, and facilities construction. This will promote dialogue between the area and the utility personnel.

3) Expanding special aid policies for site selection for enterprises: in order to promote site selection by enterprises in nuclear power areas, large-scale expansion of grants and low-interest financing for enterprises that do locate in the area.

4) Expanding nationwide public relations: in addition to publicrelations activity for each site, which is now taking place, efforts will be made to increase understanding with regard to nuclear power and improving the image of areas with nuclear power in all regions, whether or not they have nuclear power plant sites, through improving energy education and offering appropriate information at the national level.

2. Promotion of Other Non-Fossil Fuel Energy Sources

Renewed acceleration of developing and introducing natural gas and new and renewable energy is necessary, in terms of environmental restrictions and stable supplies of energy.

(1) New Energy

As a result of active promotion of technological developments such as the current Sunshine and Moonlight Projects, basic technology on solar energy and fuel cells has been established, and in addition, the cost of photovoltaic cells has been reduced by nearly one-tenth in the last 10 years. Furthermore, the field test business has been established this year, and appropriate measures to announce instructions for creating a purchase system for, and active purchase of, surplus energy by utilities have been strengthened.

However, because economical spread of these technologies in the future remains a core issue, active promotion of long-term innovative technology development must be combined with even more promotion of technologies that aim to reduce costs and improve reliability. Along with renewed promotion of applications development, it is necessary to expand guided introduction and to study general aid measures as listed below, in addition to policies already implemented.

- strengthening measures to initiate and promote expansion of field tests for new energy production
- encouraging initiatives by utility industry personnel
- systematic environmental maintenance
- actively promoting purchase of surplus power

(2) Vehicles Using Fossil Fuel Substitutes

Field tests for electric cars and automobiles using CNG and methanol have been expanded in 1992, and policies for a distribution system and for simple quantifying of the diffusion of these vehicles will be a future issue.

(3) Renewable Energy Sources Such as Hydropower and Geothermal Power

As energy sources with assured quantities, it is vital to promote accelerated introduction and development of these sources. Because development of suitable amounts of energy by means of hydropower are thought to be possible, due to strengthening of policies on hydropower, it is important to plan and develop improvements in economy with continued aid measures. In addition, expanding and strengthening aid measures for reducing development risks and improving the economy of geothermal power is necessary.

Building a Pro-Environment Socioeconomic Structure

1. Introduction

According to the discussions so far, in order to achieve energy supply and demand goals by 2000, and really address both economic development and the global warming problem, it will be necessary to put great effort into policies for energy efficiency and steady promotion of the resultsof technology development, and to change the current socioeconomic structure itself into one which takes the environment into consideration.

However, individual policies have already been adopted for various environmental problems other than global warming in response to the respective characteristics of each problem, and solid promotion of these measures is fundamental. But with global-scale environmental problems caused by the expansion of human activity expected to worsen, such as global population growth and economic growth, in addition to individual policies, it is necessary to build a pro-environment socioeconomic structure in which enterprises and consumers, according to their respective situations, voluntarily behave in a manner that takes the environment into consideration in order to make continued growth over the long term possible.

Furthermore, it is important not only to construct a socioeconomic system that does not place an excessive burden on the environment in order to reach energy supply and demand goals by 2000, but also to make continued long-term growth possible beyond 2000. In addition, in fields where policies are desired for efficient utilization of energy and resources, such as recycling, long-term product use, and appropriate packaging, it is important to have cooperation between business and consumers, and efforts by society as a whole.

2. Promoting Pro-Environment Business Activity

(1) The State of Business Activities

In the case of business, independent efforts on energy and environment problems are a factor of economic activity, and if we consider the role of these efforts within economic activities, and their capability to influence other economic objectives, they are expected to play a key role in solving problems.

Independent and objective efforts are already being made in this regard; the Keidanren's global environmental charter is an example.

(2) Future Policies

The government, while respecting these activities, is calling for a decision on a "Voluntary Plan" for business in order to accelerate these efforts. Furthermore, in order to promote independent efforts by entrepreneurs and make these efforts more efficient, drastic aid measures that include legal provisions are necessary, in addition to measures for estimated taxes and investment.

Moreover, "Anticipated Business Activities for Overseas Business Development" (10 items), for care of the environment by enterprises finding markets abroad, was revised, and more urgency is needed for independent environmental efforts by business.

The voluntary plan includes:

1) Fundamental guidelines for business activities, for management policies on the environment.

2) Items relating to maintenance of the organization within the company:maintaining both the company's internal structure and rules related to the environment.

3) Environmental consideration within business activities:

- Measures responding to separate issues:
  - — environmental consideration during site selection
  - — pollution prevention
  - — energy conservation
  - — promoting recycling and resource conservation
  - — lengthening product life
  - — eliminating use of specified freons
  - — introducing and developing production processes and products that reduce the burden on the environment
  - — rationalizing commodity distribution
  - — promoting technology development related to the environment
- Public relations, education, and corporate activities:
  - — public relations
  - — offering information
  - — educational activities for the whole company
  - — efforts towards company activities such as recycling
  - — aid for volunteer activities by employees
- Overseas activities:
  - — care for the environment during business activities abroad
  - — care for the environment during import and export

4) Other matters that should be taken into consideration when performing business activities, and responses to emergencies.

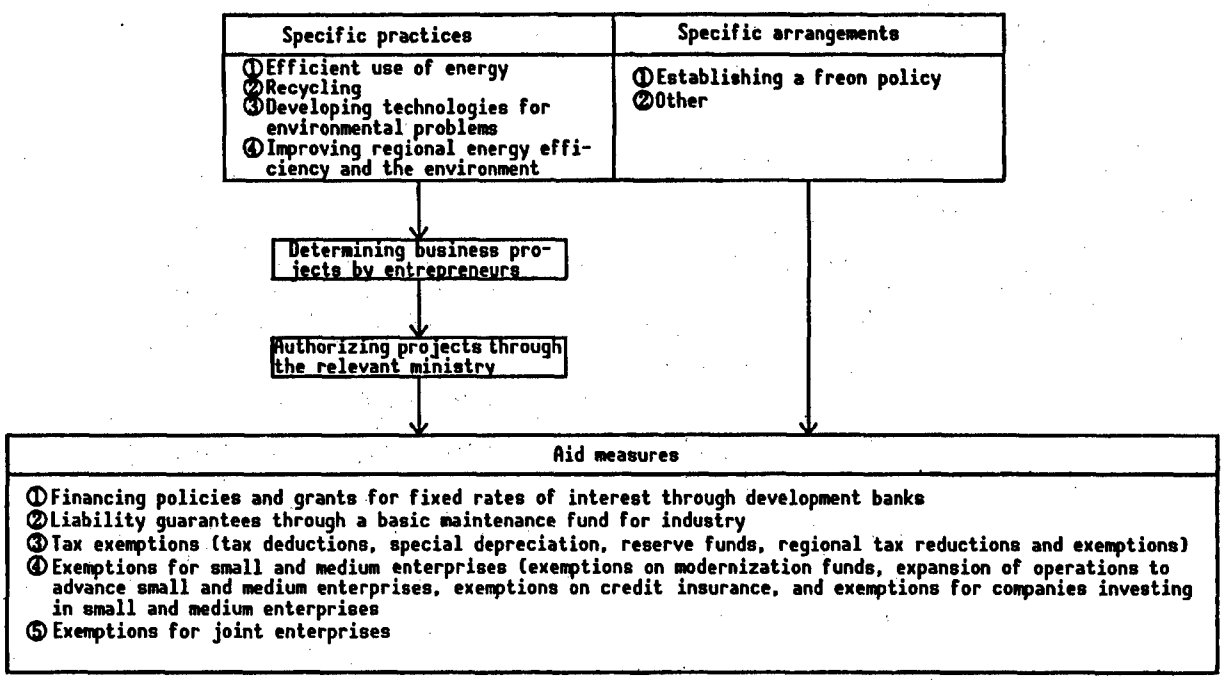

Figure 2. Image of the Legal Framework for Aiding Efficient Energy Use by Business, and Specific Pro- Environment Business Activities

3. Promoting Pro-Environment Consumer Activity

(1) Consumer Consciousness and Current Activities

Consumers are very concerned about environmental problems related to energy, but that concern is not necessarily connected with action.

Consumer behavior at the time of purchase: consumers value price and quality, and few take energy and the environment into consideration when selecting products. There are not many consumers that actively practice or cooperate in making packaging and delivery unnecessary, or paying a fee, although most understand the motivation for doing so.

Consumer behavior at the time of use does not always take energy conservation and environmental protection into consideration either.

There is room for improvement in consumer behavior when items are discarded, if a better, more convenient collection and recycling system is accessible.

(2) Policies to Promote Pro-Environment Consumer Activity

- Along with directly appealing to consumers, a social system that helps in clarifying appropriate consumer activities should be created.
- In order to stimulate rational consumer choice, it is important not only to work on raising consciousness, but also to effectively develop ties with actual activity. Therefore, it is necessary to promote the diffusion of various kinds of education, including consumer education in the schools, while making possible comprehension of the necessity and results of consumer activities, and methodically using a variety of mediums and easy to understand catch phrases.
- Each aspect of consumer behavior is guided and orchestrated by businessand government activities and systems. Therefore, it is important to encourage a system to aid consumer behavior and to maintain this system. For example, it will be necessary to promote appropriate selection by giving instructions, promoting correct product use by giving handling and warning instructions, and promoting separation and collection of trash by providing a collection system.
- In order to maintain an environment for promoting voluntary efforts among consumers, devising plans that create an environment for mutual exchanges and education between consumers, and fostering leadership within consumers in response to direct consultation with consumers, are necessary.

In concrete terms, it is necessary to comprehensively develop the following measures, and promote pro-environment consumer behavior.

1) Expanding consumer development and consumer education:

- Public relations for energy conservation (such as an Energy Conservation Center): In addition to the usual posters and pamphlets, a variety of public relations

activities will be promoted, including the use of various mass media such as newspapers, radio and television; using permanent and mobile exhibits on energy conservation; and holding research meetings and exhibitions by scholars and researchers with experience in energy. Creation of databases related to energy conservation technology and implementing an award system is encouraged.

- Deciding on guidelines for conserving and reusing resources: Determining guidelines and holding exhibitions on basic matters related to resource conservation and reuse, for smooth implementation of laws for promoting renewable resource use.
- Development and dissemination of a national "Clean Japan" movement: In order to call for active citizen participation in recycling as the focus of October as Recycling Month, awards will be established for: a contest on ideas for reusing resources, a conference to promote reuse of resources, creating a recycling symbol, creating and distributing pamphlets and posters, and business contributions to reuse of resources.
- Policies to promote reuse of non-ferrous metals: Committee meetings are being held in every part of Japan on policies to promote reuse of non-ferrous metal resources, and fact-finding surveys and study of systems has taken place on local and volunteer aluminum can recycling. At the same time know-how on recycling systems is being exchanged, public relations activities are taking place, such as creating pamphlets and posters aimed at consumers, and holding lectures.

2) Maintaining an organization and system for aiding consumer activities:

- Business activity for improving the field of waste paper recycling (Waste Paper Recycling Promotion Center): Promoting activities for putting a green symbol on products that use waste paper, in order to popularize these products; implementing model activities for establishing a system for community collection of waste office paper and for separation and collection; and encouraging lectures for improving quality through domestic separation and collection of waste paper. At the same time, needs surveys on recycled paper, and study of new uses for waste paper that is not recycled will be promoted.
- Activities to promote an environmental protection design council (Japan Industrial Design Promotion Council): Starting with experts and people with learning and experience, an environmental protection design council will be established and will include experts and people with learning and experience as well as representative from industry, government, and education, and consumer representatives. The council will investigate what an "eco-design" should be, and will make recommendations based on its results.
- Rationalizing displays and handling instructions: Along with promotion of investigative study on a uniform symbol and color to display across products, the symbol's display and handling instructions are being studied in order to promote its use on major household goods, with appropriate selection, use and disposal information.

3) Allowing for consumer self-motivation:

- Promoting policies on scattered waste materials (Clean Japan Center): Most scattered waste, such as empty cans and bottles, are found on the roads and in parks where they were discarded. Therefore, organized volunteer activities are being planned in cooperation with municipalities and related groups, in order to promote collection and recycling.

4. Important Fields for Independent Study, In Order to Build a Pro-Environment Socioeconomic Structure

(1) Promoting Recycling

Along with being an effective method for solving the waste problem in which disposal capacity has reached its limits, in recent years promoting the use of recycled materials has been helpful in responding to global environmental problems, through efficient use of limited energy resources.

Table 1. Energy and Resource Conservation Results Through Recycling

	waste paper	recycled aluminum	scrap metal	cullet
Quantity supplied in 1991 (t)	15,090,000	1,300,000	45,660,000	1,270,000
Reduction in energy (converted to crude oil)(l)	224	5,362	313	39
Effects of energy conservation (converted to crude oil)(kl)	3,380,000	6,970,000	14,320,000	50,000
Total	24,472,000 kl (7% of the 358 million kl consumed in 1991)			
Amount converted to crude oil purchases	¥403.4 billion (= $3.1 billion, 8.8% of the $35.2 billion of crude oil imported in 1990)(calculated as 1 barrel = $20, $1 = ¥130, 1 kl = 6.29 barrels)			
Amount converted to electricity consumed	Electricity consumed by 32.8 million households in one year saved (Number of households in 1988 = 37,580,000; amount of electricity consumed by one household in a year = 6,967,800 kcal)			

Not only within administrative and industrial circles, but a national movement supported through broad consumer cooperation is indispensable in promoting use of recycled materials. The policies described below have just been developed by the government and the public:

- Decisions on guidelines for waste disposal and recycling by product classification and industrial classification, and their follow up
- Enacting a law promoting use of recycled materials (a recycling law), and solid enforcement
- Developing a citizen movement for establishing a recycling promotion month and a recycling promotion conference

Table 2. Achievement Rates for Recycling and Use of Recycled Materials

	1989	1990	1991	Target year
% waste paper used	50.3%	51.6%	52.3%	(55% by1994)
% steel cans recycled	43.6%	44.8%	50.1%	(60% by 1995)
% aluminum cans recycled	42.5%	42.6%	43.1%	(60% by 1994)
% cullet reused	47.6%	48.0%	51.8%	(55% by 1995) Note: () indicates target value according to Industrial Structure Inquiry Board Guidelines

The large increase in the quantity of steel cans used by blast furnace makers contributes to the striking improvement in the recycling rate.

In order to convert Japan's socioeconomic structure into one of "self-motivated recycling," an important policy for future study entails first ascertaining where usage bottlenecks occur for each recycled material, and planning for detailed responses at the problem's location.

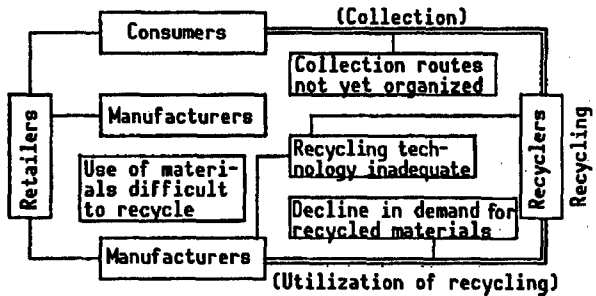

Figure 3. Recycling Flowchart and Location of Bottlenecks (indicated by double lines)

(2) Lengthening a Product's Useful Life

1) Current state of product life (automobiles and home appliances): The average annual number of automobiles and home appliance in use have improved in quality due to technological developments, and tend to have a long life due to factors such as expansion of the repair system (for automobiles, the level is about the same as in Germany).

Table 3. Average Number of Years an Automobile is Used (source: Automobile Examination and Registration Association)

	1975	1980	1985	1991
Passenger vehicles	6.72	8.29	9.17	9.19
Freight vehicles	6.29	7.77	8.38	9.29

Table 4. Number of Years a Home Appliance is Used Before it is Discarded (source: Home Appliance Association)

	1978	1991
Television sets	5.9	9.7
Refrigerators	8.4	10.2
Washing machines	7.1	9.0

2) Model changes: The cycle for model changes is generally 4 to 5 years for automobiles, and 1 to 1.5 years for home appliances. While model changes play an important role for incorporating new technologies and materials into products, in response to societal demands, excessive model changes are indicated as a factor in promoting obsolescence and hindering efficient use of resources. However, model changes themselves are a problem at the very basis of business activities, which are closely tied to marketing and technology development trends, and in essence, should be dealt with by the enterprises themselves.

3) Future responses: Renewed efforts to improve quality and strengthen the repair system is necessary in order to promote a longer product life. In addition, along with adopting policies for reducing the number of products with model changes or making products with models in common, each business is expected to independently set a model change period that takes into consideration external diseconomies.

It will be necessary for the government to call on each business to make efforts in lengthening the useful life of their products and set appropriate model change periods.

(3) Rationalizing Packaging

1) Recent Policies: In December 1990, a report by the Japan Packaging Technology Council and the Committee to Promote Rationalization of Packaging was published. In January 1991, MITI set guidelines for rationalizing packaging, and called for promotion of

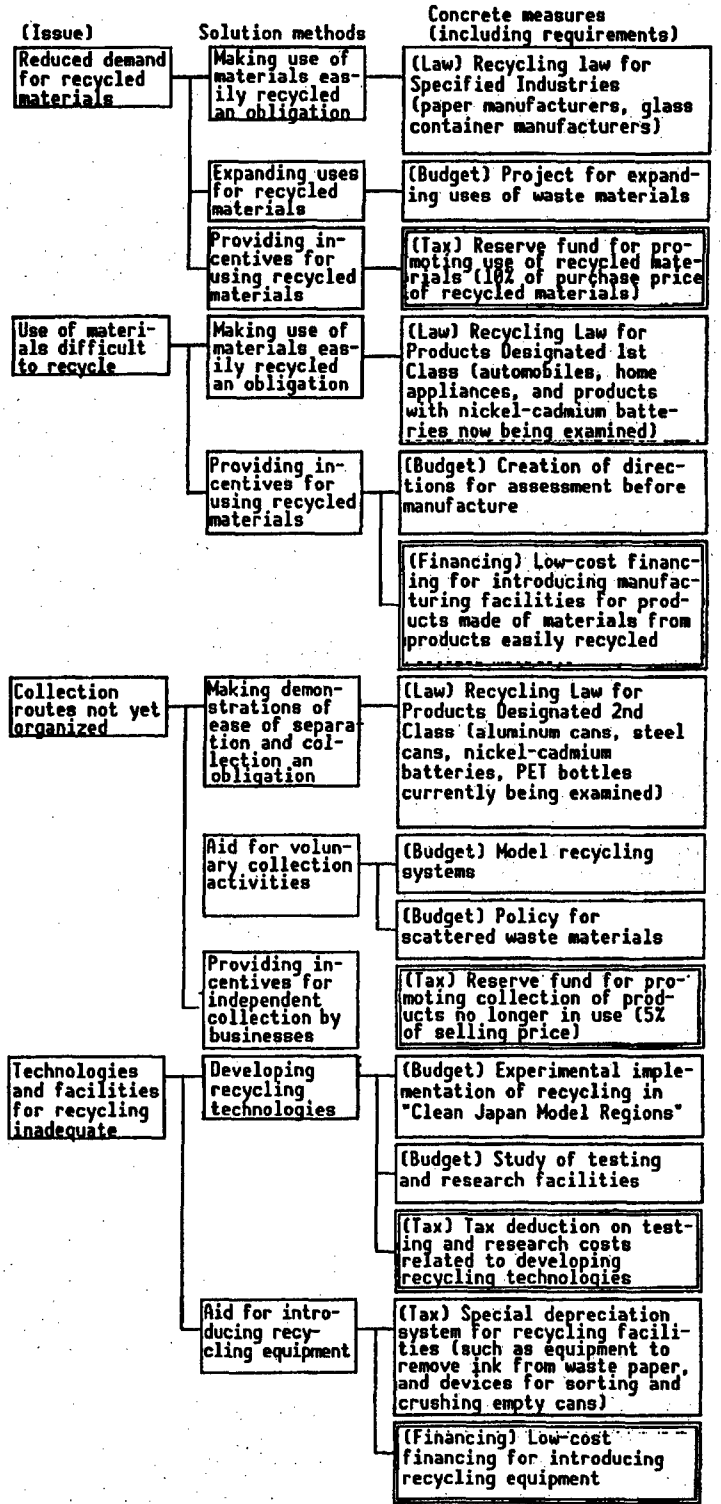

Figure 4. Policy Development (double lines indicate new policies for 1993)

packaging rationalization by all concerned bodies, and the creation of a plan. A summary of the MITI guidelines includes the following:

- For makers of packaging materials: developing materials that are easily disposed of, and creating a system for collecting and recycling these materials.
- For product makers: setting goals for reduction and conformity in packaging, setting a price margin dependent on the amount of packaging, and indicating packaging quality.
- For distributors: setting a price margin depending on whether or not the product is packaged, simplifying packaging, using recycled materials, and creating a collection system at stores.
- For consumers groups: promoting educational activities to raise consumer consciousness.

2) Independent efforts by business for rationalizing packaging:

- Makers of packaging materials: promoting collection and reuse of styrofoam (the rate of recycling in 1991 was 12.6%).
- Product makers: for home appliance makers, deciding to reduce the amount of, or not using, packaging such as styrofoam. And according to a survey of department stores, packaging of products to be presented as gifts has improved overall (However, the percentage of excessive packaging for food, alcohol, and soap remains high).
- Distributors: Since mid-1991, all department stores have implemented simplified packaging. The rate of products with simple packaging was 75% to 95% by mid-1992. When a system was introduced in supermarkets that reduced prices for a set number of stamps collected by shoppers not needing bags (¥100 reduction for 20 stamps), the number of bags used dropped by 3% to 5%. When a fee was charged for bags (¥5 per bag), the number of bags used was reduced by nearly 70%.

3) Policies for future study: comprehensive efforts that unite businesses, consumers, and the government are important for promoting packaging rationalization. Independent efforts on the part of business regarding packaging are being combined with measures in response to other kinds of environmental protection, and additional development coupled with these efforts is desired.

(4) Rationalizing Commodity Distribution

The increase in supply and demand for Japan's commodity distribution has been remarkable in view of the variety of products and the regional dispersal of factories. Problems have also increased in response, in terms of the basics for economic development such as insufficient transportation infrastructure and inefficient forms of distribution.These problems are the basis for energy and environmental problems of external diseconomies, such as increased consumption of energy in the transportation sector, and traffic jams and the NO_x problem in cities.

The so-called "Vision for Making Commodity Distribution Efficient for the 90's" was received in December 1991, and the following matters are currently under investigation:

- Limiting excessively frequent distribution and transport of small lots: "Guidelines for Rationalizing Commodity Distribution" have just been created and disseminated to 19 industries, and follow ups will be implemented for observations of these guidelines.
- While reconsidering the custom of free delivery service, and rectifying excessive demand on distribution services by shippers, giving incentives for every company's policies for rationalizing distribution.
- Creating an efficient distribution system through systematic maintenance of wide-area distribution bases, improving the percentage of freight loaded by making transport systematic and cooperative, and promoting standardization in the field of distribution, consistent "palletization", and information.
- Creating a modal shift through strengthening infrastructure related to commodity distribution.

(5) Developing and Disseminating Low-Pollution Vehicles

In order to respond to the problems of NO_x and global warming, efforts are needed to disseminate low-pollution vehicles that emit less NO_x and CO_2, and low-fuel consumption vehicles (such as electric cars, cars using methanol and natural gas, and hybrid cars). Although electric cars are now on the market, on the whole they are in the testing and evaluation stages, and promotion of their practical use and dissemination is necessary.

Quantities of CO_2 emitted (including fuel used for manufacture) Electric cars.....45% compared to gasoline; 49% compared to diesel Natural gas cars ...70% compared to gasoline; 77% compared to diesel Hybrid cars.compared to gasoline—; 90% compared to diesel

Future issues include:

- Promoting autonomous dissemination: In order to popularize low-pollution vehicles, automobile makers that develop and supply them, those in the transportation sector that demand them, and electrical, natural gas, and gasoline workers in industry and infrastructure circles need to collaborate in dissemination. Therefore, it is necessary to work towards practical use and coordinated dissemination through a "Forum for Low-Pollution Vehicles" recently organized by private groups belonging to the three categories described above.
- Promoting Research and Development: Along with promoting business and government research and development for implementing actual tests on high capacity fuel cells for electric cars and on methanol vehicles with a developed electrical system, international study of standards and criteria is needed.
- Local and national measures for incentives and for maintaining infrastructure: Along with investigating

expansion of incentives to provide financing and tax breaks for greater support of autonomous dissemination described above, study is needed for planning infrastructure maintenance for popularizing low-pollution vehicles, and for providing economic incentives (subsidies and tax breaks).

Ideal Technology Development and International Cooperation InResponse to Energy and Environmental Problems

Current economic and social activities are deeply affected by the environment, which is the basis of human existence, and there is widespread recognition of harm caused by future development.

Global environmental problems, in particular the problem of global warming, is unavoidably created by human economic activity, and differs from industrial pollution in that it affects a wide area on the global scale, crossing national boundaries. It is important to tackle it internationally.

In particular, Japan must utilize as much as possible its technology and experience, and promoting the transfer and dissemination of environmental technology on energy to developing countries is needed.

Furthermore, when considering the population growth problems of developing countries, economic growth and environmental protection on a global scale must be reconciled as we face the 21st Century, and technological breakthroughs are vital for drastic solutions to these problems.

A Global Restoration Plan aims to solve global environmental problems, beginning with global warming. The goal is 60% reduction in greenhouse gas emissions by 2100. Concrete contents of a scenario in response to global warming include:

- Complete scientific knowledge
- Promotion of global energy conservation
- Introduction of large scale "clean energy"
- Innovative technology development
- Expansion of resources that absorb CO_2
- Development of innovative energy technologies for the next generation
- Policies to reduce greenhouse gases other than CO_2 (Freon, methane, NO_2)

Concrete response measures in the area of technology development include introducing existing technologies by 2000, introducing some technologies currently being developed by 2010, and implementing the New Sunshine Project and global environmental industrial R&D after 2010.

Responses in the area of international cooperation on the environment include general rules for government development aid and a "Green Aid Plan," while international cooperation on energy includes creating energy efficient operations in developing countries, promoting cooperation on clean coal technologies, promoting new and renewable energy, ensuring nuclear power safety, and ensuring stable supplies of petroleum and natural gas.

I. Technology Development for Global Environmental Protection

1. Responses by 2000

Before 2000, it is not realistic to expect many new technologies based on existing research and development or that promote a new energy demand structure. Consequently, in addition to making every effort to entrench every policy for efficient energy use based on already developed technologies into the socioeconomic system, achieving long-term supplyand demand estimates is possible if the results of technology development that contributes to energy efficiency in every sector (industry, public welfare, and transportation) are taken into account.

Examples of technologies that can be introduced and disseminated by 2000 include:

- Steel: equipment for dry extinguishing of coke, dry waste pressure recovery equipment, equipment for controlling coal moisture for use in coke ovens, high temperature direct delivery rolling equipment, and direct current water-cooled arc furnaces.
- Chemicals: Gas turbine generator facilities and high efficiency compressors for petrochemicals; for plastics, direct heat drying of polyvinyl chlorides and shortening the drying process for manufacture of synthetic resins.
- Ceramics and cement industry: Equipment for in-house power production using waste heat, and making equipment that uses surplus heat from cement raw materials more efficient.
- Paper: Raising the ratio of waste paper utilized, and facilities using the tax structure to promote investment in improving the energy supply and demand structure.
- Power generation: For coal-powered plants, technologies to produce power under critical pressure limits, and to produce power with pressurized circulation boilers using composite fuel; for LNG powered plants, an advanced combined cycle power generation repowering method.
- Automobiles: Developing and disseminating low-emissions vehicles such as electric cars.
- Home appliances: liquid crystal picture for televisions.
- Heaters and electrical machinery: devices to recover waste heat.
- Commercial buildings and homes: insulated homes and homes that place few burdens on the environment.

2. Responses by 2010

Although fusion reduction methods for iron manufacture and actual application of direct caustic technologies are expected by 2010, as are increases in energy supply

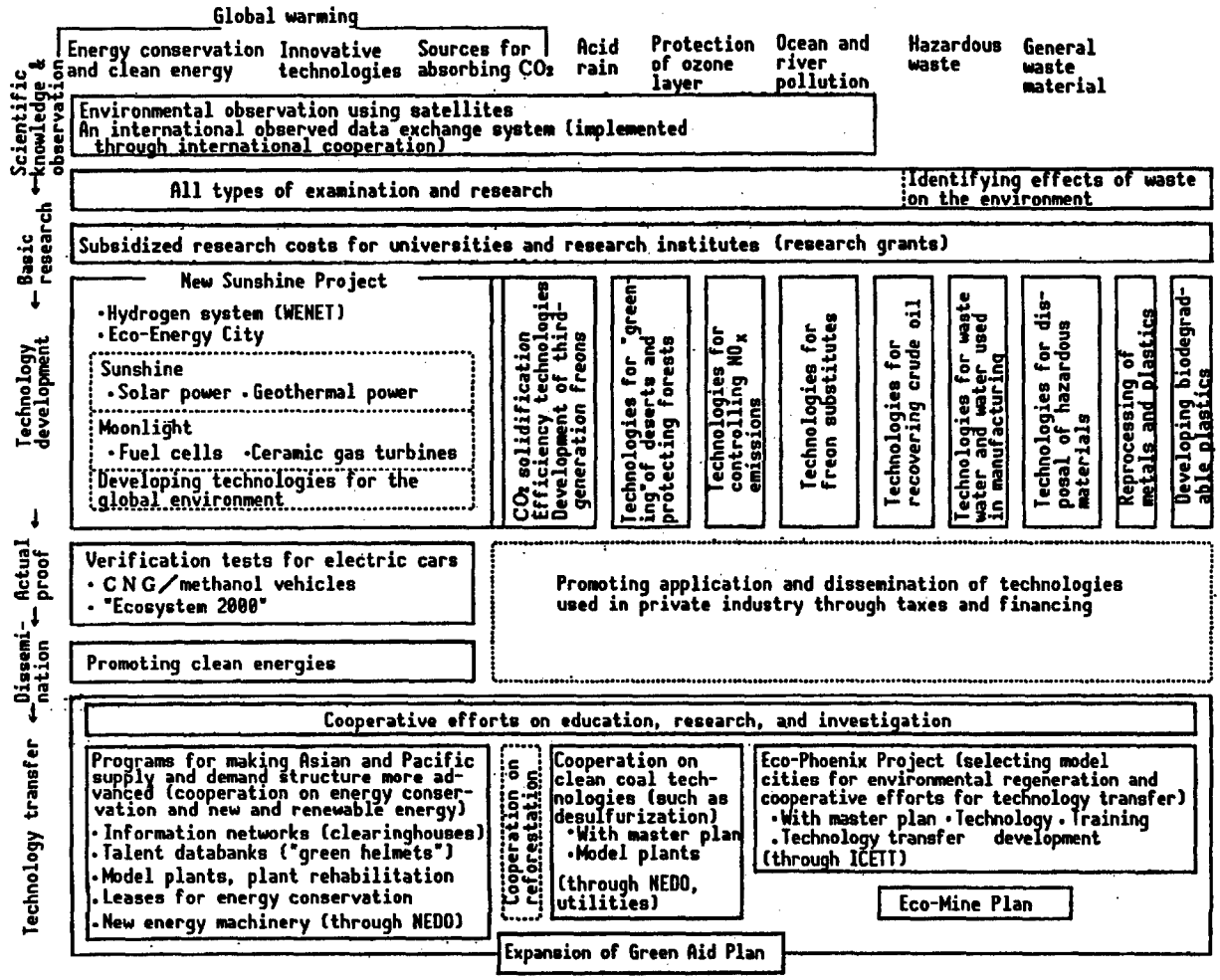

Figure 5. Organization of the Global Restoration Plan (Conceptual Diagram)

potential from solar power and fuel cells due to accelerated development as part of the New Sunshine Project, it will be difficult to drastically reform the energy supply and demand structure. However, even though the scope of energy efficiency policies is getting even smaller, it is not necessarily impossible to stabilize CO_2 emissions by concentrating every effort to this problem. Examples of technologies that can be introduced by 2010 include:

- Electricity:
  - — Raising the efficiency of thermal power plants: composite fluidized bed-coal gasification power generation technology, large fluidized bed boiler combustion power generation technology, pressurized fluidized bed composite power generation technology, and supercritical pressure thermal power generation technology
  - — Establishing electric power storage technologies: compressed air storage gas turbine power generation, superconducting electrical power storage technology
- high-capacity industrial furnace technology: indirect and direct heating methods
- technologies for making commodity distribution more efficient
- technologies for energy conserving systems for buildings
- technologies for energy conserving electronic element manufacture
- methods for melting reduction in iron manufacture
- New Sunshine Project: solar power generation and fuel cell power generation

3. Responses after 2010

As mid- and long-term responses to realizing a Global Restoration Plan after 2010, a breakthrough is anticipated by means of technologies for reconciling global environmental problems and economic growth, through the introduction of clean energies such as the New Sunshine Project's solar power generation and fuel cells, results of innovative technology development, and

implementation of CO_2 solidification and efficiency development by global environmental industrial technology research.

Comprehensive development of the New Sunshine Project includes: New Sunshine Project System, the image of contributions toward the Global Restoration Plan, and efforts towards innovative technology development.

In combination with accelerated research and development on photovoltaic cells and fuel cells described above, the following comprehensive and planning efforts for innovative technological development are important:

(1). Technology for Wide-Area Energy Use Network System (Eco-Energy City System)

- Summary: a powerful heat energy cascade and composite circulating utilization system based on innovative technologies that efficiently collect heat energy from factories over a wide area for transport and use in cities.
- Issues: developing technologies for collecting heat for use at maximum temperatures and raising temperatures, technologies for transport and storage of heat used in chemical reactions, and elemental technologies such as multi-functional heat supply technology. In addition, constructing and optimizing a total system that matches multiple wide-area heat sources with demand.
- Effects: For coastal areas within large metropolitan areas, use of the maximum amount of energy not yet utilized will result in a 6% reduction in Japan's energy consumption and a 9% reduction in CO_2 emissions.

(2) Technology for International Clean Energy Systems Using Hydrogen (WENET: World Energy Net)

- Summary: a system utilizing clean energy on a global scale, based on innovative technologies from production to transport and consumption, with hydrogen energy as the medium.
- Issues: Developing technologies for high efficiency, large-scale hydrogen production, technologies for storage and transport of high density hydrogen, and elemental technologies for using hydrogen such as hydrogen turbines. In addition, building and optimizing a system for production, distribution, and utilization on a global scale.
- Effects: By the time technology is disseminated globally, by 2030, a 10% reduction in CO_2 emissions; 20% reduction by 2050.

(3) Technology for Combustion Systems That Reconcile Economics and the Environment (Weak Combustion Denitration Catalyst Technology)

- Summary: a waste gas denitration catalyst technology applied to diesel engines and weak combustion engines, which aims to simultaneously reduce NO_x emissions, improve fuel consumption, and eliminate CO_2 in automobiles.
- Issues: Analyzing materials and structure of catalysts in a highly concentrated oxygen atmosphere, and developing elemental technologies for new catalysts with improved heat resistance, corrosion resistance, and life span. In addition, integrating fuel, engine, and waste gas systems that reconcile fuel consumption, CO_2 and NO_x.
- Effects: Compared to methods currently in use, the technology will reduce Japan's fuel consumption by 2%, CO_2 emissions by 2%, and NO_x emissions by 40%.

(4) Complex Technologies for Pro-Environment Coal Conversion

- Summary: a system for liquefying coal that greatly reduces costs and CO_2 emissions during the liquefaction process, by a combination of a hydrogen utilization system that uses renewable energy and weak combustion denitration technology.
- Issues: Establishing core technologies for coal liquefaction, and merging both of the technologies described above for utilizing hydrogen and weak combustion.
- Effects: Along with reducing CO_2 emissions by 2%, product costs are reduced from $35/B to $25/B, compared to current methods.

"Research and Development on Global Environmental Industrial Technology" (abbreviation) will also be promoted after 2010.

II. International Cooperation in the Fields of Energy and the Environment

1. International Cooperation in the field of the Environment

As for international cooperation on the environment, Official Development Aid (ODA) which comprehensively supports efforts by developing countries to help themselves and a "Green Aid Plan" are being actively implemented, in recognition of the need for implementing detailed, appropriate responses based on the type of environmental problem and the international framework.

Excerpts from the General Principles for Official Development Aid (Determined by the Cabinet, 30 June 1992) are given below.

- Basic Doctrine (Excerpt of relevant passages): Japan, based on the above considerations, holds self-help efforts by developing countries to be fundamental, and through broad enhancement of the national character, infrastructure that includes many domestic organizations (the socioeconomic foundation) and facilities for basic livelihood, official development aid will be implemented, with the goals of ensuring fair and efficient allocation of resources and "proper administration" within these nations, and realizing sound economic development. While striving to achieve environmental protection, efforts will be made to promote sustainable development on the global scale.

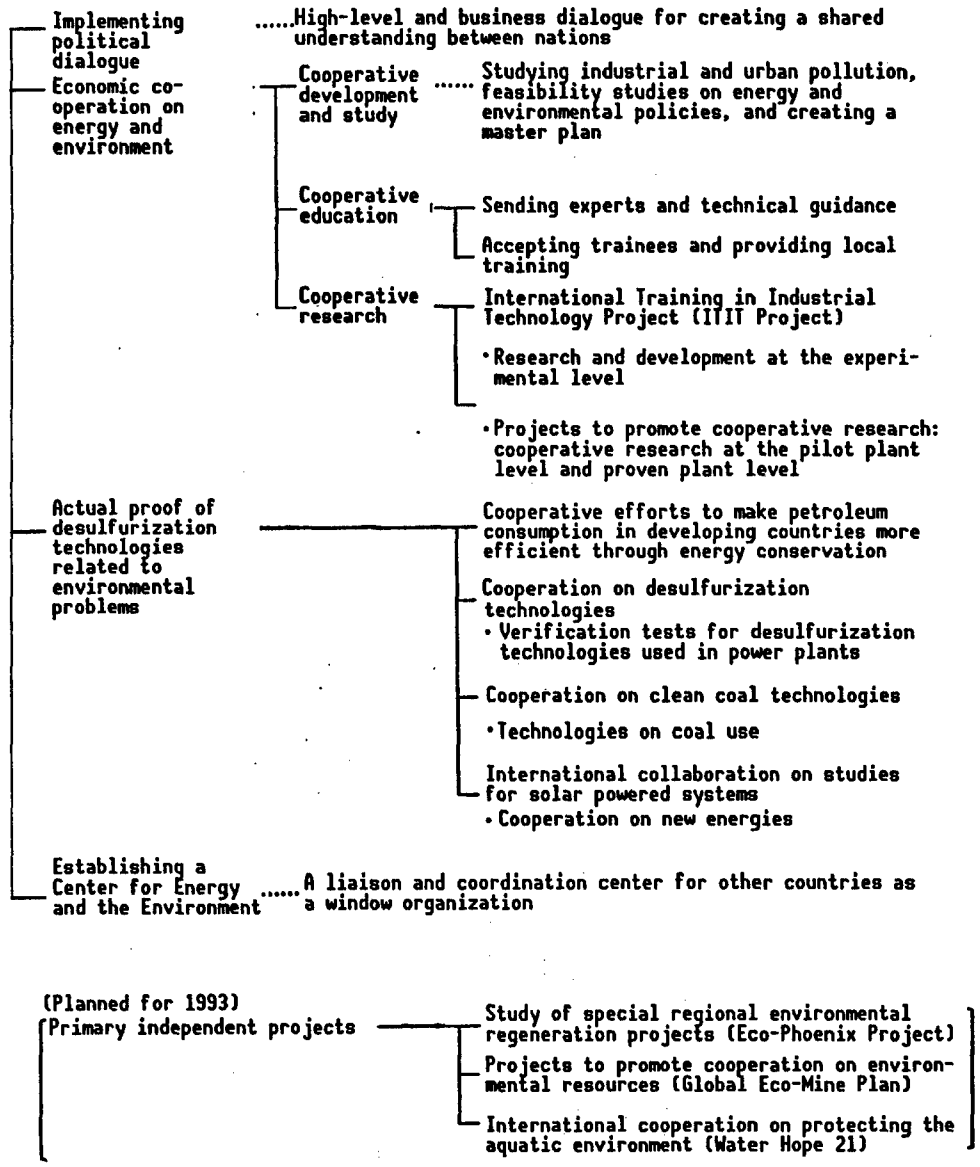

Figure 6. Green Aid Plan

- Principles: Reconciling the environment and development.
- Important items: tackling global scale problems; considering facing global problems such as the population problem through cooperation between developed and developing nations to be important; and aiding efforts on the part of developing nations to tackle these problems.
- Policies for effective implementation of Official Development Aid: While giving sufficient consideration to the requirements and views of other nations, intimate dialogue on policies will be promoted in order to have in common with other countries basic knowledge of information gathering, continued analysis, and development policies with regard to developing nations.

Japan, based on results of reconciling environmental protection and economic growth, will put its technology and know-how to practical use when encouraging aid for environmental problems.

2. International Cooperation on Energy

(1) Fundamental Views

From the viewpoint of Japan's promotion of energy policies, active promotion of international cooperation is needed in order to stabilize global energy supply and demand while taking into consideration global environmental protection.

It has been forecasted that the mid- and long-term trend of international energy supply and demand will become increasingly restricted, based on the large increase in global demand centered in the developing countries of Asia and the Pacific, and the drop in oil production in the former Soviet Union. If we consider the strengthening relationship between Japan and the international energy market, it is important to speed up efforts in energy conservation in developing countries, and stabilizing global energy supply and demand, in addition to ensuring stable supplies of energy for Japan.

However, because efficiency in energy use in these regions lags far behind when compared to Japan, the burden on the global environment becomes quite large when energy use increases rapidly while policies do not exist for improving energy efficiency and adequate desulfurization. As a result, global environmental problems can become big limiting factors for energy use.

For the developing countries of Asia, which are expected to have rapid increases in energy demand, transfer of technologies related to pro-environmental energy can be considered Japan's duty as a nation that excels in effective and efficient technologies.

(2) Japan's Record in Each Field of Cooperation, and Future Issues

1) Efforts to make energy consumption in developing countries more efficient: the rate of growth in the energy consumption of developing countries over the last 10 years is nearly seven times that of industrialized nations. Among these, the rate of increase in the Asian and Pacific regions was particularly high. However, the margin for improvements in energy efficiency is great in Asian countries, with the exception of Japan. It is important for Japan to actively strengthen international cooperation on energy conservation, and to build a pro-environment efficient energy consumption structure aimed at developing countries and focussed on the Asian and Pacific regions.

- The record of cooperation thus far includes technological cooperation with developing nations and cooperation centered around the International Energy Agency (IEA).
- Future efforts include establishing a clearinghouse for improving the supply and demand structure in Asia and the Pacific, and forming an international network for energy conservation.

2) Promoting cooperation for clean coal technologies: Coal is an important energy source that accounts for about 30% of primary energy, and it is expected that demand in developing countries, especially in the Asian and Pacific regions, will greatly increase. In developing countries such as China where environmental policies on coal usage have not been adopted, it is feared that grave environmental problems are being created. From this point of view, Japan must transfer its superior clean coal technologies, and establish a pro-environment coal utilization system.

- The record of cooperation thus far includes cooperative research (with Indonesia) for developing simple desulfurization equipment for use in coal boilers, and cooperative projects with China for coaldesulfurization technologies.
- Future challenges include establishing a pro-environment coal utilization system for developing countries such as China, and establishing a Clean Coal Technology Center at NEDO in October 1992 as an organ for centralized promotion.

3) Promoting the introduction of new and renewable energy: Because socioeconomic infrastructure such as a network for supplying and distributing power is not yet maintained in developing countries, effective uses exist for solar power and wind power even at today's costs, for electrification of rural villages and power sources using water pumps. Promoting technologies that utilize new and renewable energy sources is based on the most effective means of reducing CO_2 emissions in these regions, and will steadily put into practice research that has already been proven through international cooperation.

- Concrete examples of cooperative work includes international cooperative proven research on solar power generation (Thailand, Indonesia, and Malaysia), and cooperative development of systems for production of fossil fuel alternatives (Thailand).

4) Ensuring the safety of nuclear energy: Although international fears have increased regarding the safety of nuclear reactors in the former communist countries, even developing countries have indicated a desire to introduce nuclear power, because of the increase in electrical demand. If nuclear power safety problems arise in these regions, it is feared that the introduction of nuclear power not only in the regions concerned but also in industrialized countries like Japan will be greatly affected, and in turn the international energy supply and demand will be greatly affected as well. Therefore, Japan's advances technologies for safe management of nuclear power will be transferred to these areas, and international guarantees of nuclear safety will be given.

- Cooperative efforts thus far include bilateral cooperation with the former Soviet Union and various Asian nations.
- Future issues to tackle include implementing international study and training in nuclear safety management (inviting 1,000 trainees over the next 10 years from the former Soviet Union and Southeast Asia), and instituting a Nuclear Operations Technology Center (temporary name) in the former Soviet Union.

5) Ensuring stable supplies of petroleum and natural gas: Although an increase in demand for petroleum is expected in the Asian and Pacific regions, petroleum production in the largest oil producing countries of the former Soviet Union and non-Middle Eastern countries is generally expected to decrease. Therefore, in the mid- and long-term, dependence on Middle Eastern oil is once

again expected to increase. Furthermore, as concern over global environmental problems rises, the demand for natural gas, which has a reputation as a clean energy source, is expected to increase even more, and cooperative efforts are taking place to ensure stable international supply and demand for natural gas.

- Cooperative efforts thus far include strengthening exploration activities in countries where exploration has not yet taken place (26 areas in 12 nations), and establishing cooperative technologies for increased recovery of petroleum in oil-producing nations.
- Future efforts include establishing a system in response to oil spills from large-scale accidents, examining technological aid for preventing a slowdown in oil production in the former Soviet Union (technologies for increased recovery of petroleum), and aid for materials and equipment for petroleum and natural gas production in the former Soviet Union(additions to export insurance).

(3) Methods for Promoting International Cooperation

1) Promoting cooperative efforts for energy conservation and clean energy through a centralized promotion agency: As the primary body for promoting international cooperation on energy and the environment, the New Energy and Industrial Technology Comprehensive Development Organization (NEDO) is being utilized as part of an organization that uses accumulated private know-how and has a record of international cooperative research and development. In order to carry out the promotion, the system will be revised, including improvements in required laws for expanding and strengthening the functions of NEDO. NEDO's record on international cooperation includes:

- Cooperative research on fuel cell applications and regional power production systems (Thailand)
- Demonstrated cooperative development on solar power systems (Nepal, Mongolia)
- Cooperative projects for making fossil fuel consumption in developing nations more efficient (Thailand, Indonesia)

2) Active influence in other countries through political dialogue: Industrial expansion and growth are apt to take precedence over environmental policies in developing countries. In addition, implementing cooperative efforts on energy and the environment is difficult, not only for individual cases based on requests, but also for planned, continual cooperation. It is also difficult to incorporate a strategic point of view on international supply and demand of energy.

In instituting cooperation, it is important to carry on close political dialogue with other countries and influence the process, while generally taking into account factors such as the stage of the country's economic development, energy situation, and level of technology.

- The record thus far includes: a Japan-Indonesia joint committee on energy, and institution of a dialogue for a Green Aid Plan (China and Thailand)
- Future issues include: political dialogues through cooperative determination of a master plan as a requisite for making energy consumption in developing countries more efficient (China, Thailand, Malaysia, the Philippines, and Indonesia), and expanding political dialogue on Green Aid Plans in other countries.

3) Promoting cooperation between advanced countries and other countries: In addition to bilateral cooperation centered on dialogue, it is important to have active cooperation towards international agreement, in order to plan effective and efficient international cooperation on energy and the environment. This can be accomplished not only through cooperation between the developed countries on energy policies and continued technological cooperation on energy, but also through international organizations like IEA, IAEA, and APEC. Concrete efforts include:

- Participating in IAEA negotiations on policies for cooperation on nuclear safety and nuclear safety treaties, and information exchanges and cooperative policies through energy policy conferences with advanced nations (such as the U.S.-Japan Energy Working Group and the Japan-Australia Advanced Energy Conference).

Conclusion: Investigation Results of the Planning Subcommittee

1. Reforming the Structure of Energy Supply and Demand

Although economizing on energy to the level of 30 million kl is not necessarily easy, it is in keeping with the recognition that there are possible measures that deal with the problem of global warming, by promoting all efforts towards the proposed reform of the energy supply and demand structure. However, in order to be sure that this is carried out, responses by each sector, such as industry, public welfare, and transportation are necessary, as are comprehensive efforts which include technological development.

These policies are the basic methods for inducing reform, but it will be necessary to look at the actual record of just how these measures infiltrate, and in particular how they penetrate into the public sector.

2. Building a Pro-Environment Socioeconomic Structure

Promoting independent efforts by business is extremely important for encouraging pro-environment business activities, and government support for business efforts and for determining voluntary plans within enterprises has a purpose, and should be actively promoted.

Although grass-roots activities such as volunteer work that encourages pro-environmental consumer behavior is becoming widespread, current policies that only disseminate instructions to consumers are not enough to

create a universal public movement or produce uniform effects. Policies that will have a breakthrough in terms of giving consumers an active role are needed, and should be investigated in the future.

Enterprises and consumers cannot simply be divided when studying how to build a pro-environment socioeconomic structure, but within the active stream of production, distribution, and sales, and the more passive stream of recovery, recycling, and disposal, the position and means of each individual enterprise and consumer should be studied.

In separate fields of study, consumers and enterprises must cooperate in conserving energy and resources, and efforts on recycling, lengthening the useful life of products, and rationalizing packaging are needed.

3. How Technological Development and International Cooperation Should Be

Efforts to actively promote mid- and long-term technological development and introduction and technology transfer through the Global Restoration Plan, the New Sunshine Project, and the Green Aid Plan are necessary. While taking into account that implementation is not always easy, it is important to use persuasive measures such as quantifying the subject matter of these projects, along with describing a bright outlook.

Cooperative efforts with developing countries, the former Soviet Union, and Southeast Asia are indispensable for resolving the problem of global warming. Depending on each country's situation, it is important to implement cooperative efforts in the appropriate fields, from existing policies on pollution such as soot to desulfurization and denitration policies. It is also important to use international influence on advanced countries that do not have adequate environmental policies.

The problem of population growth is an important factor when studying long-term responses, and must be reexamined.

4. Methods for Promoting Policies

Furthermore, because global environmental problems are an extremely important cultural issue, responses should not be limited to the shortterm. From a long term view, it is necessary to solidly plan for reformation of the socioeconomic structure itself through comprehensive and continuous development of each policy previously described. The following considerations on methods for implementing policies have been examined:

- Methods for regulating volume (controlling total amounts, buying and selling emission rights) result in difficulties in international and domestic allocations and monitoring system maintenance, inflated costs, and direct intervention in the market. Prudent examination is needed before introducing the various problems, such as the possibility of obstructing the free market system.
- Opinions on methods related to the cost mechanism (taxes and surcharge systems) are divided into those that advocate introducing taxes with the goals of assuring the importance of global environmental problems and guaranteeing financial resources for policies, and making announcements regarding environmental policies more effective; and those opposed to taxes at the present time from the viewpoint of the need for international cooperation and coordination for global responses, the relationship between the effectiveness of taxes and the tax rates, the effect on economic growth, and the relationship to existing energy taxes. The Planning Subcommittee has not reached a consensus on these opinions.
- As for a guiding system, promoting independent business efforts has been an effective policy, but adequate funds are necessary for ensuring effectiveness. In addition, there are indications that a system of guidance is one that can be used in conjunction with the previous methods on cost mechanisms (taxes and surcharges).

Environment Agency Plans Acid Rain Observation Network

OW2005034293 Tokyo KYODO in English 0231 GMT 20 May 93

[Text] The Environment Agency will set up a panel, possibly in early June, to lay the groundwork for a network to observe acid rainfall in East Asia, agency officials said Thursday.

The agency will also host an international meeting on acid rain in Toyama Prefecture for three days from October 26, the first such gathering of experts from East Asian countries, the officials said.

Sulfur and nitrogen oxides originating from China and South Korea are believed to be a large factor in acid rainfall in Japan.

Southeast Asian countries which have recorded acid rainfall have asked Japan to arrange internationally coordinated assistance, they said.

The agency will hammer out a plan on how to organize the watchdog network over the next three years through meetings of the proposed panel and international gatherings, they said.

Miyazawa Wants To Review Environmental Assessment System

OW1805155793 Tokyo NHK General Television Network in Japanese 1000 GMT 18 May 93

[From "NHK News" program]

[Text] To strengthen the environmental assessment system, which is a focal point of Diet deliberation on a fundamental environmental bill, Prime Minister

Miyazawa officially disclosed a plan to review the current system. He was speaking at a meeting of the lower house committee on environment, which was held tonight.

In response to a question at the meeting, Prime Minister Miyazawa first said that relevant ministries and agencies will be united to carry out research and investigations on the current state of environmental assessment at home and abroad and on other matters. He then said that based on results of studies, he would like to make necessary reviews of environmental assessment, including the possibility of making it into a law. In this way, he disclosed a plan designed to review the current system.

He also indicated that he may push for enactment of a law on environmental assessment if circumstances require.

The environment bill was passed at tonight's meeting of the Environmental Committee and will be sent to the upper house.

SOUTH KOREA

ROK Decides To Join Four Environmental Conventions in 1993

SK0206082593 Seoul YONHAP in English 0653 GMT 2 Jun 93

[Text] The South Korean Government decided Wednesday to join four international environment conventions this year.

It will join the Convention on International Trade in Endangered Species (CITES) this month, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter by September, and the Basel Convention on Control of Transboundary Movement of Hazardous Wastes and Their Disposal and the United Nations Framework Convention of Climate Change in the second half of the year.

Korea will also ratify the Convention of Biological Diversity, signed during the U.N. Conference on Environment and Development in Rio De Janeiro last June, next year to become a member after installing the legal and systematic backing for it.

The issue was discussed and decided in an environment-related ministerial meeting Wednesday, presided by over Prime Minister Hwang In-song and attended by Deputy Prime Minister Yi Kyong-sik, Foreign Minister Han Sung-chu, Home Minister Yi Hae-ku, Trade, Industry and Resources Minister Kim Chol-su, Environment Minister Hwang San-song and 11 other ministers.

The government decided to enter CITES this month in view of the growing pressure from advanced countries and international organizations to stop trade in endangered wildlife and plants.

It will condition its joining that the international community guarantees a three-year grace period on its trade of musk and bear's gall, two out of the five items that are regulated. Korea will immediately limit its transactions of the other three.

But the government will continue to study the standing of the two substances used for medication in Korea and try to shorten the deferment if possible while seeking alternatives in developing medicines.

It hopes to join the framework convention on climate change, also initiated during the earth summit, before its likely effectuation this year-end. In line with the aim, it will work to cut releases of carbon dioxide 7.7 percent by 2000 and 39.2 percent by 2010.

To effectively cope with Russia's dumping of nuclear waste in the East Sea, Korea will sign the London-born convention safeguarding maritime pollution by September.

It will join the Basel Convention, a watchdog on movement and disposal of wastes that took effect in May 1992, this year in time with the entry of the United States and Japan, importers of ferrous scrap and other waste.

The government will dispatch a delegation led by Environment Minister Hwang to the first U.N. Commission on Sustainable Development meeting in New York from June 14-25 to call for technology transfer from advanced countries while protecting domestic industry.

AFFAIRS: ROK, Russia, Japan, Poland 'To Fish Less' in Okhotsk Sea

SK0206052393 Seoul YONHAP in English 0252 GMT 2 Jun 93

[Text] South Korea, Russia, Japan, China, Poland agreed Monday to fish less in the Sea of Okhotsk out of ecological consideration for the area.

In two days of talks, Korea, China, and Poland agreed to cut their fishing in the area 25 percent by the time of their second meeting in October. Japan stopped fishing there in 1991, and promised not to resume.

Under the agreement, the five countries will separately conduct investigations on the state of pollack and other fish resources in the area and report to a meeting of experts in Vladivostock in September and make appropriate preservatory measures in the second negotiations in Mosow.

The Russian Government retracted its announcement a day earlier of a three-year ban on all fishing in the Sea of Okhotsk in the wake of the multilateral settlement.

Russia declared a unilateral moratorium on fishing in the sea on concluding the area was in an ecological crisis in February, raising opposition from the five fishing countries who claimed the portion of the Pacific Ocean was international waters.

But whether the Russian Legislature will approve the government retraction of the ban that was due to take effect on June 15 is unclear in view of the worsening confrontation between the two.

CZECH REPUBLIC

Black Sea Cooperation Commission Session Opens in Bulgaria

AU0106193693 Sofia BTA in English 1756 GMT 1 Jun 93

[Text] The state of the Black Sea and Black Sea fishing regulations were discussed today at the 19th session of the Joint Black Sea Cooperation Commission between Ukraine, Russia, Romania and Bulgaria opened in this Black Sea Bulgarian town. Such meetings are traditionally held once every two years. Turkey still has the status of an observer. The agreement signed between the member-states in 1959 is outdated and needs amendment, according to Mr. Nikolay Kisyov, chief of the State Fishing Inspectorate with the Bulgarian Ministry of Agriculture. The session will discuss agreements for future cooperation drafted by Russia and Ukraine. The four member-states will receive 9 million U.S. dollars for a term of three years within the framework of one of the UN programmes to improve the state of one of the most polluted seas in Europe. They are also to sign a Convention on Black Sea Environment Protection which will probably be joined by Turkey.

ROMANIA

3.4 Trillion Zlotys Needed To Control Odra River Pollution

LD0206102993 Warsaw PAP in English 0940 GMT 2 Jun 93

[Text] Some 3.4 trillion zlotys (about 182 million U.S. dollars) will be needed to control water pollution of the Odra River and the Baltic Sea, Jan Miodonski of the Regional Board for Water Economy in Wroclaw has reported.

The project, based on World Bank research from 1991-92, envisages the construction of three large water treatment plants and modernisation of existing sewage treatment plants. The scheme also provides for technological up-grading in three chemical plants, and restructuring of underground water management.

The World Bank research aimed to identify priority investments which would make it possible to improve water quality in the Odra River. The implementation of the project will enable Poland to meet the binding regulations of the Helsinki convention for protection of the Baltic Sea waters.

The biggest Odra polluters in south-west Poland include the nitrogen plant in Kedzierzyn Kozle, the "Rokita" chemical factories in Brzeg Dolny and Boleslawiec, the "Polska Miedz" copper combine in Lubin, and the towns of Glogow, Wroclaw and Zielona Gora.

Reduction in Use of Ozone-Destroying Substances

LD1405214493 Warsaw PAP in English 1950 GMT 14 May 93

[Text] Poland is reducing its output of ozone-destroying substances faster than is currently required under existing international agreements, Ryszard Purski of the Ministry of Environmental Protection, told a press conference in Warsaw on Friday.

Under the 1987 Montreal Protocol, which Poland signed in 1990, the use of freons is to be gradually reduced from 1994, while halons are to be definitively removed from use after 1995. Poland is not a producer of these chemicals, and has reduced its use of imported freons from 8,000 tonnes in 1986, to 2,700 tonnes in 1991.

Purski anounced that the Environment Ministry was committed to take action aimed at further reducing the production and use of substances harmful to the ozone layer, to the organisation of a system to protect ozone, and the creation of a suitable legislative framework.

ARGENTINA

Mendoza Environment Minister Orders Study of Uranium Mine

PY1905214993 Buenos Aires TELAM in Spanish 1657 GMT 19 May 93

[Excerpt] Mendoza provincial Environment Minister Aryo Lafalla denied that a nuclear waste dumping operation is under way at the abandoned Malargue uranium mine. Lafalla admitted, however, that "studies on the effect these types of operations have on human health have not been conducted," thus justifying the population's fears.

"We cannot speak about nuclear waste. It is quite improper from a technical point of view because there has never been a single gram of enriched uranium like what is used in power plants at Malargue. All we have is a mine that was abandoned in 1985," the official added.

Lafalla said that in 1985 the National Commission for Atomic Energy (CNEA) abandoned the mine, but it "did not completely eliminate" all the leftover uranium. Lafalla added that in 1992 the Mendoza Government signed an agreement with CNEA President Manuel Mondino in which the CNEA had to eliminate all the residual uranium.

The Mendoza environment minister has decided to order a study by an international consulting firm contracted through a public bidding in order to investigate the possible harmful effects this material has on people's health.

Lafalla said that "reports of harmful effects on people, without an appropriate study to prove it, can only cause economic damage to the region." Lafalla added that "we would not be so irresponsible as to do nothing if we knew something was wrong."

Jaul Montenegro, head of the Foundation for the Defense of the Environment (Funam), did not dismiss, however, that "residual uranium was being dumped at the abandoned mines" in Malargue. (passage omitted]

BOLIVIA

Official Denies Presence of Toxic Waste in Oruro

PY0106195693 La Paz Television Nacional Network in Spanish 1700 GMT 1 Jun 93

[Text] The environment secretary has insisted that there are no radio active elements in the mineral waste that will be recovered at an Oruro smelting plant. He added that if there are, they are minimum.

A British ecology organization had charged that a shipment of mineral waste being sent from England to a smelting plant in Oruro contains a high level of toxic and atomic waste.

That environment secretary said that preliminary investigations have shown that this is not the case although the mineral dusts, like any other mineral, contain contaminating elements.

President Paz Criticizes Industrialized Nations, Greenpeace

PY0106171093 La Paz La Red Panamericana in Spanish 1100 GMT 1 Jun 93

[Text] President Jaime Paz Zamora accused the industrialized countries of being the only ones causing an imbalance in the environment. He thus criticized the Greenpeace organization for attempting to impose on Bolivia its criteria about the alleged radioactive material accumulated in Oruro:

[Begin recording] Now they are imposing on the Third World, on the developing countries, a half (?title) that [words indistinct] which can prevent us from (?reaching) any kind of industrial development in our countries. Therefore, the Bolivian position is that those who have dirtied up the planet must pay the costs of cleaning it up.

It is very easy for Greenpeace, which is a product of the industrialized countries, to denounce [word indistinct] but why doesn't Greenpeace raise the money to pay the salaries of the Oruro workers who will lose their jobs by not processing this material? [end recording]

COLOMBIA

Petroleum Sector Lacks Environmental Safeguards

93WN0428A Santa Fe de Bogota EL ESPECTADOR in Spanish 5 May 93 pp 1, 3B

[Text] Neither the State nor private citizens have been careful about managing natural resources when authorizing or carrying out oil field production.

The situation is such that, according to Health Minister Juan Luis Londono, most of the 998 wells said to be commercially viable currently do not comply with the minimum health standards required by law.

Moreover, a document known to this newspaper describing the visit made by several authorities to the main oil production zone in Casanare recognizes that "both Ecopetrol and its affiliated companies have committed errors deserving of intervention on the part of the health authorities, which should have been resolved."

The Government has thus committed to implementing a series of environmental protection programs in the zones where crude oil activities are carried out.

Yesterday, during a conference held at the Senate's Committee V by Congressman Eduardo Chavez, the minister characterized as "monstrous" the environmental impact of this industry and warned that "the companies involved are seriously affecting the local populations' health conditions."

As demonstration, he made public a report that the ELF company was causing spillage of polluted water and atmospheric emissions inappropriate for the community.

In his opinion, the different phases of oil production have various environmental effects, the most serious being the water, the distribution of by-products, and the civil works carried out in constructing the facilities.

In Londono's view, in order to contain this "accumulated carelessness," systematic plans must be developed leading to regulation of a situation in violation of environmental policy, and programs must be designed that will in the future permit these violations to be avoided."

To that end, he revealed that he had signed an agreement for $1 billion with the Panamerican Health Organization to carry out a study of occupational risks at the Casanare oil facility.

"Mea Culpa"

With respect to the document describing the official visit, Vice President for Ecopetrol-Related Operations and Cusiana Manager Engineer German Espinosa commented on concern about the geological legislation.

For his part, Engineer Edmond Baruque, of the Lasmo company, recognized that "effectively, they lack the health authorizations and environmental permits to legalize their operations in the wells subject to security measures."

He said that the Health Ministry does not concern itself with enforcing the legislation and that for that reason the current problems have been caused by "force of habit."

For his part, Engineer Jorge Lopez, of Maxus Company, admitted that situations were presented that compromised the sanitation of the water which serves as the aqueduct for the town of Aguazul because of the heavy rains."

Finally, a commitment was made to overcome these anomalies as soon as possible.

DOMINICAN REPUBLIC

Mighty Nizao River Now Small 'Stream'

93WN0414Z Santo Domingo LISTIN DIARIO in Spanish 7 Apr 93 p 15

[Article by Santiago Estrella Veloz: "A Formerly Bountiful River Is Now Languishing"]

[Text] Rancho Arriba, Cerros de Montenegro—The formerly bountiful Nizao River is drying up to the point that it can now be crossed on foot. This represents a real threat to the future of the Jiguey and Aguacate dams, which cost more than 7 billion pesos.

"What has happened to this river is a terrible thing," one resident said. "Between Los Quemados and Montenegro, motorists and people alike cross it as if it were not there, because it is almost dry."

In some places the Nizao River gives the appearance of a treeless plain littered with rocks—an appearance so desolate that it is frightening, especially at nightfall.

The oldest residents of these localities in the high mountains of the Central Cordillera can remember the time when the Nizao River—which is 133 kms in length from its source in La Vega Province to its mouth at the village of Nizao on the Caribbean—had a consistent flow of up to 16 cubic meters per second.

Now, however, it is a mere stream, although fortunately it is fed by some tributaries downstream such as the Mahoma and Mahomita rivers.

Explanations

The forestry engineer Eleuterio Martinez—one of the most qualified experts in his field in the Dominican Republic—attributes the low volume of water in the river to various factors:

1. The deforestation to which the Nizao River Basin has been subjected, especially in the high mountains, where a wood products industry based on sawmills had existed until 1967, at which time the sawmills were shut down by President Joaquin Balaguer.

2. The forest fires, largely caused by the severe drought that during various periods has impacted the region and the rest of the country.

3. The increasing erosion that has resulted from the deforestation.

As a result of this erosion, thousands of tons of material (earth and even large rocks) have wound up in the river, blocking the natural watercourse.

The earth thus carried away settles in the reservoirs behind the dams, thus shortening the useful life of the reservoirs.

The Nizao River Basin is 1,076 square kms in area. It is considered to be one of the most seriously deteriorated river basins in the entire country.

The UN Agency for International Development (AID) has said that "the deterioration of the river basins in the Central Cordillera is so critical that the situation calls for emergency measures and drastic action comparable to the shutting down of the sawmills."

The agency recognizes, however, that protection and rehabilitation is not as easy as shutting down the sawmills, inasmuch as the river basins "are filled with hardscrabble farmers on their small plots."

"Massive resettlement is impossible," it says, "because there is no new frontier for traditional agriculture in the Dominican Republic."

"Integrated management of the land worked by small farmers is the only viable solution for continuing the productivity of the river basins," says the field study "Environmental Profile of the Dominican Republic."

Resettlement Program

In the case of the Nizao basin, the Dominican Government has initiated a resettlement program to resettle small farmers whose farms are near the Jiguey and Aguacate dams. The program would provide these farmers with economic incentives for each tarea [a land measure] planted to trees.

Informed sources, however, are of the opinion that although the effort is a good one, a greater injection of economic resources is needed so that results can begin to be seen before the Nizao River dries up.

The reforestation program in the Nizao Basin is headed by the agricultural engineer Cesar Sandino de Jesus—a former secretary of agriculture—who has been able to do very little, precisely because the resources at his disposal are very limited by comparison with the needs.

MOROCCO

Conference Discusses Environment Strategy

LD2505220893 Rabat RTM Television Network in Arabic 2030 GMT 25 May 93

[Text] The future of the environment in one of the most important parts of the globe, the Mediterranean, was the focus of discussions at the ministerial conference on the environment in the Mediterranean. The discussions focused on the second stage of Mediterranean environmental strategy for the next three years.

The conference is scheduled to end its proceedings today by endorsing a number of resolutions and recommendations. The Moroccan experts expected that the conference will produce a comprehensive vision of the strategy for the national environment, the strategy defended by these experts at the Casablanca conference from the premise of the accumulation of many years' experience in the environmental sphere. These experts and officials want a national strategy taking into consideration the regional dimension of the position of Morocco, which has for years been active in the environmental sphere within the framework of Moroccan laws, international charters, and regional agreements. For example, there are the efforts of the National Center for the Safety of Maritime Navigation:.

[Begin recording] [Spokesman for National Center for the Safety of Maritime Navigation] More than 500,000 ships pass through the Mediterranean every year, some carrying oil products, some carrying hazardous materials. Then we have in the Atlantic more than 2 million tonnes of hydrocarbons [as heard]. As regards prevention, the daily continuous task of this center is to monitor and guard Moroccan ships and also foreign ships. As regards prevention, we work in total coordination with the Ministry of Interior and with the Secretariat for the Protection of the Environment. Within this framework, an important project has been accomplished: a national quick-action plan for the confrontation of pollution accidents. [end recording]

[Announcer] The new Moroccan law provides for all ships and carriers to keep a distance of more than 50 miles from the Moroccan shore. This is only part of the attempts and many efforts in the field of the environment, efforts which experts and official wish today to operate within the context of a general strategy.

Minister Basri Appeals to North Mediterranean Nations

LD2505184993 Rabat MAP in English 1306 GMT 25 May 93

[Text] Casablanca—Moroccan Minister of the Interior and Information Driss Basri Monday called here on the rich nations of the north bank of the Mediterranean to further heed "the serious environment issues which are sometimes of vital importance and which particularly affect the countries of the southern bank" of the sea.

In an address before the opening here Monday of the Ministerial Conference on Environment in the Mediterranean Region co-sponsored by the World Bank and the European Investment Bank, Basri recalled recommendations and workplans adopted at last year's Earth Conference. He said the Mediterranean basin was chosen as the best site for testing ecology protection activity.

He cited population growth, tourism, industrialization, overuse of natural resources as redoubtable threats for the eco-system and sea life adding that south Mediterranean countries are also faced with drought, natural resources exhaustion and degradation of urban milieux.

Basri said north and south Mediterranean nations are bound by the threats and must combine efforts to find a genuine method for promoting both development and environment in the Mediterranean.

RUSSIA

Russian Scientists' Open Letter to Caspian States on Endangered Fisheries

937C0228 Moscow ROSSIYSKIYE VESTI in Russian 7 Apr 93 p 3

[Open letter by Prof I. A. Barannikova, doctor of biological sciences; V. K. Vinogradov, doctor of biological sciences; M. Ye. Vinogradov, academician Russian Academy of Sciences; A. D. Vlasenko, candidate of biological sciences; O. V. Gritsenko, doctor of biological sciences; A. A. Yelizarov, doctor of geographical sciences; K. A. Zemskaya, candidate of biological sciences; Prof V. K. Zilanov, candidate of biological sciences; V. P. Ivanov, candidate of biological sciences; Prof B. N. Kazanskiy, doctor of biological sciences; L. A. Kuderskiy, doctor of biological sciences; B. N. Kotenev, candidate of geographical sciences; Prof P. A. Moiseyev, doctor of biological sciences; I. V. Nikonorov, doctor of technical sciences; V. M. Nikolayev, candidate of economic sciences; D. S. Pavlov, Russian Academy of Sciences academician; Prof N. V. Parin, doctor of biological sciences; Prof T. S. Rass, doctor of biological sciences; V. V. Sapozhnikov, corresponding member Russian Academy of Natural Sciences; O. A. Skarlato, academician Russian Academy of Sciences; T. I. Spivakova, candidate of juridical sciences; S. A. Studenetskiy, corresponding member of Russian Academy of Agricultural Sciences; Prof N. P. Sysoyev, doctor of economic sciences; under the eyebrow head of "Open Letter": "We Only Have One Caspian"; first paragraph is list of individuals to whom the letter is addressed]

[Text] To the president of the Azerbaijan republic, Mr. A. Elchibeyu; the president of the Islamic republic of Iran, Mr. A. A. Kh. Rafsanjani; the president of the Republic of Kazakhstan, Mr. N. A. Nazarbayev; the president of the Russian Federation, Mr. B. N. Yeltsin; the president of Turkmenistan, Mr. S. A. Niyazovu

Respected leaders of the Caspian States,

We, Russian scientists and specialists in the fields of ichthyology, ecology, fisheries, economics, and international relations, consider it our professional and civil duty to bring to your esteemed attention the catastrophic situation with regard to the fish in the Caspian basin and, above all, the principal wealth of that water body, the sturgeon.

As we know, Caspian sturgeon—the Russian sturgeon, the great sturgeon, the starred sturgeon, the sterlet, and the *ship* sturgeon—which spawn in the rivers that empty into the Caspian Sea and which feed all over that sea, provide 90 percent of the world's sturgeon catch. In essence, the Caspian and the rivers that empty into it contain the world's gene pool of sturgeon and remain the world's only storehouse of species' diversity of those fish, which are among the most ancient on Earth.

The history of sturgeon catches and the latest scientific research show that to preserve those valuable species of fish and to use them in an ever sensible manner, we must take in only mature specimens, in strict compliance with scientific recommendations and exclusively in rivers during their spawning migrations.

In the past, in the first half of the twentieth century, when sturgeon fishing in the sea was under development and many young fish were being caught, the catches in the Caspian were only 5,000-6,000 tons.

Later, in 1962-1965 and even up to 1991, marine fishing on most of the waters of the Caspian Sea was banned as a result of recommendations made by scientists, which lead to a rise in the sturgeon population. There were limits placed on the fishing that was done during that time, only the lowlands of the spawning rivers were fished, the necessary quantities of mature fish were passed over for the sake of natural reproduction, some of the sturgeon were used for reproduction in 13 sturgeon hatcheries, and nearly 93 million young Russian sturgeon, starred sturgeon, and great sturgeon were released into the Caspian Sea every year as a result of pisciculture. Over the past five years, the release by hatcheries on the Volga River of young sturgeon has accounted for 58 percent of the Caspian great sturgeon schools, 27 percent of the Russian sturgeon schools, and almost 53 percent of the starred sturgeon schools.

The development and implementation of that complex system of measures for regulating fishing and reproduction and for protecting or banning marine fishing were the result of the creative work of fishery scientists, specialists, and practitioners from all the Caspian republics, which made it possible to have stable sturgeon catches of 22,000-27,000 tons in the late 1970's and in the 1980's.

In recent years, however, as a result of the breakup of the Soviet Union, sound rules for fishing have not been observed, and the unified fish-protection agencies have broken up, and, as a result, the violations associated with sturgeon fishing have become massive. The fact that the ecosystem of the Caspian basin is all one system is being completely ignored, with the reproduction of sturgeon—including hatchery reproduction and raising—taking place primarily in the rivers that empty in to the northern Caspian, and the feeding taking place in the sea, with a definite cycle of migration along the shores of all the Caspian states. In connection with that, a system for providing the Caspian states with sturgeon catches via river fishing has been developed, with the size of the takes based on the contribution made by those states to the reproduction of the fish and on the level of their restraint in terms of marine fishing. Thus, the fishermen of each state can also get their legal share of the sturgeon takes in the future, too. Despite all that, the sturgeon continue to be destroyed rapaciously and uncontrollably right in the sea, and as early as 1992, the takes of those valuable fish amounted to only 8,000 tons, that is, they dropped threefold in a short period. In such conditions,

the number of mature fish that make it to the spawning rivers has dropped, as a result of which the efficiency of natural reproduction has dropped. With the Russian sturgeon, for example, it has dropped fivefold. The number of mature great sturgeon migrating to the Volga River has dropped dramatically, and as a result, the hatcheries cannot produce the number of young of that species needed to maintain its population.

Scientists are predicting that if we don't stop the maritime fishing, the sturgeon population will decline even more.

What is also doing a great deal of harm to the sturgeon populations is the continuing pollution of the spawning rivers and of the Caspian Sea itself.

In light of the ecological features of the sturgeon, its species diversity, and the structure of its populations, we are convinced that, if the continuation of such unsound maritime use of their reserves, in conjunction with the pollution, is not stopped and reversed, those processes will, in a very short time, lead to an irreversible subversion of their population and to the total loss of those valuable fish for the peoples of the Caspian states.

Foreseeing all that, fishery scientists and practitioners and international-law specialists in 1992 prepared a draft law that is now being examined by the proper agencies of your countries. The draft—Agreements on the Preservation and Use of Biological Resources of the Caspian Sea—is, we are thoroughly convinced, mutually beneficial, nondiscriminatory, and, essentially, the only alternative for achieving consolidation of the efforts of all the Caspian states not only in terms of preserving the sturgeon population, but also in terms of increasing it and, consequently, creating a stable take of those valuable fish for the good of the interests of the indigenous population and the professional fishermen of the coastal regions of the Caspian Sea. Dragging out the signing and the implementation of this most important international document will go against common sense and against the spirit of the agenda adopted at Rio de Janeiro for the twenty-first century.

As a result, we ask that you, elevated representatives of the people, focus your attention on preserving the sturgeon and that you exert your intrinsic political will to achieve as quickly as possible the signing of the Agreements on the Preservation and Use of Biological Resources of the Caspian Sea.

There is no other way to save the sturgeon, which are a national treasure for the Caspian states, from total destruction.

Cobalt Radiation Found at Semipalatinsk

LD2505193093 Moscow Ostankino Television First Channel Network in Russian 1700 GMT 25 May 93

[From the "Novosti" newscast]

[Text] A Japanese expedition has found an area of increased radiation with the presence of cobalt in the vicinity of the Semipalatinsk nuclear test range. The members of the expedition imagine that, during the existence of the USSR, tests of a special cobalt bomb, used to pollute the environment, probably took place there. Ecologists are now studying the information in Tokyo.

French Role in Tomsk-7 Explosion Cited

934D0050A Moscow NOVAYA YEZHEDNEVNAYA GAZETA in Russian No 7, 21-27 May 93 [Signed to press 20 May 93] pp 1, 5

[Article by Kirill Belyaninov under the heading "Version": "French Nuclear Wastes Exploded at Tomsk-7"]

[Text] "...According to reports from I. P. Nedelchuk, head of the West Siberian Regional Center of the Russian State Committee for Emergency Situations, and A. V. Pankratov, Tomsk Oblast Civil Defense chief of staff, at 9:15 am (Moscow time) on 6 April 1993 at Facility No 15, Tomsk-7, of the Siberian Chemical Combine (under the Russian Ministry of Atomic Energy) there occurred an explosion of a container containing a mixture of paraffin and tributylphosphate. The explosion was accompanied by a release of uranium and plutonium salts...

As a result of the explosion:

1. Structures at Facility 15 were destroyed.

2. A fire started and was extinguished in one hour through the efforts of the chemical combine's own emergency responders...

As of 8:00 pm (Moscow time) on 6 April 1993 the radiation level was:

—30 millirems/hour in the area of the explosion;

—40 millirems/hour 19 kilometers northeast of the facility.

The estimated extent of contamination is 1,000 hectares... The maximum radiation dose received by personnel was 0.6 rem/hour..."

No matter how much one might like to, there is no way to turn this document into a sensation. True, there are some discrepancies in the official reports. For example, International Atomic Energy Commission experts, whose informed opinions are constantly being cited by the Ministry of Atomic Energy when it wants to calm an alarmed public, did not draw any conclusions whatsoever, merely stating briefly and frankly that "the three days spent by specialists at the facility were insufficient to arrive at any serious conclusions." The dispute between the Russian State Committee for Hydrometeorology, which found plutonium-239 emissions in the atmosphere, and the Ministry of Atomic Energy, which found nothing, has not yet been resolved.

The rumors that have been alarming Tomsk for several years were dispelled by Viktor Mikhaylov, the Russian minister of atomic energy. At a press conference devoted to the effects of the accident Viktor Nikitovich stated that his ministry had not signed any contracts with foreign partners, that not a single gram of Western nuclear wastes was being processed at Tomsk-7, and that everything that exploded was of our country's own manufacture.

First a caveat: I have no desire to accuse anyone of anything. After all, the minister might well have been unaware what was happening in his own ministry. But such a contract does exist. No. 54-02/60006, signed in March 1991 between the Tekhsnabeksport Association (part of the Russian Ministry of Atomic Energy) and the Cojemat Company, representing the French Commissariat for Atomic Energy. This contract provision for the shipment to Russia "in 1992-93 of regenerated uranium in the form of mixed uranium oxides (I308) in quantities of up to 150 tonnes annually, and in 1994 and subsequent years in the form of hexafluoride (I6) in quantities of up to 500 tonnes annually. This contract shall remain in effect until the year 2000." Reprocessing of this French uranium was to be done by the Siberian Chemical Combine, which is popularly known as Tomsk-7.

Actually there is nothing all that extraordinary about this contract. Reprocessing and enrichment of foreign nuclear materials has long been eagerly engaged in by England, France, the United States and other highly developed countries. However, with one small difference: after reprocessing and fuel manufacture the wastes incidentally created are returned to their original owner. In this case the Siberian Chemical Combine only sends back to France the finished product, i.e. fuel for nuclear power plants. The Russian side agreed to deal with the wastes independently: "Under the terms of this contract the Siberian Chemical Combine will keep, in regard to U-235, up to 0.3 percent by weight of the uranium hexafluorides, which are contained in containers with a volume of 2.5 cubic meters and stored at appropriate waste storage areas located on the premises of the separation plant until the development of technologies that will permit the comprehensive processing of these wastes."

The agreement was given a positive assessment by a commission established in February 1992 on orders from then-state secretary E. Burbulis to evaluate the contract. Though it did note, albeit indirectly, that "the project makes provision for burial of wastes in existing underground storage facilities. This means of disposal does not ensure complete safety... As the project is implemented a large quantity of depleted uranium hexafluoride (the waste product) will accumulate; however, that material does not undergo reprocessing." Finally, it noted that "the commission was not provided with confirmation by competent Russian Federation organs of international certification granting the right to transport radioactive products on special terms" and "comprehensive assessment of effects on the environment of the city of Tomsk and adjoining areas has not been carried out in full." Nevertheless the go-ahead was given. Facility No. 15, where the explosion occurred, was specially built to handle the French uranium.

"The accident occurred precisely as a result of the difference in the characteristics of the materials being processed," said one of the members of that evaluation commission who asked to remain anonymous for the time being. "The regenerated uranium supplied by the French is similar to our own but contains a higher level of uranium isotopes—232, 234 and 236—and also contains transuranium elements and products of U-232 decay which make it more active. To put it simply, working with Russian and imported materials is very different in terms of those materials' characteristics. Evidently both French uranium and our uranium were in the same container, which became overheated due to an inappropriate separation process, resulting in an explosion. You are aware of the effects of that accident."

More Waste, Good and Varied

Of course, that is just one theory. But even if it is confirmed, nothing will change in this country—the processing of Western wastes brings in too much money for that to occur. Last year, though it spent R3.214 billion [rubles] on "processing of spent nuclear fuel" the Ministry of Atomic Energy easily recouped its costs and more "due to the value of the products sold." And it appears that it has no intention of stopping there.

In February 1993 a group of deputy ministers and chairmen of the most diverse Supreme Soviet committees discovered an annoying mistake in the Law on Environmental Protection. Point 3 in Article 50 of the law, which took effect in February 1992, banned "the importation of radioactive wastes and other materials into Russia's territory for the purpose of their storage or disposal." As a result, in the opinion of a group of responsible individuals, all sorts of unpleasant things have happened. Some of these were set forth by Nikolay Yegorov, deputy minister of atomic energy, in a letter to the Supreme Soviet: "In 1992 the operations of a number of enterprises in the nuclear industry were virtually paralyzed and confidence was undermined in Russia as a partner capable of strictly complying with the international obligations that it has assumed." Going on to cite two arguments that are indisputable under our present circumstances—the economic argument, as Russia's losses due to the ban on the importation of radioactive materials in the past year alone were $66 million plus more than R2.0 billion, and the social argument, as the situation at processing facilities, due to the fact that they are located in closed cities, is tending toward a social explosion—Nikolay Nikolayevich urgently insisted on the complete elimination of Point 3, Article 50 from the law. Thereby Russia would increase its international prestige, open up new horizons in the world nuclear technologies market, and earn millions of dollars that our country needs so badly.

It was at this point that I became hopelessly confused. So far no law has in any way prevented the Ministry of Atomic Energy, along with the Ministry of Health and the Ministry of Defense, from quietly going about importing and processing Western radioactive materials at enterprises in Russia. Furthermore, those ministries have long been doing this and doing it successfully, as attested to by the information sheet appended to the letter. If that information is to be believed, then it appears that last year Russia, in addition to the nuclear weapons withdrawn from Belorussia, Kazakhstan and Ukraine, also imported:

—natural uranium from Hungary, Czechoslovakia and Ukraine to be used in the manufacture of nuclear fuel;

—regenerated uranium from France for enrichment at Russian plants;

—pellets of low-grade enriched uranium from Kazakhstan for the manufacture of fuel assemblies for RBMK and VVR-1000 reactors;

—spent fuel from nuclear power plants and research reactors built according to Soviet designs in Hungary, former Czechoslovakia, Bulgaria, Finland, Germany, Ukraine and Kazakhstan;

—radioactive pharmaceuticals and radioactive isotopes from England, France, the United States, Sweden and Germany.

In addition to all this, natural uranium from the Central Asian republics bound for export is transshipped via Russia. In a single year a total of 8,196,000 kilograms of radioactive materials were imported into the country. Each year this brings Russia $100 million plus several billion rubles. The cost of utilizing radioactive wastes—and processing produces almost twice as many wastes as there were originally—has thus far not been calculated by anyone in Russia.

A draft decree prepared by the Supreme Soviet preferred not to mention either the environmental or the financial aspect of the matter, but the reasons behind a legislative change was formulated very specifically: "In order to legally establish and secure the expanding practice of working interaction between the executive and legislative branches in regard to coordination of environmental protection and commercial activities the Russian Federation Supreme Soviet hereby decrees: ...the applicability of... the Law on Environmental Protection does not extend to radioactive materials, including spent nuclear fuel from nuclear installations, imported for processing or temporary storage for subsequent processing, or for subsequent return of the radioactive materials to the country from which they are imported..."

"No one is talking about us storing Western radioactive wastes here," Nikolay Yegorov said, dismissing my bewilderment. "It is just that in some regions some local organs regard the ban on waste storage as a ban on any importation whatsoever."

True, Nikolay Nikolayevich refused to name those regions for us, but Valeriy Menshchekov, deputy chairman of the Supreme Soviet Ecology Committee, to whom the Ministry of Atomic Energy's letter was actually addressed, finally dispelled all my doubts:

[Menshchekov] This change in the law is prompted solely by economic necessity.

[Belyaninov] But will not this amendment enable about a hundred ministries and other agencies to quite legally import nuclear wastes into Russia and store them? This change in the law will also give any small enterprise the opportunity to earn money by importing radioactive materials.

[Menshchekov] Well, that would just be some kind of independent local action. Who would want to turn our country into a dump?

The Price of Survival

In August 1986 the city of Philadelphia decided to clean up the city. A total of 14,000 tonnes of highly toxic wastes were collected, loaded on the ship "Hayanne Sea" and prepared for shipment. Two weeks later the ship was ejected from U.S. territorial waters: the federal authorities considered its cargo too hazardous. The waste's owners were not particularly concerned: "I'll kick myself if there are not enough crazy people somewhere in the world who are willing to take our garbage," declared Gary Perks, an official with Philadelphia's city hall. Despite Perks' optimism those crazy people could not be found in a 27-month voyage. The wastes were finally dumped somewhere in the Indian Ocean.

Philadelphia was too hasty. In 1986 economic reform in the Soviet Union was only beginning, and the word "small enterprise" was something that today's Russian businessmen scarcely dreamed of. Now everything would be so much simpler. Three months ago the Russian freighter vessel "Kirov" quietly offloaded in St. Petersburg several tens of tonnes of plastic wastes from the U.S. city of Baltimore. Chemical wastes from the United States and Canada have been shipped to Russia on board the freighters "Khudozhnik Saryan" and "Nadezhda Obukhova." One year ago the U.S. firm Tradeway Incorporated attempted to export to St. Petersburg almost one million tonnes of wastes: 60,000 tonnes of sand contaminated with mercury, food scraps, oily rags and household garbage collected throughout Europe. Apparently it is simpler and cheaper to bury these things in Russia. Two months ago the German-Austrian firm Tet AG attempted to obtain permission to import a total of 1,200,000 tonnes of contaminated soil from Western Europe into Leningrad Oblast each year.

The end of the cold war, in addition to its various political dividends, also brought the West benefits that are purely utilitarian. Specifically, benefits in terms of reclamation. The developed countries have always gotten rid of their toxic waste, attempting to do so as far away from themselves as possible. In doing so expense

was not particularly taken into account, and the cost of disposing of waste somewhere in Africa was much cheaper. In 1987 the government of Guinea-Bissau spent 10 minutes looking over a proposal from several American corporations and then agreed to accept 15,000,000 tonnes of toxic waste. Everyone was happy. Guinea got $600 million for the deal, a sum that is four times larger than that country's gross national product, and the American corporations saved at least $1.5 billion. That is roughly how much it would have cost to reclaim the waste in the United States.

"The geography of waste exports has now changed completely," affirms the companies coordinator of Greenpeace in Amsterdam, Jim Packet. "Whereas in the past most of them went to countries in Africa and the Caribbean, now the destination of most exporters is countries in Central and Eastern Europe, particularly the former Soviet Union."

The period of initial capital accumulation in Russia has been characterized by the emergence of an unbridled passion for conducting trading operations. What is being traded is not of any particular importance. And the difference between world prices and prices in Russia does not bother our country's entrepreneurs too much: they pay in dollars. The St. Petersburg firm Bazis is currently engaged in active negotiations with the German firm HLY GmbH concerning the shipment of 70 tonnes of outdated paints to Russia. Reclamation of each tonne of paint would cost $500 in the West. The Russian company agreed to a price of $50 per tonne. The expected profit of a little more than $3,000 is clearly to Bazis' liking.

"In the West these wastes are incinerated, but I am certain that the Russian company will simply dump them in the Gulf of Finland," said Jim Packet.

As a result, dispatches from the new economic front more and more frequently are reminiscent of a tour of a dump:

—the Swiss firm Promos has concluded a preliminary agreement with the Bryansktsement Production Association to import 120,000 tonnes of industrial waste which will subsequently be incinerated in cement furnaces;

—the Irrit Company has given permission for German industrial waste to cross Russia in route to Uzbekistan;

—the American company Lares is attempting to obtain a license to import computer scrap into Russia;

—using the Latvian firm Inkom as a middleman, the Swiss firm Eco Energy is preparing to ship printing industry wastes to Russia...

Yet there are means much simpler than these. According to information obtained by us the Armed Forces have also decided to start making money off of toxic waste imports. The scheme is simple: at our air force bases in Germany cargo aircraft are loaded with waste and then, without any customs inspection or any other unnecessary formalities whatsoever, the containers are shipped to Russia. Nor is there any need to worry too much about how to reclaim them: the country is big, and there are more than enough wastelands and dumps that belong to no one.

"The prospect of being turned into an international toxic waste dump is for us a very real one," commented V. Timofeyev, deputy minister of security, at a session of the Russian Presidential Council on Environmental Policy.

Obviously it is futile to point to international agreements. Just as it is pointless to mention the Basel Convention, which forbids all exports and imports of chemical waste and was signed by the Soviet Union in March 1989. Because the time-honored definition of the USSR as "the Congo with ballistic missiles" that has served many generations of Soviets is now hopelessly out of date. In July 1988 the Congo refused to conclude a contract to dump Western toxic waste there, even though the deal promised to net the country $84 million. "We would be better off to be poor but healthy," said then-minister of information Christian Gilbert-Bembet. But sage advice is seldom heeded in Russia...

* * *

Russia: A Map of Nuclear Minefields?

Mayak Chemical Combine (Chelyabinsk-65): located in the eastern part of the Northern Urals near the city of Kyshtym. The complex was built in 1945-46 to extract plutonium from the fission products of natural uranium that had irradiated in breeder reactors. Currently only one heavy water reactor is in operation. Five uranium-graphite reactors were shut down in 1991-92. A spent fuel reprocessing plant that was modernized in 1978 has been adapted to process fuel from transportation reactors of the BN-350, BN-600 and VVER-440 models. A demonstration installation for the vitrification of radioactive waste is in operation.

Liquid wastes containing high levels of radioactivity have been stored here in stainless steel cisterns since 1953. In 1957 an explosion occurred in one of these, and approximately 70 tonnes of wastes with a total radioactivity of approximately 20 million curies were released into the environment.

Siberian Chemical Combine (Tomsk-7): located not far from Tomsk on the Tom River. In the mid-1950's a plant was built here to process spent fuel from five dual-purpose reactors which were used as plutonium-producing breeder reactors. In 1978 an enterprise was set up to produce plutonium for military purposes.

In the opinion of foreign experts the local storage facility for radioactive waste is not adequately secure. In the 1970's waste was discharged directly into the Tom River, resulting in radiation contamination of the river and

adjoining areas. On 6 April 1993 an explosion occurred in a container at the combine.

Mining and Chemical Combine (Krasnoyarsk-26): construction of a number of enterprises (with three industrial reactors) producing plutonium in Krasnoyarsk Oblast began in the 1950's. In 1978 a plan was approved authorizing construction of a plant to process spent fuel from VVER-1000 reactors in the same region, and that construction should be complete by 1997-98. The plant's annual output will be 1,500 tonnes.

Experts Still Divided on Threat Posed by Sunken Submarine

93WN0435A Moscow IZVESTIYA in Russian
22 May 93 p 15

[Article by B. Konovalov: "'Nuclear Contagion' in Ocean"]

[Text] **Loss of the Komsomolets nuclear submarine raised a very important question concerning the threat to the world ocean posed by such catastrophes. Some have even started talking about a "maritime Chernobyl." Is that justified?**

There are two sources of danger on board the Komsomolets—the nuclear power installation and two torpedoes armed with plutonium warheads. The crew did everything possible in order to "muffle" the submarine nuclear reactor. All protective measures against development of nuclear processes in the installation were implemented, all devices designed to consume neutrons generated by uranium fission to maintain the chain reaction in the fuel were activated.

Thus far there are no signs of any perceptible destruction of the primary circuit of the reactor or serious radioactivity. Those products of nuclear fission which accumulated in the reactor are being blocked by the rod jackets and the entire structure of the active zone as well as by the reactor vessel itself.

The sub rests at a depth of 1,700 meters. A rather strong current was found in that part of the ocean with a speed of up to 0.3 meters per second, but no pronounced "diffusion" of the radioactive patch from the reactor has been noted up to now.

Specialists from a famous physics-energy institute, headed by Academician Valeriy Ivanovich Subbotin, evaluated the radiological consequences of the possible destruction of the active zone of the reactor and nuclear warheads, independently of the designers of the submarine Komsomolets. In their opinion this type of disaster does not pose a mortal threat to the world ocean. Experience indicated that accidents with the American nuclear submarines Thrasher and Scorpion, accompanied by the destruction of their hulls at a depth of around 3,000 meters, did not cause global radioactive contamination. It is of a localized nature.

Therefore the operation of nuclear submarines, atomic icebreakers, and transport vessels with nuclear installations in principle is quite permissible. Atomic power installations operating with uranium do not pose a global threat. This is also confirmed by experience gained in the discharge of liquid waste into the Irish Sea which was regularly done by Great Britain.

Natural radioactive elements are dissolved in water and a comparatively small increase in their concentration will be of little consequence. Not everyone is aware that sea water contains a substantial amount of uranium. At one time there was serious discussion of plans for "extraction" of uranium from sea water.

Artificial radioactive elements which are not encountered in nature are a different matter. They include plutonium in nuclear warheads. Plutonium is one of the most radiotoxic elements. One ten-thousandth of a gram of plutonium in the organism causes death. In the assimilation of plutonium by living organisms it may pass through the natural "food chain" to man without obstacle. With the consumption of seafood with a large accumulation of plutonium it is possible to expect some serious consequences for the organism.

The condition of the Komsomolets plutonium warheads causes alarm among specialists. It turned out that sea water serves as a kind of electrolyte completing an electrical circuit between the warhead casing and the submarine hull. Sooner or later this will lead to a destruction of the warhead casings and the "plutonium genie" will burst out.

What can be done? Should the submarine be raised and decontaminated? Should a "sarcophagus" be built on the bottom of the ocean similar to the one at Chernobyl? Specialists at the FEI [Physics and Power Engineering Institute] tend toward the latter. According to their evaluations even total discharge and distribution of warhead plutonium in the sea will not bring any perceptible consequences for the population. It is true, that even though in this case they are speaking as independent specialists, they are still Russian ones. It would probably not be excessive to conduct a more thorough evaluation of the state of Komsomolets using deep-water bathyscaphes, with involvement of international specialists.

In recent years, in connection with the gradual aging of submarines and the intensive disarmament process another problem is becoming rather pressing for Russia—recycling of materials from these submarines. Their titanium hulls are extremely valuable. There is also quite a lot of other valuable materials. Specialists believe that they could be safely recycled for use in the atomic industry. But that remains to be proven with figures and data produced through laboratory research. Thus far there are no programs or established standards for such specialized research. At the same time, there is a need for that.

Northern Fleet Slow to Curb Polluting Practices

93WN0435B Murmansk POLYARNAYA ZVEZDA in Russian 5 Mar 93 p 2

[Interview with A. V. Lobov, maritime inspection specialist, by V. Denisenko; place and date not given: "Vaska Listens But Continues Eating, or When Will the Law Apply to the Military as Well?"]

[Text] Much has been written about the first ecological check of the Northern Fleet. Small wonder, since the boundaries of that "state within a state" have been pierced for the first time ever. It is natural that the navy, which was under no control whatsoever, formerly was far from compliant with those basic nature protection measures that are binding for civilian sailors.

Therefore time was allowed to correct sins, tens of instructions were prepared, and kilograms of paper were used up. Has anything at all changed since that time? This was the topic of our conversation with A. V. Lobov, a specialist of the Maritime Inspectorate of the Oblast Committee on Ecology and Natural Resources who participated in one of the regular inspections.

[Denisenko] Aleksey Valeryevich, what were you checking that time?

[Lobov] Our task included inspection of naval vessels undergoing repair at Dockyard 35. What we saw once again confirmed a known fact: the military are their own masters and have no intention of reckoning with anyone. The greatest pity is that their opinion of themselves is corroborated in our laws. Here are two concrete example.

Special logs of the aircraft-launching cruiser Kiev show that oil-polluted water has not been drained from the ship since July 1991. For one and a half years it has been dumped in Kola Bay—there is no place else. According to our calculations, which are confirmed by log entries, the bay turned out to be contaminated by over 100 tonnes of fuel-polluted water.

The second example. On one of the destroyers documents appear to be in order: all bilge water was pumped out to a bilge water collector. Then it turns out that at the specified time it was actually undergoing long-term repairs. It seems out that at that time it was in no condition to receive oil-polluted water. This is a clear case of document falsification.

[Denisenko] What is now going to happen to the violators?

[Lobov] In accordance with the new law of the Russian Federation on protection of the environment we have the right to punish the military unit with a fine of from 50,000 to 500,000 rubles [R]. That is, the vessel (which is an independent military unit), noted to have violated ecological norms, must deposit the money in the oblast ecological fund.

[Denisenko] Half a million—a significant sum. Is even such a large fine insufficient in order to make it necessary to think before doing?

[Lobov] Alas, no. The cost of armaments on board naval ships is measured in astronomical sums. Comparing them with our fines one reaches certain conclusions.

Our entire activity with respect to the Northern Fleet may be viewed as mere mosquito stings. An incredible amount of persistence is required in order to get on board a ship. There are cases, when using secrecy as an excuse, the military have time to "prepare" for the arrival of an inspector. Frequently we are simply incapable of performing our functions. As before, the navy remains the principle polluter of water in Kola Bay.

I am surprised by something else. The entire army survives on taxpayer money, that is on your and my money. They will pay the fines with our money as well. I personally do not understand what punishment are they being subjected to by the levying of these sums that are so small by their measure, for all that damage they are causing the environment?

[Denisenko] Let us return to the check. What else did you find?

[Lobov] First of all it is necessary to note that not a single one of our recommendations issued last year has been followed. Something has been done at the naval ship repair facilities, whereas in the fleet itself nothing was done. It is sufficient to say that we demanded an increase in the number of oil-polluted water collectors. Last year there were still just three of them. Now only two remain.

I understand the vessel commanders very well when they dump fuel oil and oil-polluted water into the bay. They face the alternative of either sinking, because it takes too long to wait for a collector, or dumping all this filth overboard. For the purpose of record they submit requests which clearly cannot be fulfilled.

Approximately 900 vessels have Murmansk as their port of registration. They utilize 15 bilge water collectors, to say nothing of the large number of oil and trash gatherers. While in the Northern Fleet, which is many times larger than the merchant fleet, there are only two.

Maritime inspectorate repeatedly requested and demanded that the fleet commander increase the number of collectors. If they cannot be bought then old vessels should be converted into temporary storage facilities for water polluted with fuel oil. Instead of that the military trade in vessels that are written off.

More than that, those vessels which have special equipment for the processing of such water do not utilize it because it is broken or no one knows how to operate it. Whenever possible this equipment is removed and dumped. After which we are told that it was never there.

Here it would be possible to talk for a long time about dumping of drainage water into the bay. The thought

that it should also be collected for processing simply does not occur to the military. What about the old ships and small vessels found abandoned along the coast of the Kola Peninsula? The amount of scrap metal in the form of abandoned or scuttled vessels is estimated by our specialists to be 100,000 tonnes. The navy accounts for 80 percent of them.

[Denisenko] Aleksey Valeryevich, do you think it is possible to halt these excesses?

[Lobov] Please understand me correctly, I am all for us having a powerful and efficient navy. But it must meet all of the demands with regard to the protection of nature. Then it will not be difficult to provide money for its support.

As far as your question is concerned it is difficult to answer. In theory the oblast administration can apply pressure on the military since they are using land which is under the jurisdiction of the local administration. In practice, however, I have never seen such pressure applied. After all the Northern Fleet is managed by the Ministry of Defense which is both high up and distant.

It seems to me that in the immediate future the situation will not be changing no matter how hard we try to do our work. There will be progress when the army becomes a professional one. When the sailor and officer will occupy a high-paying job and understand whose money supports them. But until then...

State of Environment in Chelyabinsk Oblast in 1992

93WN0421A Chelyabinsk EKOLOGICHESKIY VESTNIK 'YUZHNIY URAL' in Russian No 2, Feb 93 pp 1-2

[Aleksey Fedichkin report: "Results and Predictions. V.A. Bakunin, chairman of the Chelyabinsk Oblast Committee for the Environment: The Main Result for 1992 Was That the Environmental Situation in Chelyabinsk Oblast Improved"]

[Text]

The Air Has Become a Little Purer

Overall, compared to 1991 atmospheric emissions in the oblast declined apporximately 11.5 percent. This significant decline was the result of concern for nature on the part of enterprises and environmental monitoring on our part, but most of all it was the result of cutbacks in production.

For Magnitogorsk the largest reduction of emissions was made by the Magnitogorsk Metallurgical Combine—about 124,000 tonnes, including 87,000 tonnes through environmental protection measures. For Chelyabinsk the reduction in emissions was considerably less—about 30,000 tonnes, with the Chelyabinsk Metallurgical Combine accounting for about two-thirds of this, but achieved mainly through production cutbacks.

On the positive side, note should be made of the Ural Automobile Plant, where the entire volume of reduced emissions (6,500 tonnes) was achieved as the result of adoption of measures of an environmental nature.

It was possible to achieve significant reductions in emissions at the Magnezit Combine, the Bakal Ore Administration, the Ufaleynikel Production Association, the Yuzhuralzoloto Production Association, and some other enterprises.

Of the many atmospheric protection facilities capable of reducing emissions and brought on line last year we might name (in addition to those already listed in the last issue of the newspaper) the first line of the gas scrubbers for the Nos 3 and 4 furnaces in the sintering shop at the Chelyabinsk Electrometallurgical Combine and a crushing-and-grading factory on the new area at the Shershnevskiy stone plant. Switching the heating furnaces at the metallurgical machine-building plant to natural gas has significantly improved the environmental situation in Verkhniy Ufaley.

Protection in Other Natural Spheres

The Ural Automobile Plant has distinguished itself even more by the fact that it has completed modernization of the southern purification plants, which has made it possible to reduce untreated or inadequately treated waste discharges into the Miass River by 1.7 million cubic meters. Recently the quality of water in the Uy River and the Troitsk reservoir has improved. The purification plants in Troitsk city, which have finally been brought up to full capacity, are in that "catchment."

Virtually all timber management complexes and mechanized timber complexes in the Chelyabinsk forestry administration were included in checks conducted throughout the year, and the Chelyabinsk-65 and Chelyabinsk-70 mechanized timber complexes were checked. Fines were imposed for instances of damage caused, in particular, suits were brought against the Zlatoust Timber Combine in the amount of 513,000 rubles [R] for illegal felling of 62 hectares of valuable conifer stock (a fine of R300,000 was also imposed on this enterprise), against the Krasnoarmeyskiy timber complex in the amount of R1.16 million, and others.

Unfortunately, each check brings in information about new violations—unauthorized takeover of land, illegal felling of trees. A particularly large number of these facts have been found in the collective orchards, whose numbers have grown significantly in recent years. Our inspectors visited the Michurinets, Neftyanik, and Elektrometallurg orchards... The collective orchards in Miass city have been the subject of special discussion. For this reason we prepared a decision for the oblast soviet of people's deputies, banning the clearing of trees in the green belt of Miass city to establish collective orchards along the Ilmen ridge.

I have no qualms about repeating the banal truth that people relate toward nature as if they were favorites. The Zavod imeni Ordzhonikidze Production Association, which is firmly entrenched in the Kashtakskiy coniferous forest, where until recently it was building Vesnyanka summer homes for children, is a persistent violator. So what has been done with this monument to nature? Hundred-year old pines have been illegally put to the axe and a great number of trees have been damaged. We have now managed to stop this environmental crime—a decree has been passed banning the construction of dachas until after we receive the conclusions of a state expert environmental examination. Yu.K. Nesvetayev, deputy general director of the Zavod imeni Ordzhonikidze Production Association, has paid a fine in the amount of R4,500.

We must also pay attention to the question of territories under special protection. Last year we took a complete inventory of them. Proposals have been prepared for the oblast soviet on creating the state Serpiyevskiy game reserve on the territory of Katav-Ivanovskiy Rayon. And what may be of interest to many is this: In our committee we have prepared for publication the manuscript of a book entitled "Territories of Chelyabinsk Oblast Under Special Protection." If I am not mistaken, there is no other similar book in our country. (Editor's note: With the permission of the collective of authors led by A.S. Matveyev, an excerpt from this book will be published in the March issue of our newspaper).

Problems in the Construction of Environmental Projects

Most enterprises are very short of assets to build environmental protection facilities. Add to this the failure by contractors to meet their contractual obligations in the matter of assimilating allocated funds, and we have the expected result. For example, for three years now the schedule for bringing gas scrubbers on line for steelmaking shops Nos 1-8 at the Chelyabinsk Tractor Plant Production Association has been constantly delayed, the gas scrubber for the plasma-arc furnaces in the electric steelmaking shop No 3 at the Chelyabinsk Metallurgical Combine was not put into operation in 1992, modernization of the electrostatic precipitators on the slag-drying drums at the Magnitogorsk Cement Plant has not been carried out, and gas-scrubbing equipment has not been modernized at the electric steelmaking shop No 2 at the Zlatoust Metallurgical Plant. Unfortunately, the production structure has not been reprofiled in the first section of the Karabash Copper Smelting Combine, but postponed until later. Certain other measures whose completion could additionally reduce atmospheric pollution in the oblast have also been held up for the same economic reason.

Violators of Environmental Protection Legislation Must Be Punished

Last year the committee made 27 claims against enterprises totaling about R1.4 million for above-norm and accidental atmospheric emissions, of which R567,000 were exacted. The chief debtor here was the Chelyabinsk Metallurgical Combine, which has to pay R793,000. In addition, 113 depositions have been filed for the imposition of fines on officials in a total amount of R153,000. A total of 37 decrees were promulgated to shut down equipment, units, and production facilities polluting the environment. This produced a real reduction of 42,500 tonnes of emissions.

In 1992 23 suits were brought in the amount of R11.7 million for pollution of reservoirs due to accidents and inefficient operation of purification plants, of which 17 suits have been filed in a total amount of R2.7 million. Some 175 fines were imposed on officials, of which 126 have been exacted, in an amount of more than R103,000. Nine sets of materials have been passed to the prosecutor's office, in particular on instances of pollution in the catchment area of the Ural River (the housing and communal office in the settlement of Kizilskoye), the inefficient operation of purification plants in Verkhneuralsk city, and others.

Into Whose Pocket Should the Money Go?

Polluting enterprises are paying society not only for above-norm and accidental emissions and discharges but also normative emissions and discharges. A system of payment exists that operates on a permanent basis. It should be said that before passage of the law "On Environmental Protection" the monitoring bodies used to be guided by instructions adopted earlier for particular environmental spheres (water, land, air, and so forth). These documents frequently contradicted each other and created confusion and muddle in the work of the specialists. With passage of the law, however, these shortcomings were largely eliminated. We obtained a substantiated, well-worked, and systematized document that provided the oblast committee on the environment and natural resources with the ability to resolve environmental questions more effectively. In particular, last year in accordance with this law we made calculations of the payments for environmental pollution. The total calculated sum for 1992 for the oblast was about R800 million. **The funds received from payments are being distributed as follows: 10 percent is being allocated to the republic budget, 54 percent remains in the budget for the city or rayon where the polluting enterprise is located, and the remaining 36 percent goes into the oblast environmental fund.**

Monitoring of Many Leads to Clean Water

First of all it should be said that much work has been done in the oblast to develop a monitoring system, and at recent conferences in Kyshtym and Perm attended by the chiefs of environmental protection bodies in the Urals and representatives of the Ministry of the Environment and Natural Resources, the experience of our oblast in this direction was supported.

So what is the practical purpose of the automated observation and monitoring system for the environmental situation that has now been created? First of all it makes it possible to coordinate the actions of all monitoring services—the oblast environmental committee, the hydrometeorological center, and the oblast sanitation-epidemiological inspection service. The automated system will also assume the lion's share of the routine work in taking readings and analyzing pollutants. But attention will be focused mainly on monitoring the so-called specific pollutants—the chief enemies of our health. Here we refer to compounds like hexavalent chromium, the aromatic hydrocarbons, dioxin, and heavy metals. Their total concentration in the total volume of pollutants is small but they are hundreds or thousands of times more dangerous than, for example, the oxides of nitrogen or carbon.

Based on modern methods of automated data collection, transmission, and analysis, the monitoring system makes it possible to determine on an operational basis where, who, what, and how much is being emitted into the atmosphere and the other natural spheres. Here, the law of the Russian Federation passed last year "On Environmental Protection," on whose basis every specific violator will be punished to the full, again comes to our aid. In addition, the monitoring system will insure constant measurement of the basic parameters of air and water pollution at particular points in the oblast, make an evaluation of the data obtained at the local level, and transmit them to a central post where they will immediately be processed, and it will provide a prediction of the development of the environmental situation and recommendations to improve it. And it will take not days or weeks but just minutes to detect a source of elevated pollution and make a decision. There is no doubt that all of this will significantly improve the overall environmental situation in the oblast. Incidentally, the Western countries passed through this stage much earlier, as can be seen from the experience gained by the FRG and Japan. But today, making use of that experience, we are going down our own road and we are convinced that it will provide good results.

East Kazakhstan Oblast Sets Fines for Polluters

93WN0421B Almaty KAZAKHSTANSKAYA PRAVDA in Russian 1 Apr 93 p 2

[Anatoliy Akava report: "They Will Have To Pay for Emissions"]

[Text] The East Kazakhstan Oblast soviet of people's deputies has confirmed payment rates for 1993 for environmental pollution. It states in the document that was adopted that this has been done for the purpose of further perfecting the mechanism for the use of natural resources and improving the ecological situation in the region. And in order to establish serious bases for implementing the decree, enterprises that market their products for hard currency will now pay part of the fines for environmental pollution in freely convertible currencies.

There is another important factor. The rates of payment for emission and storage of production wastes will be adjuster for inflation once each year. According to data from the republic State Committee for Statistics and Analysis it has been decided to index losses caused from environmental pollution by a factor of 22.

The new approaches show that finally the local soviets are really becoming spokesmen for the interests of the population living in the region rather than for the industrialists, with whom they were buddies for so many years. Today everything is being put in its proper place, and the enterprise managers have now been forced to consider whether it is better to modernize technology or pay fines for harm caused to the environment.

Moscow To Step Up Anti-Pollution Program

934F0665A Moscow ROSSIYSKAYA GAZETA in Russian 25 May 93 p 3

[Article by B. Kudryavov: "Breath Deeper - We are Passing Through the Capital!"]

[Text] "Chistyy vozdukh [Clean Air]." Such is the name of an operation currently being conducted in Moscow by environmental protection services. Their goal: to reduce motor transport exhaust.

The automobile, as is know, is a source of increased environmental pollution. In exhaust gases emitted by cars there are more than 200 components of various toxic substances, the major portion of which is carbon monoxide and hydrocarbons. It is namely these substances that ecologists are trying to fight.

In the capital there are more than a million cars. With this number of four wheeled vehicles, exhaust from their movement makes up 77 percent of all environmental pollution. The rest is added by manufacturing enterprises. Therefore, "Clean Air" is as necessary as the breath of life. Nevertheless, according to the affirmations of specialists, testing of this kind has been effective. For example, in comparison with 1984, when the first inspections were being performed, it was found that 44 percent of cars were in disrepair in an environmental sense. Today this number has been reduced to 19 percent. The capital is slowly moving toward the rest of the civilized world. In two weeks of active checking, more than 50,000 cars are inspected.

True, we have a long way to go at present to reach Western levels. Environmental automobile standards are much stricter there. This, in large, is tied in with the construction of cars themselves, and with fuel quality. For this reason the condition of free air in Los Angeles, for example, is no worse than in Moscow, although the number of automobiles there is several times higher.

Tomsk Complex To Restore Site at Own Expense

LD2404124793 Moscow ITAR-TASS in English 1227 GMT 24 Apr 93

[By ITAR-TASS correspondent Vladimir Yakushev]

[Text] The chemical complex, where a breakdown occurred recently, is to restore the stricken workshop at the expense of its own funds. Repairs will require about 2,000 million rubles, director Gennadiy Khandorin told a briefing on Saturday. He acquainted journalists with the state of affairs in the affected workshop.

"To begin with, a few words about the direct causes of the breakdown," Khandorin said. "An operator blundered: he did not mix the solution and did not open the tap to the full when he discovered an increase in pressure. The operator has been now demoted to auxiliary operations".

"The blast-damaged slag blocks on the eastern side of the workshop have already been removed. But rehabilitation work in the western part of the premises has not yet been started: there is a high radiation level there and we do not want to expose people to risk," Khandorin emphasised. "However, the workshop continues to function. We rendered it safe: all explosive liquids have been poured off", he added.

It is now impossible to bring the workshop to a standstill as long as reactors are in operation, the director explained and specified a repair timetable: "priority is given to work on the apparatus that exploded. We must penetrate it with the aid of machinery. There is a high level of radiation there. The apparatus will be restored in due course".

Asked how the breakdown influenced the foreign economic relations of the enterprise, the director pointed out that "we have not felt any changes so far: Chinese specialists visited the site after the breakdown, and there are business offers from other partners as well".

Union Of Ecological Organizations Formed In Moscow

934F0610A Moscow MOSKOVSKAYA PRADA in Russian 30 Apr 93 p 1

[Unattributed and untitled article on establishment of Union of Moscow Ecological Organizations]

[Text] The Union of Moscow Ecological Organizations is the name of a new citywide ecological public organization. Its objective is to protect Moscow and Moscow Oblast residents' right to a healthy and safe environment.

Space Agency Plans Launch of Priroda Ecological Module

LD2805171893 Moscow ITAR-TASS in English 1341 GMT 28 May 93

[By ITAR-TASS correspondent Rena Kuznetsova]

[Text] It is planned to launch the Priroda ecological module to the Mir orbiting station at the end of 1994, Deputy General Director of the Russian Space Agency Yuriy Milov told ITAR-TASS today. Still, the launch will depend on the Russian economic situation.

The official told a news conference on remote earth probing, ecology and meteorology at the Russian Space Agency the state of the environment is a most acute social-economic problem, which concerns everyone directly or indirectly.

The gross annual damage inflicted on Russia by unfavourable ecological situation, natural calamities and emergency situation has exceeded 50 billion rubles in 1991 prices in the early 1990s. Space means of remote earth probing will take an important place in preventive and rescue operations, stressed Milov.

The agency is implementing a long-term program to create and develop space means of remote earth probing and meteorology. The program aims to create by 2000 a single space system to control the environment for large-scale servicing of consumers both inside and outside the Commonwealth.

At the first program stage, from 1997 through 1998, it is planned to focus on the use of satellites of the Meteor, Electro, Resurs'f, Resurs'o and Okean'o types, as well as defece spacecraft.

WESTERN REGION

Spokesman Sees Waning Influence of 'Green Alliance' Party

934K1271A Chisinau KISHINEVSKIYE NOVOSTI in Russian No 20, 8 May 93 p 2

[Interview with L. T. Voloshchuk, member of the coordinating council of the "Green Alliance" Party, academic secretary of the Institute of Biological Protection of Plants, and candidate of biological sciences, by A. Chegarovskiy, under the rubric "We Present the Parties and Movements"; date and place not given]

[Text] **L. T. Voloshchuk, a member of the coordinating council of the "Green Alliance" Party, academic secretary of the Institute of Biological Protection of Plants, and candidate of biological sciences, answers our correspondent's questions.**

[Chegarovskiy] Mr. Voloshchuk, your party has a beautiful name, "Green Alliance." It sounds better than "Greenpeace."

[Voloshchuk] Perhaps it sounds better, but we do not have the glory of Greenpeace and we never will. We are involved in politics, and that is not so romantic at all.

[Chegarovskiy] But your party is fairly popular on the scale of Moldova.

[Voloshchuk] It was at one time. According to data of the Sociological Research Institute, it was among the top three most popular until December of last year. It is no longer. True the Greens are losing their positions not only in our country but throughout Europe too. In Germany, for example, they did not get even one seat in the Bundestag in the last elections. That certainly does not mean that people are losing interest in ecology. Greenpeace, for example, continues riding high, and it is likely that the European parliaments will soon "green up." But there are altogether objective reasons which have nothing at all to do with Europe for our drop in popularity.

[Chegarovskiy] What are they, if it is no secret?

[Voloshchuk] It is no secret. The organizer and chairman of the party, Georgiy Malarchuk, died in November. That was a heavy blow not only to the party but to those who knew him and read his books. Half a year has already passed but we still have been unable to select a worthy replacement for him. For now the coordinating council is managing everything. You know almost all the members of our party are linked professionally with nature protection and among them are many associates of our institute and the Academy of Sciences. But Georgiy Malarchuk was not a specialist; a different word, "expert," would fit here. He was an expert on Moldovan nature and the spirit of the people, and as a creative individual he handled his duties in the party creatively.

[Chegarovskiy] How was that?

[Voloshchuk] To illustrate, Georgiy Malarchuk was the author of the well-known "Appeal to the Ecology Parties and Peoples of the World," which resounded in the UN General Assembly, UNESCO, the headquarters of the European Community in Strasbourg, and last year's ecology forum in Rio de Janeiro.

[Chegarovskiy] As far as I remember this Appeal was in some way linked to the conflict in the Dniester Region.

[Voloshchuk] Yes, the conflict served as the pretext for its publication. But the idea presented in it was much broader, an ecological, or better yet ecology-minded society and a world without wars and violence.

[Chegarovskiy] Since we have begun to speak of Georgiy Malarchuk, allow me an unplanned question. The heroes of his novels, such as Sergey Lazo and Father Kozma, do not fit with today's pantheon of saints. Have his literary works of the "stagnation" years been discussed in the party?

[Voloshchuk] You mean, didn't Georgiy Malarchuk renounce his heroes? No, he did not. When the writer ran for the post of president of Moldova, we asked him about it and he said roughly this: "I was not engaged in propaganda, I was engaged in art." Reread his work and you will see that Kozma and Lazo are attractive not because they were "ardent revolutionaries," but because they were strong and very vital characters. You must not think that literary figures divorce their heroes as easily as some politicians do their convictions.

[Chegarovskiy] Fine, let us return to the party. Do you have political allies or opponents?

[Voloshchuk] Allies, opponents! What use are these words in political games! Political parties create and dissolve alliances when the particular goals are reached. Today you are an ally and tomorrow you are already an opponent. But we will never find a common language with socialists or, perhaps, the agrarians. Everything is clear about the first, while the latter are simply hard workers who do an equally bad job of understanding economics and ecology. In between the two generally accepted types of ownership—private and public—they are trying to squeeze in some kind of collective ownership. In short they do not want to part with the land. They assert that the peasants do not need land and will not take care of it. But kolkhozes themselves neglected the land, and if it is left in the power of kolkhoz chairmen, neither the ecological nor the economic problems will ever be resolved. It is for that very reason that we are involved in politics.

[Chegarovskiy] But how do you propose to divide up the land?

[Voloshchuk] It is difficult to cover all the nuances in such an interview, but this is the principle: Every citizen of Moldova, including the urban resident for whom two or three-hundredths planted to potatoes is enough, should receive as much land as he can work. Of course, not everyone will prove to be a solid landowner, so the land will gradually move to those who love it and know how to work on it. If necessary they will be assembled into communes, but even so each member of this commune will retain private ownership of his share of land.

[Chegarovskiy] The social democrats believe that this will aggravate the social conflict of the population.

[Voloshchuk] Conflicts can be inflated under any arrangement, if someone wants to do it. As for the social democrats and certain other "centrist" parties, since the time their leaders began to obtain official posts at the president's court, they have been in his pocket politically.

[Chegarovskiy] And are you in opposition to the official power?

[Voloshchuk] No, but we take a fairly critical attitude toward its actions. In January we adopted a working document with an evaluation of the laws on privatization of property in which we did in fact emphasize that collective ownership does not help resolve economic

problems and does not even reach ecological problems. But we can work with the president. On 13 April Snegur received our delegation, listened to us very carefully, and probably filled up an entire notebook. The promise was made to report to us on the results of the meeting, but two of our requests have already been fulfilled. The widow of Georgiy Malarchuk has been given a pension and a memorial plaque with his name will be mounted on the building at 13 Sergey Lazo Street where the "Miscarea ecologista" is located. I believe this street has not been renamed and will not be renamed as a sign of respect for the writer.

[Chegarovskiy] Mr. Voloshchuk, many people believe that the "Green Alliance" is the People's Front in ecology.

[Voloshchuk] We are in fact very close on many positions, for example in evaluating the draft of the new Constitution, but we differ on the most important thing—The "Green Alliance" opposes immediate reunification of Romania and Moldova. Everything should occur by itself.

[Chegarovskiy] But certainly not everything is politics. Are you engaged in pure ecology?

[Voloshchuk] A point of the Law "On Environmental Protection" was introduced in parliament recently. The nature protection department and the parliamentary commission under the leadership of Pavel Rusak presented alternative drafts. Our draft is more successful, I think: It is shorter, and was compiled by a lawyer. A law based on all three drafts will apparently be adopted at the next session of parliament.

[Chegarovskiy] And is the "Green Alliance" doing anything in practice?

[Voloshchuk] It is engaged in ecological expert study work. This winter Moldova was supplied with 30-40 percent of its fuel requirement, and the city consumed all of it. But do you know what the countryside warmed itself with the entire winter? The forests, our Kodry region. The damage is now being assessed, and we are looking for ways to remedy it.

It is not only our forests and rivers which are damaged; it is our hearts which are damaged. And the party is working on the ecology of society. And that is why we call ourselves the "Green Alliance."

BALTIC STATES

Committee for Selecting Nuclear Waste Dump Sites Formed

WS1905134693 Minsk Radio Minsk Network in Belarusian 0505 GMT 19 May 93

[From the "At the Council of Ministers" program]

[Text] The government has created a committee responsible for choosing sites for dumping nuclear waste and products, materials, and other things contaminated by radioactive substances. The committee is composed of scientists, experts, and managers of departments and organizations dealing directly with the radiation situation in the Republic.

Council of Ministers Adopts Decree on Radioactive Areas

WS1905133493 Minsk Radio Minsk Network in Belarusian 0505 GMT 19 May 93

[Report entitled "At the Council of Ministers"]

[Text] The Council of Ministers has issued a decree adopting the procedure of state control over the use of and protection from radiation-contaminated areas. Its task is to ensure observance of to the law by all enterprises and citizens in order to alleviate [words indistinct] The regulation is aimed at carrying out measures on protecting and restoring nature, and securing rational use of the economic and scientific potential of these zones. The control will come under the State Committee for [word indistinct], oblast soviets of people's deputies, State Committee for Supervising Nuclear Industry, and the Committee for Standards and Ecology. These organs are authorized to control enterprises and organizations in the province, issue compulsory orders, and discontinue any type of activity that violates the existing law. It is noteworthy that those particularly guilty of such violations may be brought to court.

Cabinet Decrees Nuclear Enterprises To Report Accidents

LD0206172893 Kiev Radio Ukraine World Service in Ukrainian 1500 GMT 2 Jun 93

[Text] Interested state and public bodies, enterprises, organizations, and citizens must have access to information on the state of the environment as far as nuclear and radiation safety is concerned. In connection with this Ukrainian Cabinet of Ministers' instruction, the State Atomic Committee [Derzhkomatom], the State Atomic Inspection [Derzhatomnahlyad], and the Ministry of Chernobyl [Minchornobyl] are bound to supply the Ministry of the Environment with prompt data on all the incidents that occur at projects where they use nuclear and radioactive technologies or substances, and also to report incidents connected with the transportation of nuclear and radioactive substances that either lead or may lead to environment pollution.

CAUCASUS/CENTRAL ASIA

Dangerous Radioactivity Revealed in Bishkek Structures

AU1805150093 Kiev HOLOS UKRAYINY in Ukrainian 14 May 93 p 4

[Yevhen Denysenko report from Bishkek: "Do Not Come Near Lenin Closer Than 100 Meters"—first paragraph published in boldface]

[Text] The Lenin monument made of granite has turned out to be an object that discharges the greatest amounts of radioactivity in Bishkek. As determined by geophysicists, it creates a gamma-radiation background of between 70 and 80 microroentgen per hour. It is not recommended to remain in the vicinity of the monument for a long period of time. However, at a distance of 100 meters, the radiation is fully absorbed by the air.

Today, quite a number of such radioactive sources have been revealed in the capital of Kyrgyzstan. Their origin can be traced back to the "stone disease" [excessive preoccupation with stone material] of the city authorities and builders. In the 1970's and 1980's, during the construction of new administrative buildings in the city and restoration of old ones, extensive use was made of decorative stone whose radiological standard was not always properly checked. This was how buildings appeared in Bishkek with the stone facing radiating between 50 and 60 microroentgen per hour.

In the opinion of geophysicists, the presence of such "architectural" radiation is allegedly not so dangerous if it does not exceed the norms established for the republic, more specifically, 60 microroentgen per hour. However, in accordance with the WHO data, the radioactive emission can have a pathological effect upon human organism even at levels of 24 microroentgen per hour. The pathology may even become felt at a genetic level.

The search for radioactive structures in Bishkek is continuing.

REGIONAL AFFAIRS

BASF, Bayer's Dioxin Destruction Methods Show Promise

93WS0396C Paris INDUSTRIES ET TECHNIQUES in French 5 Mar 93 p 63

[Article by Michel Le Toullec: "Avoiding Pollution by Chlorine Chemicals and Waste Incineration: New Weapons Against Dioxin"—first paragraph is INDUSTRIES ET TECHNIQUES introduction]

[Text] Dioxins are the result of many manufacturing—pesticides, paper bleaching—and incineration processes. BASF [Baden Aniline and Soda Factory] and Bayer propose innovative solutions to get rid of them.

Highlights

—Of the 210 dioxins known, only 17 are considered toxic.

—Bayer has shown that some bacteria can deactivate dioxins.

—Production of pyralenes, used as electric insulators, has stopped: the quantities already produced must still be disposed of.

Just beneath the surface, in chlorine chemistry, we find dioxins. These molecules form during the synthesis of certain chlorinated products and at the end of the chain, when these very compounds (or other chlorinated products) are destroyed by incineration. Actually, emissions are usually minimal, at any rate insufficient to affect man. But these molecules have the drawback of being very tough, and especially of accumulating in fats, in particular those in the food chain. To get rid of them, the German chemical companies BASF and Bayer propose new methods.

The problem is that when we talk about dioxins—a generic term that covers both dioxins and polychlorinated furans—the image of Seveso immediately comes to mind. Especially since the dioxin involved in the famous disaster was 2,3,7,8-TCDD dioxin [tetrachlorodibenzoparadioxin] , considered as one of the most toxic products ever synthesized. Actually, of the 210 dioxins known (including the polychlorinated furans), 17 are considered toxic. These are produced by two main industrial activities, where they occur as mixtures.

First, we have the chemical reactions involved during the production of pesticides and chlorine gas, during paper-pulp bleaching, and during pyralene synthesis. For each of these possible cases, solutions have been proposed. Production of DDT was stopped. Paper-pulp chlorine bleaching, on the other hand, was optimized to eliminate as much as possible all chlorinated organic compounds. All the same, chlorine bleaching is one known source of 2,3,7,8-TCDD dioxin. There are other chlorine-free bleaching processes, in particular those using oxygen (in the form of ozone). In chlorine bleaching, the dioxins produced are generally diluted, but they still exist. And they pollute the environment into which they are dumped. Bayer has studied this form of contamination and shown that some bacteria will break down dioxins (these are the brevibacteria, which are also used to make cheese). These microorganisms are said to be able to completely deactivate dioxins: they feed on dioxins to get carbon. This method is said to be so promising that it could even destroy the most formidable of all dioxins, 2,3,7,8-TCDD.

Production of the pyralenes used as liquid electric insulators in transformers was also discontinued during the eighties. Pyralenes are expected to be completely phased out by the year 2000. This means that we must now find a way to dispose of them. The most efficient method would consist in heating them to 1200-1400 x C for a given time so as to decompose them into carbon dioxide, water, and hydrogen chloride. Atochem uses such a process at its Saint-Auban site.

The second main source of environmental contamination by pyralenes is municipal and medical waste incinerators. One of the materials most often blamed is PVC [polyvinyl chloride], which is widely used in packaging and medical equipment. PVC incineration is known to release hydrochloric gas, but it also generates minute amounts of dioxins. That is quite a lot for a single material. Actually, according to the TNO [Netherlands Central Organization for Applied Natural Scientific Research] (the Dutch equivalent of the INERIS [National Institute of Industrial Environment and Risks]), the amount of dioxin released by PVC is insignificant compared with the amounts generated by the incineration of other waste. Currently, the rates of dioxin discharge after incineration accepted in Europe are of the order of 0.1 nanogram of TEQ (toxic equivalent) per cubic meter. This rate can be achieved by controlling the flame temperature, the turbulence, and the time of contact between waste and flame. Very rapid cooling in the critical 450-250 x C zone is another effective mean to prevent the formation of dioxins.

To recover the dioxins that will form anyhow, incinerators are now equipped with filters made of fine activated charcoal powder. The disposal of saturated filters then becomes a problem: they must be incinerated (!) or buried in the ground. To avoid this headache, the German chemical company BASF just introduced a catalyst consisting of titanium, vanadium, and tungsten oxides, which turns dioxins into carbon dioxide, water and hydrogen chloride. The chemical company is now installing this system permanently at its Ludwigshafen plant. Supreme recognition, its competitor Bayer just installed the device at one of its plants, near Cologne.

ENERO Environment Alliance One-Year Activity, Plans Reported

93WS0396D Paris INDUSTRIES ET TECHNIQUES in French 5 Mar 93 p 65

[Article by Thierry Mahe: "A European Industrial-Environment Club: Europe Federates Its Industrial Environment Expertise"—first paragraph is INDUSTRIES ET TECHNIQUES introduction]

[Text] ENERO [European Network of Environmental Research Organizations], a European association of environmental laboratories, is turning into a research club to serve both European organizations and industrial groups.

A European association for the environment was created in the spring of 1992 by eight institutes specialized in industrial problems. ENERO has ambitions to be a reference structure serving political and industrial decision-makers, and to which the Community could have recourse to guide its decisions. Who are its members? They are laboratories entrusted with public service missions, equally competent when it comes to air, water, soil, and waste problems. In France, INERIS [National Institute for Industrial Environment and Risks] is an ENERO member. INERIS was the initiator of this organization, which also includes the Spanish CIEMAT, the Irish EOLAS, the German KfK, the Dutch TNO [Netherlands Central Organization for Applied Natural Scientific Research], the British Warren Spring Laboratory, and the Portuguese INETI [National Institute of Industrial Engineering and Technology]. These laboratories employ a total of 3,000 researchers. Christine Heuraux of INERIS indicated: "We wanted all ENERO charter members to be involved in industrial problems, so real needs would become apparent. We have therefore excluded agencies like ADEME [Agency for the Environment and Energy Control], because their role was judged too political."

One year after its creation, ENERO has still not found its pace. "We are still at a stage where researchers are getting acquainted, where projects are being set up." Two working groups, however, have already been formed. The first one, sponsored by TNO (Netherlands) has taken for its theme the life cycle of industrial products. The second one, headed by INERIS, will study pollution in an aquatic environment after an accident.

This project, scheduled to last three years and financed with ENERO's own funds, gives a precise idea of its working procedures. During a full quarter, a Ph.D. student, Veronique Petit, worked on a comprehensive bibliography of research and results concerning aquatic pollution: product toxicology, impact on animals and plants, analysis of existing regulations, etc. The work was done at the Danish laboratory Teknologisk. Today, Veronique Petit codifies a pollution analysis methodology designed to measure pollution. The work is done in Great-Britain, at the Warren Spring Laboratory. This will be followed by a phase of analysis and laboratory simulation, using the INERIS facilities at Verneuil-en-Halatte, Oise. The ultimate goal of all this work is to update the Seveso guidelines. Thus, the program relies on a network of knowledge and expertise in order to avoid duplicating prior research and to make the best possible use of each laboratory's specific characteristics.

Each organization pays dues of ECU15,000 per year, giving ENERO an annual operating budget of 840,000 French francs [Fr]. It is rather modest, compared with its proclaimed ambitions. In addition, it was just revised downward: Fr560,000 for 1993. Therefore, it is hoped that these basic dues will be supplemented by outside financing from manufacturers or industrial federations such as the European Chemical Industries Union. This policy has not materialized yet.

Industry Group Fears Increased Burdens From Law Change

93WN0429B Copenhagen BERLINGSKE TIDENDE in Danish 27 Apr 93 p III 2

[Article by Anders Lehmann: "Danish Industry Warns Against Proposal on Collective Environmental Responsibility"—introductory paragraph in boldface as published]

[Text] **The environment: There is concern at the Danish Industry [Council] that a change in the environmental protection law will force Danish businesses to clean up after one another.**

A proposed change in the Environmental Protection Law has made the Danish Industry rush into print and take a swipe at the new government.

In the most recent issue of the Danish Industry's magazine INDUSTRIEN, Environment Minister Svend Auken (Social Democratic Party) was accused of breaking with constitutionally established principles of law and making the innocent suffer for the guilty.

According to the Danish Industry, the proposed law, which is being studied by the standing committee on the environment, would force Danish businesses to take back damaged and discarded goods. And to take back other businesses' goods.

At the same time the Danish Industry is afraid that the proposal, if adopted, would come into effect retroactively, so that goods produced before the change in the law would have to be taken back.

At the moment responsibility for waste lies with cities, and it is there, in the opinion of Henrik Houg, vice director of the Danish Industry, that the responsibility for waste produced before a cutoff date should continue to be.

"We are in favor of taking products back which are manufactured so they can be reused, but it is not reasonable for us to take back goods which, for example, cannot be taken apart," he said.

At the same time industry is warning that, according to the proposal, businesses would be obliged to accept collective responsibility, in which businesses within the same field would take back goods which they had neither produced nor sold.

"It isn't reasonable for a firm such as, for example, Bang and Olufsen Co., Inc., which is the only one in Denmark producing televisions, to take back all televisions sold in Denmark."

Today it was not possible to get a comment from Environment Minister Svend Auken to the Danish Industry's criticism.

DENMARK

Increased Business Spending on Environment Projects

93WN0429A Copenhagen BERLINGSKE TIDENDE in Danish 6 May 93 p III 1

[Article by Klavs Snitkjaer: "Environmental Investments Under Way"—introductory paragraph in boldface as published]

[Text] **Survey: Environmental activities have a central place in more than one out of two Danish businesses. Many are increasing their environmental investments to reduce rising costs for environmental fees and taxes.**

Many Danish businesses have been quick to bring environmental concerns into their management, and that will give them a good competitive position on export markets.

So concludes the accounting and consulting firm of Price Waterhouse, based on a survey of 180 large Danish businesses' environmental activities.

Among other things, the firm studied the businesses' position on environmental policy, environmental management, and environmental accounting, and how far along the businesses have gotten in these areas, plus the businesses' expectations on the issue of environmental taxes and fees.

The study shows that environmental activities play a significant role in many Danish businesses and that businesses have plans for further environmental measures.

One-half of the businesses have formulated their own environmental policy while 14 percent plan to do so, and 25 percent have not taken a position. Eleven percent responded that they did not have plans to formulate an environmental policy.

This, according to Price Waterhouse, puts Danish businesses far ahead in the European context. Among German and Dutch businesses, one out of three businesses has issued an environmental policy, in France and Sweden it is one out of four businesses, whereas only 5 percent of British businesses have gone so far.

"I am surprised in a positive sense by how far ahead Danish businesses are in the environmental field," said Gert Hansen, a partner in Price Waterhouse. He also took note of the high percentage of responses. One out of three businesses took the time to fill out the 20-page questionnaire.

"That shows an interest in the environment and at the same time businesses do want to know how far others have gone," Hansen said.

One out of five Danish businesses in the survey has put together an environmental management system, while 30 percent plan to do so.

Cost Impact of Freon Ban Outlined

93WN0429D Copenhagen BERLINGSKE SONDAG in Danish 9 May 93 p 13

[Article by Kaj Skaaning: "Ban on Freon Could Cost More Energy"—introductory paragraph in boldface as published]

[Text] **Energy: Freon has to be removed from Danish refrigeration/freezer facilities at a faster pace than previously planned. That could mean quick-fix solutions and higher electricity consumption, the refrigeration industry fears.**

The decision by Danish environmental authorities to phase out some of the most widely used freon gases from Danish refrigeration/freezer facilities effective the end of this year could have unfortunate consequences, the refrigeration industry fears.

The officially authorized refrigeration firms' industry federation believes that the faster pace could lead to quick fix solutions for the approximately 125,000 refrigeration/freezer facilities, with higher electricity consumption as a consequence.

At the environment conference in Copenhagen in November 1992 there was international agreement to force a phaseout of the aggressive CFC [chlorofluorocarbon] gases R12 and R502. But Denmark opted to go further and ban the use of newly manufactured R12 and R502 at new refrigeration facilities effective as early as 31 December 1993.

Quick-Fix Solution

But at the same time, effective July 1994, these CFC gases can only be used in connection with topping off, and only if the gases can be reused from existing facilities. That is to say, those quantities that escape in leaks and drawoffs may not replaced.

That means that there will soon be a need for replacement gases. These are being intensively researched, but it can take upwards of 10 years to develop new, efficient preparations, and those replacement preparations that are already on the market are not particularly good for existing facilities, according to the Save Energy Committee in its latest paper *"Energistyring"* ["Energy Management"].

For that reason the refrigeration industry fears quick-fix solutions and is now urging that its own plan be initiated which would ensure the quality of refrigeration/freezing facilities in connection with the freon phaseout. Together with the Danish Technological Institute, the industry has put together a proposal for an oversight arrangement which would establish overhaul and service for systems.

Impact of Thinning Ozone Layer Over Country Viewed

93WN0429C Copenhagen BERLINGSKE TIDENDE in Danish 27 Apr 93 p III 1

[Article by Steen Voigt: "Twenty to Twenty-Five Percent of Ozone Layer Disappeared"—introductory paragraph in boldface as published]

[Text] **Alarm: High pressure which is giving Danes lovely spring sun is helping to thin out the ozone layer. Stay indoors between 1200 and 1500 hours, a doctor advises.**

There's no reason for panic. It's not a catastrophe. But given the current lack of ozone, the most sensible thing to do is stay out of the sun between 1200 and 1500 hours, give children a light cotton shirt, and smear suntan lotion on yourself and the rest of the family.

And it does surprise researchers at the Danish Meteorological Institute [DMI] that the ozone layer is so thin. High pressure over Scandinavia is helping to thin it out—but it is, as if the natural movement of ozone from the topics to our part of the world had gotten stopped up. "Because over the entire globe at 50-60 degrees north, upwards of 25 percent of the ozone is lacking, and there certainly isn't high pressure round the world," said Paul Eriksen, M.S.

Yesterday he and other DMI researchers reacted to the fact that on Sunday and Monday the ozone layer proved to be 20-25 percent thinner than normal: They urged people to use suntan lotion.

Because of the shortage of ozone, we are struck by approximately 40 percent more of the sun's dangerous ultraviolet rays. They are the most serious cause of skin cancer, which approximately 4,000 Danes contract annually. Hans Chr. Wulf, chief of the National Hospital's dermatology division, agreed with the DMI researchers' recommendation. But the best thing the average Dane can do is stay out of the sun between 1200 and 1500 hours.

"If you go out in the sun after 1500 hours, you get only a fourth of the day's rays, and so in general terms it isn't necessary for the average Dane to protect himself."

FINLAND

Increased Algae in Gulf of Finland

93WN0408B Helsinki HELSINGIN SANOMAT in Finnish 29 Apr 93 p 6

[Article by Sven Wikstrom: "Algae in Gulf of Finland To Be Monitored"]

[Text] Environmental monitoring of the eastern Gulf of Finland has been intensified. The objective is to prevent the surprising bird die-off of last spring.

Sea wardens, the Water and Environmental Agency, Marine Research Institute, the universities, and sea rescue officials are cooperating to monitor events taking place in the marine environment this spring. Water samples are being taken from the eastern Gulf of Finland, and the clams are being examined for the presence of possible algal toxins.

Explanations for Bird Die-off Still Lacking

Between the months of April and July of last year, about 1,000 dead birds were found in the eastern Gulf of Finland. These dead birds were razor-billed auks, southern guillemots, and Lapland terns. Scientists still do not know the reason for the die-off.

Researcher Karri Eloheimo of the Water and Environmental Agency says that the monitoring cannot prevent a new wave of bird die-offs or, on the short term, any other environmental catastrophies either. "The increased monitoring will immediately give us more evidence, however, and this will enable us to investigate the reasons for the catastrophies."

Researchers had to study the bird die-offs of last spring after the effect: Samples of the dead birds were obtained a month after their death.

Few Environmental Toxins Found

The studies have been able to exclude bacterial or virus-caused diseases as possible causes. The amounts of environmental toxins in the remains of the birds were also found to be small. The strongest suspicions are in the direction that the bird die-off was caused by a still unknown algal toxin.

Karri Eloheimo thinks it possible that an increase in nitrogen and phosphorus content may lead to toxic growths of diatom algae and armor plate algae. This is highly likely in the eastern Gulf of Finland: St. Petersburg's and the Neva River's contribution of nitrogen and phosphorus into the Gulf of Finland equals the total emissions of all of Finland.

One cannot be sure of these toxins, however, for the blooming season of these algae was over by the time officials were able to begin researching into any toxicity.

Clams Absorb Toxins Readily

Now the samples of seawater are examined two times per week. The Baltic mussel and blue clam are checked to detect any algal or other toxins in the water.

On Tuesday [27 April] the first clam traps were taken out to sea by Karri Eloheimo, biologist Vesa Pimia, and senior researcher Jarmo Nironen.

The first clam collection site was right beside the international boundary, near Huovari Island. The clam traps for checking on algal toxins will also be set nearer the coast.

The clams will be examined at the Marine Research Institute laboratories. According to Pimia the samples will be checked for previously unknown toxins as well as the familiar ones.

Clams are used in the research for they very readily absorb toxins. Near the coast clams have long been used to monitor toxic emissions by industry and others. Their use for detecting algal toxins has not been as common.

Algae Tinting Eastern Gulf of Finland

The blooming diatoms and armor plate algae are presently tinting the waters of the eastern Gulf of Finland the color of brownish beer. Despite the blooming of these algae no dead birds have been observed.

Eloheimo feels that taking samples twice a week will lead to a lot of good research material from the peaking time of algal toxins.

During previous years the time intervals between sampling might have been many weeks. "For that reason there is no certain information about, among other things, the strength of algal bloom toxins."

It is generally believed that there was not an uncommon abundance of algae last spring. In the water samples taken at the outer islet the algae-indicating chlorophyll levels were about 35 milligrams per cubic meter of water at their peak last spring.

Slight Breezes Lift Nutrients to Surface

Last Monday, due to the warm weather, the chlorophyll levels at the Huovari collection site rose as high as 46 milligrams. Because of the calm seas the levels dropped to 32 milligrams on Tuesday.

"A slight breeze raises more nutrients to the surface and that leads to more algae and chlorophyll," says Eloheimo.

Eloheimo describes the waters of the eastern Gulf of Finland as being a solution of nutrients getting ever stronger. "With these kinds of nutrient contents there will always be lots of algae. Their abundance and their effects will depend only on the weather conditions."

SITA Launches Four Waste-Treatment R & D Programs

93WS0397C Paris COMPOSITES ET NOUVEAUX MATERIAUX in French 12 Mar 93 pp 2-3

[Unattributed article: "Plastic Mix: Recycling Plastics Recovered from Household Waste"]

[Text] The fact that it is France's turn to chair EUREKA [European Research Coordinating Agency] undoubtedly strongly motivated SITA [International Society of Aeronautical Telecommunications] when it drew up its European research policy. Presenting four new programs under the EUREKA label, a few days ago, Philippe Brongniart, the SITA chief executive officer, reaffirmed his desire to continue the company's R & D efforts to preserve the environment. In 1992, SITA had already shown its determination to provide new impetus to this activity sector: 32 million French francs [Fr] were devoted to R & D, i.e. twice as much as in 1991. This generous trend will continue in 1993, with Fr42 million devoted to R & D. The Cered (Waste Storage Research Center) created jointly with Rhone-Poulenc is about to be completed and should be inaugurated around mid-1993.

Fr300 Million in Research Impetus

Four new SITA programs already cover several key sectors of the Lyons Water-Supply Company/Dumez waste-related activities. "Electre" covers future waste-collection vehicles; "Plastic Mix" deals with the recycling of plastics from household waste; "Incipro" will deal with clean incineration and vitrification; and "Sitinert" will tackle the problem of ultimate waste storage. These four projects represent investments of about Fr300 million. Two of them alone, "Incipro" and "Sitinert," will get close to Fr250 million; the smallest project is the one dealing with plastics recycling.

"Electre" and "Sitinert" are the two programs for which SITA will be program leader. As for "Plastic Mix," it will get its impetus from the Testa group, the French leader of plastics recycling (including mixed plastics). Finally, "Incipro" will be headed by Rhone-Poulenc, which started a veritable research cooperation and partnership with Sita already a few months ago (Cered, acquisition of Scori, etc.).

Plastic Mix

—Amount: Fr18 million

—Duration: three years

—Partners: Testa (leader)—the leading French recycler; Remaplan (Germany)—plastic mix chemistry know-whow; SITA

—Program orientations: to use mixed plastics to develop manufacturing techniques yielding finished products for targeted markets (composting or collecting bins).

The project will avoid manufacturing granules of secondary raw materials that would compete with virgin materials.

1. Characterization of the sources (quality, quantity)

2. Study of the process proper: chemistry: chemistry of the mix (plastics intercompatibility; identification and use of additives and compatibility products); process proper.

3. Work on the design and characterization of the finished products.

In a way, Plastic Mix will accompany the Eco-Packing system by offering a complete process leading to a finished product. The pilot plant that was operated on the Testa site in Gardanne is now being installed in the Bayonne-Anglet-Biarritz district to produce composting and collecting bins. The newly created Ecobac company (a joint SITA-Testa subsidiary) will manage the output which, according to Francis Testa, should amount to 20,000 bins (about 1,000 metric tons of products) when the plant is in full production, and 12,000 bins during this first year.

GERMANY

Bundestag Ratifies Rio World Summit Resolutions

BR0306150793 Bonn DIE WELT in German 23 Apr 93 p 7

[Text] Barely a year after the UN conference in Rio de Janeiro, the German Bundestag has begun work on converting the agreements signed there on climate protection and biodiversity into national law.

The climate protection agreement commits the states concerned to limiting emissions of carbon dioxide and other greenhouse gases to their 1990 levels. In the agreement on biodiversity, they declare their intention of safeguarding sufficiently large protected areas for wild animal and plant species.

The Federal Government has already signed the agreements, and the laws ratifying them had their first reading in the Bundestag yesterday, when the SPD [German Social Democratic Party] accused the government of having so far pursued only a "verbal environment policy."

FDP [Free Democratic Party] environment spokesman Gerhart Daum warned against diluting environment policy, pointing out that Germany had gained a 20-percent share of the 200 billion German mark world market in environment technology. Federal Environment Minister Klaus Toepfer and the coalition spokespersons are standing by the target of reducing carbon dioxide emissions by 30 percent by 2005. Toepfer announced that the EC's environment and energy ministers would today resume discussions on the introduction of a uniform carbon dioxide tax at a special meeting in Brussels.

The Federal Government welcomed United States President Bill Clinton's announcement of his intention to sign the agreement on safeguarding biodiversity: Toepfer referred to a "major step" by the United States.

The Federal Government's decision to establish a Federal Conservation Agency has met with general agreement in the Bundestag. This future federal supervisory body will primarily be responsible for the import and export of protected animals and plants: It will also support the Federal Environment Ministry in flora and fauna conservation and in preserving the ecology of the countryside.

The six leading German refrigerator manufacturers will cease using the ozone killer chlorofluorohydrocarbon [CFHC] from mid-1994. The Central Association of the Electrical Engineering and Electronics Industry yesterday gave Toepfer a voluntary undertaking to this effect, which will also end the use of partially halogenated CFHC's.

According to Toepfer, cooperation of this type will be more effective than legislation in bringing about a rapid termination of CFHC use. A propane/butane mixture will be used as a refrigerant in future. Another hydrocarbon, pentane, will be used to foam heat insulators.

However, Toepfer found it disturbing that considerably more CFHC is still manufactured than used in the Federal Republic: He therefore called on the industry to do its utmost to promote the use of alternatives abroad as well.

German Environment Minister Tours Baltic States

BR0406031593 Bonn DIE WELT in German 20 Apr 93 p 6

[Article by Heinz Heck: "Toepfer's Travels, or Where the Ecological Timebombs Are Ticking: Baltic States Seek Support in Removing Traces of Their Hated Past"]

[Text] Wrecked ships, smashed oil-barrels, rusting generators, and battered filing cabinets—just some of the relics of the fallen Soviet empire on view to visitors at the Baltic military bases. Seldom has an official visit abroad by a German minister aroused such expectations as that of Environment Minister Klaus Toepfer last week to Estonia, Latvia, and Lithuania. The governments of the three small states are hoping for powerful support in removing traces of their hated past.

Though they have formally been independent for several years, the former Soviet empire's grip can still be felt at every turn. In few areas is this so clear as in energy and environmental issues. Moscow has deliberately integrated the three countries into its global imperial

strategy, with Estonia supplying electricity from a massive 3,200-MW oil shale-fired power station, while Lithuania has two 1,500-MW reactors, the biggest in the world. Lithuania also has a 1,800-MW oil- and gas-fired power station, although it is hardly used owing to fuel shortages.

Both countries are totally dependent on Russia for everything from operating personnel and fuel supplies to every last screw. The technology is obsolete, so electricity generation pollutes the environment. Furthermore, there is no supply grid linking the Baltic states: As elsewhere, the purpose was to ensure total alignment towards and dependence on Moscow. Though political independence was gained at the stroke of a pen, it cannot alter this situation, at least not from one day to the next.

The situation regarding the former Soviet army's bases is similar. Estonia and Latvia have not even signed treaties with Moscow on troop withdrawals, and none of the three states has access to the real estate occupied by Russian troops. The two training reactors for nuclear-powered submarines on the Estonian Paldiski peninsula and the uranium extraction plant at Silamae in Estonia are glaring examples. Access to these no-go sites is essential if the situation is to be surveyed.

Finally, the importance of the three states' location on the shores of the Baltic must be considered. Progress will only be made if, as Toepfer demands, the Russians lay open all their records on the disposal at sea of radioactive and chemical materials, so that the state of these ecological timebombs can be investigated. It is doubtful whether the international Helsinki Convention team that has been meeting since yesterday in St. Petersburg will obtain the answers.

Toepfer has laid down three objectives for reclaiming polluted sites: comprehensive surveying, assessing polluted sites in terms of risk potential, and prioritizing their decontamination.

Even though the Baltic states expect a massive amount of the west, the actual scope for rapid assistance is somewhat limited. The Russians' obsessive secrecy is not the only impediment to rapid progress; the annual total of 9 or 10 million German marks [DM] available from Germany's budget for the whole of the former Soviet Union and central and eastern Europe makes a modest sum. On his return, Toepfer plans to press for an increase in this budget, but repeatedly makes it clear that responsibility must be assumed by the West as whole, and neighboring countries in particular. Finally, it needs to be borne in mind that the Baltic states themselves, and particularly Lithuania, face major economic difficulties that prevent them from allocating more generous environment budgets.

Though Toepfer was frequently dismayed by his four-day tour of Soviet pollution, he has not given up hope of improvement: "Despite the gravity of the situation in the Baltic states, I consider there is room for confidence," he stated, summing up his visit. Perhaps he is also hoping for good sense on the part of the Russians. One thing is certain, however: The behavior of Russian troops in the Baltic states will be a significant factor in determining the latters' future relationship with Russia.

Ministry Reviews Environment Research Policy

BR0306083493 Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN in German 16 Apr 93 pp 2-3

[Text] The BMFT [Federal Ministry of Research and Technology] is currently examining in what way research and development projects could contribute specific solutions to current and possible future environmental problems. It is working together with the national research institutes on a strategy that will set new priorities and areas of emphasis, with the aim of bringing together existing knowledge on the environment as a system and the environmental problem-solving technologies. This involves:

—Determining the causes of environmental pollution and damage;

—Acquiring comprehensive knowledge of stability conditions and pollution limits, especially for the natural systems used by man, such as woodland ecosystems, agrarian ecosystems, and waterways, and assessing the risks inherent in actual and potential pollution and damage;

—Listing, studying, and largely closing materials cycles in production, the vast majority of which are currently unrecorded and open;

—Developing technologies to prevent, reduce, and remedy damage to the environment;

—Devising environmental management strategies guaranteeing, simultaneously, long-term exploitation and conservation of natural systems.

All this can be achieved only if science, technology, and industry work more closely together on solutions than before.

It will also be necessary for environmental R & D, which has previously been science and technology-oriented, to join forces with economic and social science disciplines.

Integrated Environmental Protection

In the future, as now, the BMFT intends to continue providing practical solutions to local environmental problems, and it also wants to make identifiable contributions to solving global environmental problems. It intends to play a part, too, in achieving an ecology-oriented structural change in industry, and thereby in reconciling ecology and economy. The redirection of funding will therefore also focus on achieving technical progress ensuring that, wherever possible, "integrated"

solutions avoid the production of environment-polluting residues or wastes in the first place.

Understanding material flows and cycles and environmental systems, such as ecosystems or the climatic system, is necessary if meaningful tactics, technical solutions included, are to be developed. This is illustrated by three examples of future priorities:

Cycles

In order to understand and predict anthropogenic changes in environmental systems, it is essential to know the major system parameters, especially those of the decisive substance cycles. Of outstanding importance here is water, i.e., the hydrological cycle, which has the greatest effect on our climate, yet whose present level of natural availability is to a great extent jeoparized by the possibility of climatic change.

A preliminary study currently under way aims to determine priority areas of action that will enable environmental research and technical development both to improve our level of knowledge, e.g., on the future availability of fresh water resources or a possible change in sea level and its consequences, and to initiate the correct developments for environment-friendly technologies.

Production-Integrated Environmental Protection

The main aim is to offer integrated solutions to prevent industrial production and agriculturefrom polluting the environment right from the outset.

What is primarily involved is an environment-compatible, cyclic economy designed to prevent or reduce environment-polluting residues from production processes and to recycle residual matter or reutilize it as raw materials for other products.

Decisive contributions to converting material flows in production into closed cycles are expected from environmental engineering, where medium-sized enterprises in particular have a chance to participate in the future growth of this sector of industry by providing an intelligent link between technical concepts and their operational implementation.

With a view, also, to the market relevance of the products and the competitiveness of companies in Germany, the BMFT therefore intends to make these topics the subject of the strategic dialog between politics, industry, and science.

Changed Land Use

In addition to substances polluting environmental systems, great importance is also attached to the increasing changes in land use both in Germany and worldwide.

This includes the depletion of the rain forests, the growth of urban and industrial areas and of traffic areas, and the unecological cultivation of agricultural land, with the associated problems of soil degradation. In order to gain a better understanding of this range of problems in all its complexity and multiplicity, significant landscape types, such as woodland, farmland, urbanized industrial areas, or inland waterways, are to taken as examples on the basis of which interdisciplinary research teams will draw up strategies for revitalizing, shaping, and cultivating similar areas in the long term.

It is common to all projects working on the various priority areas that not just the requisite system and related knowledge will be gained, but also practical strategies or concepts for reclamation and environmental management.

Asbestos Disposal, Recycling Process Developed

BR0306084393 Bonn DIE WELT in German 30 Apr p 8

[Article by Wolfgang Asche: "Acid Can Recycle Asbestos—Burden on Dumps Could Safely Be Eased"]

[Text] Asbestos for reinforcement and insulation purposes has for decades been as good as its name, which actually means "indestructible." Asbestos matting was used for insulation, and, owing mainly to its fire-inhibiting properties, it was frequently used in fire-resistant protective clothing. The use of asbestos is forbidden. Years after the fibers have been inhaled, the substance can cause lung damage (asbestosis) and lung cancer. It is not the chemical properties that are crucial here, but the structure and size of the fiber-shaped particles (which have a diameter of less than two microns.)

If asbestos pollution limits are exceeded, buildings must be completely stripped. The fibers in dumped rubble containing asbestos must then be permanently bound. In Britain, however, asbestos dumps are being cleaned up for the first time, as no one knows precisely the scale of the hazard that they represent. In Hannover, a process has now been developed that destroys the dangerous structure of asbestos, eliminating it without trace, and preparing it for recycling as a safe building material. Solvay Environmental Chemicals has succeeded in dissolving asbestos with hydrofluoric acid. "The hazardous carcinogen asbestos becomes a high-grade recycled product," says project leader Dr. Werner Legat.

In the process, silicon reacts in the mineral fiber with fluorine to form hexafluorosilicate. This destroys the asbestos structure, which cannot reform. Milk of lime (calcium hydroxide) is added to neutralize excess hydrofluoric acid. The solid end product can be used as an aggregate in the manufacture of cement building blocks, the dangerous asbestos structure having been eliminated.

Dr. Legat sees initial potential for the "Solvas process" in cases where substances are contaminated by small amounts of asbestos. Such cases could include blocks from old night-storage heaters (which were clad in asbestos matting), or items of clothing. Plastic clothing

treated in the "Solvamat washing machine" and freed from asbestos can even be reutilized. The Kaefer company from Bremen is already operating a pilot Solvas plant.

German Environment Minister Introduces Controversial Bill

MI2204132993 Munich SUEDDEUTSCHE ZEITUNG in German 30 Mar 93 p 25

[Article by Thomas Froelich: "Waste Avoidance Takes Priority—Toepfer Presents Controversial Bill/Criticisms from Trade"—first paragraph is SUEDDEUTSCHE ZEITUNG introduction]

[Text] In the future, industry will be responsible for the recycling and disposal of used products, if Federal Environment Minister Klaus Toepfer CDU [Christian Democratic Union] gets his way. Waste avoidance and recycling secondary raw materials will take absolute priority over waste disposal. Nothing that can be recycled as a secondary raw material should be wasted. These are the aims of the Residue and Waste Management bill to be passed by the federal cabinet tomorrow (Wednesday).

As long ago as last August, Toepfer had submitted a working bill, which had come up against massive criticism from industry. Wholesale and export trade president Michael Fuchs had described the bill at that time as an "ecological enabling act." After months of negotiations and representations to the Federal Chancellor by the Chemical Industry Association (VCI), the Environment Ministry was assuming yesterday that cabinet will pass the bill tomorrow, after which industry will have a much greater inducement than before to "think in terms of waste."

This means that, according to the principles of a low-waste recycling-oriented economy, hence the Recycling Economy Act, priority is to be given to avoiding residues or recycling them as secondary raw materials, and only as a last resort incinerating them or otherwise disposing of them as waste. For the first time, moreover, the bill will embody in an act the privatization of public waste disposal, which has already been introduced with the Packaging Ordinance. In that instance, privatization had led to the creation of the Dual System.

New Regulatory System

The bill, of which SUEDDEUTSCHE ZEITUNG has a copy, creates an entirely new regulatory system, does away completely with the previously accepted concept of waste, and includes secondary raw materials. Waste is taken to mean only those residues that cannot be recycled lawfully and harmlessly as secondary raw materials. Recyclable residues are secondary raw materials; "residue" will be the central concept in the future.

In Article 4, the bill states that residue recycling (reutilization of materials) takes priority over incineration (exploitation for energy purposes). This is only a target, however. The priority to be given to recycling is restricted again in article 4 (4): "Where there is no difference, in ecological terms, between recycling materials and recycling waste for energy purposes, the decision shall depend on economic considerations." Proof of the type and whereabouts of residues that have been recycled or disposed of must be submitted every two years in special residue balance sheets. In order to prevent waste being exported, the bill stipulates that, in principle, it must be disposed of in Germany. Exceptions are possible if the movement of waste is part of a cross-border regional waste management plan run be EC states.

The product liability advocated by the bill includes the requirement that products be reusable many times, be low in residues, and have a long useful life, but the federal government reserves the right to introduce product bans, restrictions, and labeling provisions by issuing statutory orders. In article 21, the legislator threatens to ban or restrict the use of packaging in cases where, "if they were disposed of as waste, the release of harmful substances could not be prevented or only at a disproportionately high cost.."

In spite of months of negotiations with industrial associations, the trade associations that make up the Council of German Trade still reject this bill. According to a policy statement, trade supports waste avoidance and reduction, but claims that the principle of product liability takes no account of the particular circumstances of trade.

Thinking in Terms of Waste

Trading concerns, it continues, cannot "think in terms of waste" as they do not have sufficient product knowledge. If private collection systems fail to materialize, trade fears that areas will have to be set aside for waste removal and sorting.

Ecology Research at Cologne University Described

BR0206081293 Bonn WISSENSCHAFT WIRTSCHAFT POLITIK in German 7 Apr 93 p 4

[Text] Cologne University has become an environmental research pole.

Not only numerous natural scientists, but also legal experts, economists, doctors, and educationalists are engaged in this field of research at Cologne university. This was how Professor Peter Mittelstaedt, prorector for research and scientific junior staff at Cologne university, summarized the situation when submitting the research report for 1991. It offers a complete overview of an impressive 2,174 research projects on which scientists at Cologne university were working in 1991. During the same period, 4,910 books, essays, and articles were published by Cologne researchers.

Prof. Mittelstaedt gave some examples: A team at the Institute of Mineralogy and Petrography is working on

improving highly efficient flue gas scrubbing plants used during the incineration of noxious waste. This project, which is funded by industry, is developing an analytical system for measuring particulates and condensates that will help optimize process parameters and further the emission of pollutants. Another industry-funded project is also examining the suitability of clays for lining waste dumps.

Slow Progress Made With Polluted Sites in Eastern Germany

BR0206085693 Bonn DIE WELT in German 13 Apr 93 p 11

[Text] Environmental pollution continues to be a major obstacle to investment in eastern Germany. Saxony-Anhalt's Environment Minister Wolfgang Rauls (FDP [Free Democratic Party]) has described the federal-laender agreement of four months ago on sharing the costs of ecological reclamation as inadequate.

According to Rauls, no significant progress is being made with the more rapid and generous release of Trust Agency firms from liability for polluted sites intended under the agreement. Of 9,000 applications submitted in Saxony-Anhalt, only 14 have so far been approved, and only about 80 of the over 60,000 applications from the new laender as a whole. Rauls believes the reason lies in the Trust Agency's restrictive interpretation of the agreement.

The administrative agreement of December 1992 established that the Trust Agency would meet 60 percent of the costs of reclaiming polluted sites, rising to 75 percent for major chemical and brown coal projects: The "remainder" would be met by the land concerned. However, where firms have already been sold, this 60:40 ratio is intended to apply only in cases where the Trust Agency undertook to meet reclamation costs in the privatization contract—and this was the exception rather than the rule in the 1992 sales contracts. Furthermore, the sums agreed for release from liability have frequently been, and continue to be, well below the actual liability risk. The laender are consequently left with residual liability on an incalculable scale.

Rauls also criticizes the fact that the Trust Agency shares the costs neither for firms expropriated in the seventies and reprivatized, nor for those with no prospects of privatization. However, experts believe that it is the least economically viable firms that tend also to be the ones with the greatest ecological pollution. According to Rauls, "the sites must be cleaned up in any case, whether the firms are privatized or liquidated." Thus, Saxony-Anhalt is on its own as far as cleaning up the highly polluted, closed Ilsenburg copper mill is concerned, the reclamation costs for which are put at around 63 million German marks.

In a bid to speed up the pace of reclamation effectively, Saxony-Anhalt's environment ministry has submitted to the federal government a proposed solution, though without success so far. His proposal is for the Trust Agency to open up the allocation that is scheduled to disburse DM1 billion a year over the next 10 years to cover all polluted sites for which its is responsible.

Environment-Friendly TV, VDU Disposal Plant Opens in Berlin

BR0206085993 Bonn DIE WELT in German 23 Apr 93 p 7

[Article by Jan-Uwe Stahr: "Assembly in Reverse for Environment Protection—New Environment-Friendly TV and VDU Recycling Method—Pilot Plant at Koepenick, Berlin"]

[Text] The picture fades forever on 4 to 5 million TV screens and computer monitors a year in Germany. These appliances, which contain pollutants, are increasingly ending their days at recycling firms.

Two engineers from the Vicor company of Koepenick, Berlin, demonstrate how the various glass fractions of scrap picture tubes can be kept separate and processed. They have designed a plant in which the screens pass not into a shredding mill, but into the experienced hands of television assembly workers.

All 30 Vicor employees once worked for the former GDR's largest television manufacturer, the state-owned Television Electronics combine. Now, at Vicor's pilot plant, they are stripping down what they previously assembled. "We call it production in reverse," says Vicor chief Reinhard Schmidtmann.

The dismantling plant comprises a carousel with four stations. At the first, the picture tubes are removed and automatically rotated into the correct position for a scoring device, which prescores the screen at the spot where it will be detached with a resistance wire at the next station, i.e., between the cone (the rear section of the picture tube) and screen glass. The dismantler at station two removes the cone glass in an upward movement like an umbrella, and conveys the part containing lead to a collection container. The next workstation removes the metallic "flat masks," through which the electron beams once had to force their way before they could make the phosphors on the screen light up. Finally, at station four, rotating brushes are inserted into the now open screen, loosening the phosphor coating from the glass surface and drawing off the two to three grams into a collection vessel.

After only four minutes, the individual parts of the tubes have been cleanly separated by type into collecting containers. The lead from the cone glass is salvaged by a glassworks in Saxony; the barium-containing screen glass serves as an ingredient for a hard building material called Magmavit; only 0.04 percent of the former picture tubes, the two or three grams of phosphor containing zinc and cadmium, have to be disposed of as hazardous waste.

Because "production in reverse" at Koepenick is completely future-oriented, the Vicor process has been awarded a prize for innovation by the Berlin Senator for Trade.

Depending on screen size, this environment-friendly dismantling costs between 12 and 18 German marks. This includes a proportion of the several hundred German marks that Vicor pays to the glassworks per tonne of lead-oxide glass it takes. The Koepenick company will have to take the screens from the whole of Germany to exploit fully its recycling capacity of 600 items per day. This could change if the Electronic Scrap Order were to come into effect. All television sets and computers would then have to be taken back. The use of recycled picture tube glass in new screens could also bring Vicor a lot of work. Technically, this would present no problems, even today. "If only," says Vicor chief Schmidtmann, "screen manufacturers would agree on standardized lead and barium oxide admixture dosages."

Government Acts to Curb Illegal Toxic Waste Exports

BR0206130293 Bonn DIE WELT in German 29 Apr 93 p 2

[Text] It is hoped that export bans, licensing requirements, and the threat of severe penalties will put a stop to the "waste pushers" in Germany. The Federal Cabinet yesterday passed the bill on the Basel Convention, which will establish wide-ranging conditions for waste exports. A criminal law amendment making illegal exports of hazardous waste punishable with up to five years' imprisonment has already been submitted to the Bundestag.

Federal Environment Minister Klaus Toepfer (CDU [Christian Democratic Union]) said that illegal exports of toxic waste to Romania had damaged Germany's reputation and revealed gaps in the monitoring system. He did not rule out similar finds being made in other eastern European countries. The proposed regulations should therefore be put into effect without delay.

They provide for a statutory ban on exports of nonrecyclable residues to countries outside the EC and EFTA [European Free Trade Association]. They do not apply to waste, such as plastic waste, intended for reuse.

Recyclable substances are also governed by the regulations in order to do away with the "gray area" between waste and merchandise. In general, potentially hazardous residues may cross borders only with the consent of the states concerned, the conditions for disposal being determined by the [German] land granting the license and the country of destination.

Suppliers must put down a security deposit for the export transaction. This will be drawn on if the export subsequently turns out to be illegal and the waste must consequently be returned to the Federal Republic. If the perpetrator cannot be traced, the land responsible for the administrative procedure pays the costs. Toepfer hopes that this will quickly remedy the shortcomings in the controls. Under the bill, waste export brokers will in future have to be licensed.

Toepfer called on the laender to press ahead with reprocessing and disposal facilities, as they could make waste exports unnecessary and of no financial interest. Delays, on the other hand, were an incentive for waste pushers, said the Environment Minister.

ITALY

Environmental Monitoring Project for Amazonia Launched

BR0306121393 Milan ITALIA OGGI in Italian 10 May 93 p 43

[Article by Eduardo Cagnazzi: "Naples Studies Amazonia"]

[Text] A project for monitoring the environmental resources of Amazonia is being launched in Naples. The initiative comes from Alenia Spazio and the Federico II University Faculty of Economics and Business Studies in cooperation with the European Space Agency and the Para University of Belem.

Nowadays in Amazonia, as in other parts of the Earth, the problem is not only one of stalling the deterioration of natural resources which are the property of Brazil and the whole of mankind, but also concerns the people who live off these resources.

This has led to an initiative that contributes both to guaranteeing the quality of life for future generations and to drafting a land planning policy for the short term.

This problem is therefore of concern to the scientist involved in optimizing clean technologies, the legislator called upon to find forms of regulation and control, and the businessman in charge of new technologies. Each will have to revise economic growth and development strategies.

The program relies upon the scientific support of remote-sensing via satellite. A currently irreplaceable technique for obtaining essential information not only on the climate, but also on river and marine pollution, on the use of the soil and the changes caused by erosion and desertification.

A comprehensive research program, therefore, which ranges from acquiring data to possible solutions proposed to local governmental organizations as to the most appropriate action.

According to Francesco Lucarelli, dean of the faculty in Naples and project leader, there is definitely no intention of tackling global problems.

Essentially the project will focus on the use of remote-sensing for an integrated environmental monitoring and diagnosis program.

Only later will legal, economic, and technological directives be dealt with.

NORWAY

Satellite Facilitates Swift Oilspill Alert

93EN0509Z Oslo AFTENPOSTEN in Norwegian 10 May 93 p 2

[Article by Rolf L. Larsen: "Satellite Saw Oilspill on the Coast"—introductory paragraph in boldface as published]

[Text] **Earlier in the week there was a perfect bull's-eye for oilspill surveillance from the ERS-1 environmental satellite.**

"This is a textbook example of how such an observation and reporting service can function. The satellite 'saw' the oilspill just before 1300 hours, we had developed the pictures and sent the position on to the National Pollution Inspectorate's [SFT] oil protection division well within an hour later, and the SFT plane was at the pollution site and confirmed the satellite observation at about 1530," says research worker Terje Wahl of the Defense Research Institute [FFI] at Keller.

The European ERS-1 environmental satellite discovered the oilspill around 8 kilometers west of the Utvaer lighthouse on Thursday. The oil covered an area of about 6 square kilometers.

The data were read below at Tromso Satellite Station and sent on to the FFI. The satellite passed along the Norwegian coast at an altitude of about 800 kilometers. With help of advanced radar equipment on board, it would see about 100 kilometers west of the coast. An on-duty research worker at the satellite-receiver equipment here, at the FFI, detected the oil slick in the pictures sent to us from Tromso. He immediately warned the SFT in Horton and, a short time later, relayed the position and area. The SFT had its surveillance plane out on assignment and the pollution inspectorate sent it to the position we had given. Here the oil find was confirmed. The weak wind in the area was favorable for use of radar pictures from the European ERS-1 environmental satellite, says researcher Terje Wahl.

Permanent Service?

The Defense Research Institute and the National Pollution Inspectorate are now conducting a test project to investigate how well the European ERS-1 environmental satellite sees oilspills at sea. The project is the only one of its kind in Europe and is being followed with great interest by ESA, the European space organization, and European environmental researchers. The oilspill project is being coordinated by the Norwegian Space Center in Oslo.

The cooperative project between the FFI and the SFT is being supported by funds from the Environmental Protection Ministry's environmental technology program. It will be finished in September. The authorities will then decide whether a permanent collaborative observation and reporting service, involving oilspill surveillance with the help of satellites, should be established between the FFI and the SFT beginning next year.

"So, there is great interest in this oilspill project among environmental authorities in Scandinavia, and the Nordic countries have given us here, in Norway, the assignment of following developments and research in environmental satellite technology. Norway is at the very forefront internationally in this area," says department engineer Jorn Harald Anderson of the SFT oil protection department in Horton.

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